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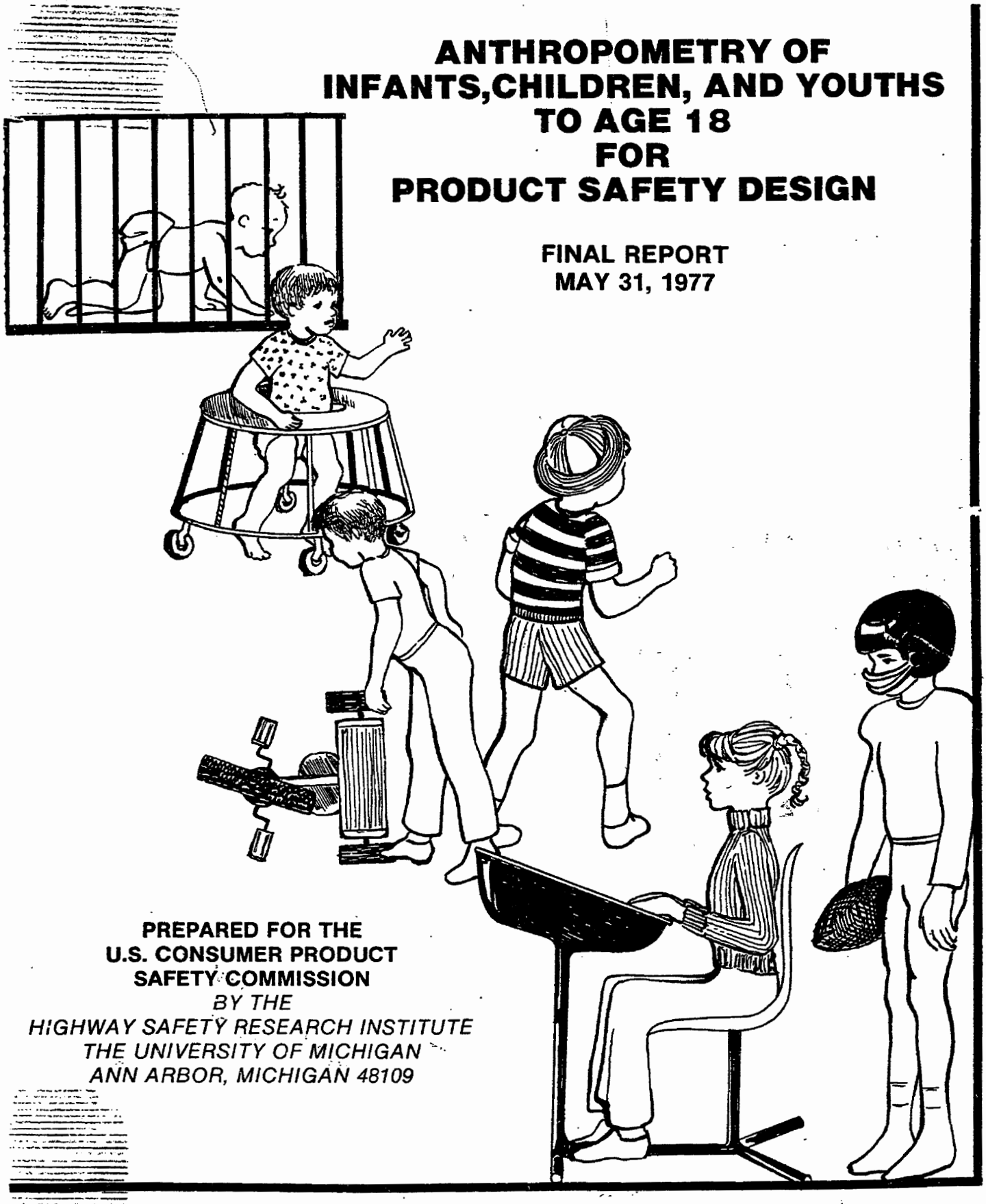
ANTHROPOMETRY OF INFANTS, CHILDREN, AND YOUTHS TO AGE 18 FOR PRODUCT SAFETY DESIGN

FINAL REPORT
MAY 31, 1977



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May 1977

ANTHROPOMETRY OF INFANTS, CHILDREN, AND YOUTHS TO AGE 18 FOR PRODUCT SAFETY DESIGN

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16. Abstract

A total of 87 traditional and functional body measurements were taken on a sample of 4127 infants, children and youths representing the U.S. population aged 2 weeks through 18 years. Measurements were taken throughout the United States by two teams of anthropometrists using an automated anthropometric data acquisition system. Standard anthropometers, calipers, and tape devices were modified to read electronically and input dimensional data directly to a mini-computer for data processing and storage. Summary statistics of measurement results are reported for 16 age groups along with scatter plots of the data points for the sexes combined and males and females separately. Each measurement is described along with a photograph and illustration. In addition bivariate relationships of selected functional measurements with weight or stature are provided along with regression data.

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The foresight and guidance of the project officers who have

managed this program, Dr. Albert F. Esch and Technical Monitor Donald T. Van Houten, deserve special recognition due to their major contribution to the overall conduct of the work. This effort is the culmination of earlier studies initiated by Carl W. Blechschmidt (April 1972-November 1973), and subsequently under the technical guidance of John K. O'Connor (November 1973-April 1974). Elaine Besson, formerly of the National Commission on Product Safety, provided early encouragement.

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CHAPTER I

INTRODUCTION

A. Introduction

In 1975, the Biomedical Department of the Highway Safety Research Institute (HSRI) under the sponsorship of the Consumer Product Safety Commission (CPSC) completed an anthropometric survey of infants and children to age 12 (22). In that study, 41 measurements chosen for their functional application to design of children's products were obtained on a sample of over 4000 infants and children representative of the current U.S. population. The present study is a continuation and extension of this survey and is an attempt to provide a more complete source of useful anthropometric data on children and youths through age 18. In this continuation study, data on 87 measurements have been obtained on over 4100 additional subjects two weeks through 18 years of age, representing as nearly as possible the U. S. population with regard to race, demographic, and socio-economic factors. This report describes the procedures and presents the results of this study.

Chapter I contains two additional sections. Section B provides a brief description of related anthropometric background material and Section C presents the overall investigation objectives.

Chapter II discusses the methods and procedures including the measurement and sampling strategy designed to provide a maximum amount of data on a sample representative of the United States Youth 0-18 years of age. In addition, a complete description of the measurement equipment is included.

The main body of the report is found in Chapter III which is divided

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This study was annually reviewed by, and conducted under standards established by the University of Michigan Medical Center, Committee to review Grants for Clinical Research and Investigation Involving Human Beings, and conforms to the quidelines of the Institutional Guide to Department of Health, Education and Welfare Policy on Protection of Human Subjects.

PAGE 2 MISSING

PAGE 3 MISSING

a complete and reliable source of the physical characteristics of infants, children, and youth be available to designers, engineers, and other groups concerned with establishing guidelines and standards for the manufacture of these products. As of 1972, however, such a source of reliable and consistent data providing measurement statistics for both traditional and functional anthropometric measures for a sample representative of the infants, children, and youth in the United States was not available.

In 1972 the Biomedical Department of the University of Michigan's Highway Safety Research Institute completed a literature survey of anthropometric studies of infant and child measurements. The results, which constitute a comprehensive review of child and infant measurements, are presented in Source Data of Infant and Child Measurement: Interim Data 1972 (18) which references over 800 studies providing child measurement data.[1] While this comprehensive review of the literature on child and infant anthropometry data revealed that a large number of studies had been conducted, the data urgently needed for a number of current safety applications were non-existent. A large number of these studies were longitudinal (rather than cross-sectional) surveys designed to study the growth of a fixed population over a period of time using only a few basic measures such as height and weight. All the studies were limited in that they either used specific populations, selected age ranges, or only a few measurements, and did not consider differences due to region of the country, race, and other environmental and socioeconomic factors likely to affect the sizes of children. Even if these factors had been considered and if all the measurements necessary had been taken in one study or another, differences due to measurer technique, definitions in measurements, and differences in age groupings would make it impossible to compile these data into one common source of reliable and consistent information. Additionally, many growth studies as recently as Marshall and Carter, 1975 (7)

[1] See reference 22 for a brief discussion of these studies.

have found that children today are taller and larger than children their same age in past generations. Since only one-third of the 35 most complete studies encountered had been made since 1960, it is questionable how representative much of these data may be of the current population of U. S. children.

In 1972, as a result of the clear need for more useful and current child measurement data for product safety design, the Consumer Product Safety Commission contracted with the University of Michigan to undertake the task of providing these data. The study which resulted was completed in March, 1975 and the data were reported in the publication Physical Characteristics of Children as Related to Death and Injury for Consumer Product Safety Design (22). A total of 41 body measurements were taken on over 4,000 infants and children representing the U.S. population from 2 weeks through 12 years of age. An important aspect of this study was the design, fabrication, and use of a portable mini-computer system for automatic retrieval of measurement data. Standard anthropometers, calipers, and tape devices were modified to output electrical signals to the computer and pressure transducers were utilized to standardize measurements on soft tissue. Devices were also designed for fast and reliable measurements of whole-body centers of gravity in the standing and seated positions and for obtaining a number of functional measurements such as hand clearance, grip size, and finger diameters.

C. Objectives

The overall objective of the present study was to provide a complete source of anthropometric data on U. S. children for consumer product(s) design, hazard assessment and guidance in establishing requirements or recommendations in standards. In carrying out a study of this complexity, it was necessary to subdivide the effort into the following tasks.

1. Develop a list of traditional and functional anthropometric measurements most urgently

needed on infants, children and youth from 2 weeks to 18 years for broad application to product safety design.

2. Determine a measurement strategy and sampling procedure that would efficiently and accurately collect these data on a sample representative of the total U. S. population of infants, children, and youth.

3. Make necessary modifications to existing anthropometric instruments and assemble a second portable computer system for collecting these anthropometric data.

4. Collect, reduce, and analyze the required dimensional data.

5. Tabulate and present the data in a format or formats most useful to persons concerned with designing or establishing guidelines and standards for children's products, taking into consideration the potential functional applications.

CHAPTER II

METHODS AND PROCEDURES

A. Study Design

As stated in the objectives, the purpose of this study was to provide anthropometric data of both a functional and traditional nature to describe the sizes of infants, children and youths from 0 to 18 years. In order that the study sample represent as closely as possible the children and youth of the 48 conterminous United States, the cooperation and consultation of the University of Michigan Biostatistics Department was obtained. From an extant list of public schools available from the third round (1975) of a study of youth fitness completed in the Department of Physical Education at the University of Michigan,a sub-sample was selected for this study.

The selection procedure used in the Youth Fitness Study is described in detail in Reiff, Kish and Harter (16). In brief, the Survey Research Center, University of Michigan, maintains economic, demographic, and sociological information on a national sample representative of the United States population consisting of 74 primary sampling units (PSU's) which are made up of one or more counties. These PSU's include the 12 largest standard metropolitan statistical areas (SMSA's) plus 62 other PSU's which are divided into two groups both representative of the population outside the 12 largest SMSA's. The sampling frame utilized in the Youth Fitness Study was selected from the 12 SMSA's in one of these halves, and consisted at the first stage of the 12 largest central cities, 22 suburban counties selected from these 12 SMSA's and the 31 counties outside the 12 SMSA's.

In the Anthropometric Study of this report, 8 of the 12 cities were randomly selected and 10 counties neighboring the chosen 8 cities and 15 of the remaining 31 counties were then obtained

by a random process. Within each of the chosen areas one school district was randomly selected.

Next, within each district a level or levels of schools [elementary school (usually K-6), intermediate school (usually 7-9) and high school (usually 10-12)] were selected. Schools were selected randomly from among those with a given grade range and grade levels were selected randomly so that the resulting sample was balanced in the ratio 2 elementary to 1 intermediate to 1 high school.

Unfortunately, selection of a school district or school by this sampling scheme did not guarantee its participation in the study. Refusals of school boards, school superintendents, or principals, and practical limitations of school buildings such as space available made it necessary to select alternative districts or schools as scheduling progressed. Thus, the ideal of adhering rigidly to the original sampling scheme could not be realized and it was imperative to remain flexible. In each case where substitutions were necessary, however, every effort was made to make the substitution from the same city, county or geographic area. It should be noted that the Ann Arbor Area was included in addition to sampling dictated by the National Sampling Scheme.

B. Measurements and Measurement Strategy

1. General

Traditionally, anthropometric measurements have been devised solely to describe human variation in body morphology, body proportions, and changes in size attributed to growth, race, and other variables of interest to anthropologists. These dimensions were taken to describe the linear distance between two landmarks (heights, breadths and depths) or around a body segment at a prescribed level (circumference). In today's world, however, this classical approach to anthropometry is not sufficient to answer questions relevant to the interaction of man with a multitude of man-made environments.

While the traditional anthropometry measures are still important as they describe differences between individuals and populations, the differences must also be considered as a part of a "man-machine system". Thus, in anthropometric studies today, functional measurements which describe physical characteristics in relation to man's performance in his environment must be considered as well as the more traditional type measurements.

2. Ages 2-18 Years

With a systems approach to anthropometry as a general guiding principle and with the recognition of the need for a complete and consistent data bank of both classical and functional anthropometry on U. S. children and youth for application to product design, the process of selecting measurements for this study was initiated. Consideration was also given to the fact that another study of this magnitude would not be likely in the near future and it was thus essential to provide the maximum amount of information possible within the time and budget limitations and to identify those measurements that would be of most interest and usefulness to the greatest number of people (e.g., safety engineers, medical doctors, human factors specialists and others).

The result of these considerations was the list of 87 functional and traditional measurements shown in Figure 1. Traditionally, all measurements in anthropometric surveys are made on every subject in the survey sample. It was realized at the outset, however, that neither the children or the schools would permit the time for 87 measurements on each subject. Previous experience had indicated that 15-20 minutes is a maximum time interval for both of these factors, which allows about 40 measurements to be taken. Thus, an alternative measurement strategy was needed.

In essence, this new strategy divides the measurements into four groups as indicated in Figure 1. One group of 22 measurements (Group I), called core measurements, was taken on every subject. The

I. Core Measurements

Weight
Stature
Head Circumference
Chest Circumference
Waist Circumference
Hip Circumference
Upper Arm Circumference
Forearm Circumference
Upper Thigh Circumference
Calf Circumference
Foot Length
Foot Breadth
Hand Length
Hand Breadth
Shoulder Breadth
Shoulder-Elbow Length
Elbow-Hand Length
Maximum Hip Breadth (sitting)
Buttock-Knee Length
Knee Height
Erect Sitting Height
Head Breadth

II. Shape Measurements

Chest Height
Waist Height
Hip Height
Chest Breadth
Waist Breadth
Neck Circumference
Natural Waist Circumference
Wrist Circumference
Ankle Circumference
Calf Circumference
Ankle Breadth
Calf Breadth
Upper Thigh Depth
Wrist Breadth
Forearm Depth
Upper Arm Depth
Neck Breadth
Head Length
Eye Height
Thigh Clearance
Maximum Thigh Breadth (sitting)

Figure 1. Measurement Sets for Subjects 2-18 Years.

III. Linkage

Vertical Arm Reach
Frontal Arm Reach
Lateral Arm Reach
Step Height
Suprasternale Height
Iliocristale Height
Iliospinale Height
Trochanteric Height
Gluteal Furrow Height
Sphyrion Height
Tibiale Height
Bispinous Breadth
Clavicale-Acromion Length
Acromion-Radiale Length
Radiale-Stylion Length
Biocromial Breadth
Hip Breadth at Trochanter
Supine Stature
Supine Sitting Height
Standing Center of Gravity
Seated Center of Gravity

IV. Head, Face and Hand Measurements

Bizygomatic Breadth
Maximum Frontal Breadth
Mouth Breadth
Nose Length
Lower Face Height
Face Height
Head Height
Tragion to Back of Head
Tragion to Top of Head
Ear-Sellion Depth
Bitragion Breadth
Ball of Fist Circumference
Maximum Fist Breadth
Ball of Fist Circumference
Maximum Fist Breadth
Maximum Fist Depth
Thumb Crotch-Middle Finger Length
Middle Finger-Thumb Grip Length
Thumb Length
Index Finger Length
Middle Finger Length
Middle Finger Diameter
Index Finger Diameter
Thumb Diameter
Minimum Hand Clearance

Figure 1. (continued) Measurement Sets for Subjects 2-18 Years.

other three groups of measurements called body shape (Group II), linkage and center-of-gravity (Group III), and head, face and hands (Group IV) were taken sequentially along with the core measurements on every three subjects. Thus, on any one subject only 42-45 measurements were taken. While the sample size for the core measurements is equal to the total number of subjects in the study, for the other three data sets the sample size is only one third the total sample size.

The key factor in this approach is in the choice of the core measurements which have been carefully selected to include measurements highly correlated with each of the measurements in the other three data sets. Since the core measurements are taken on every subject and each of the other measurements is correlated with one or more of the core measurements, comparison of the core measurements associated with the three other measurement groups provides a procedure for checking the comparability and representativeness of the sample for the separate measurement sets.

In order to avoid the systematic association of measurements with subjects for a particular region of the country or age group, all measurement sets were taken equally at all measurement sites. To accomplish this, the combination of measurement sets (core + shape, core + linkage, core + head, face and hands) was sequenced in the computer program.

In summary, then, the measurements in this study were selected to provide maximum information for the maximum number of potential users. This was accomplished by a new measurement strategy which takes advantage of the strong relationships between certain anthropometric measurements, thereby permitting a large number of measurements to be taken on a large cross-sectional sample with a minimum amount of time per subject.

3. Infants (0-24 months)

Since infants are not capable of performing most of the

functional measures and do not have mature skeletal and muscular systems, many of the measurements taken on 2-18 year olds cannot be taken on infants. For this reason, a separate list of 34 measurements was compiled for infants and is illustrated in Figure 2.

1.	Weight	18.	Middle Finger Diameter
2.	Crown-Sole Length	19.	Chest Circumference
3.	Crown-Rump Length	20.	Chest Breadth
4.	Head Circumference	21.	Waist Circumference
5.	Head Breadth	22.	Waist Breadth
6.	Head Length	23.	Rump-Sole Length
7.	Shoulder Breadth	24.	Rump-Knee Length
8.	Shoulder-Elbow Length	25.	Hip Circumference
9.	Upper Arm Circumference	26.	Hip Breadth
10.	Elbow-Hand Length	27.	Mid-Thigh Circumference
11.	Forearm Circumference	28.	Mid-Thigh Depth
12.	Wrist Circumference	29.	Knee-Sole Length
13.	Hand Length	30.	Calf Circumference
14.	Hand-Breadth	31.	Ankle Circumference
15.	Minimum Hand Clearance	32.	Ankle Breadth
16.	Maximum Fist Breadth	33.	Foot Length
17.	Thumb Diameter	34.	Foot Breadth

Figure 2. Infant Measurement List

C. Data Collection Procedures

1. Measurement Teams

Measurements were taken by two teams of anthropometrists, one consisting of two females, the other of two males. Each team member was chosen primarily on the basis of experience in working with children and teenagers. During the initial phase of the study the measurers underwent an extensive training period in skeletal anatomy and anthropometry techniques. Prior to conducting any field measuring the teams underwent one month of closely-supervised practice measuring at HSRI so that they were comparable in how they handled the equipment and took the measurements. A fifth team member had primary responsibility for coordinating and scheduling measurement locations but was also trained along with the measurement teams to take all measurements and

could be used as a substitute in the absence of a team member.

2. Measurement Site Scheduling

a. Public Schools. Most measuring was conducted within the U. S. public school system in accordance with the sampling scheme discussed previously. The scheduling process generally involved contacting the superintendent of a chosen school system by letter, and a week or so later following up with a telephone call. Information concerning the purpose and procedures of the project, along with estimates of the number of students needed and expected length of stay in the school district, were then sent out and the project was brought before the school board for consideration. If approved, the names and addresses of selected elementary, secondary, and high schools in the district were obtained and individual principals contacted. In many cases, the team coordinator visited the chosen schools and made a presentation of the study to the teachers and students. In this regard, an 18 minute color movie produced in the previous CPSC measurement study was an invaluable aid. Often it was sufficient to send the movie alone to a particular school in order to describe the study to students and teachers.

In general, if the study was approved by the school board and superintendent, the individual principals were usually willing to allow the study to be conducted in their school. While every attempt was made to adhere to those schools chosen by the statistical sampling scheme, this was not always possible due to inadequate space, physical layout of the building (i.e., could the computer be easily moved in and out of the school), and the coordination of our measuring schedule with school activities (e.g., exams, holiday programs, etc.).

Once it had been decided that a school would be used in the study, the forms and letters illustrated in Figures 3, 4, and 5 were distributed to the students. These consist of a letter of explanation to the parents, a consent form and a questionnaire of demographic information about the child and child's family. Since it would be

HIGHWAY SAFETY RESEARCH INSTITUTE
Institute of Science and Technology
Huron Parkway and Baxter Road
Ann Arbor, Michigan 48109

THE UNIVERSITY OF MICHIGAN

Dear Parent:

The Highway Safety Research Institute and the Department of Pediatrics of the School of Medicine at The University of Michigan are jointly conducting a study of infant, child, and teen-age body sizes. During the next year we plan to take measurements on over 3,600 youths throughout the United States from birth to 18 years, and we have recently made arrangements to measure in your school.

This research is being sponsored by the Consumer Product Safety Commission for the purpose of collecting measurement data which can be used as guidelines for design of safer consumer products. This would include such items as children's furniture, playground equipment, car seats and restraints, toys, bicycles, etc.

The measurements will be taken by two teams consisting of two experienced research assistants each. Measurements are taken with automated instruments designed especially for use with children and youths. Many find the equipment interesting, and the measurement experience enjoyable. Our protocol has been approved by the Human Subjects Committee of the University of Michigan Medical School.

The present study is a continuation and extension of an earlier three-year study which we concluded in March, 1975. At the completion of this study, information on over 90 body dimensions will be available to product designers. These results will have a number of direct and basic applications in improving consumer products and in forming a valid framework for governmental standards. As one example of the importance of these data, our measurements of 3- to 6-month old infants formed a basis for the government's recent issuance of safer crib standards, reducing slat interspaces from 3 1/2" to 2 3/8" to prevent the hazard of infants sliding between the slats.

We have included a brief questionnaire with this letter. Because our sample will reflect the total U.S. population of children, we need to ask questions about race, education, and occupation. This information is strictly confidential and will be released only in an anonymous form.

Thank you for your cooperation.

Sincerely,

Clyde L. Owings, Ph.D., M.D.
Department of Pediatrics

Richard G. Snyder, Ph.D.
Head, Biomedical Department
Research Scientist
Professor of Anthropology

Figure 3. Letter to Parents

UNIVERSITY OF MICHIGAN MEASUREMENT STUDY

Consent Form

I, the undersigned, understand that the purpose of this study is to take some measurements on my son or daughter. I am aware that these measurements will enable us to acquire information about the physical shapes of youths at different ages and to use this information in constructing guidelines for the design of safer consumer products for youths.

I have been informed that there are no health hazards or discomfort to my son or daughter associated with this, and that participation is voluntary. In order to take measurements with accuracy, it is necessary for the subject to partially undress, leaving on his/her underwear or to wear a bathing suit (preferably two-piece for the girls). Each subject is measured individually by research investigators of the same sex and all steps are taken to insure privacy.

I further understand that these data are confidential and I agree to allow publication of any or all of the data collected on my child if presented in an anonymous form.

Child's Name _____ Signature of Parent _____

Date _____

10/8/75

Figure 4. Conse[illegible]m

QUESTIONNAIRE FORM

1. Name of School _____

2. Name of Teacher _____ Hour _____ Grade _____

3. City _____ State _____

4. Subject's Name _____

   a. Sex: _____ M _____ F

   b. Birth Date: _____ Month _____ Day _____ Year

   c. Race: Black _____ American Indian _____

      White _____ Oriental _____

      Other (Specify) _____

   d. Right Handed _____ Left Handed _____ Both _____

   e. Number of Brothers _____ Sisters _____

   f. Twin: _____ yes _____ no

   g. What is the birth order of this child in relation to brothers and sisters? _____
      (For example: 1-oldest, 2-second oldest, etc.)

   h. Has child been under treatment for any serious illness?

      _____

5. Mother's Occupation _____

6. Father's Occupation _____

7. Mother's Education — Father's Education

   (Please check one)

_____	Elementary	_____
_____	Junior High	_____
_____	Senior High	_____
_____	College	_____
_____	Other (Please specify)	_____

8. How long have you lived in this community _____ (years)

(For Official Use Only)

SN	_____
MD	_____
LC	_____
G	_____
S	_____
BD	_____
CR	_____
CB	_____
CS	_____
T	_____
BO	_____
SF	_____
MO	_____
FO	_____
ME	_____
FE	_____
LL	_____
CC	_____

Figure 5. Subject Questionnaire Form

economically prohibitive to distribute forms to all students in all the schools visited, a plan for distributing the forms to certain classes covering the age ranges of interest was worked out with each school principal. In a few cases, the school principal included a letter of his own with this package, acknowledging his approval of the study and encouraging participation. If this was done, the student and parent responses were usually very favorable.

If a school board did not approve the project an alternative school district was selected via a sampling scheme developed by the University of Michigan Biostatistics Department or a district in close proximity to the original district was approached.

The complete process of obtaining approval, making preparations to measure in individual schools, and getting forms back from students and parents generally took about 2 months. Because of the possibility of unanticipated problems (e.g., flu epidemics, teacher strikes) it was also necessary to remain somewhat flexible in setting firm measurement dates with schools and to have alternative measuring sites available. Thus, considerable effort in planning and scheduling was needed in order that the measuring teams could continue from location to location in a smooth and coordinated manner.

b. Summer Schedule. Because public schools are closed for 2-3 months during the summer it was necessary to change the scheduling procedure somewhat during this period. Overnight summer camps were a logical alternative and efforts were directed toward scheduling and measuring at these facilities. While there was less difficulty in obtaining approval from camp directors to conduct the study, other problems created a less desirable situation for measuring than in the public schools. The physical facilities at camps were usually not as conducive to using the automated system, either due to stairs, inadequate space, or inadequate power. Also, since the parents are only at camp to bring their children, it was necessary to explain the project and get parental approval during the first day of camp. Despite these drawbacks, which resulted in a decrease in the

rate of measuring, camps were the primary source of subjects over 6 years old during the summer months.

c. Preschool Measuring. While 5 through 18 year olds were measured in public schools, the primary sources for children 2 through 5 years were nursery schools and day-care centers. As with the camps, it was generally easier and faster to obtain approval for measuring than in public schools. Because these preschool facilities generally have 50 or fewer children, it was often necessary to move and set up the equipment two or three times a week. Perhaps the greatest problem in measuring 2-5 year old children was due to the unwillingness of many of them to be measured. It was thus not infrequent that a nursery school would have a good response of parental consent, but fewer children could actually be measured.

d. Measuring at HSRI and Infant Clinics. Since 2-3 year olds were often unwilling to be measured and since there are relatively few 2-3 year olds in the preschool centers, an alternative source for these children was needed. One procedure which was found useful for infants and toddlers was to obtain names of children born on selected dates from newspapers at the local library. Parents were contacted by phone and asked if they would bring their child or infant to HSRI for measuring. While the process was tedious and time consuming, a number of subjects aged 2 weeks to 3½ years were obtained in this way. Two other primary sources for measuring infants were the University of Michigan Well Baby Clinic and a pediatrician's clinic in Pontiac, Michigan.

D. Measurement Equipment and Procedures

1. Computer Systems

The basic process of collecting anthropometric data was automated to a large extent by use of a portable computer system illustrated in Figure 6. This system includes the NOVA 1220 computer with 24 K of memory, two tape drive units, 16 channels of A/D input, a signal conditioning and power supply package for processing instru-

ment signals and activating device transducers, and an interactive display system consisting of terminal, keyboard and video display. Figure 7 shows a typical set-up of the automated measuring process. Since two teams operated independently and simultaneously, often in different locations, two automated systems were needed. One system had been developed in the previous CPSC child measurement study (22), while a second system was constructed early in the present study.

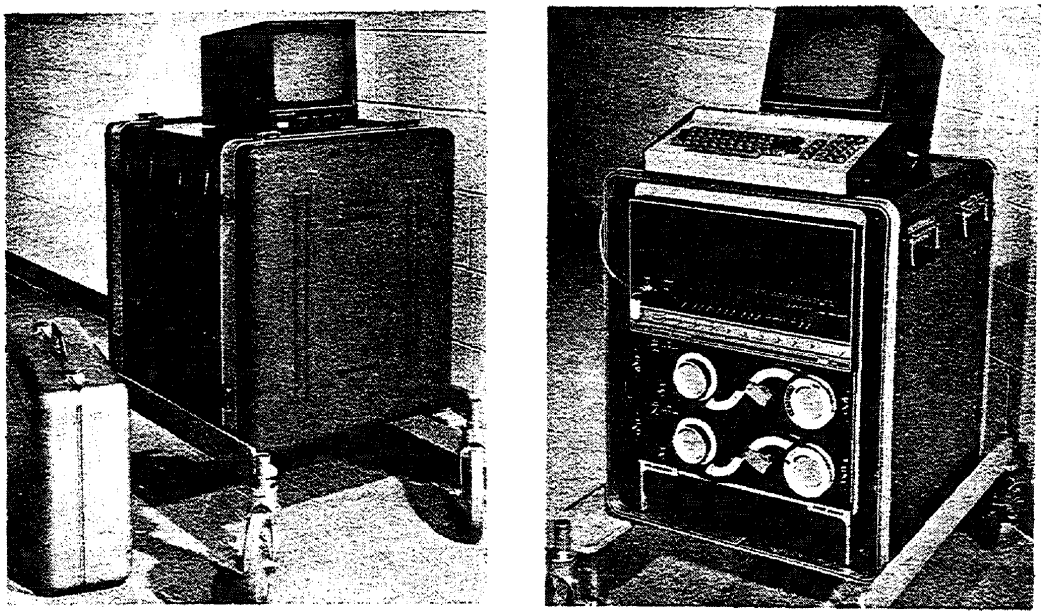


Figure 6. Computer System Used for Anthropometric Data Acquisition

2. Automated Anthropometric Devices

Four different automated measuring devices were interfaced with the NOVA computer system and utilized in the measuring process. For measuring linear distances (i.e., breadths, lengths, depths, heights) the automated calipers or anthropometer was used. These instruments are illustrated in the drawings of Figure 8 and have

been previously described (11-13, 20-22). GPM (Siber Hegner & Co. Ltd) anthropometers and calipers were modified to provide electrical

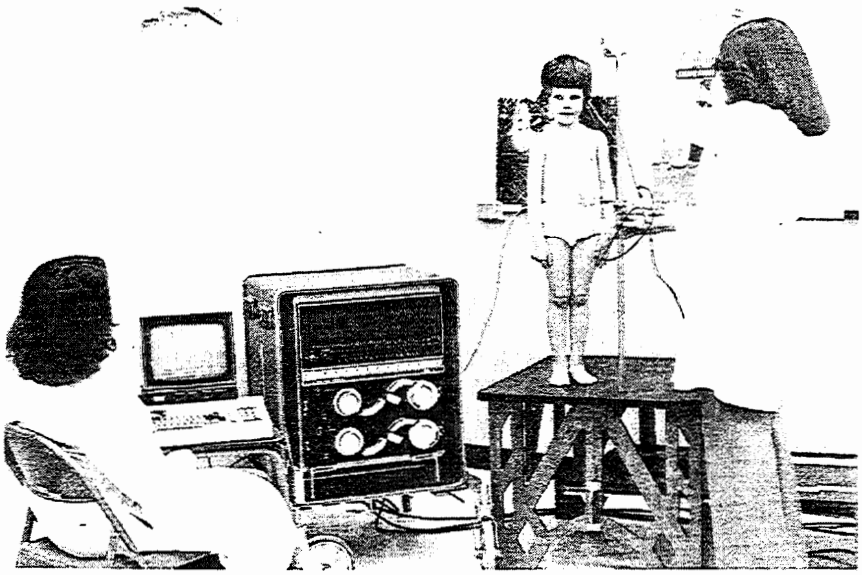


Figure 7. Typical Measuring Set-Up Using Automated Anthropometry System.

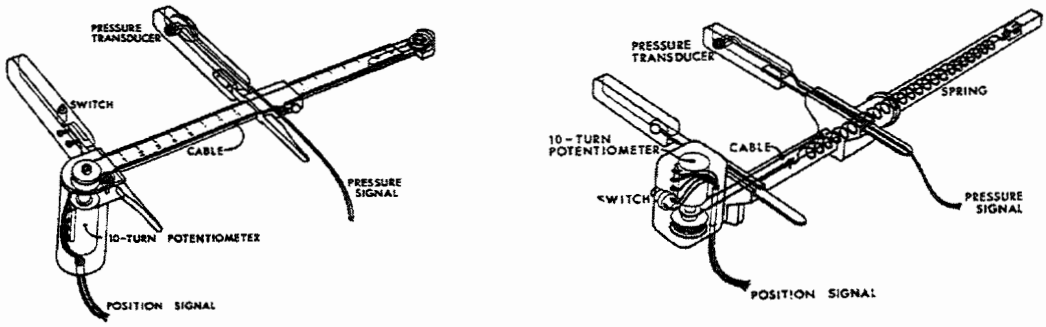


Figure 8. Drawings of Modified Calipers (left) and Anthropometer (right) Illustrating Potentiometer, Pully and Cable System, Pressure Transducer and Switch.

readout of length by means of a 10-turn potentiometer connected to the moving blade by a pulley and cable system. A miniature pressure transducer (Konigsberg Model P21) mounted in the special plexiglass blade provided a means of standardizing measurements on soft tissue. Figure 9 shows the actual instruments along with sets of removable pointed extensions of varying length for taking body linkage and head, face and hand measurements. A button in the stationary blade is used to activate the measuring process on each device.

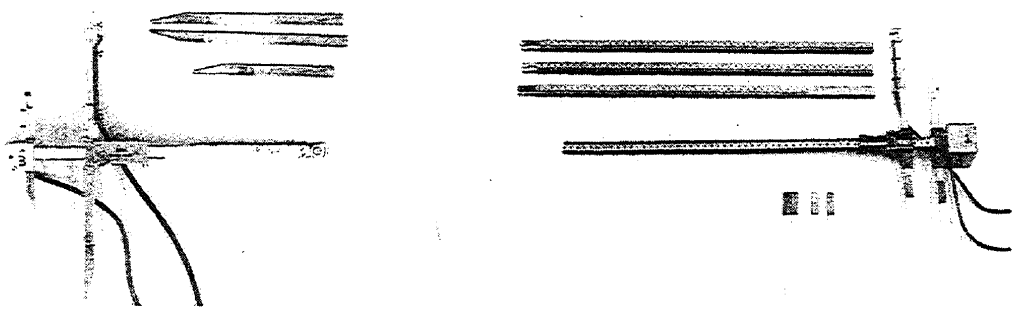


Figure 9. Modified Calipers (left) and Anthropometer (right) with Removable Pointed Blades and Anthropometer Extensions.

Figure 10 shows a third automated device used for measuring various body circumferences. This consists of a standard steel measuring tape wrapped around a pulley which is attached to the shaft of a 10-turn potentiometer. The tape is wrapped about the particular body segment being measured and clipped back on the tip of the aluminum tape guide. Tension is provided by a coil spring located inside the pulley and the measurement is sensed by the computer upon depressing the plastic button with the thumb or index finger.

A fourth device used to measure the center of gravity is illustrated in Figure 11. This device consists of a platform supported

by three precisely calibrated load cells. The subject is placed on the platform in either a supine standing or supine sitting position with the feet or buttocks firmly against a reference plane. Outputs of the load transducing cells are amplified before entering the A/D unit of the computer and during execution of the center of gravity measuring routine, load cell sampling is initiated by depressing a keyboard key. In order to eliminate error caused by subject movement, each transducer is sampled 1600 times in about a

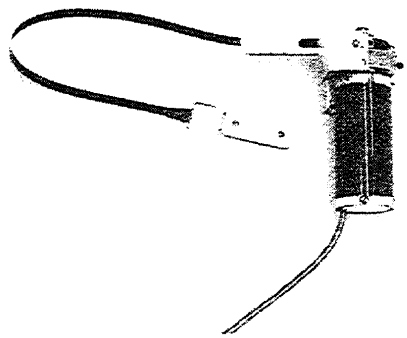


Figure 10. Modified Tape Device

1-second time interval and the average A/D readings computed. Since the transducers have been precisely calibrated, the weight and location of the subject's center of gravity with respect to the reference plane can be calculated from load cell readings taken with and without the subject on the platform. By reading the load cells with the platform tilted 15 degrees to the horizontal as shown in Figure 12, one can in theory compute the location of the subject's center of gravity above the platform as well as along the platform. In practice, however, small measurement errors introduced in measuring the center of gravity between the load cells become magnified in computing the center of gravity above the platform and make field measure-

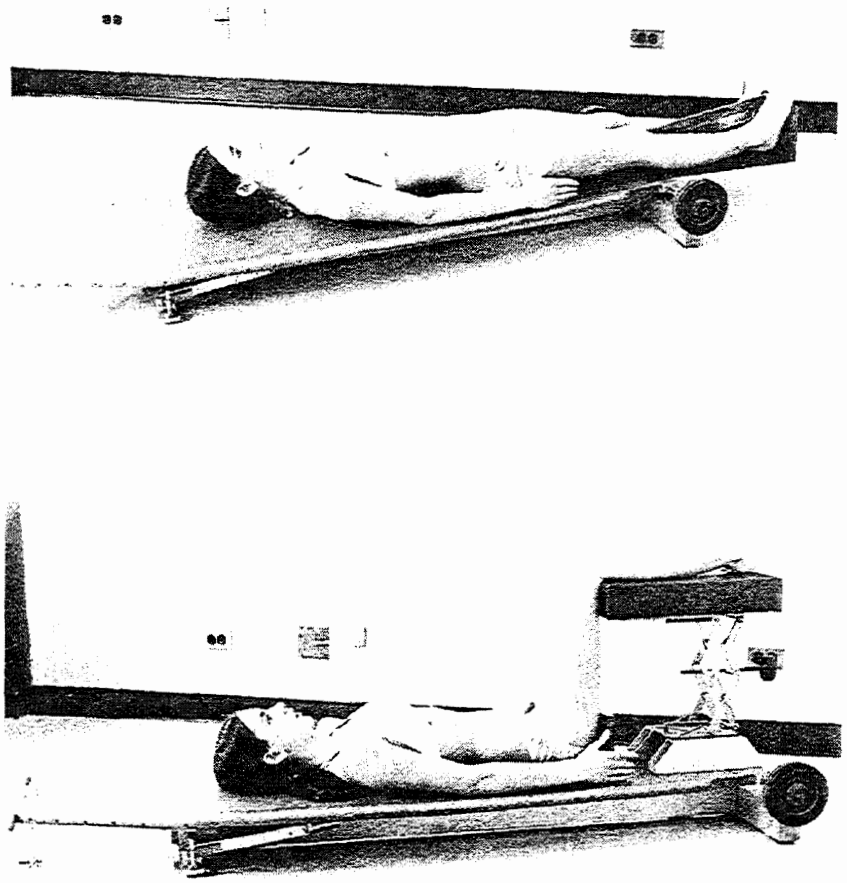


Figure 11. Center of Gravity Device with Subject in Supine Standing (upper) and Supine Sitting Position(lower).

ments of vertical (anterior-posterior) center of gravity in the supine standing position unreliable. In this study, therefore, the center of gravity above the platform is reported only for the supine sitting position. During the center of gravity measuring sequence the computer program advances through the sequence of eight positions shown in Figure 13 sampling the load cells in each position when a

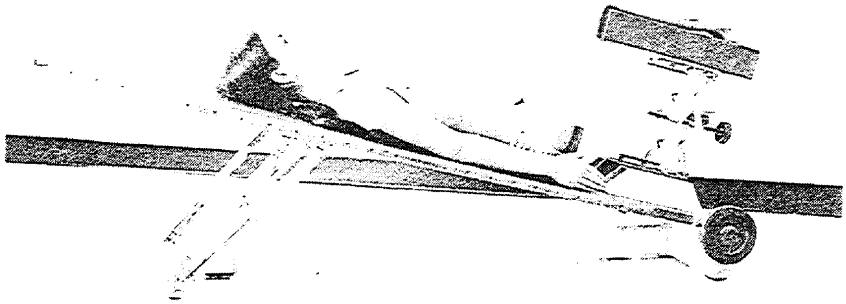


Figure 12. Center of Gravity Device Tilted to 15°.

1. Standing Tilted
2. Standing Horizontal
3. Empty Horizontal
4. Empty Tilted
5. Seated Tilted with Leg Support
6. Seated Horizontal with Leg Support
7. Empty Horizontal with Leg Support
8. Empty Tilted with Leg Support

Figure 13. Sequence of Center of Gravity Device Position

keyboard key is depressed. Upon completing the series, the computer displays the results and compares the calculated weight with the value of the scale weight previously entered. If a significant difference in the two weights exists, the computer rejects the center of gravity data and displays a request to repeat the measurement.

During the center of gravity measuring process, the supine

standing height and sitting height are measured while the subject is lying on the platform. The plaxiglass device shown in Figure 14 is aligned with the measuring tape attached to the C.G. platform and

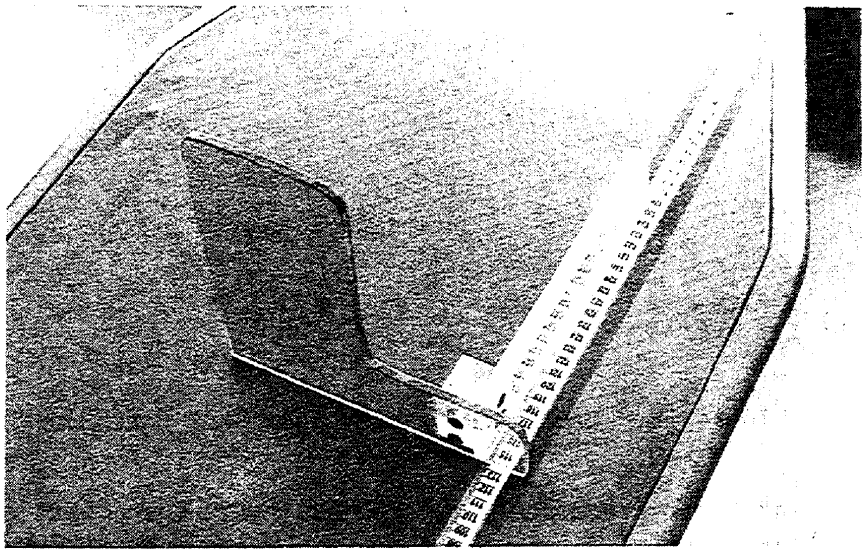


Figure 14. Plexiglass Device for Measuring Supine Stature and Sitting Height Aligned with Tape on C.G. Platform

placed against the top of the subject's head. The tape reading at the intersection with the plexiglass head plate is typed into the computer. These supine measures are used to describe the center of gravity results as a percent of standing and sitting height. The seated center of gravity distance above the platform (anterior/posterior) is also presented as a percent of buttock-knee length.

A foot rest extension shown in Figure 15 is removable and is used in taking center of gravity measurements on large subjects. By shifting the center of gravity further toward the end with two load cells (i.e., toward the wheels) and away from the single load cell end, this device allows heavier subjects to be measured and facilitates tilting of the platform. Before beginning a center of

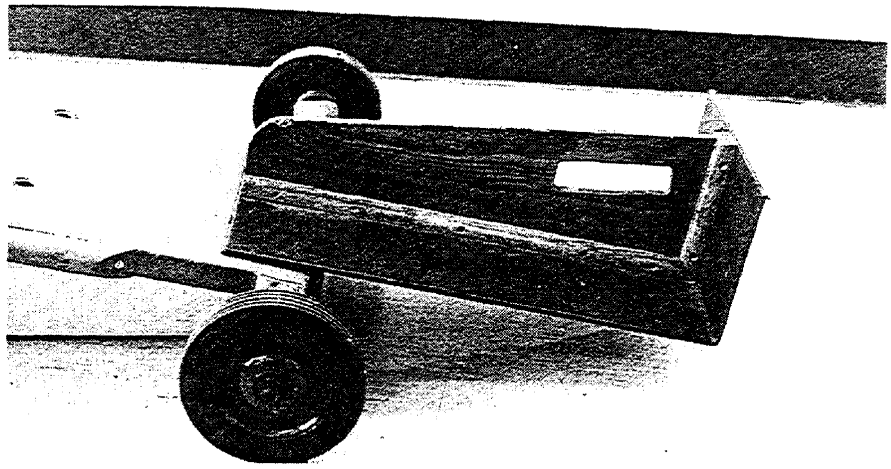


Figure 15. Center of Gravity Foot Rest Extension

gravity measurement sequence the computer requires an input as to whether this extension is being used. In this way the distance of the center of gravity from the foot reference plane can always be calculated.

3. Instrument Calibration

The transducing cells on the center of gravity devices were calibrated before field measuring began and periodically checked when the equipment was returned to HSRI. The other measuring devices including the anthropometers, sliding calipers, and girth devices were calibrated each day or each time the computer was turned on. Length was calibrated by sequencing through a number of predetermined positions along the scale of each device. At each distance the potentiometer voltage was sensed when the device button was depressed. For the calipers, five points were taken and a least squares linear regression fitted to the data. For the anthropometers and girth devices, two linear regressions were used. One, for computing distances less than 25 centimeters, was fitted to six points at 5, 10,

15, 20, 25 and 35 centimeters. The other, for distances greater than 25 centimeters, was fitted to six points at 20, 35, 50, 65, 80 and 90 centimeters. The regression coefficients were stored and used for converting A/D values to measurement distances during the measurement process.

Pressure transducers were calibrated by using a dial pressure gauge and child size blood pressure bag as illustrated in Figure 16. The surface of the bag was placed evenly over the transducer and the bag inflated. Pressure was then exerted on the bag with the fingers or palm of the hand until the dial read the desired pressure. The

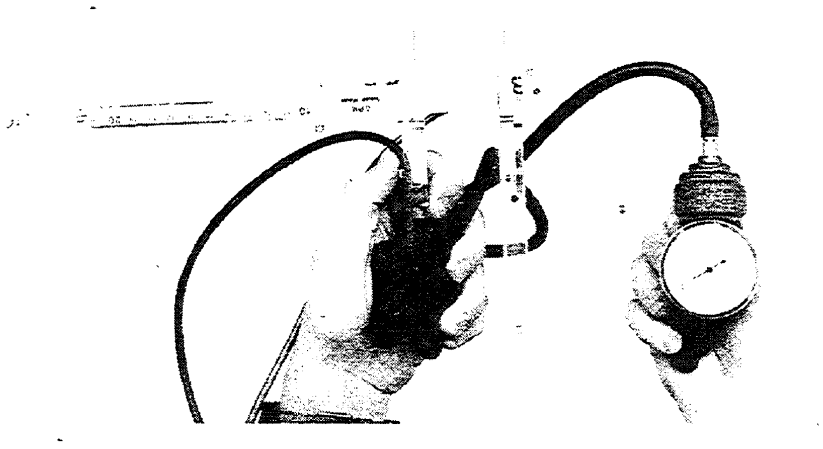


Figure 16. Pressure Transducer Calibration Procedure Using Dial Pressure Gauge and Child Size Blood Pressure Bag.

inflation of the bag was maintained so that only the air pressure transmitted through the bag wall pressed against the transducer. Three pressures at 50, 30 and 0 mm Hg were used for calibration and a linear regression fitted to the data.

While the computer program automatically sequences through the calibration of all the instruments when the data acquisition program

is begun, it is possible to recalibrate any instrument at any time during the measurement process. This was useful if an instruments' calibration was suspected or if any instrument was replaced due to a device failure.

4. Data Acquisition Program

a. General Description. The process of collecting anthropometric and demographic data is controlled by a fairly sophisticated program called the Michigan Anthropometric Processor or MAP. This program contains routines for calibrating equipment, sensing which measuring device is being used, editing and storing data on magnetic tape, sequencing through the measurements and demographic questions, and informing the anthropometrist when a measurement value seems inappropriate in relation to the subject's age, weight or stature. In addition, the program provides several options to the investigator such as skipping forward or back to a particular measurement, redoing a measurement at the end of the sequence, listing all data for review, overriding the use of an automated device in case of a device failure, and deleting a subject or selected measurements at the end of a measurement sequence. The program also selects on a rotating basis the particular measurement set (shape, linkage, or head, face and hands) to be taken on each subject, thereby eliminating any measurer bias and insuring an equal number of subjects at each location for each data set.

b. Demographic Information. The program automatically assigns a number to each subject based on the data tape number and the number of subjects already on the tape. For example, the eleventh subject on data tape 130 would be assigned subject number 130011. For each new subject the program initially requires the measurer to input the approximate age and height. The remainder of the demographic data was usually typed into the computer upon completion of the measuring process, although the option is also provided for doing this before measuring. The date and location are input only once each time the computer is started up since these will remain the

same for all subjects measured at that time. Upon input of the subject's birthdate, the computer calculates the precise age of the subject and compares this with the approximate age previously input, thereby insuring that an accurate measure of age is obtained. Where feasible, and in order to minimize errors in the demographic data, information is typed in using words, and numerical codes are assigned by the program. For example, sex is entered as "Male" or "Female" and assigned codes 1 and 2 respectively. For each subject measured, a number corresponding to the person taking the measurement is also typed in.

Upon completion of the interview routine, the computer program asks for any comments about the subject which may be useful in editing the data (e.g., very large for age) or indicate a factor (e.g., serious illness) which could affect the childs physical size. In addition to writing this message, the comments were coded in a six digit number in which two adjacent numbers comprise one comment code (e.g., 050300 indicates a heavy, tall subject). It was thus possible to code three different comments on a subject which could be referred to during data editing.

c. Measurement Information. With regard to the process of obtaining measurement data itself, there are several ways in which a measurement may be taken. For a few measurements such as weight, bitragion breadth, and finger diameters, the measurement is read manually (i.e., visually) and typed into the computer. For all other measurements. the measurement distance is retrieved electronically, and is activated on the particular device in use by depressing a button on the measurement device.

For most of these automated measurements, the electrical signal is read at the time the button is depressed. For some measurements, however, where soft tissue is a major factor (e.g., shoulder breadth), the measurement signal is recorded at a specified value of pressure as measured by the pressure transducer in the moving plexiglass blade of the calipers or anthropometer. In taking these soft

tissue measurements, the computer assumes that zero pressure is applied at the time the device button is depressed and uses the slope of this regression line to determine the applied pressure during a measurement "squeeze". By this procedure, variations in the pressure due to transducer offset shifts are eliminated. For each measurement "squeeze" on soft tissue, 20 lengths at 20 pressures are recorded from 0 to 1 PSI. Only the distances at .1 PSI (light contact) are reported in this study.

While for most measurements the electrical signal into an A/D channel is converted to a measurement distance using calibration regression coefficients determined for each instrument at the beginning of a measuring session, in many cases some further computations are necessary. For example, for certain measures such as thumb crotch-middle finger length or thumb-middle finger grip length, the distance across the anthropometer housing or the width of the instrument blades comprise part of the measurement distance. These fixed distances must be added to the distance between inside surfaces of the blades as calculated from the electrical readout.

For another group of measurements which are referred to in this study as "tare" measurements, the distance of interest is not that between blades, but rather the distance between the sliding blade and the extension end of the anthropometer. An example of such a measurement is stature, where the outside edge of the moving plexiglass blade is placed in contact with the top of the subject's head while the extension end of the anthropometer is on the standing surface. Since the computer receives an electrical signal proportional to the distance between the paddle blades, a calculation must be made to determine the distance from the bottom of the moving blade to the floor. Thus, the length of the instrumented portion of the anthropometer, the thickness of the moving paddle blade, and the length and number of any extensions must be known and added to the anthropometer. All of these distances are standardized and can therefore be fixed in the computer program. To determine the number of extensions used in a particular "tare" measurement, the computer pro-

gram relies on the approximate subject height, which is typed in when a new subject is begun, and the high correlation between stature (which is the first "tare" measure taken) and the other "tare" measurements.

As each measurement is taken, it is checked against a table of measurement minimum and maximum values based on the age of the subject. If the measurement is not within the range of the table, the measurer is notified on the display screen with a special message. The measurer then has the option of accepting or retaking the measurement. Also, after any measurement is taken, the measurer has the option of retaking it, retaking a previous measurement, or deleting all measurements and starting the measurement sequence again. Upon completing the measurement set, the measurer may list all the measurements and delete or repeat any measurement that is in error.

As with sampling of the center of gravity transducing cells, the actual signal used for measurement computations is an average of several A/D readings taken in a short time interval (approximately 16 samples in 1 msec). This is done to average out high frequency noise imposed on the signals by the computer or other external electrical devices. The result is a measurement device repeatability far more accurate than measurer repeatability.

5. Other Measuring Equipment

In addition to the automated devices described above, several other measuring tools were used in taking these anthropometric data. Thumb and finger diameter measurements were taken using the holes in a drafting template, while hand clearance measurements were taken using a set of hinged plexi-glass boards containing various-sized holes as illustrated in Figure 17. In all these devices the hole dimensions were coded and the code typed into the computer at the time of measuring. Since the hole size in a drafting template is not exactly the dimension written on the template by the manufacturer

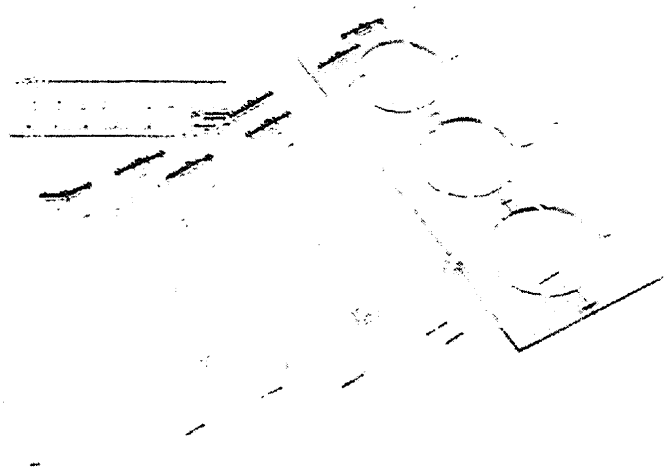


Figure 17. Drafting Template and Hinged Plexi-glass Boards for Measuring Finger Diameters and Hand Clearance.

(i.e., the hole allows for pencil thickness), these holes were individually measured in order to construct the conversion table.

The grip bar attached to the pivoting extension rod shown in Figure 18 was used for taking functional grip reach measurements. This device not only helped the measurer to align (square) the position of the arm relative to the horizontal or vertical, but simplified the measuring of vertical arm reach on tall subjects. Instead of measuring to the top of the grip bar, the anthropometrist measures to the bottom of the extension rod and the computer program adds the fixed distance from the bottom of the rod to the top of the grip bar.

Other equipment which facilitated the measuring process considerably are the specially constructed portable table and adjustable foot rest platform shown in Figure 19. These devices allowed the measurers to orient the subject in any position and at various levels

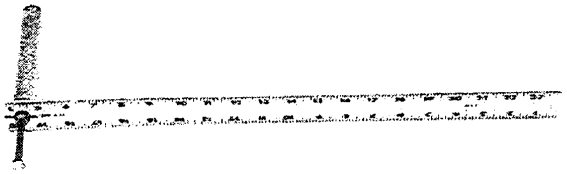


Figure 18. Grip Bar and Pivoting Extension Rod Used for Functional Reach Measurements.

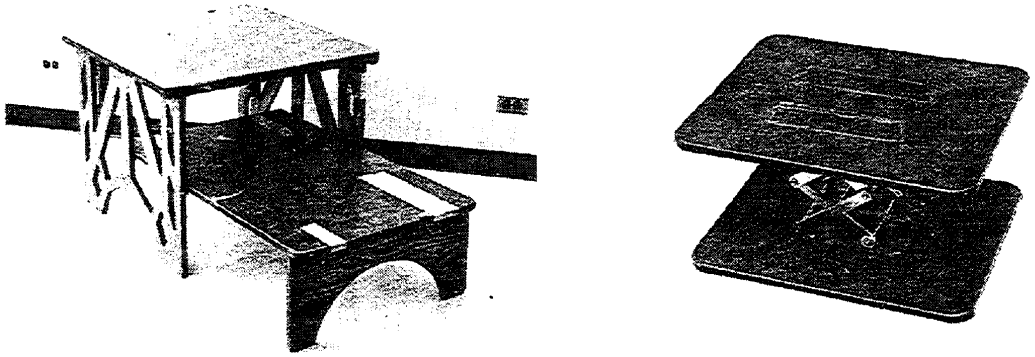


Figure 19. Portable Measuring Table (left) and Adjustable Foot Rest (right) Used for Orienting Subjects in Desired Positions.

from the floor for greatest ease and accuracy in taking any measurement.

Two complete sets of all equipment were assembled, including a standard spreading caliper for measuring bitragion breadth, and

carried along with the automated instruments in suitcases with specially designed foam inserts for instrument protection. In addition, a third suitcase containing an extra set of automated devices was carried between the two teams and used as backup in case of an instrument failure.

All equipment, including computers, table, anthropometers, center of gravity devices, display screens, infant and standard scales and related devices was transported to measurement locations by two Dodge Maxi-Vans. The interior of the vans were modified for securing all equipment in a safe and stable manner and specially designed light weight ramps were utilized for moving the computers in and out of the vans as illustrated in Figure 20.

Figure 20. Computer Being Unloaded From Dodge Maxi-Van Using Specially Designed Light Weight Ramps.

6. Standard Measuring

For the case where an automated device became non-functional and a back-up device was not immediately available, the

computer program allowed for overriding the automated data storage and for accepting data typed in via the keyboard. In these cases the measurers could continue to use the modified instrument or could switch to a standard anthropometric device. In either case, however, the measurement was read visually off the scale. This particular situation happened only infrequently and was used only as a temporary procedure to prevent the teams from falling behind in their measuring schedule.

In other cases, due to the construction or size of a particular facility, it was not possible to use the computer system at all. In general, these conditions were avoided in the public schools, but this was not always possible, especially during the summer when a good deal of measuring took place in camps. In these instances, measurements were taken with standard anthropometric instruments equipped appropriately with paddle and pointed blades, and measurements were recorded on prepared forms.

7. Data Handling, Editing, and Analysis Procedures

Measurement and demographic data obtained in the field were recorded either on Linc magnetic tape by the computer system or on measurement forms by hand if the computer could not be used. The former technique was used in most locations and thus digital tapes constitute most of the data. At the completion of each geographic location the data were returned to HSRI for transfer to a common file on the Michigan Terminal Computer System (MTS). Tape data were first copied to a DEC tape which could be read by the HSRI PDP 11/45 computer system and transferred to 9-track magnetic tape. These tapes could then be read directly by MTS. Hand-recorded data was keypunched onto IBM cards at HSRI and read into MTS directly. Prior to keypunching these data, the demographic information was hand coded in the right hand column of the questionnaire (see Figure 5). A subject number was assigned at this time beginning with 300001 for 2 through 18 year olds and 450001 for infants. Code numbers denoting the measurement

set and measurer were also included.

While much editing of the data took place continuously as data were collected by the MAP program or immediately after transfer to MTS, final editing could not be accomplished until all measuring was completed and all data were in common file. At this time the data were brought back to the HSRI PDP 11/45 system for editing by two procedures.

A program called X-VAL, obtained from anthropologists at Wright-Patterson AFB, was used to search for extreme measurement values in designated age groups. Subjects were grouped by data set, sex, and age intervals of one year each, and the program listed the ten smallest and ten largest values for each measurement along with statistics of the distribution (e.g., mean, standard deviation, skewness). Visual inspection of the data was then used to search for subject numbers with unreasonable measurement values and a complete listing of the data on these subjects, including the comments and comment code, was produced. From this listing a decision could be made as to whether to delete or leave the value in question. Substitutions in the data were made only in instances in which the error was obviously a transposition of digits.

A second procedure used to edit the data was multiple regression analysis. This involved establishing a linear relationship between one measurement variable and several other measurement variables. For example, one might attempt to establish a linear relationship of weight with stature, chest circumference, and waist circumference [weight = f (stature, chest circ., waist circ.)]. Once a relationship was established, measurement values which fell outside the predicted value, plus or minus specified error tolerances, were edited appropriately. This procedure allowed for editing points which were incorrect but which still fell within two standard deviations of the mean measurement value for a given age range (i.e., they are not extreme values). Because of the small effect of such points on the statistics of a particular age group and the time required to

do this editing, this procedure was only used for those measurements included in the bivariate analysis results in Section D of Chapter III. The program used to complete this task was also implemented on the HSRI PDP 11/45 computer system.

CHAPTER III

RESULTS

In this Chapter the results are presented in five major sections. In Section A, a breakdown of the sample by demographic information is presented along with results from statistical comparisons of selected core measurements taken in the three measurement set samples. Sections B through D present the results for measurements taken on 2-18 year olds in three ways that will be useful to product designers and other users of these data. Section E contains the results for infants (0-24 months) and Section F is a glossary of anatomical and anthropometric terms used in the measurement descriptions.

A. Description of Sample and Comparison of Measurement Sets.

1. Description of Sample

Table 1 shows a breakdown of the sample by sex and race. This consists of a total of 4127 subjects of which 2092 (50.7%) are male and 2035 (49.3%) are female. Of this 4127, 3570, or 86.5 percent are white; 452, or 11.0 percent, are black; 37, or .9 percent, are oriental; and 6, or .1 percent, are American Indian. Sixty two, or 1.5 percent, were classified as "other" indicating either biracial or unknown race. These percentages are nearly identical for males and females with the exception of American Indians where only one out of six was female. Table 2 shows this racial breakdown by age intervals and demonstrates that these percentages are consistent across the age range of the study.

Concerning geographic location, Appendix A is a list of those schools, camps, nurseries, clinics, and other locations at which measuring took place arranged by eight geographic regions. A total of 104 measurement sites were used in this study, although some have been consolidated into a single name in this listing. Table 3

TABLE 1

Numbers of Subjects and Percentages for Total Sample by Race and Sex

Race	Value	Male	Female	Total
White	n	1817	1753	3570
	row %	50.9	49.1	100.0
	col %	86.9	86.1	86.5
Black	n	225	227	452
	row %	49.8	50.2	100.0
	col %	10.8	11.2	11.0
Oriental	n	18	19	37
	row %	48.6	51.4	100.0
	col %	0.9	0.9	0.9
American Indian	n	5	1	1
	row %	83.3	16.7	100.0
	col %	0.2	0.0	0.1
Other	n	27	35	62
	row %	43.5	56.5	100.0
	col %	1.3	1.7	1.5
Total	n	2092	2035	4127
	row %	50.7	49.3	100.0
	col %	100.0	100.0	100.0

Table 2

Numbers of Subjects and Percentages for Total Sample by Age and Race

Age(yrs)	Value	White	Black	Oriental	American Indian	Other	Total
0-2	n	194	24	6	0	6	230
	%	84.3	10.4	2.6	0.0	2.6	100.0
2-4	n	288	24	7	0	8	327
	%	88.1	7.3	2.1	0.0	2.4	100.0
4-6	n	447	49	9	0	12	517
	%	86.5	9.5	1.7	0.0	2.3	100.0
6-9	n	574	78	2	1	6	661
	%	86.8	11.8	0.3	0.2	0.9	100.0
9-11	n	455	68	3	1	6	533
	%	85.4	12.8	0.6	0.2	1.1	100.0
11-13	n	505	70	7	3	8	593
	%	85.2	11.8	1.2	0.5	1.3	100.0
13-15	n	478	73	2	0	7	560
	%	85.4	13.0	0.4	0.0	1.3	100.0
15-19	n	629	66	1	1	9	706
	%	89.1	9.3	0.1	0.1	1.3	100.0
Total		3570	452	37	6	62	4127
%		86.5	11.0	0.9	0.1	1.5	100.0

TABLE 3

Numbers of Subjects and Percentages for Total Sample by Sex and Geographic Region

		New England	Middle Atlantic	Midwest	South Atlantic	South	Central	West	Southeast	Total
Male	n	363	171	610	120	333	253	147	9.5	2092
	row %	17.4	8.2	29.2	5.7	15.9	12.1	7.0	4.5	100.0
	col %	53.5	51.5	50.9	52.2	51.0	47.6	49.0	46.6	50.7
Female	n	316	161	588	110	320	278	153	109	2035
	row %	15.5	7.9	28.9	5.4	15.7	13.7	7.5	5.4	100.0
	col %	46.5	48.5	49.1	47.8	49.0	52.4	51.0	53.4	49.3
Total	n	679	332	1198	230	653	531	300	204	4127
	row %	16.5	8.0	29.0	5.6	15.8	12.9	7.3	4.9	100.0
	col %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

shows the distribution of the sample by geographic region and sex. Approximately equal numbers of males and females were measured in each region. The largest number of subjects were measured in the midwest primarily due to the fact that most infants and a large percentage of preschoolers were measured in the Ann Arbor-Detroit area. Figure 21 shows an outline of the United states and indicates this geographic distribution of measurement sites more graphically.

2. Comparison of Measurements Between Measurement Set Populations.

As mentioned in Chapter II, the measurement strategy produced three different sets of subjects. In order to compare the three separate measurement set samples, an analysis of variance test was used on the mean values of several of the core variables measured on every subject. Tests were run for seven age intervals (2-4, 4-5, 6-9, 9-11, 11-13, 13-15 and 15-19) for weight, stature, head circumference, waist circumference, shoulder breadth, maximum hip breadth, and erect sitting height. For every test but one (weight for 2-4 years) there was no significant difference between mean values of the measurement distributions for the three data sets at the .05 level of significance. From these results it can be concluded that measurements from the three sets were from similar populations and can be combined for purposes of data presentation.

B. Measurement Results Versus Age for Subjects 2-18 Years.

In this section the measurement results versus subject age are presented for the 87 measurements taken on 2 through 18 year olds.[1] The results for each measurement are presented in a 4-page format. On the first page the measurement name and description are given along with a photograph of the measurement and illustration. On the second page, a table of summary statistical results for 16 age

[1] All results in this report are given in metric units (i.e., cm., mm., kg). To convert length in centimeters to inches divide by 2.54. To convert kilograms (kg) to pounds (lbs) multiply by 2.2.

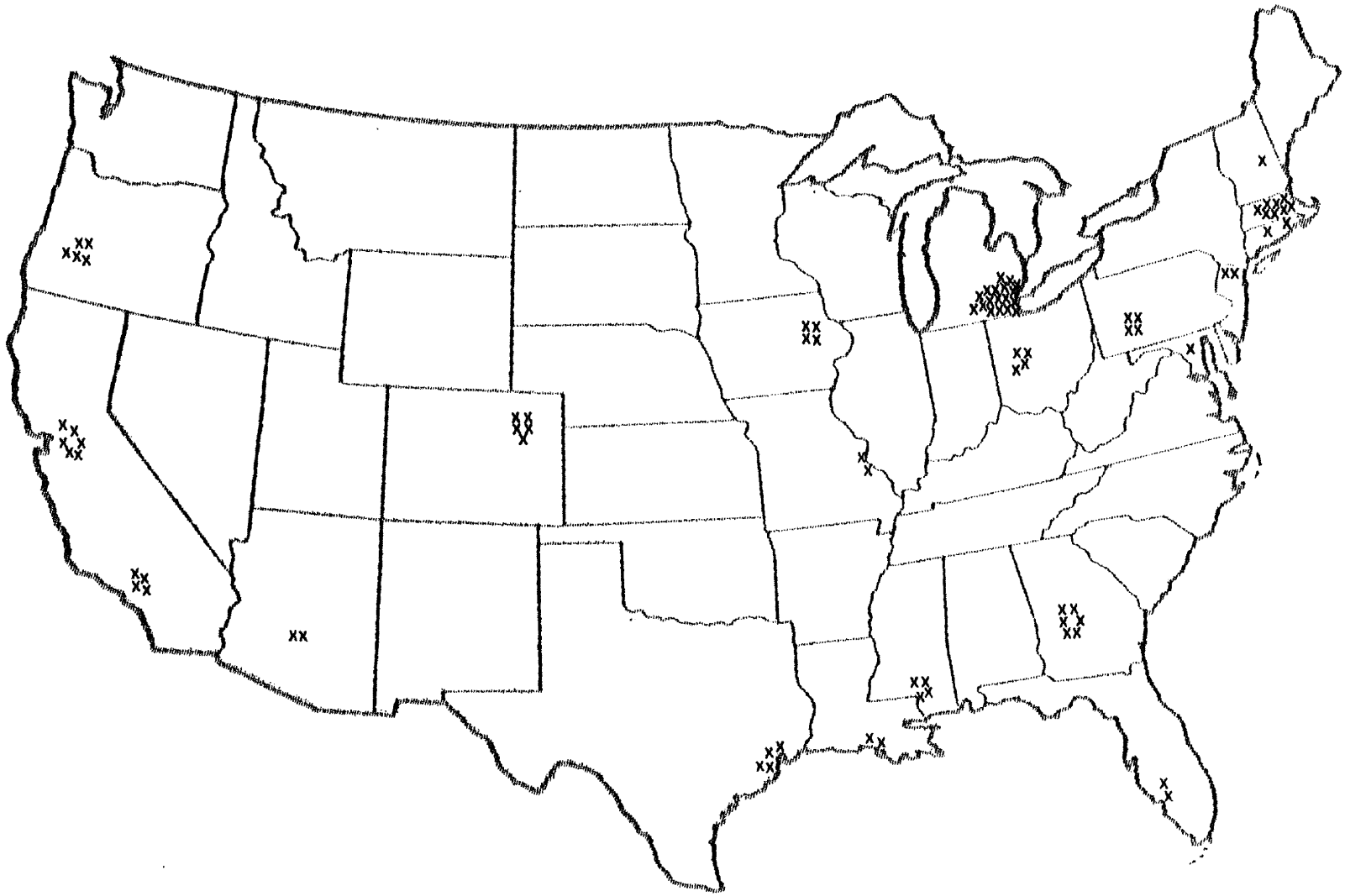


Figure 21. Map of United States Showing Measurement Location Sites.

groups and a scatter plot[1] of the measurement values versus subject age for males and females combined are given. The third page contains the tables of summary statistics for males and females separately while the fourth page contains the scatter plots for males and females separately.

In the measurement descriptions, anatomical and anthropometric terms have been used where necessary. Where a brief definition of these terms is possible, this has been placed in parentheses next to the technical term. More complete definitions of all these terms can be found in the glossary in Section F of this chapter.

For the tabular results, subjects have been divided into one year age groups centered about integer years (e.g., 3½-4½, 4½- 5½) except for the first and last groups which are for 1½ years each (i.e., 2-3½, 17½-19). For each age group the sample size (N), mean, standard deviation, 5th, 50th, and 95th percentiles, and minimum and maximum values are given. Percentiles are calculated by interpolating between values of the measurement which lie on either side of the percentile of interest. For example, if the measurement values up to 6.5 include 4.8 percent of the sample and the next higher value of 10.5 includes 5.3 percent of the sample, then the 5th percentile is computed as $6.5 + (10.5 - 6.5)\left(\frac{5.0-4.8}{5.3-4.8}\right) = 6.5 + 4\left(\frac{.2}{.5}\right) = 8.1$. If there are less than 20 values in the sample, the 5th and 95th percentiles are not calculated and asterisks are substituted in these columns.

In scatter plots, each data point is plotted using the symbol x for females and + for males. The measurements are presented in the order illustrated in Figure 22 and divided into four groups according to measurement type and body region. Group A consists of weight, stature and standing and sitting measurements; Group B is measurements of the head, face, and neck; Group C consists of

---

[1] An error in labeling the ordinate axes of these plots has been made in that accuracy to two decimal places is indicated. In fact, all measurement values have been rounded off to the nearest single decimal place.

Group A. Weight, Stature, Standing and Sitting Measurements

1. Weight
2. Stature
3. Vertical Grip Reach
4. Frontal Grip Reach
5. Lateral Grip Reach
6. Step Height
7. Supine Stature
8. Standing Center of Gravity
9. Erect Sitting Height
10. Eye Height (Seated)
11. Maximum Hip Breadth (Seated)
12. Maximum Thigh Breadth (Seated)
13. Thigh Clearance
14. Buttock-Knee Length
15. Knee Height
16. Supine Sitting Height
17. Seated Center of Gravity

Group B. Head, Face and Neck Measurements

18. Head Circumference
19. Head Breadth
20. Head Length
21. Bizygomatic Breadth
22. Frontal Breadth
23. Lower Face Height
24. Face Height
25. Head Height
26. Tragion to Back of Head
27. Tragion to Top of Head
28. Ear-Sellion Depth
29. Bitragion Breadth
30. Mouth Breadth
31. Nose Length
32. Neck Circumference
33. Lateral Neck Breadth

Figure 22. Measurements for 2-18 Year Subjects in Order of Presentation and Grouped by Body Region.

Group C. Shoulder, Arm and Hand Measurements

34. Clavicale-Acromion Length
35. Shoulder Breadth
36. Biacromial Breadth
37. Shoulder-Elbow Length
38. Acromion-Radiale Length
39. Upper Arm Circumference
40. Upper Arm Depth
41. Elbow-Hand Length
42. Radiale-Stylion Length
43. Forearm Circumference
44. Forearm Breadth
45. Wrist Circumference
46. Wrist Breadth
47. Hand Length
48. Hand Breadth
49. Minimum Hand Clearance
50. Thumb Crotch-Middle Finger Length
51. Thumb Length
52. Thumb Diameter
53. Index Finger Length
54. Index Finger Diameter
55. Middle Finger Length
56. Middle Finger Diameter
57. Middle Finger-Thumb Grip Length
58. Maximum Fist Circumference
59. Maximum Fist Breadth
60. Maximum Fist Depth

Group D. Torso, Pelvis, Leg and Foot Measurements

61. Suprasternale Height
62. Chest Height at Axilla
63. Chest Circumference
64. Chest Breadth at Axilla
65. Waist Height
66. Waist Circumference
67. Waist Breadth
68. Natural Waist Circumference
69. Iliocristale Height
70. Hip Height at Buttocks
71. Hip Circumference
72. Hip Breadth at Trochanter
73. Iliospinale Height
74. Bispinous Breadth
75. Gluteal Furrow Height
76. Trochanteric Height
77. Upper Thigh Circumference
78. Upper Thigh Depth
79. Tibiale Height
80. Calf Circumference Height
81. Calf Circumference
82. Calf Depth
83. Ankle Circumference
84. Ankle Breadth
85. Sphyrion Height
86. Foot Length
87. Foot Breadth

Figure 22. (continued)

measurements of the shoulders, arm, and hands; and Group D contains measurements of the chest, torso, pelvis, legs and feet. For purposes of simplifying the procedure of searching for a measurement or measurements on a particular body region, the results for measurements in these four groups are presented on different colored pages as listed below.

A. Weight, stature, standing and sitting measurements - blue
B. Head, face, and neck measurements - yellow
C. Shoulder, arm, and hand measurements - green
D. Torso, pelvis, legs, and foot measurements - gold

Corresponding colors are used on the index pages preceding these results (Figures 23-27) which illustrate the measurements along with the measurement numbers. These numbers are also displayed in parentheses in the upper left or right hand corner of the pages of results in this section.

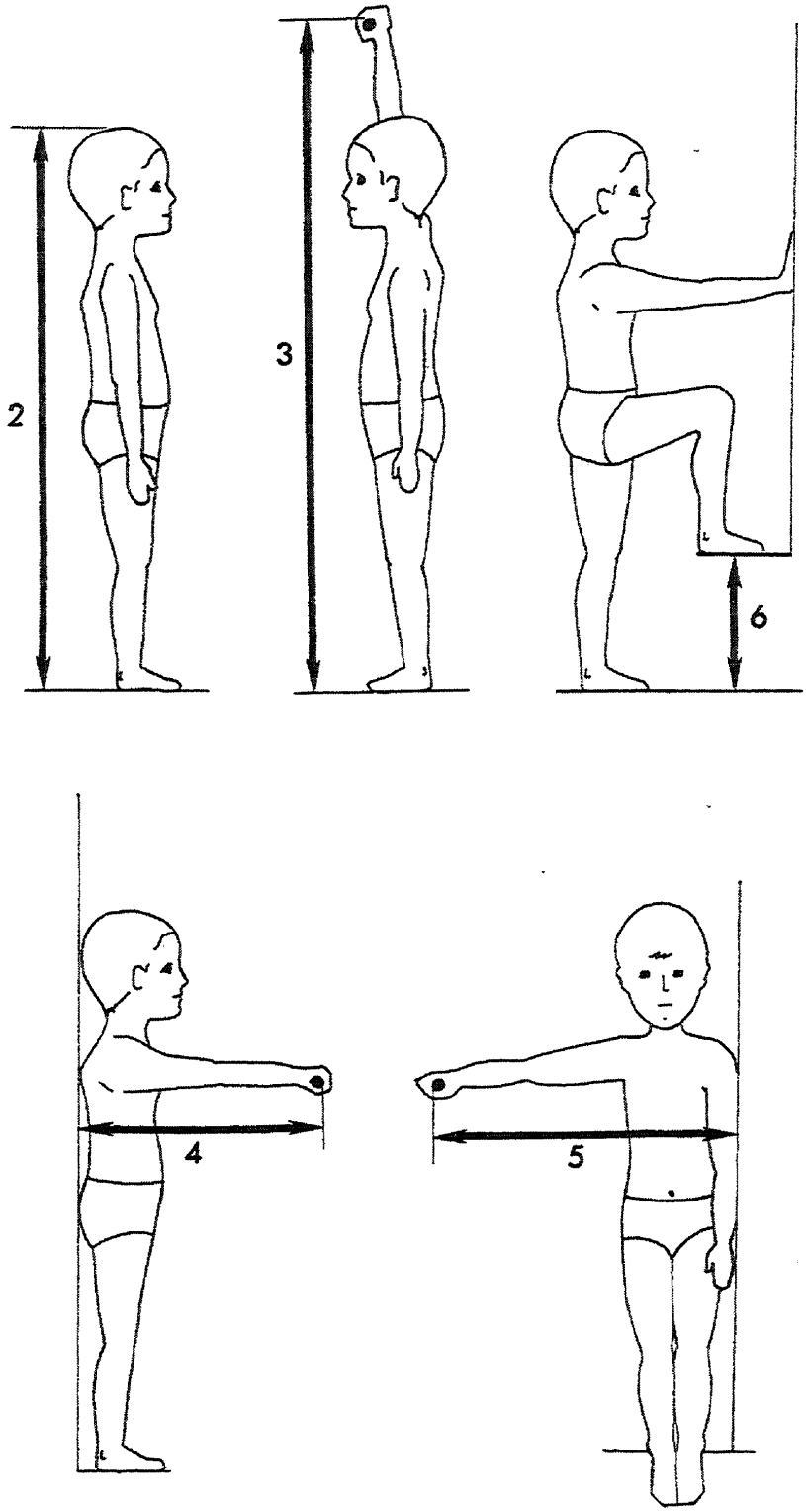


Figure 23. Standing and Sitting Measurement Illustrations

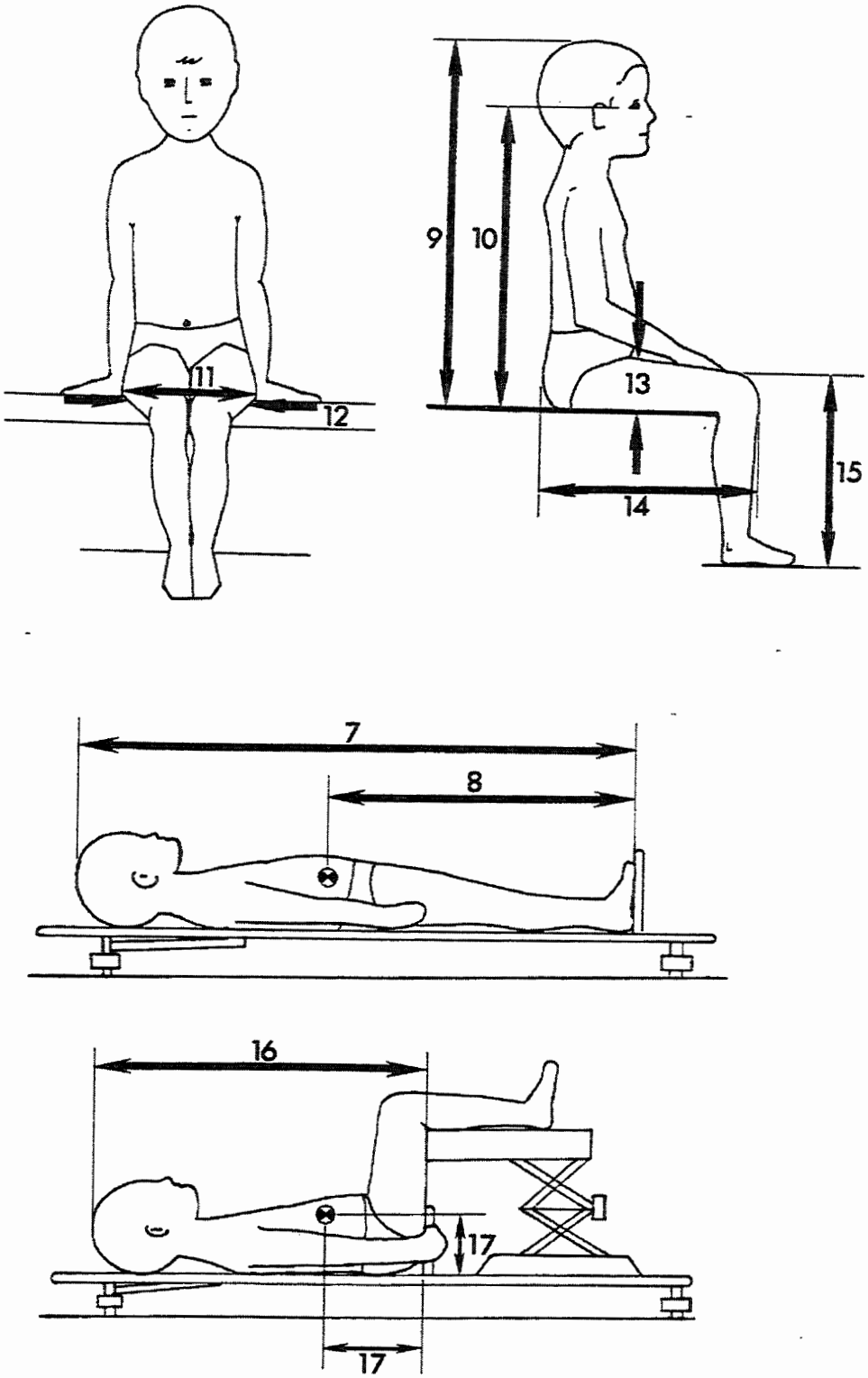


Figure 23 (continued) Standing and Sitting Measurement Illustrations

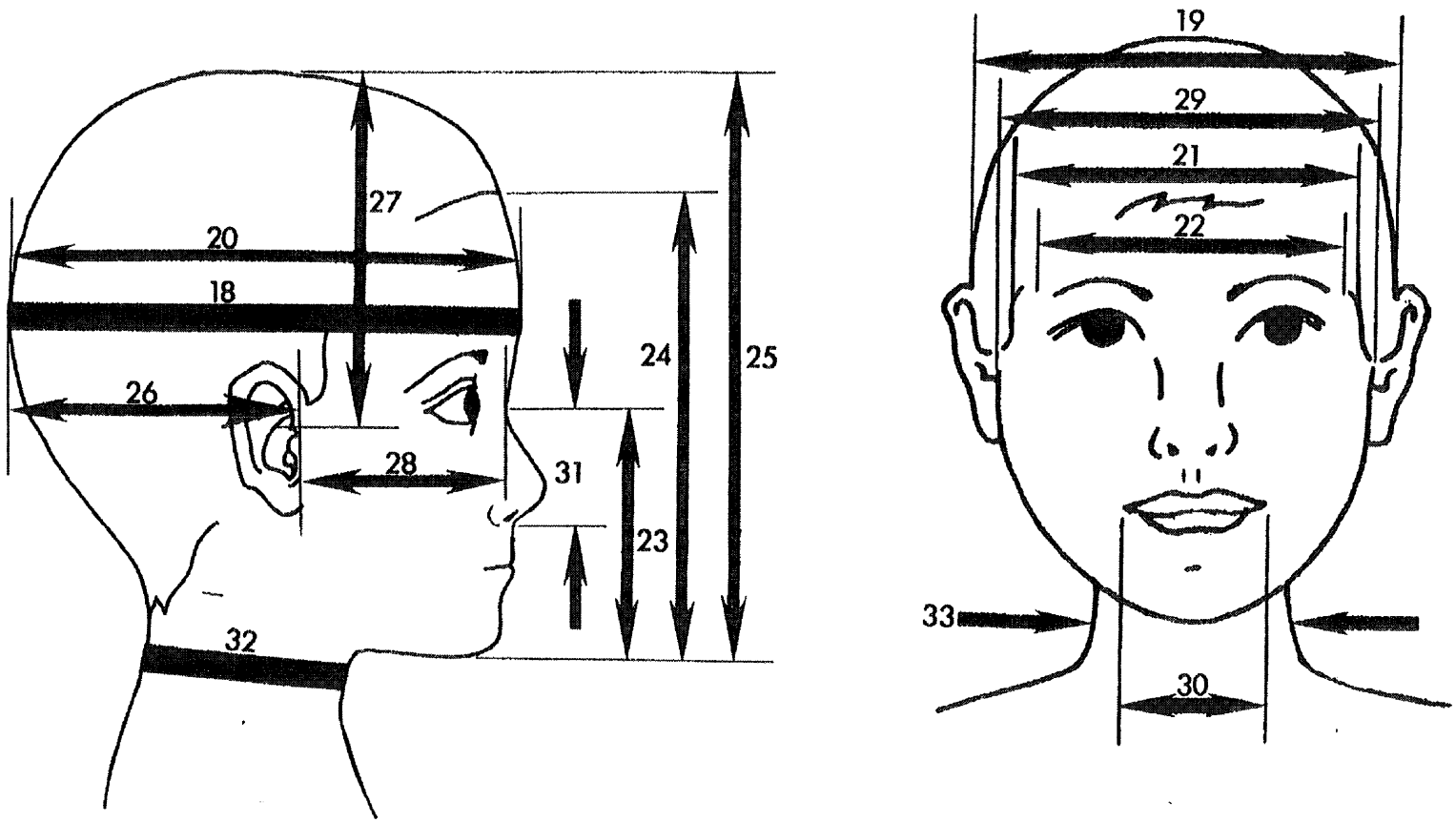


Figure 24. Head, Face, and Neck Measurement Illustrations

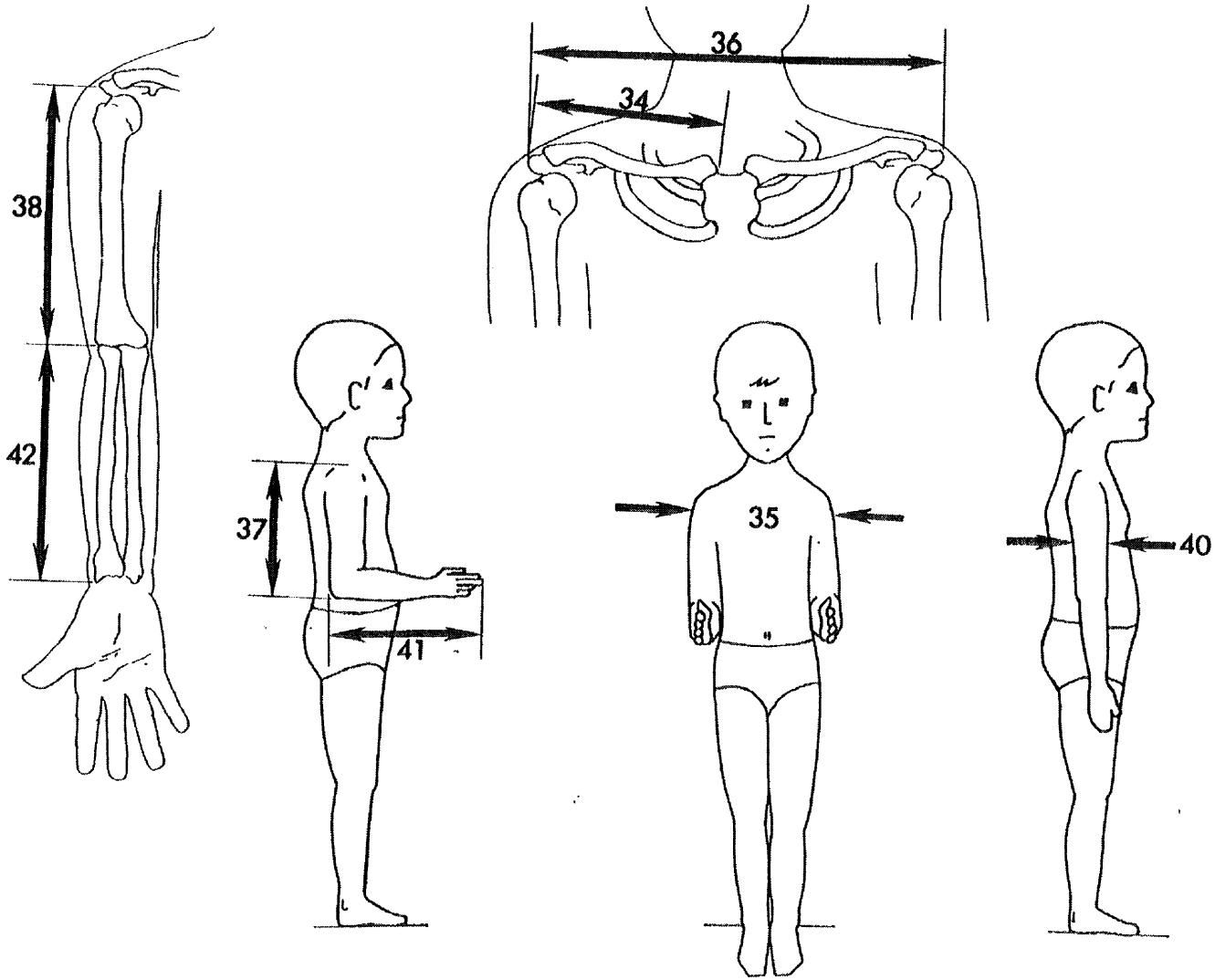
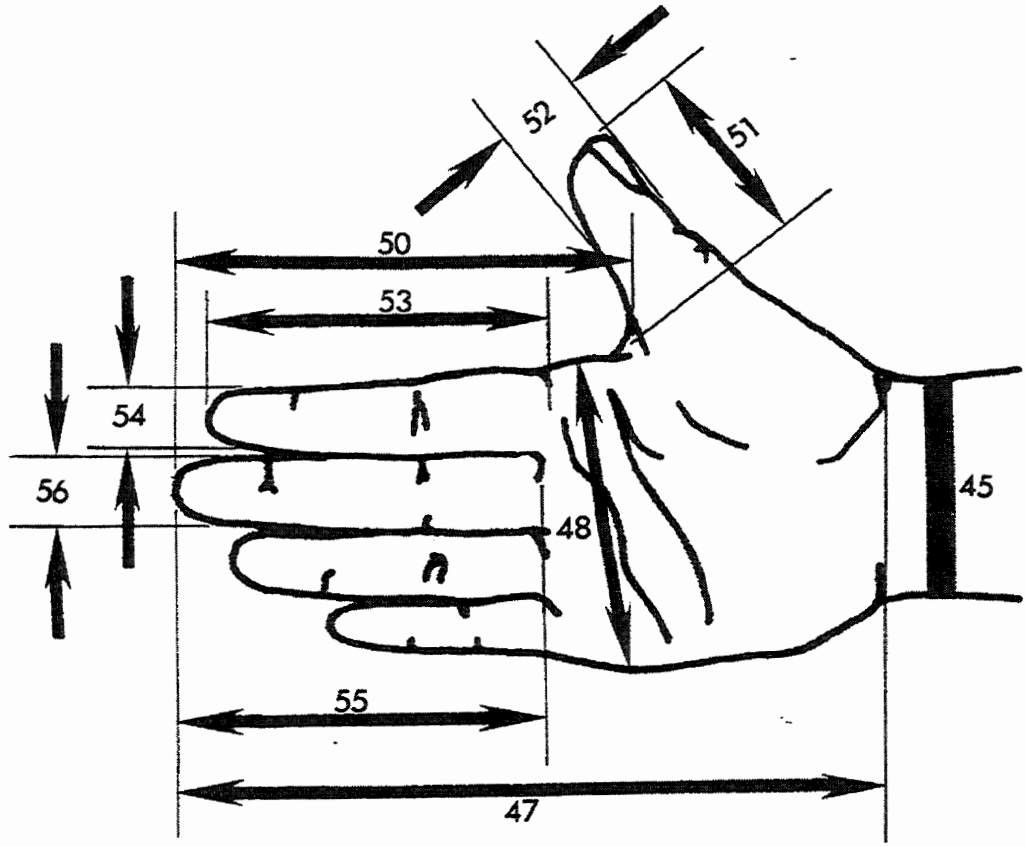


Figure 25. Shoulder and Arm Measurement Illustrations



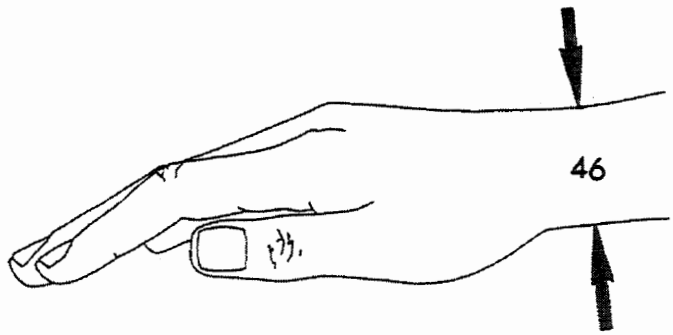


Figure 26. Hand Measurement Illustrations

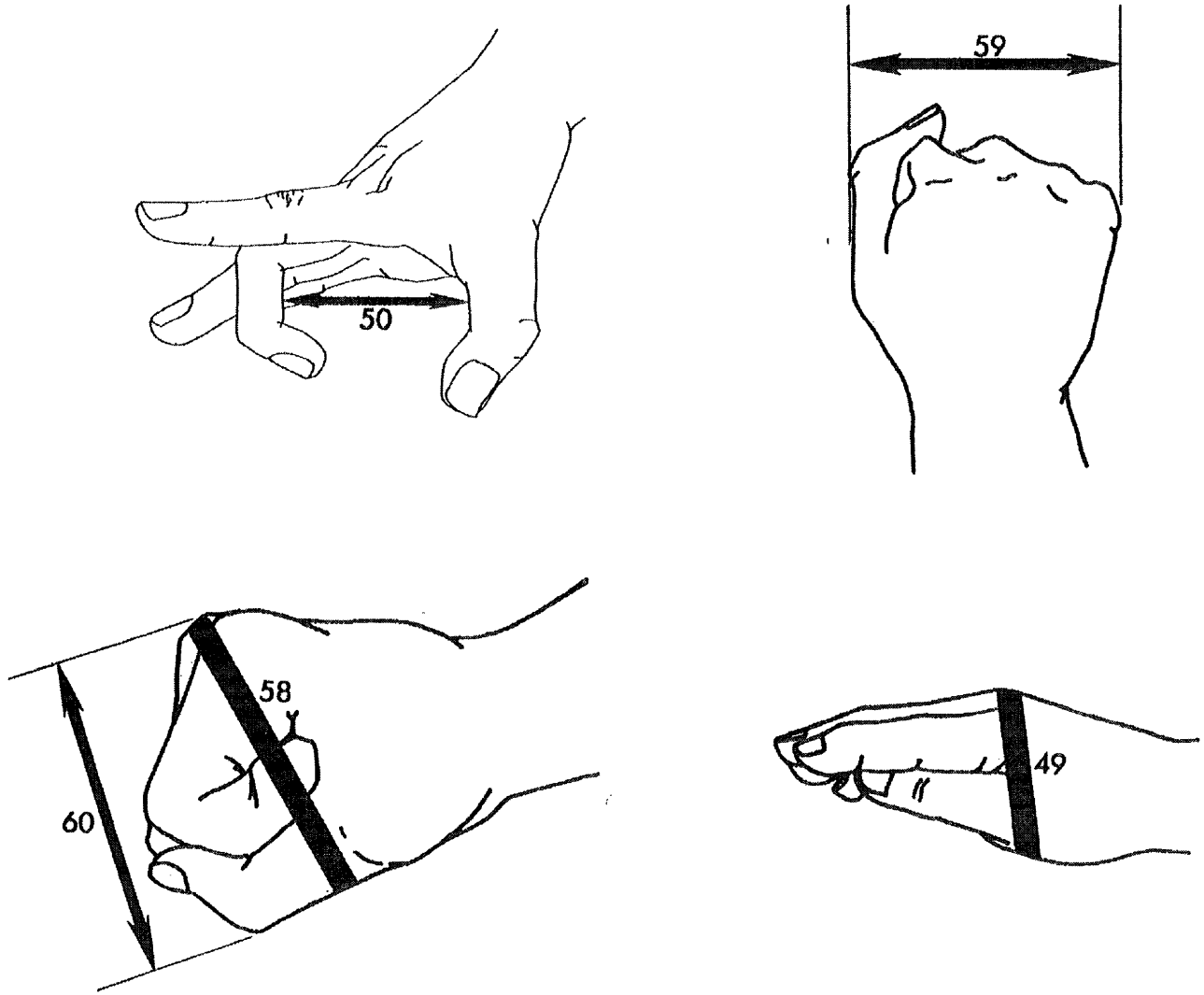


Figure 26. (continued) Hand Measurement Illustrations

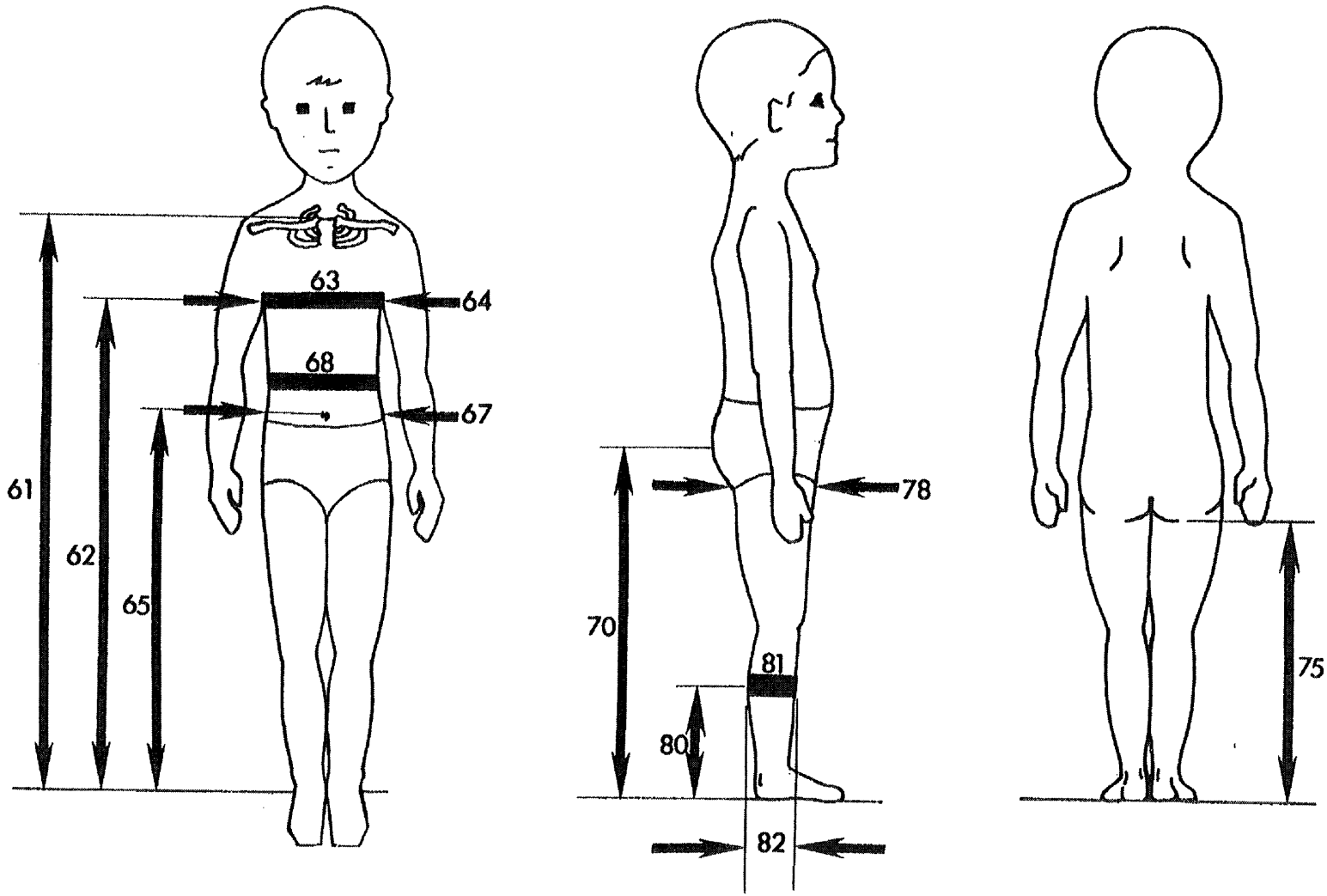


Figure 27. Torso, Pelvis, Leg, and Foot Measurement Illustrations

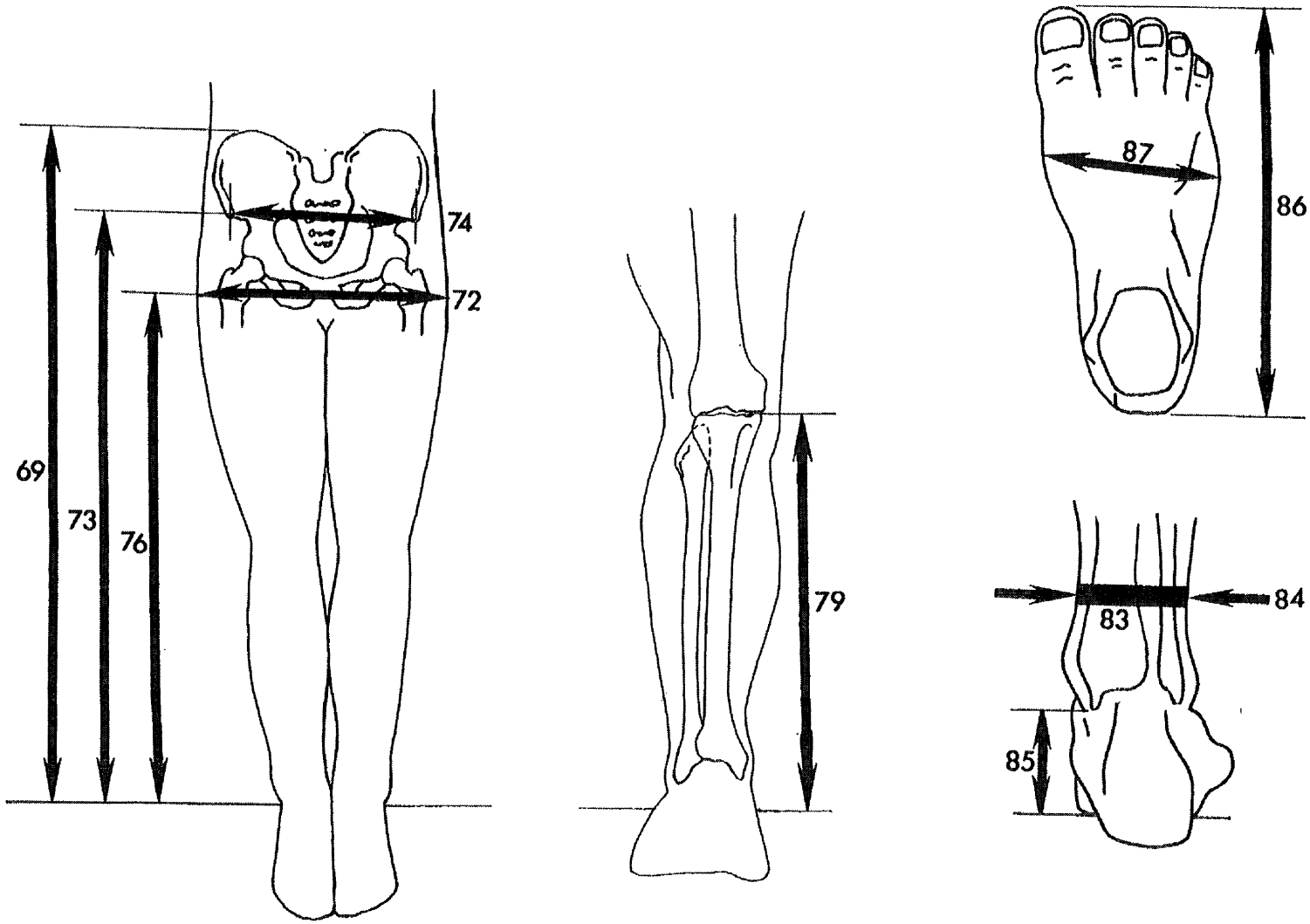


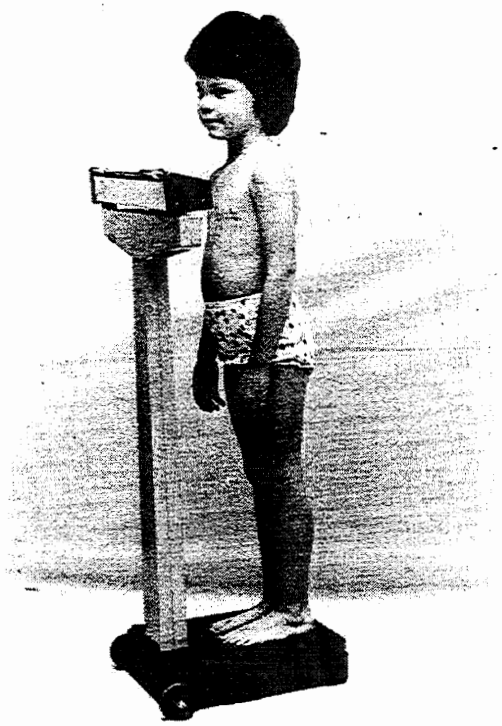
Figure 27. (continued) Torso, Pelvis, Leg, and Foot Measurement Illustrations

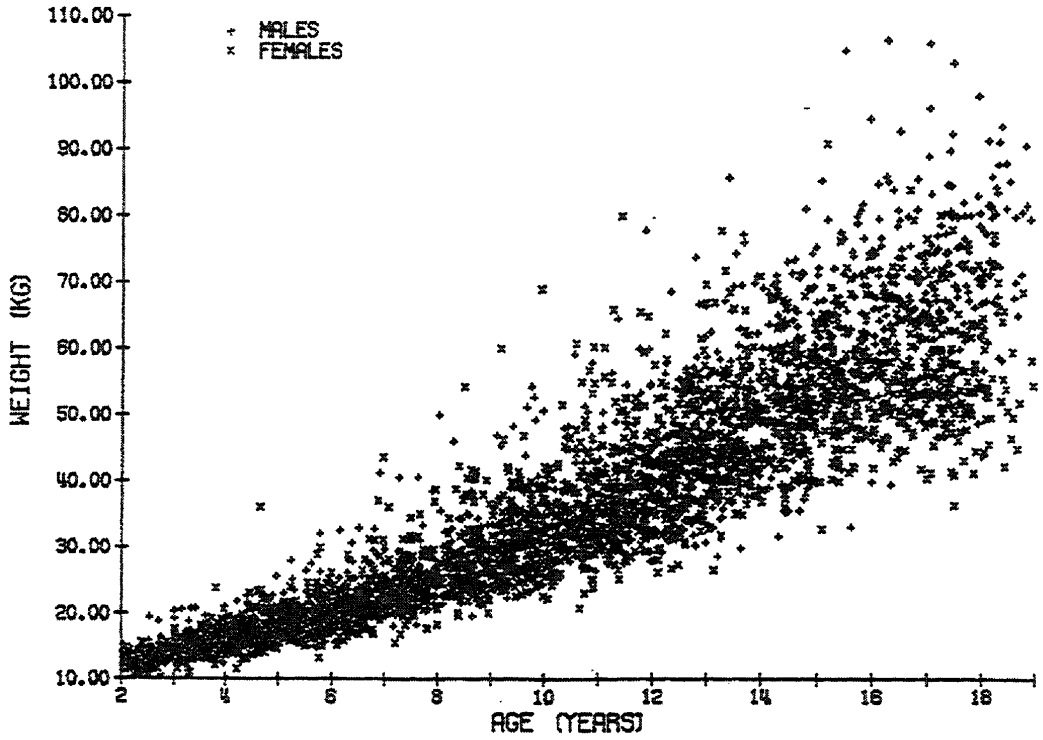
WEIGHT, STATURE, STANDING AND SITTING MEASUREMENTS

(1)

WEIGHT

Subject stands on clinical scales dressed in briefs or bathing suit. Weight is measured to the nearest tenth of a kilogram and typed into the computer.

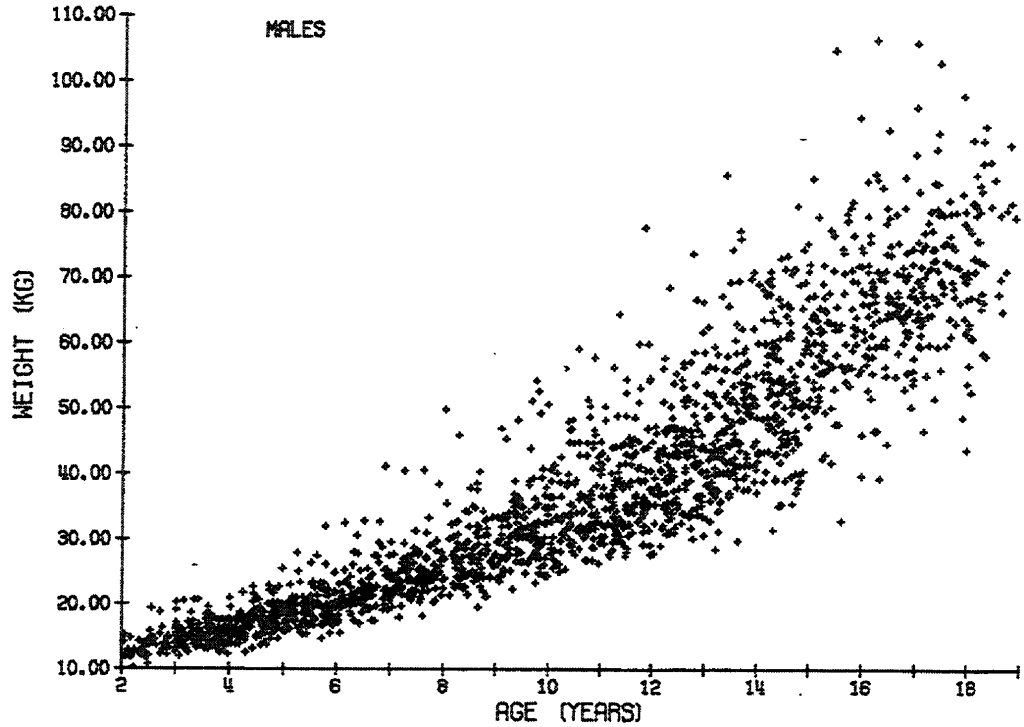


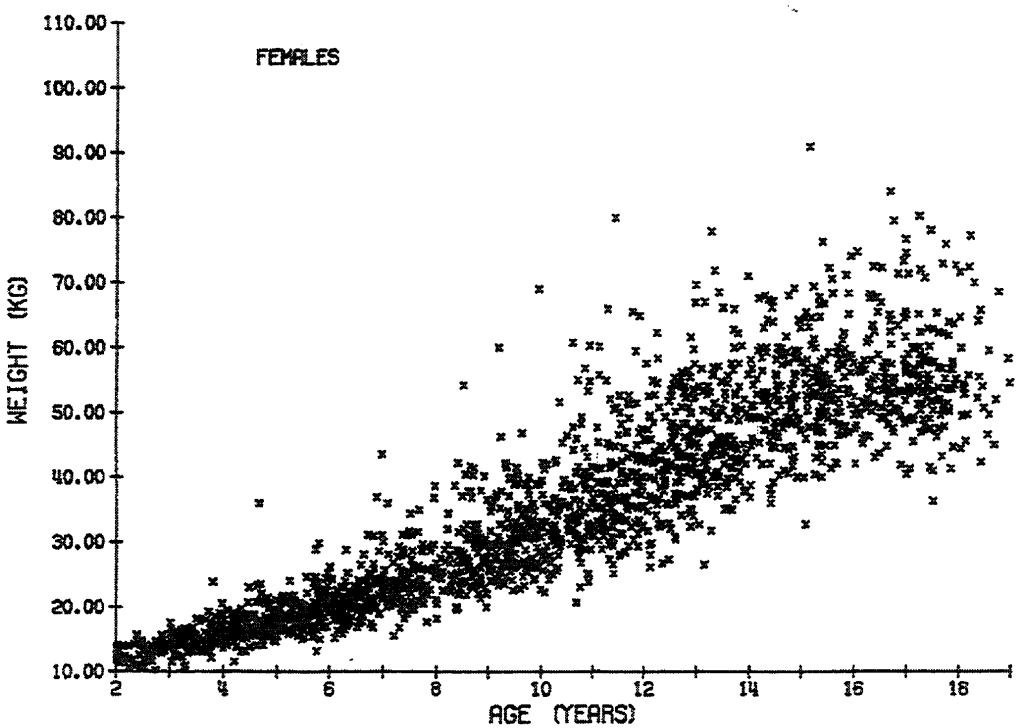


WEIGHT (kg)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	14.1	1.9	10.1	11.3	14.0	17.1	20.7
3.5-4.5	228	16.2	2.1	11.4	13.1	16.0	19.6	23.8
4.5-5.5	271	18.3	2.5	13.7	15.1	17.9	22.1	36.0
5.5-6.5	243	20.5	3.0	13.1	16.1	20.0	25.6	32.5
6.5-7.5	231	23.7	4.1	15.4	18.3	22.9	31.1	43.6
7.5-8.5	197	26.6	5.2	17.6	20.4	25.5	36.9	54.2
8.5-9.5	256	29.7	5.5	19.6	22.7	28.6	40.0	60.0
9.5-10.5	258	33.1	6.6	22.2	24.8	31.9	45.5	69.0
10.5-11.5	282	37.2	8.2	20.7	27.4	35.2	53.2	80.0
11.5-12.5	287	40.3	8.1	26.1	29.3	39.1	54.7	77.8
12.5-13.5	315	45.7	9.0	26.5	33.6	44.2	62.0	85.8
13.5-14.5	271	50.8	9.2	29.8	37.7	50.0	67.8	77.3
14.5-15.5	264	55.5	10.0	32.7	40.2	54.2	72.1	105.0
15.5-16.5	198	60.7	11.5	33.0	44.7	58.9	80.1	106.6
16.5-17.5	221	62.2	11.6	36.4	47.0	60.1	81.1	106.2
17.5-19.0	156	65.7	13.1	41.4	45.6	65.4	86.5	112.3

(1)


MALES
WEIGHT (KG)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WEIGHT (KG)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

WEIGHT (kg)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	115	14.6	2.0	10.2	11.9	14.4	18.9	20.7
3.5-4.5	118	16.2	2.1	12.3	13.1	15.8	19.7	22.7
4.5-5.5	144	18.4	2.3	13.7	15.2	18.2	22.6	27.9
5.5-6.5	117	20.8	3.1	14.8	16.8	20.1	26.6	32.5
6.5-7.5	106	24.0	3.9	17.4	18.9	23.0	29.6	41.2
7.5-8.5	104	26.9	5.0	18.2	20.9	25.7	35.3	49.9
8.5-9.5	116	29.8	5.1	19.6	22.7	29.0	37.9	48.3
9.5-10.5	124	33.5	6.7	23.3	25.1	32.0	47.9	54.3
10.5-11.5	142	36.6	7.2	26.3	27.8	34.4	50.3	64.5
11.5-12.5	154	40.0	7.9	27.8	30.3	38.1	54.7	77.8
12.5-13.5	154	45.4	9.6	28.5	33.1	43.7	63.6	85.8
13.5-14.5	155	51.8	9.6	29.8	38.0	50.9	69.6	77.3
14.5-15.5	131	57.5	11.2	35.6	39.5	56.6	74.9	105.0
15.5-16.5	100	66.1	11.9	33.0	46.2	66.1	85.0	106.6
16.5-17.5	104	69.2	10.5	46.8	54.2	67.4	88.5	106.2
17.5-19.0	88	73.2	11.0	43.9	55.2	72.2	91.1	112.3

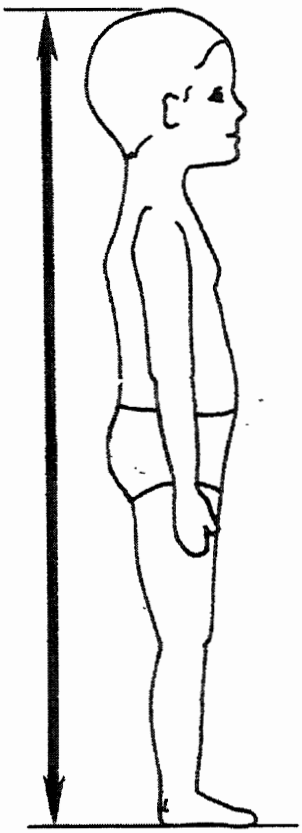
2.2

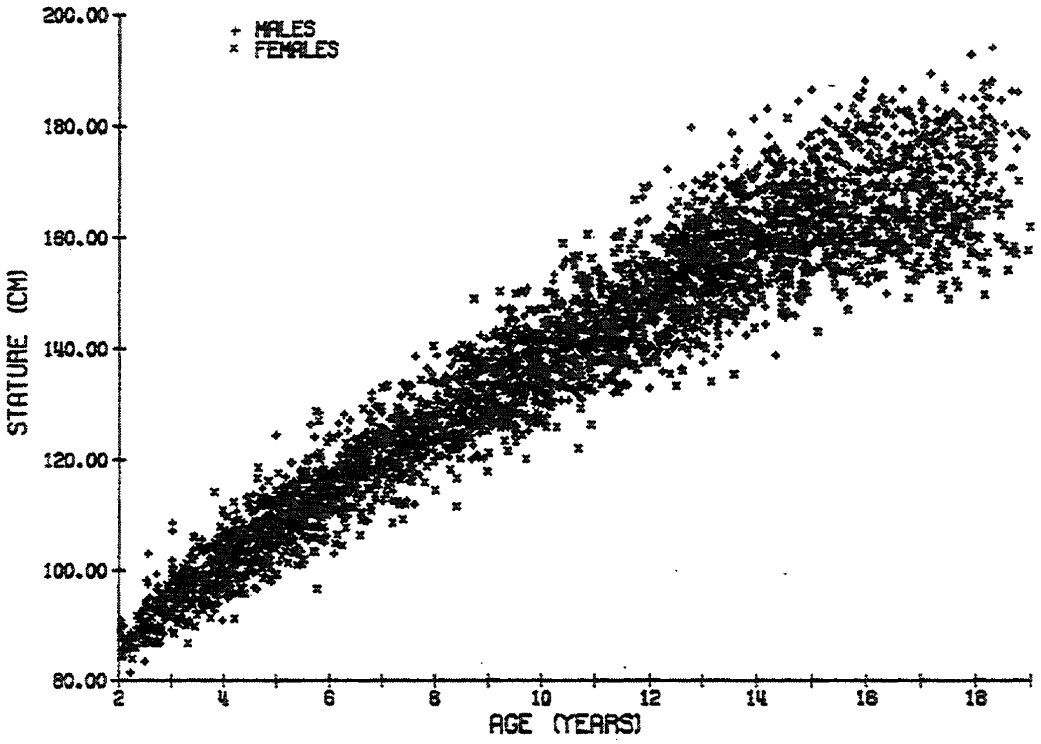
WEIGHT (kg)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	13.6	1.7	10.1	10.8	13.7	16.3	17.5
3.5-4.5	110	16.2	2.2	11.4	13.0	16.0	19.4	23.8
4.5-5.5	127	18.2	2.6	14.0	14.9	17.7	21.6	36.0
5.5-6.5	126	20.2	2.9	13.1	15.7	19.9	24.6	29.9
6.5-7.5	125	23.4	4.3	15.4	17.5	22.8	31.2	43.6
7.5-8.5	93	26.2	5.5	17.6	19.4	25.1	37.0	54.2
8.5-9.5	140	29.6	5.9	20.0	22.5	28.2	40.4	60.0
9.5-10.5	134	32.6	6.5	22.2	24.2	31.9	42.2	69.0
10.5-11.5	140	37.7	9.1	20.7	26.5	35.5	55.0	80.0
11.5-12.5	133	40.8	8.2	26.1	28.3	40.0	54.6	65.5
12.5-13.5	161	46.1	8.5	26.5	34.1	44.8	59.7	77.8
13.5-14.5	116	49.5	8.5	34.9	36.8	49.0	66.0	71.0
14.5-15.5	133	53.5	8.2	32.7	40.5	52.7	67.2	91.0
15.5-16.5	98	55.1	7.9	41.4	43.0	53.3	70.7	74.8
16.5-17.5	117	55.9	8.6	36.4	41.9	54.2	73.6	84.1
17.5-19.0	68	55.9	8.4	41.4	43.8	53.9	72.7	77.3

STATURE

Subject stands erect with head oriented in the Frankfort Plane, arms hanging at sides. With an automated anthropometer, measure the vertical distance from the standing surface to vertex (top of the head).

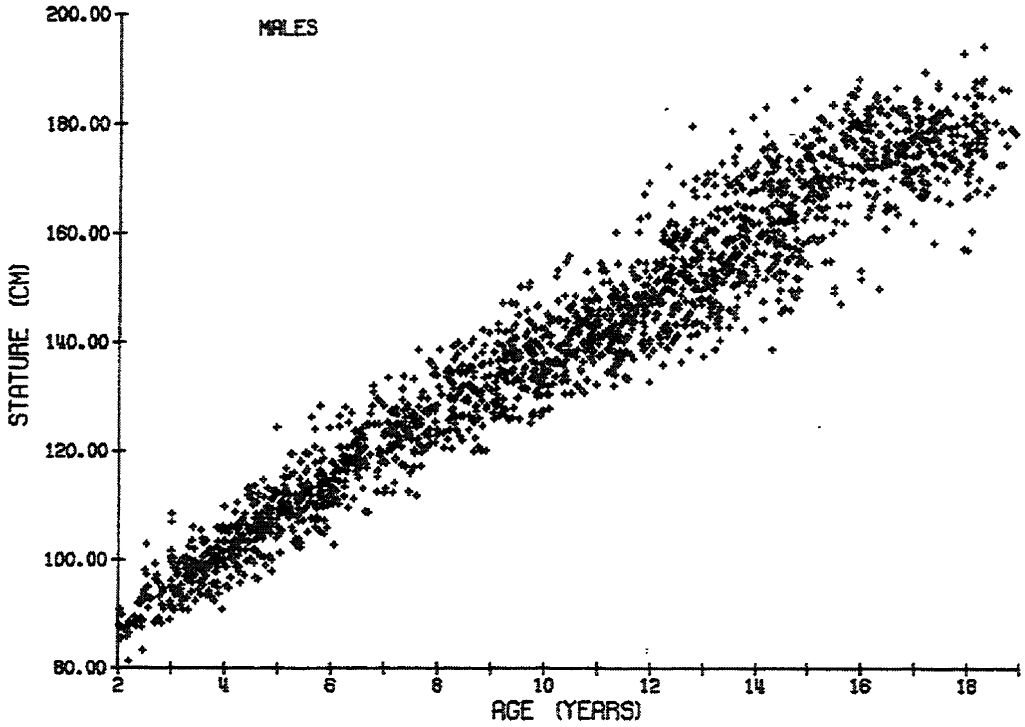


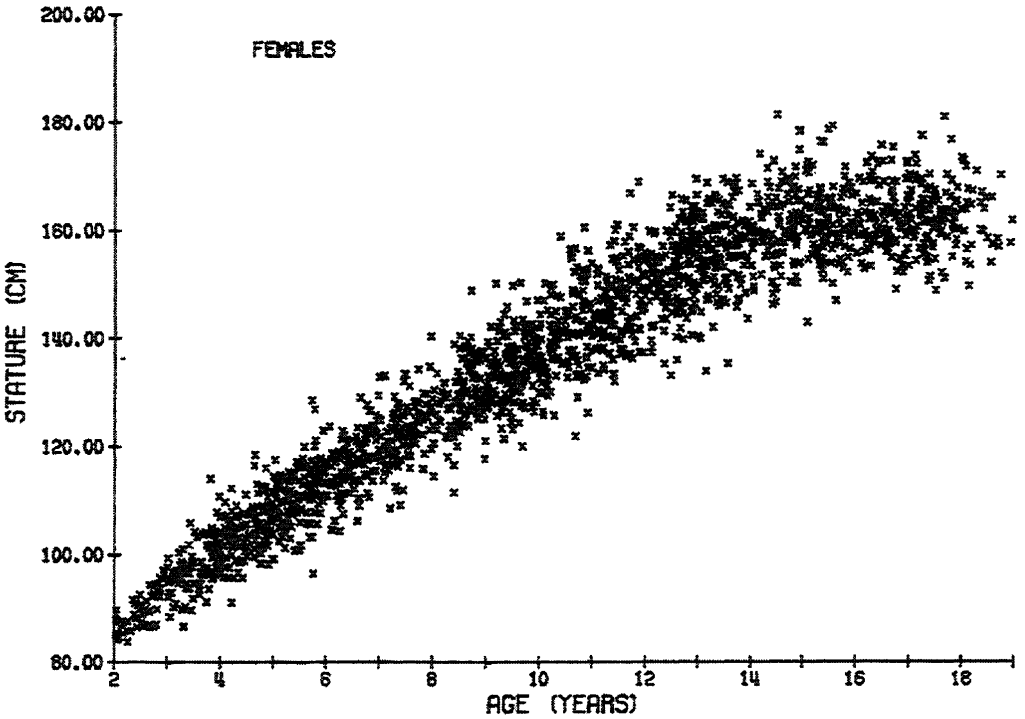


STATURE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	213	93.4	5.0	81.3	85.7	93.4	100.8	108.5
3.5-4.5	228	101.4	4.5	90.9	93.9	101.4	109.1	114.1
4.5-5.5	271	108.3	4.7	96.5	100.6	108.5	115.8	124.4
5.5-6.5	242	114.6	5.1	96.5	105.8	114.5	123.7	128.7
6.5-7.5	227	121.2	5.5	106.3	111.8	121.2	130.5	133.8
7.5-8.5	198	126.9	5.6	111.5	118.2	126.4	136.9	140.6
8.5-9.5	257	133.0	6.0	117.8	124.1	132.6	142.3	150.3
9.5-10.5	258	137.7	6.3	120.1	127.1	137.6	148.3	159.0
10.5-11.5	282	143.3	6.6	122.0	133.1	142.7	154.6	161.1
11.5-12.5	287	148.8	7.2	132.8	137.5	148.6	160.4	172.4
12.5-13.5	315	154.6	7.7	134.1	142.1	154.5	167.6	179.8
13.5-14.5	271	160.1	8.2	135.4	147.0	159.4	173.6	183.2
14.5-15.5	264	164.2	8.0	143.2	151.5	163.6	177.6	186.7
15.5-16.5	198	168.4	9.3	147.1	153.5	168.5	183.4	188.3
16.5-17.5	221	168.8	8.9	149.1	154.6	168.3	182.9	189.6
17.5-19.0	156	170.9	9.5	149.9	156.4	171.8	185.7	194.4

(2)


MALES
STATURE (CM)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
STATURE (CM)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

STATURE (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	115	94.5	5.0	81.3	87.0	94.3	102.2	108.5
3.5-4.5	118	101.3	4.5	90.9	93.8	100.8	109.0	113.3
4.5-5.5	144	108.6	4.7	96.5	100.6	108.9	115.5	124.4
5.5-6.5	117	115.1	5.2	102.9	106.1	114.6	124.7	128.4
6.5-7.5	105	122.0	5.1	108.9	112.6	122.5	130.6	133.8
7.5-8.5	104	127.8	5.6	111.9	119.9	126.7	137.7	140.0
8.5-9.5	117	133.4	6.1	120.0	123.8	133.4	142.4	147.3
9.5-10.5	124	137.9	6.3	125.2	127.0	137.6	149.2	155.9
10.5-11.5	142	142.5	5.3	130.7	133.8	142.1	151.1	160.2
11.5-12.5	154	148.4	7.4	132.8	138.1	147.4	161.3	172.4
12.5-13.5	154	154.1	8.4	136.4	142.1	153.4	169.5	179.8
13.5-14.5	155	161.3	8.7	138.8	147.3	160.6	175.5	183.2
14.5-15.5	131	166.4	8.7	146.0	149.7	167.0	179.6	186.7
15.5-16.5	100	174.5	7.8	147.3	161.1	174.6	185.2	188.3
16.5-17.5	104	175.9	6.0	158.4	165.3	176.2	184.3	189.6
17.5-19.0	88	177.1	6.8	157.1	166.2	176.9	187.4	194.4

2.54

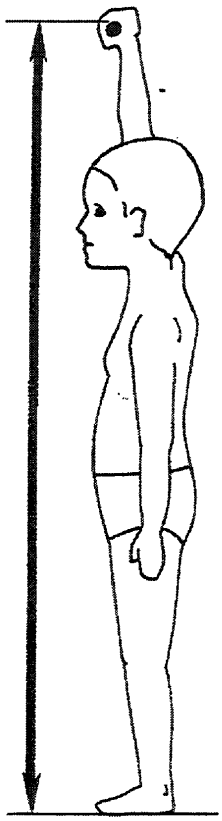
STATURE (cm)
(Females)

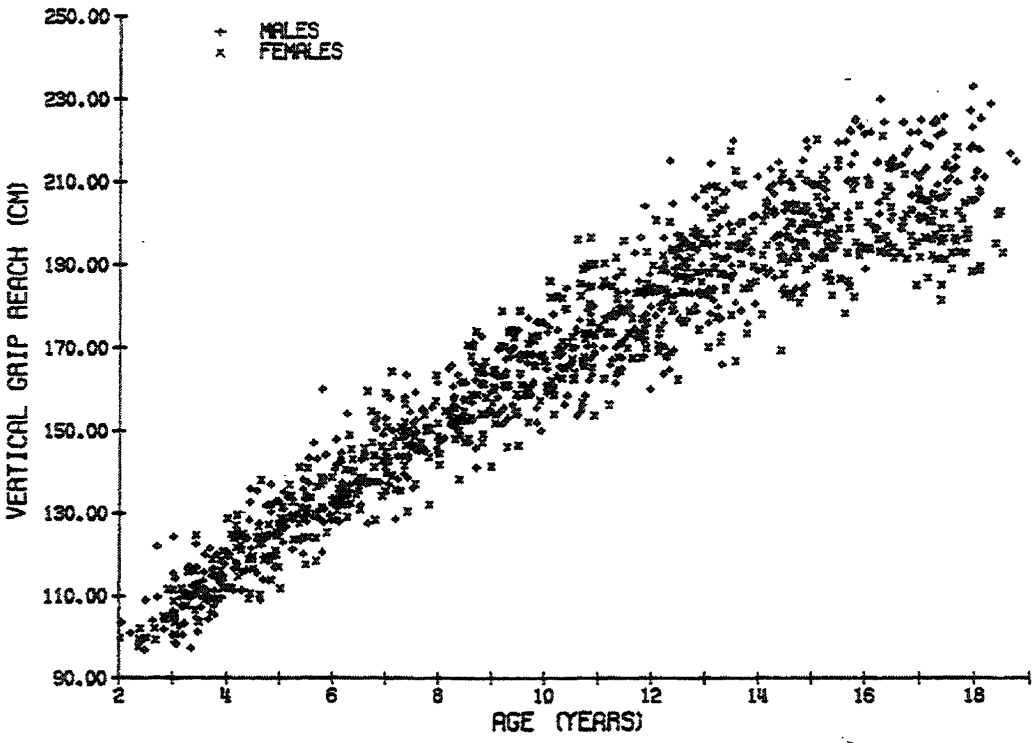
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	92.1	4.7	83.8	85.1	92.0	99.4	105.9
3.5-4.5	110	101.6	4.6	91.1	93.9	101.7	108.7	114.1
4.5-5.5	127	108.0	4.6	98.2	100.5	108.0	116.0	118.6
5.5-6.5	125	114.2	5.1	96.5	104.9	114.3	121.7	128.7
6.5-7.5	122	120.5	5.7	106.3	110.5	120.4	129.6	133.6
7.5-8.5	94	125.9	5.5	111.5	116.4	125.8	134.5	140.6
8.5-9.5	140	132.7	5.9	117.8	124.1	132.3	142.2	150.3
9.5-10.5	134	137.5	6.2	120.1	127.0	137.3	147.8	159.0
10.5-11.5	140	144.2	7.6	122.0	133.0	144.0	156.3	161.1
11.5-12.5	133	149.3	7.0	133.3	137.3	149.3	159.9	169.0
12.5-13.5	161	155.1	7.0	134.1	142.0	155.6	165.7	169.6
13.5-14.5	116	158.4	7.0	135.4	146.8	158.2	169.0	174.3
14.5-15.5	133	162.0	6.4	143.2	152.3	161.3	172.4	181.6
15.5-16.5	98	162.1	6.1	147.1	153.2	161.2	172.6	179.5
16.5-17.5	117	162.5	5.9	149.1	152.3	162.6	171.6	177.7
17.5-19.0	68	163.0	5.9	149.9	153.0	163.0	172.7	181.3

(3)

VERTICAL GRIP REACH

Subject stands erect with feet together, right side against wall, grasping the handle of the grip device in right hand, extending right arm to maximum vertical reach. With the pointed blade of an automated anthropometer, measure the vertical distance from the floor to the most distal point on the handle of the grip device.

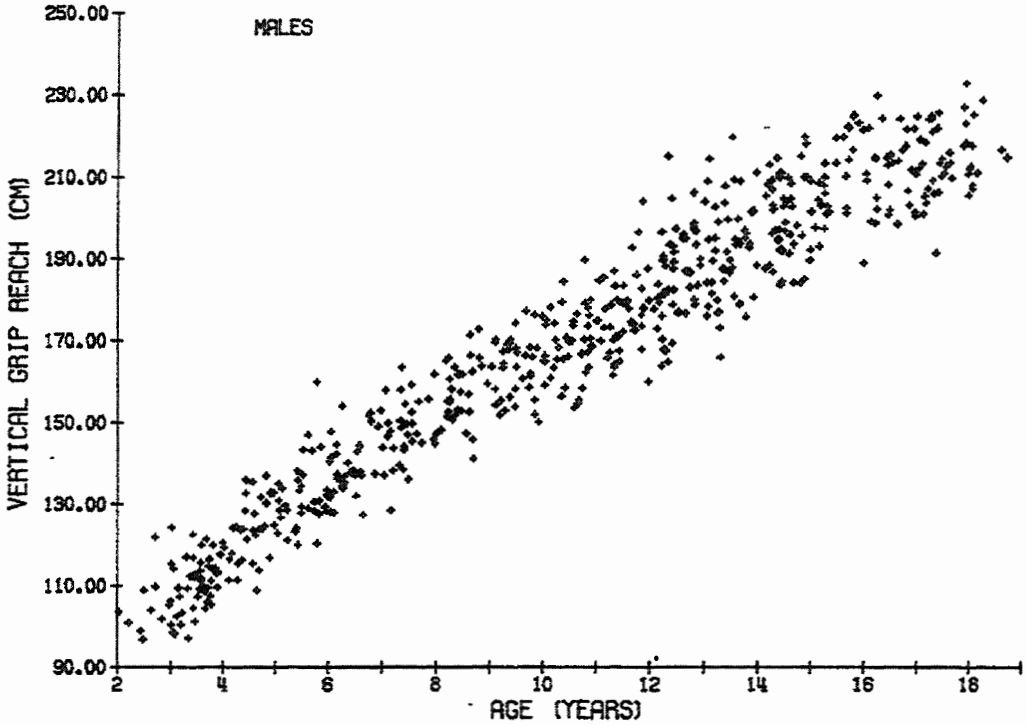


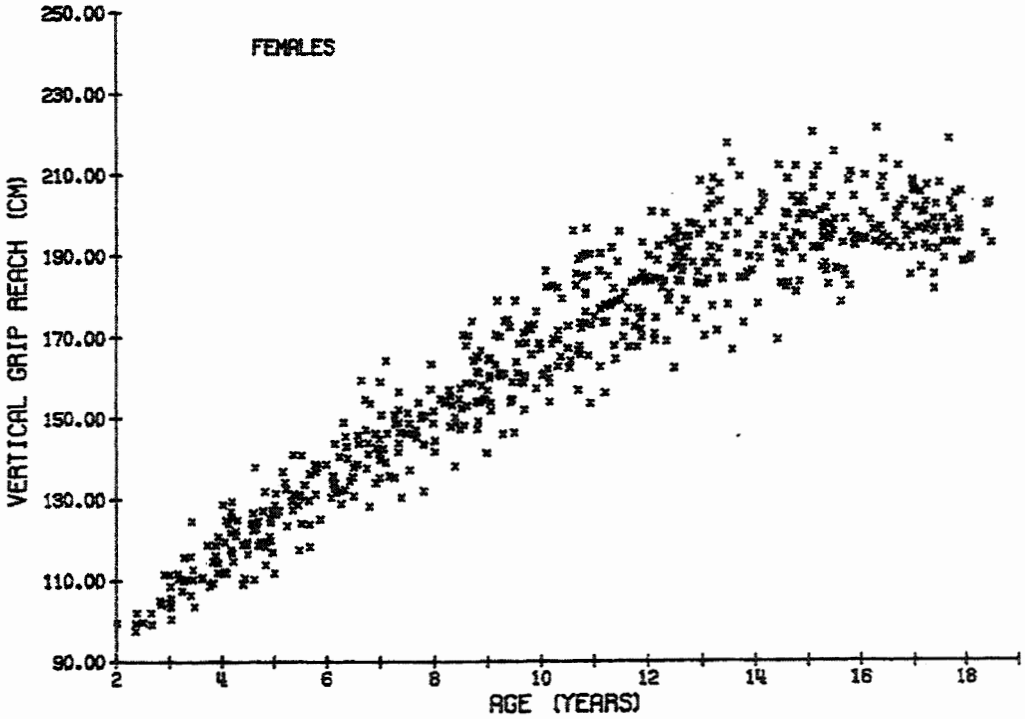


VERTICAL GRIP REACH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	61	107.3	7.0	96.8	97.5	105.9	121.8	124.6
3.5-4.5	76	116.6	6.7	104.4	107.0	116.2	128.5	136.0
4.5-5.5	73	126.1	7.0	108.9	113.1	126.2	136.9	141.1
5.5-6.5	76	135.6	7.1	118.4	124.1	135.3	147.2	160.0
6.5-7.5	71	144.6	8.3	127.5	129.5	144.0	158.5	164.2
7.5-8.5	63	152.2	6.8	132.0	138.7	152.1	163.2	165.8
8.5-9.5	81	160.8	8.5	141.2	146.1	161.0	173.8	178.9
9.5-10.5	75	167.1	8.1	150.1	153.5	166.3	182.0	186.2
10.5-11.5	93	174.7	10.2	153.6	156.0	173.8	190.3	196.6
11.5-12.5	93	181.6	10.5	160.1	165.4	180.6	198.5	215.2
12.5-13.5	98	190.5	10.6	166.0	174.3	188.9	208.4	220.0
13.5-14.5	79	195.3	10.9	166.8	175.8	194.8	211.3	214.9
14.5-15.5	87	199.8	9.5	180.9	183.2	199.7	215.4	220.3
15.5-16.5	63	205.0	12.4	178.4	185.0	203.3	224.4	230.1
16.5-17.5	72	205.6	11.1	181.6	186.3	205.5	224.5	226.0
17.5-19.0	44	206.9	11.9	188.4	188.9	205.8	227.0	233.2

(3)


MALES
VERTICAL GRIP REACH (CM)
250.00
230.00
210.00
190.00
170.00
150.00
130.00
110.00
90.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
VERTICAL GRIP REACH (CM)
250.00
230.00
210.00
190.00
170.00
150.00
130.00
110.00
90.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

VERTICAL GRIP REACH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	107.6	7.7	96.8	97.1	105.8	122.2	124.3
3.5-4.5	43	115.7	7.1	104.4	105.5	114.5	127.8	136.0
4.5-5.5	34	127.0	7.1	108.9	112.4	126.8	136.2	138.3
5.5-6.5	42	136.2	7.7	120.5	127.7	135.3	147.8	160.0
6.5-7.5	33	145.0	8.4	127.5	128.1	144.2	158.0	163.5
7.5-8.5	32	154.8	6.2	144.9	145.0	155.1	164.1	165.8
8.5-9.5	33	161.7	8.5	141.2	144.3	163.5	172.0	174.3
9.5-10.5	37	166.6	7.8	150.1	151.7	166.0	178.4	184.4
10.5-11.5	47	172.0	8.5	153.7	155.0	171.1	185.3	189.8
11.5-12.5	51	181.7	11.2	160.1	164.3	179.5	200.5	215.2
12.5-13.5	50	190.4	11.1	166.0	174.7	188.5	208.5	220.0
13.5-14.5	50	197.3	10.1	175.9	179.0	196.4	211.2	214.9
14.5-15.5	39	202.9	9.4	184.2	184.3	203.2	218.5	220.1
15.5-16.5	31	212.9	9.9	189.1	194.5	214.5	225.2	230.1
16.5-17.5	36	213.1	8.9	191.6	197.3	213.6	225.0	226.0
17.5-19.0	22	216.3	7.4	205.8	206.0	213.8	228.9	233.2

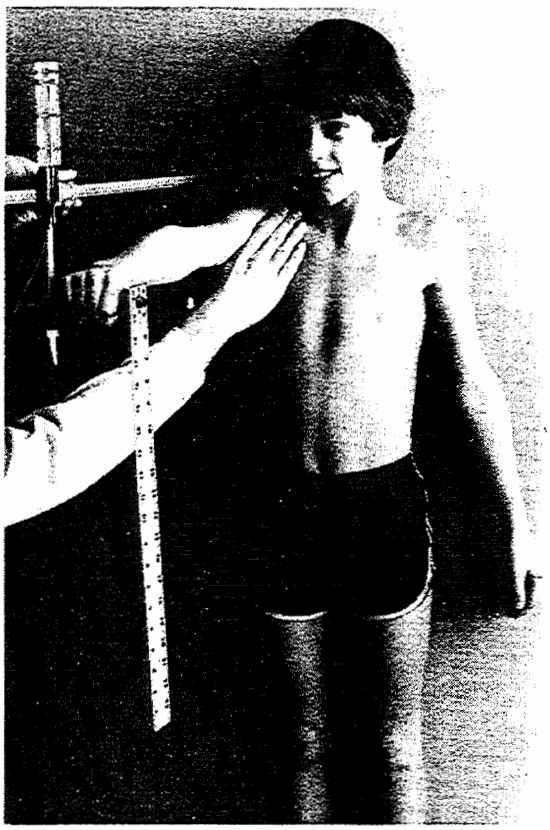
VERTICAL GRIP REACH (cm)
(Females)

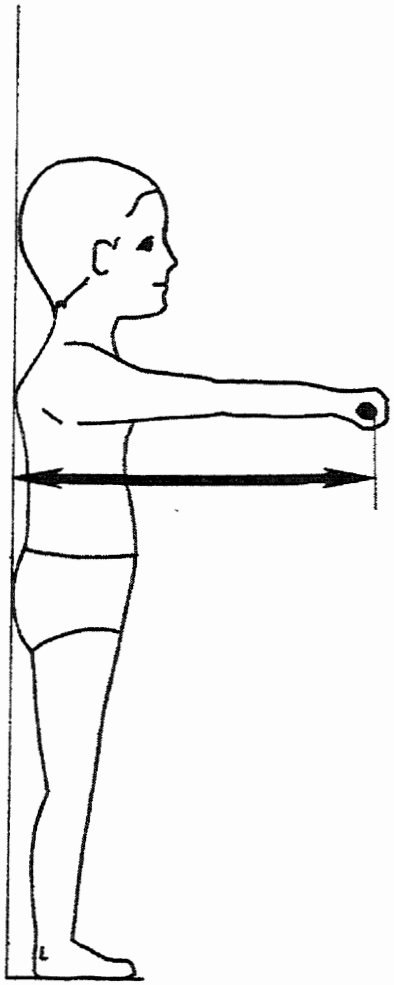
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	28	106.9	6.3	97.5	98.2	105.6	115.9	124.6
3.5-4.5	33	117.8	6.0	108.6	108.9	118.1	127.6	129.5
4.5-5.5	39	125.4	6.9	110.2	111.7	125.6	137.0	141.1
5.5-6.5	34	134.8	6.4	118.4	122.2	134.5	144.3	148.9
6.5-7.5	38	144.3	8.3	128.3	130.2	143.7	159.0	164.2
7.5-8.5	31	149.6	6.6	132.0	134.9	150.1	157.2	163.4
8.5-9.5	48	160.2	8.5	141.4	146.2	160.2	174.0	178.9
9.5-10.5	38	167.6	8.4	152.1	153.8	167.2	182.2	186.2
10.5-11.5	46	177.4	11.0	153.6	156.4	177.6	194.7	196.6
11.5-12.5	42	181.5	9.6	162.3	165.2	183.2	196.6	200.8
12.5-13.5	48	190.6	10.2	170.2	172.7	188.7	208.0	217.5
13.5-14.5	29	191.9	11.6	166.8	167.9	191.1	211.0	212.8
14.5-15.5	48	197.3	8.9	180.9	182.4	196.8	211.9	220.3
15.5-16.5	32	197.3	9.5	178.4	180.7	194.5	211.7	221.3
16.5-17.5	36	198.1	7.3	181.6	184.4	197.3	207.9	212.0
17.5-19.0	22	197.5	7.1	188.4	188.4	196.4	205.6	218.6

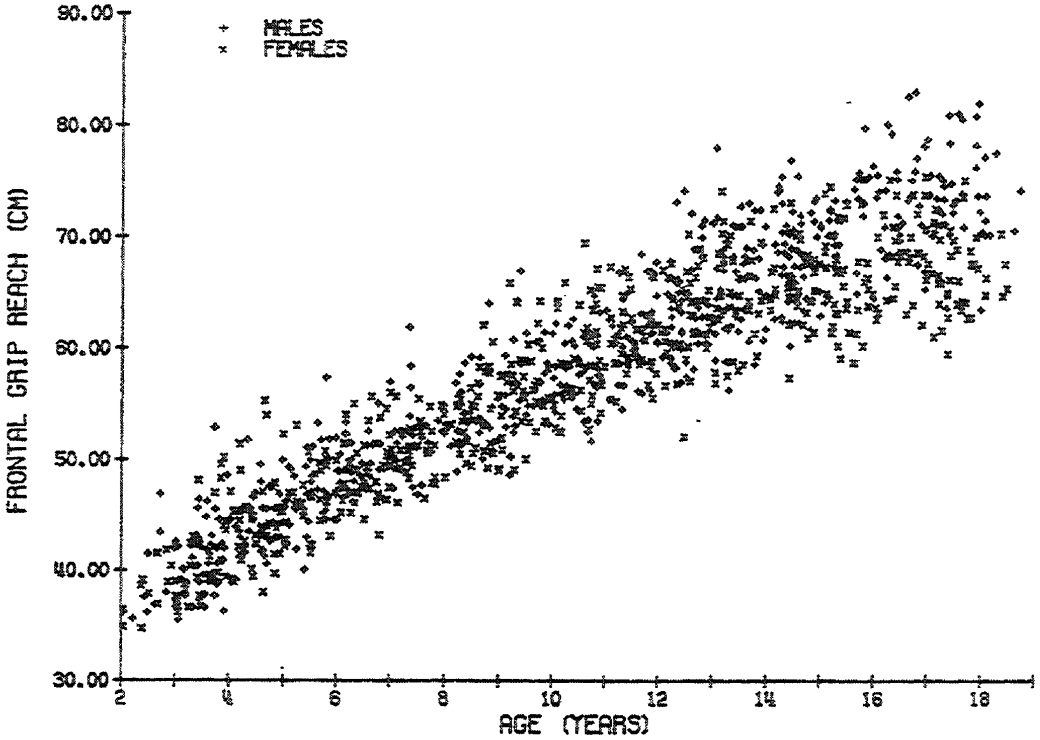
(4)

FRONTAL GRIP REACH

Subject stands erect with feet together, back to wall, grasping the handle of the grip device in right hand. The anthropometrist holds the subject's right shoulder against the wall as the subject extends right arm to maximum horizontal grip reach. With the pointed blade of an automated anthropometer, measure the horizontal distance from the wall to the most distal point on the handle of the grip device.



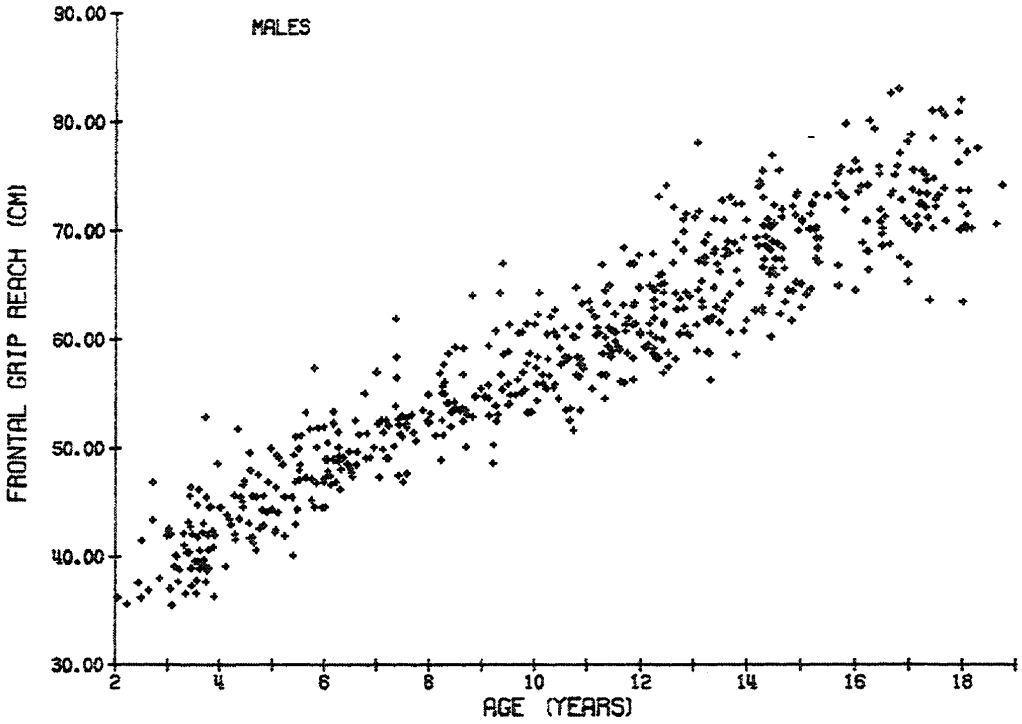


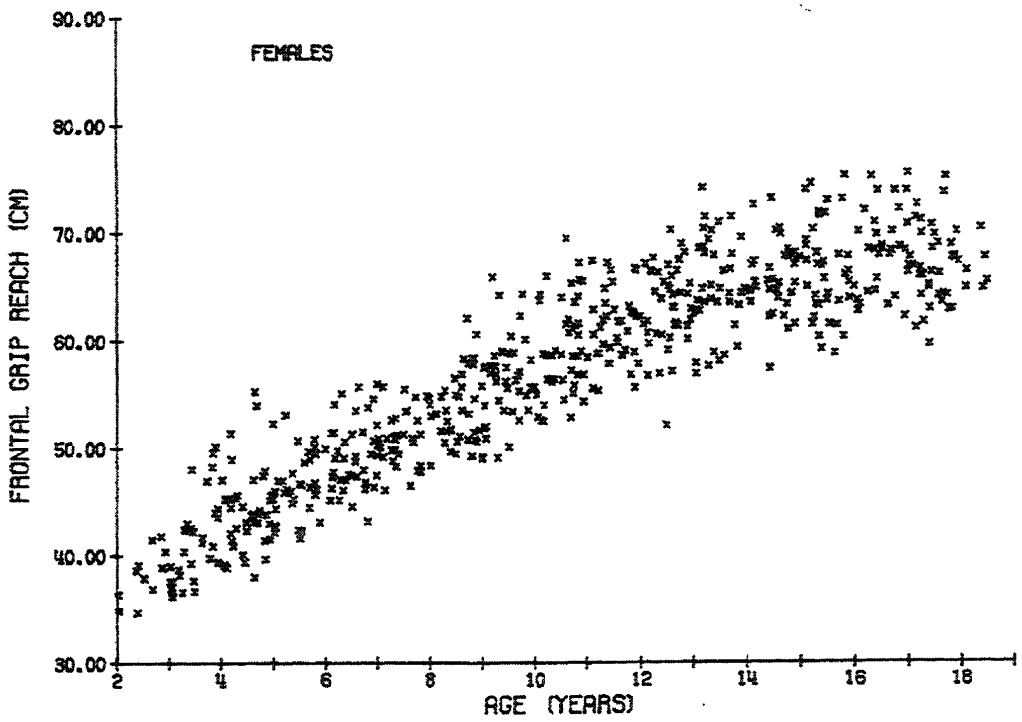


FRONTAL GRIP REACH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	62	39.7	3.1	34.7	35.5	39.0	45.4	48.1
3.5-4.5	77	43.1	3.6	36.3	37.8	42.5	49.7	52.9
4.5-5.5	74	45.4	3.4	38.0	40.4	45.2	51.5	55.3
5.5-6.5	76	48.5	2.9	41.6	44.2	48.1	53.3	57.4
6.5-7.5	74	50.7	3.2	43.2	46.2	50.7	56.1	61.9
7.5-8.5	64	52.9	2.7	46.5	47.8	53.1	56.8	59.3
8.5-9.5	80	55.5	4.1	48.6	49.2	55.1	64.1	67.0
9.5-10.5	74	57.7	3.3	52.5	52.8	56.8	64.0	66.0
10.5-11.5	94	59.9	3.8	51.7	53.4	59.9	66.6	69.5
11.5-12.5	91	62.1	3.8	52.1	56.3	61.5	67.7	74.2
12.5-13.5	97	64.9	4.5	56.3	57.6	64.3	71.6	78.1
13.5-14.5	80	67.0	4.3	57.4	59.4	66.6	74.1	77.0
14.5-15.5	87	67.7	3.8	59.2	61.3	67.6	73.4	75.6
15.5-16.5	63	69.6	5.1	58.8	60.9	68.9	76.4	80.2
16.5-17.5	74	70.6	5.0	59.6	62.0	70.7	78.7	83.1
17.5-19.0	44	70.7	5.4	62.8	63.0	70.2	80.9	82.1

(4)


MALES
FRONTAL GRIP REACH (CM)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FRONTAL GRIP REACH (CM)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FRONTAL GRIP REACH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	40.3	3.1	35.5	35.6	40.2	45.9	46.9
3.5-4.5	43	42.6	3.7	36.3	36.8	42.2	48.4	52.9
4.5-5.5	35	45.3	3.1	40.1	40.5	44.6	49.8	51.1
5.5-6.5	42	49.0	2.7	44.6	44.6	48.6	53.2	57.4
6.5-7.5	33	51.6	3.4	46.9	47.1	51.2	57.5	61.9
7.5-8.5	32	53.6	2.6	47.7	48.4	53.3	58.1	59.3
8.5-9.5	33	55.9	4.2	48.6	49.6	54.7	64.2	67.0
9.5-10.5	37	57.8	2.9	53.3	53.3	56.9	62.4	64.3
10.5-11.5	48	59.2	3.4	51.7	52.8	58.7	64.7	66.9
11.5-12.5	52	62.3	3.9	56.0	56.3	61.4	68.1	74.2
12.5-13.5	50	65.2	4.7	56.3	57.8	64.4	72.0	78.1
13.5-14.5	51	68.0	4.3	58.6	60.5	68.3	74.4	77.0
14.5-15.5	39	68.9	3.7	61.8	62.4	69.3	73.4	75.6
15.5-16.5	31	72.6	4.2	64.6	64.8	73.3	79.6	80.2
16.5-17.5	38	73.4	4.3	63.7	65.2	73.0	81.3	83.1
17.5-19.0	22	74.3	4.6	63.6	64.3	73.6	81.2	82.1

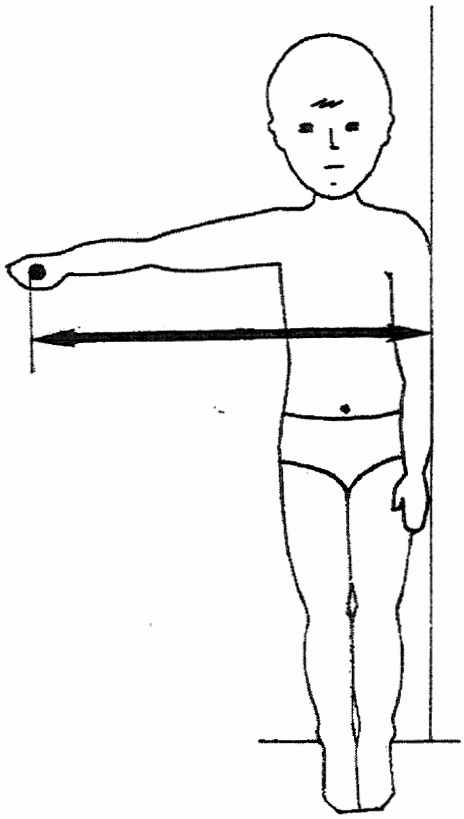
FRONTAL GRIP REACH (cm)
(Females)

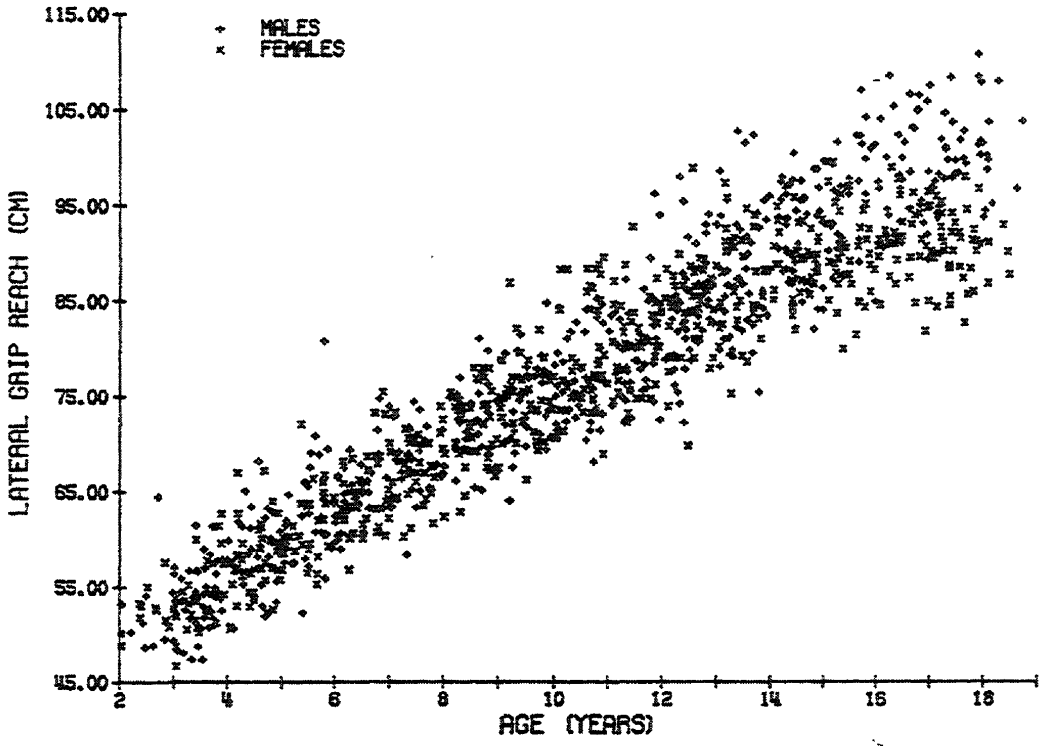
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	29	39.0	2.9	34.7	34.8	38.4	42.8	48.1
3.5-4.5	34	43.7	3.5	38.9	39.0	43.1	49.8	51.4
4.5-5.5	39	45.5	3.7	38.0	39.6	45.2	53.1	55.3
5.5-6.5	34	47.9	3.0	41.6	42.1	47.5	52.3	55.1
6.5-7.5	41	50.1	2.9	43.2	44.7	50.0	55.1	56.0
7.5-8.5	32	52.2	2.6	46.5	47.3	52.5	55.4	56.5
8.5-9.5	47	55.2	4.0	49.0	49.1	55.6	61.6	65.9
9.5-10.5	37	57.6	3.6	52.5	52.5	56.5	64.2	66.0
10.5-11.5	46	60.7	4.1	52.8	54.4	60.7	67.1	69.5
11.5-12.5	39	61.8	3.7	52.1	55.4	61.7	67.0	67.7
12.5-13.5	47	64.5	4.2	56.9	57.3	64.0	70.8	74.2
13.5-14.5	29	65.1	3.7	57.4	57.9	64.7	72.1	73.2
14.5-15.5	48	66.7	3.7	59.2	60.6	67.0	72.6	74.6
15.5-16.5	32	66.8	4.3	58.8	59.7	66.1	74.4	75.3
16.5-17.5	36	67.6	3.8	59.6	60.8	67.7	73.4	75.5
17.5-19.0	22	67.0	3.3	62.8	62.8	66.5	73.4	75.2

(5)

LATERAL GRIP REACH

Subject stands erect with feet together, left shoulder against wall, grasping the handle of the grip device in right hand, and abducts extended right arm to maximum horizontal grip reach. With the pointed blade of an automated anthropometer, measure the horizontal distance from the wall to the most distal point on the handle of the grip device.

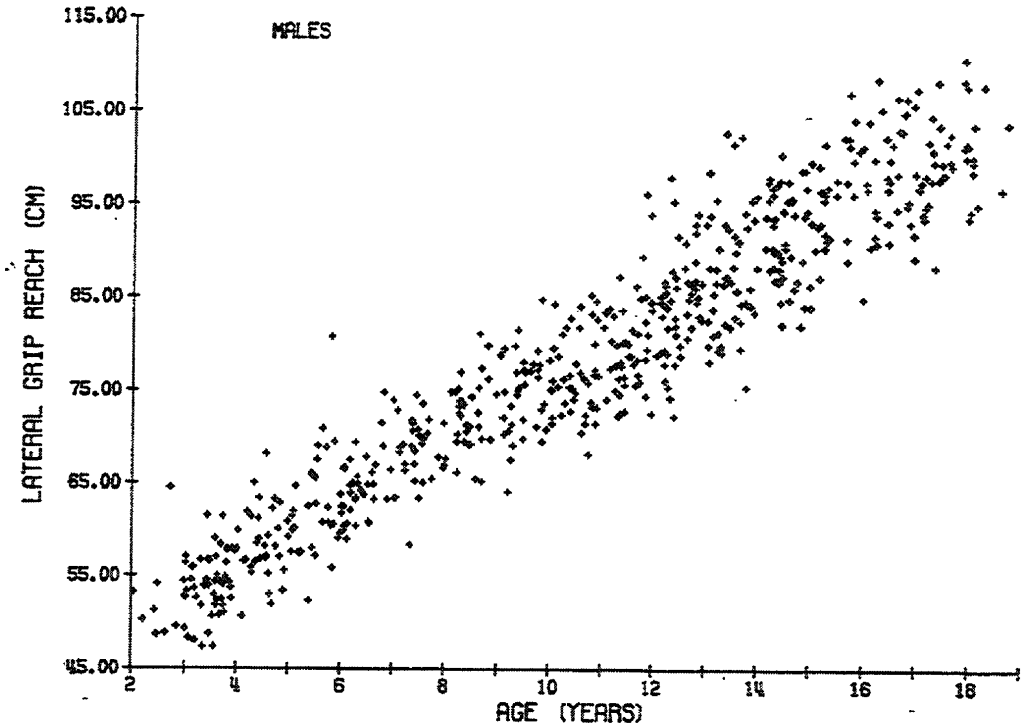


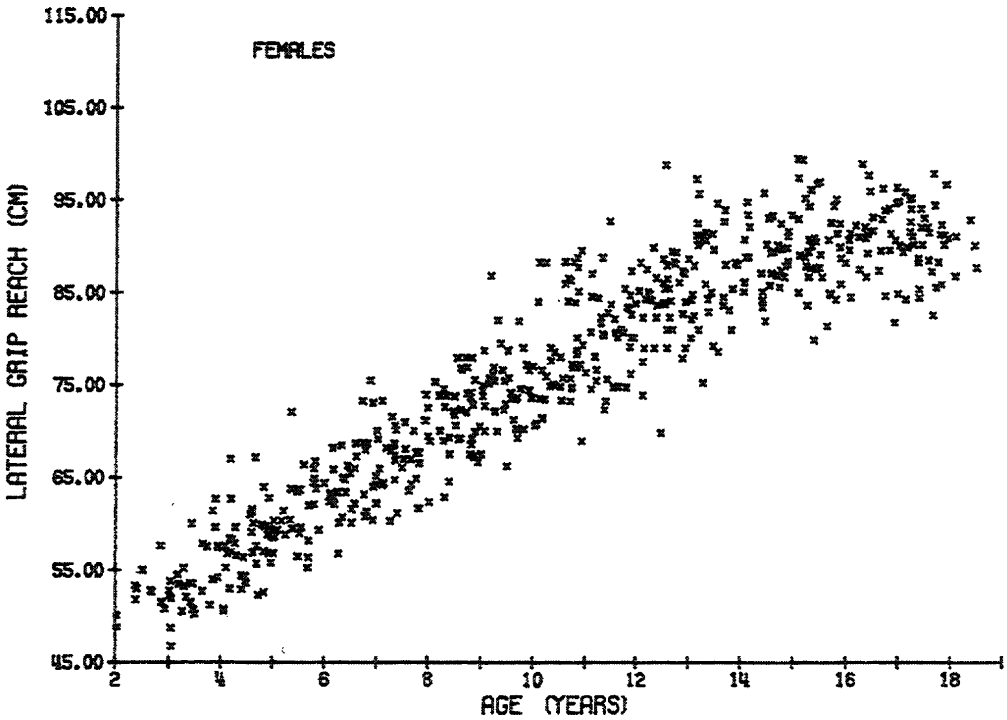


LATERAL GRIP REACH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	60	52.9	3.4	46.7	48.0	52.8	57.6	64.5
3.5-4.5	75	56.3	3.8	47.3	50.3	56.4	62.5	67.0
4.5-5.5	72	59.7	3.9	51.9	52.5	59.2	66.0	72.1
5.5-6.5	76	63.5	4.0	55.3	56.7	63.3	69.2	80.8
6.5-7.5	73	67.0	4.1	58.4	60.4	67.1	73.5	75.5
7.5-8.5	64	70.0	3.6	61.7	63.0	69.9	74.9	77.0
8.5-9.5	79	73.6	4.5	64.1	66.3	73.7	79.9	86.9
9.5-10.5	74	76.0	4.1	69.4	70.3	75.5	84.2	88.3
10.5-11.5	93	79.3	5.3	68.2	71.3	78.2	88.2	92.8
11.5-12.5	91	82.3	5.3	69.9	74.2	82.3	90.7	98.0
12.5-13.5	97	86.5	5.4	75.3	78.9	86.1	96.0	102.8
13.5-14.5	80	89.4	5.3	75.5	81.1	88.6	97.5	102.4
14.5-15.5	87	91.5	4.6	80.0	84.1	90.6	99.1	101.7
15.5-16.5	63	94.0	6.2	81.5	84.6	92.5	104.3	108.6
16.5-17.5	74	95.3	6.2	81.9	84.7	94.9	106.1	108.4
17.5-19.0	43	96.0	6.9	82.7	85.7	94.9	108.0	110.8

(5)


MALES
LATERAL GRIP REACH (CM)
115.00
105.00
95.00
85.00
75.00
65.00
55.00
45.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
LATERAL GRIP REACH (CM)
115.00
105.00
95.00
85.00
75.00
65.00
55.00
45.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

LATERAL GRIP REACH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	53.3	3.9	47.3	47.7	53.4	59.0	64.5
3.5-4.5	43	55.9	3.8	47.3	49.2	55.6	61.8	65.1
4.5-5.5	34	59.6	4.2	51.9	52.2	59.2	66.0	68.2
5.5-6.5	42	63.9	4.4	55.9	57.4	63.4	69.5	80.8
6.5-7.5	33	67.6	4.1	58.4	59.9	67.7	74.2	74.8
7.5-8.5	32	70.9	3.1	65.1	65.3	70.6	75.0	77.0
8.5-9.5	33	73.7	4.7	64.1	64.8	73.7	80.3	81.5
9.5-10.5	37	76.4	3.7	69.5	70.6	76.2	83.0	84.8
10.5-11.5	47	77.9	4.5	68.2	70.7	77.3	84.5	87.3
11.5-12.5	52	82.5	5.9	72.3	73.6	81.8	94.6	98.0
12.5-13.5	50	86.8	5.8	78.2	79.0	86.3	97.1	102.8
13.5-14.5	51	90.3	5.5	75.5	81.0	90.0	97.8	102.4
14.5-15.5	39	92.9	4.9	82.1	84.0	93.5	99.3	101.7
15.5-16.5	31	97.8	5.7	85.0	87.3	97.6	106.2	108.6
16.5-17.5	38	99.4	5.1	88.5	89.3	98.5	106.8	108.4
17.5-19.0	22	101.3	4.5	93.8	93.9	100.3	108.4	110.8

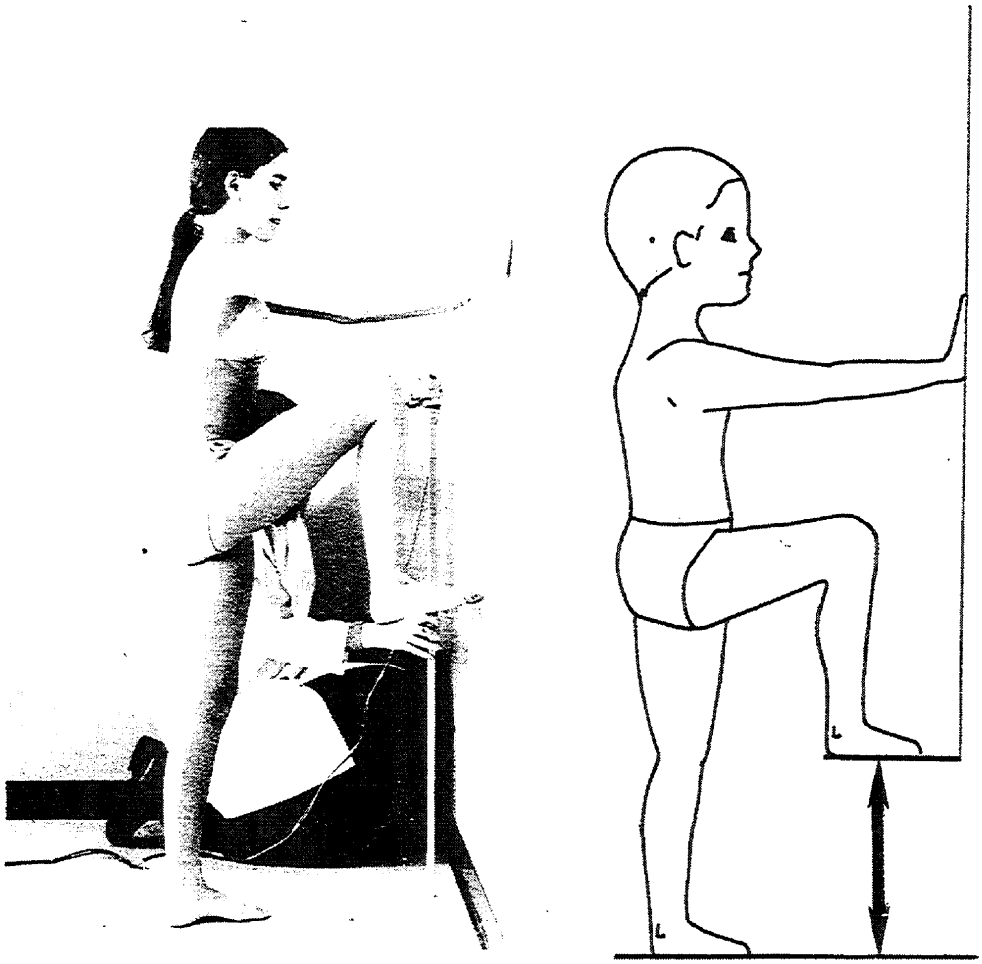
LATERAL GRIP REACH (cm)
(Females)

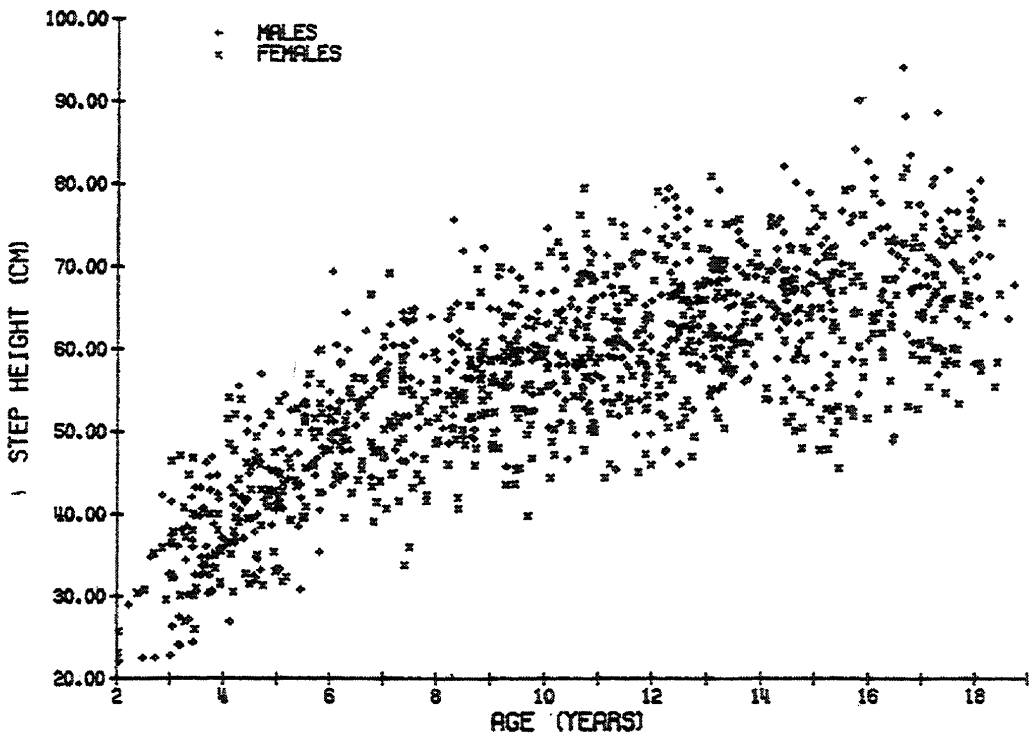
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	29	52.5	2.6	46.7	47.6	52.4	56.5	60.0
3.5-4.5	32	56.7	3.8	50.6	50.7	56.8	62.4	67.0
4.5-5.5	38	59.7	3.6	52.3	52.6	59.3	64.3	72.1
5.5-6.5	34	62.9	3.3	55.3	56.1	63.3	67.2	68.5
6.5-7.5	40	66.4	4.1	60.1	60.3	66.1	73.2	75.5
7.5-8.5	32	69.1	3.9	61.7	62.1	69.0	74.2	75.4
8.5-9.5	46	73.6	4.3	66.3	66.9	73.7	79.4	86.9
9.5-10.5	37	75.7	4.6	69.4	70.1	74.7	84.4	88.3
10.5-11.5	46	80.7	5.6	69.0	72.5	80.2	88.7	92.8
11.5-12.5	39	82.1	4.5	69.9	73.8	82.5	88.3	89.9
12.5-13.5	47	86.3	5.1	75.3	78.2	85.7	94.7	98.9
13.5-14.5	29	87.7	4.5	78.7	79.8	87.4	94.8	95.9
14.5-15.5	48	90.3	4.0	80.0	84.3	89.5	97.3	99.6
15.5-16.5	32	90.3	4.0	81.5	83.2	90.8	96.8	99.0
16.5-17.5	36	91.1	3.9	81.9	83.9	91.2	96.4	96.5
17.5-19.0	21	90.4	3.7	82.7	82.8	90.6	96.7	98.0

(6)

STEP HEIGHT

Subject stands erect facing wall with palms of hands resting lightly against wall at shoulder level for balance. Subject raises right foot to maximum height from floor. With the paddle blade of an automated anthropometer, measure the vertical distance from the floor to the ball of the foot.

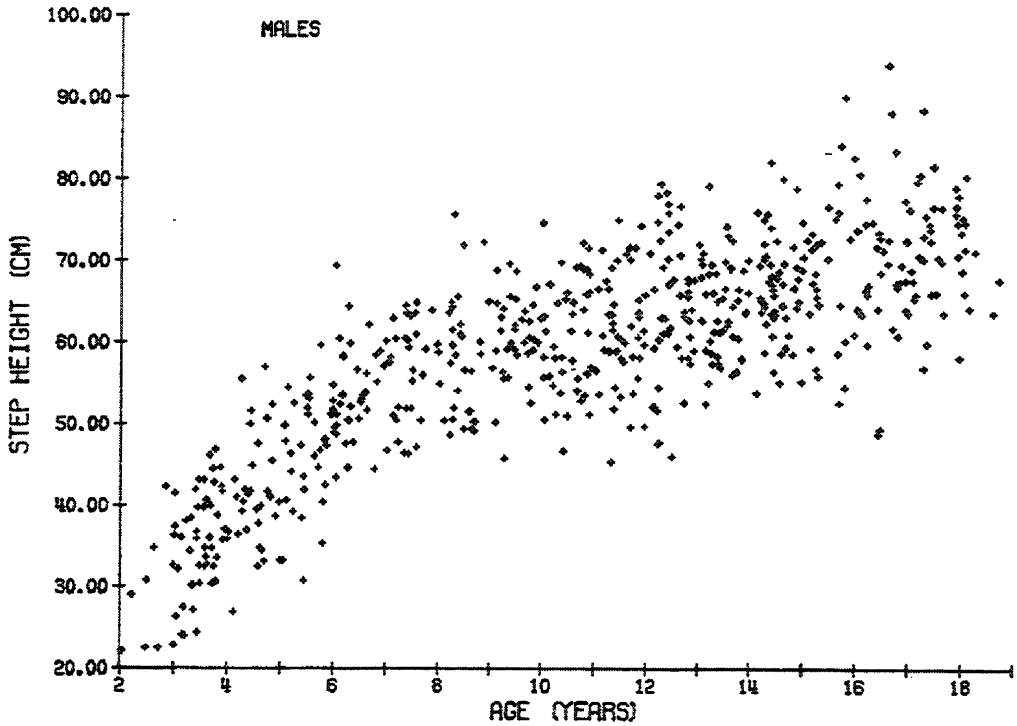


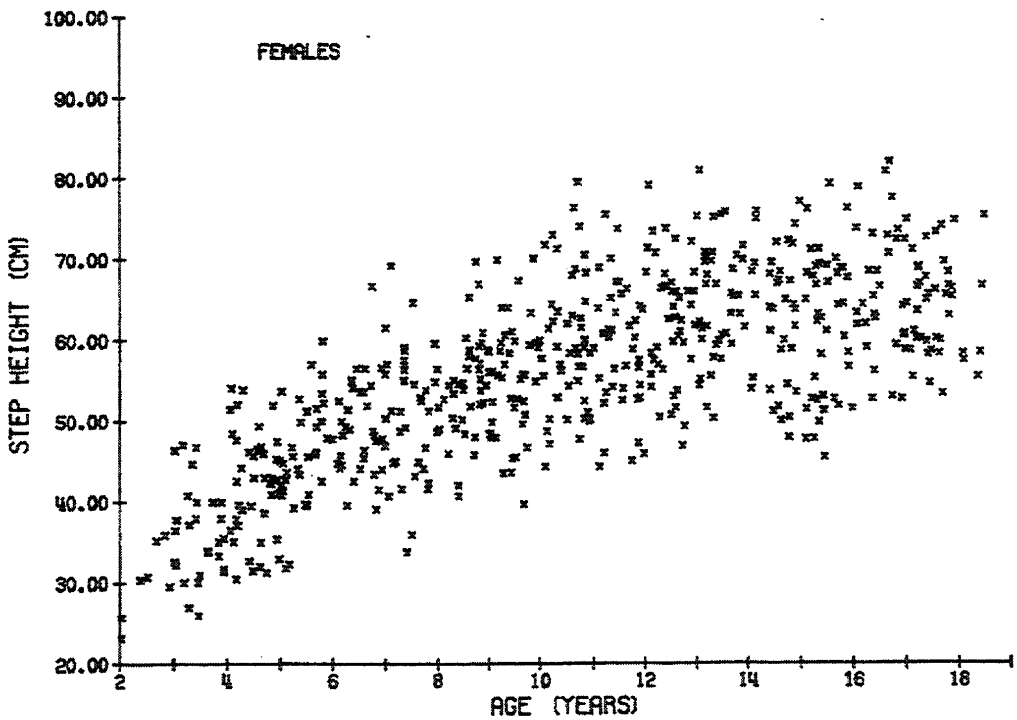


STEP HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	55	33.3	6.8	22.1	22.4	32.5	45.1	47.1
3.5-4.5	74	39.6	6.4	26.9	30.5	39.3	51.7	55.5
4.5-5.5	75	42.9	6.5	30.8	31.9	42.7	53.0	57.0
5.5-6.5	74	50.4	6.0	35.4	40.3	50.2	59.8	69.4
6.5-7.5	74	52.6	7.3	33.8	40.2	53.1	63.3	69.2
7.5-8.5	63	54.9	7.4	40.7	42.0	54.4	64.9	75.7
8.5-9.5	80	56.9	6.6	43.6	45.8	57.0	68.8	72.3
9.5-10.5	75	58.5	7.1	39.8	46.4	58.8	70.4	74.7
10.5-11.5	96	61.3	7.5	44.4	49.6	60.9	73.8	79.5
11.5-12.5	91	62.1	8.6	45.1	47.5	61.6	76.5	79.5
12.5-13.5	98	63.5	6.8	47.0	51.6	62.8	75.2	81.0
13.5-14.5	78	65.8	6.1	51.2	54.0	65.4	75.8	82.2
14.5-15.5	88	64.0	8.1	45.6	48.8	65.0	75.7	80.2
15.5-16.5	62	66.7	9.2	48.9	51.6	66.0	80.7	90.2
16.5-17.5	73	68.8	8.6	52.8	55.2	67.7	82.6	94.2
17.5-19.0	44	68.1	6.9	53.4	55.9	67.8	77.9	80.5

(6)


MALES
STEP HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
STEP HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

STEP HEIGHT (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	32.2	6.6	22.1	22.2	32.4	42.1	43.2
3.5-4.5	42	39.3	6.0	26.9	30.4	39.8	49.7	55.5
4.5-5.5	34	43.2	7.3	30.8	32.0	41.7	53.8	57.0
5.5-6.5	42	51.5	6.3	35.4	40.7	50.9	60.4	69.4
6.5-7.5	33	55.5	5.5	44.5	45.7	55.7	63.3	64.5
7.5-8.5	32	59.0	6.6	47.2	48.0	59.4	68.1	75.7
8.5-9.5	32	58.7	6.6	45.8	47.8	59.1	69.1	72.3
9.5-10.5	37	60.0	6.0	46.7	49.9	59.6	68.9	74.7
10.5-11.5	48	61.8	6.6	45.4	51.5	61.4	71.5	75.1
11.5-12.5	50	63.5	8.9	46.1	47.7	62.1	77.6	79.5
12.5-13.5	50	64.1	5.8	52.6	53.9	63.8	73.4	79.3
13.5-14.5	51	66.3	5.9	53.9	56.2	65.4	75.5	82.2
14.5-15.5	39	66.9	6.4	55.2	55.3	67.3	76.9	80.2
15.5-16.5	31	68.8	10.2	48.9	49.2	67.9	83.5	90.2
16.5-17.5	37	72.1	8.3	57.0	59.5	70.5	88.4	94.2
17.5-19.0	23	71.3	5.8	58.3	58.7	71.0	79.0	80.5

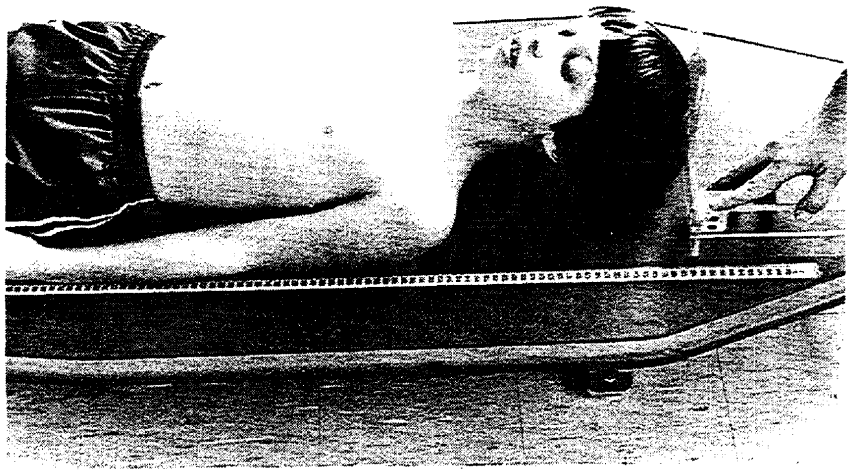
STEP HEIGHT (cm)
(Females)

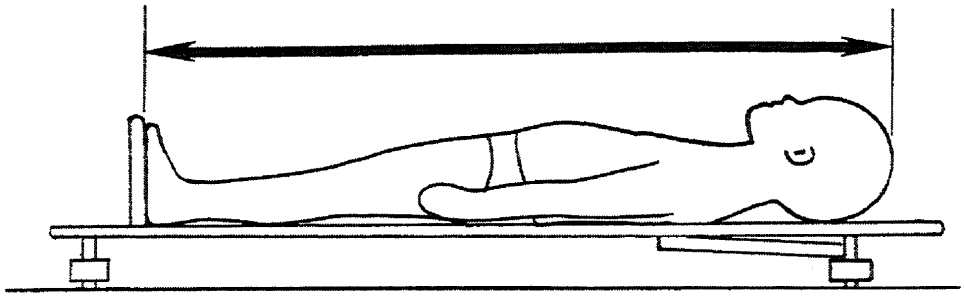
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	24	34.8	6.9	23.2	23.7	32.6	46.7	47.1
3.5-4.5	32	39.9	7.0	30.5	31.0	38.0	52.8	54.1
4.5-5.5	41	42.7	5.8	31.3	31.8	42.8	52.0	53.7
5.5-6.5	32	49.0	5.3	39.6	39.7	49.0	56.7	59.9
6.5-7.5	41	50.3	7.7	33.8	36.2	48.9	61.4	69.2
7.5-8.5	31	50.6	5.6	40.7	41.2	51.4	57.8	64.6
8.5-9.5	48	55.7	6.4	43.6	44.4	56.1	66.3	69.9
9.5-10.5	38	57.0	7.9	39.8	43.9	56.2	71.3	73.0
10.5-11.5	48	60.7	8.3	44.4	46.8	60.0	74.9	79.5
11.5-12.5	41	60.5	8.0	45.1	46.1	59.0	73.3	79.1
12.5-13.5	48	62.8	7.6	47.0	49.8	61.8	75.3	81.0
13.5-14.5	27	65.1	6.6	51.2	52.1	65.4	75.5	75.9
14.5-15.5	49	61.6	8.6	45.6	47.8	62.9	73.4	77.1
15.5-16.5	31	64.5	7.5	51.6	51.8	64.3	77.5	79.3
16.5-17.5	36	65.5	7.6	52.8	53.0	64.5	78.3	82.0
17.5-19.0	21	64.6	6.6	53.4	53.5	65.5	74.8	75.4

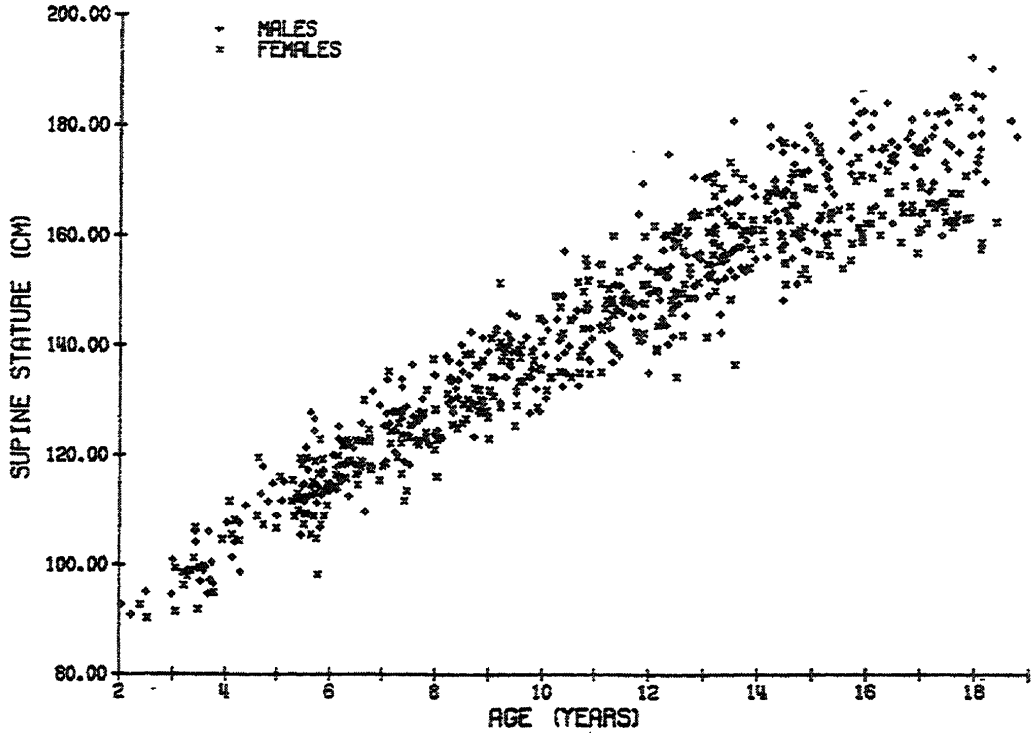
(7)

SUPINE STATURE

Subject lies on back on the CG device with feet firmly against the foot reference plane. The arms are placed at the sides with the legs straight. Using the block and tape on the CG device, measure the location of the top of the head. The measurement is typed into the computer and the distance from the foot reference plane to the top of the head is computed.



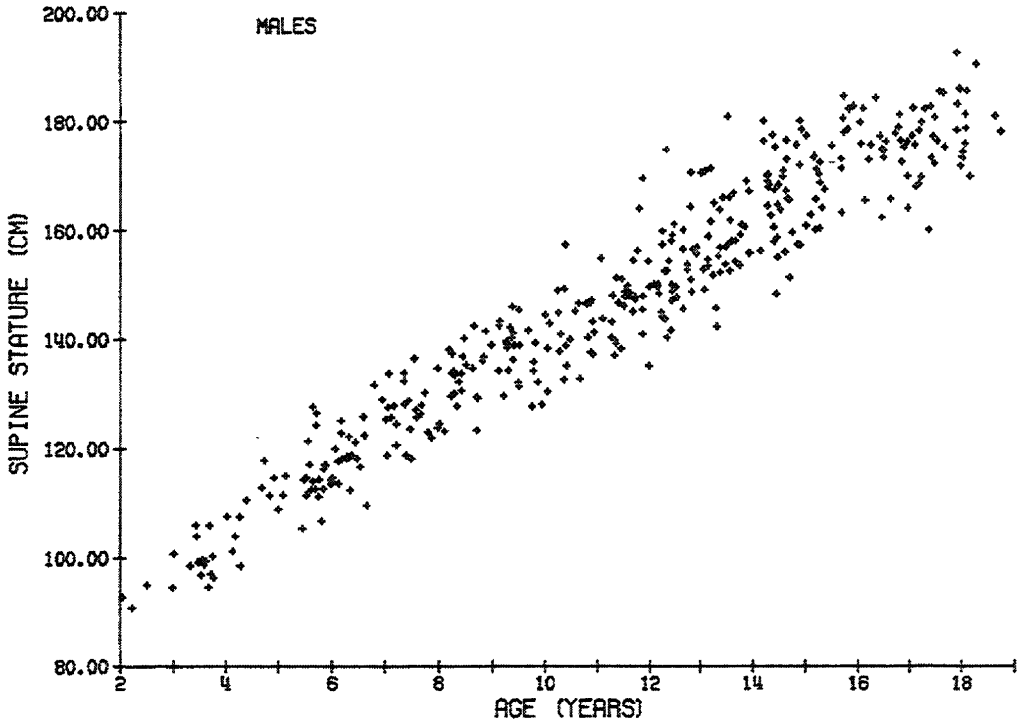


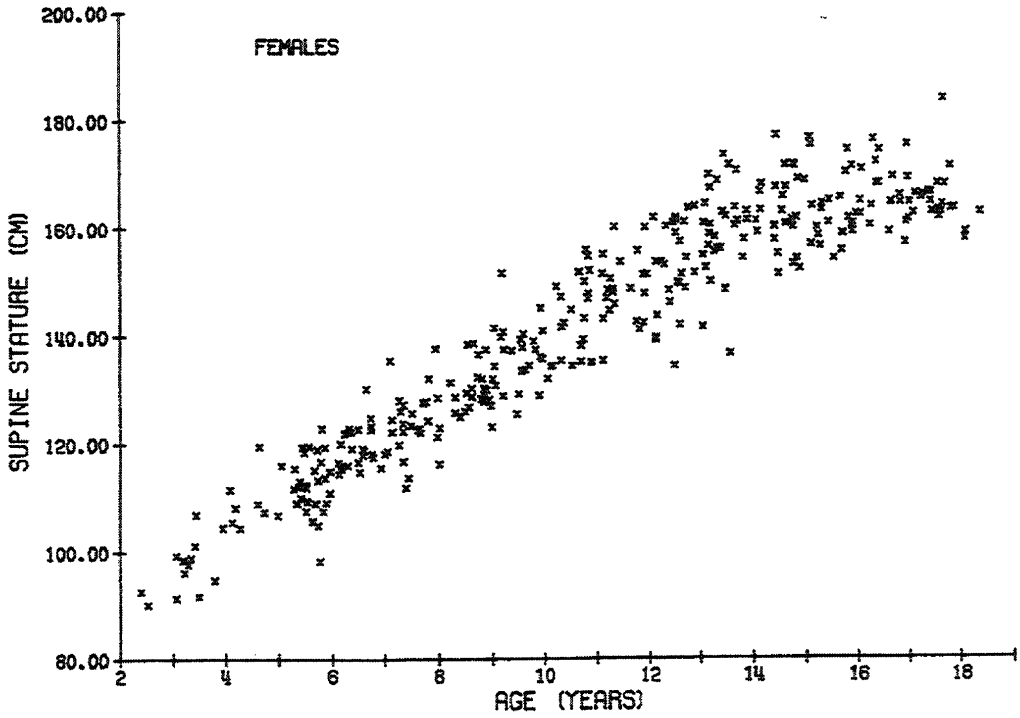


SUPINE STATURE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	20	97.3	5.0	90.2	**	97.8	**	106.8
3.5-4.5	21	102.3	5.2	94.6	94.6	100.8	110.6	111.5
4.5-5.5	26	112.5	3.9	105.5	105.9	112.1	119.1	119.5
5.5-6.5	67	116.0	5.5	98.2	106.0	116.0	123.9	127.7
6.5-7.5	47	122.9	6.0	109.7	112.3	122.8	133.3	135.3
7.5-8.5	46	128.8	5.5	116.1	121.3	127.7	137.4	140.1
8.5-9.5	57	134.8	6.2	123.0	125.1	134.4	143.5	151.4
9.5-10.5	43	138.6	6.3	127.7	128.2	138.0	149.0	157.3
10.5-11.5	53	145.3	6.3	132.8	134.7	146.4	154.8	160.0
11.5-12.5	65	150.9	7.9	134.3	139.2	149.6	161.8	174.8
12.5-13.5	66	157.2	8.1	141.5	143.3	156.0	170.7	180.9
13.5-14.5	57	162.6	7.8	136.5	150.8	161.2	176.5	180.0
14.5-15.5	59	166.0	7.3	151.3	153.1	165.4	176.6	180.1
15.5-16.5	43	170.4	8.3	154.1	156.1	171.3	182.7	184.6
16.5-17.5	45	170.5	7.2	157.0	159.2	169.0	182.0	182.7
17.5-19.0	33	174.1	9.6	157.7	158.5	174.0	187.6	192.5

(7)


MALES
SUPINE STATURE (CM)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SUPINE STATURE (CM)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SUPINE STATURE (cm)
(Males)

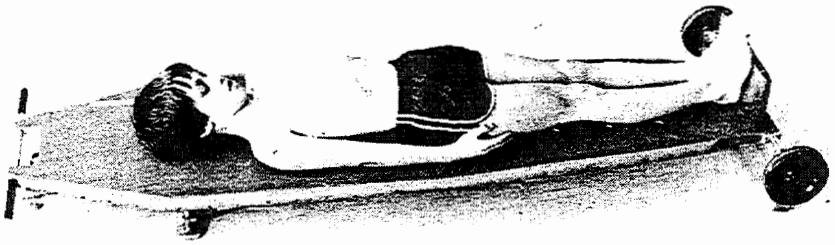
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	98.0	5.2	90.8	**	96.8	**	106.1
3.5-4.5	15	101.3	4.8	94.6	**	99.6	**	110.7
4.5-5.5	10	112.7	3.5	105.5	**	112.9	**	117.9
5.5-6.5	35	117.1	4.8	106.8	110.2	117.1	125.5	127.7
6.5-7.5	21	125.0	6.2	109.7	110.1	125.6	133.7	133.9
7.5-8.5	27	130.8	5.2	122.0	122.3	130.4	137.8	140.1
8.5-9.5	27	137.2	5.4	123.4	125.5	138.5	144.6	145.9
9.5-10.5	21	139.1	7.4	127.7	127.7	138.5	149.2	157.3
10.5-11.5	26	143.8	5.2	132.8	134.1	143.8	151.1	154.8
11.5-12.5	41	151.1	7.8	135.1	140.3	149.5	163.9	174.8
12.5-13.5	35	157.4	8.5	142.3	144.7	155.5	170.9	180.9
13.5-14.5	35	163.5	7.6	148.3	151.5	162.3	176.7	180.0
14.5-15.5	32	167.7	7.3	151.3	154.1	167.6	177.8	180.1
15.5-16.5	21	175.9	6.4	162.4	162.4	175.8	184.2	184.6
16.5-17.5	26	174.8	6.0	160.2	161.4	176.0	182.4	182.7
17.5-19.0	20	179.9	6.3	170.0	**	178.4	**	192.5

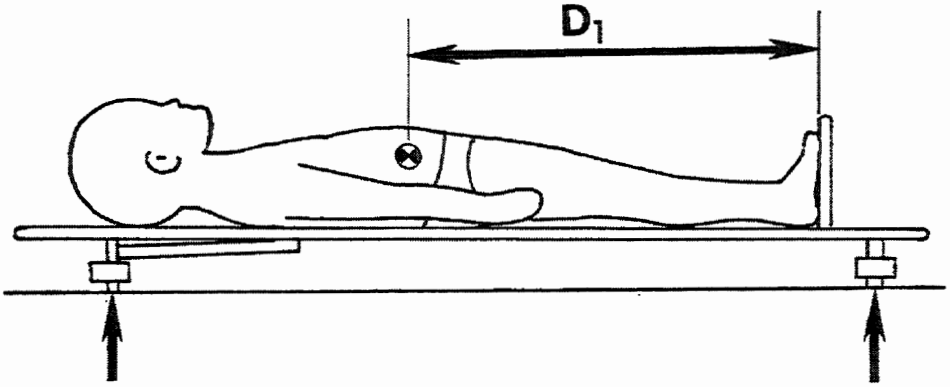
SUPINE STATURE (cm)
(Females)

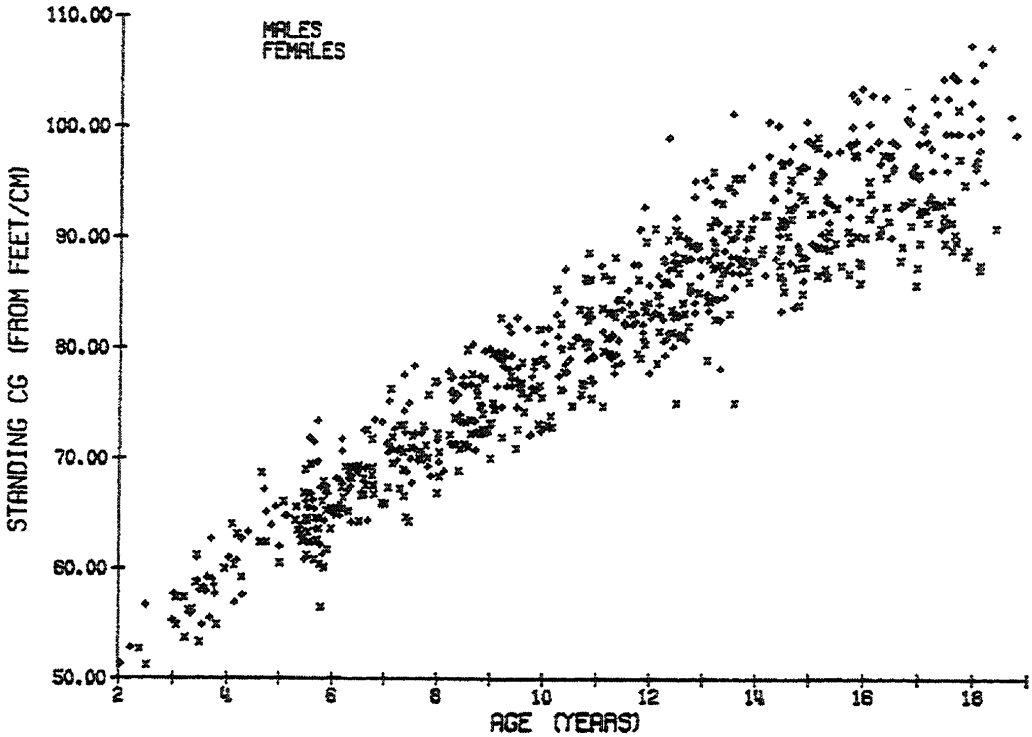
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	11	96.8	5.0	90.2	**	97.0	**	106.8
3.5-4.5	6	104.8	5.6	94.8	**	104.5	**	111.5
4.5-5.5	16	112.4	4.3	106.7	**	112.0	**	119.5
5.5-6.5	32	114.8	6.0	98.2	102.2	115.3	122.6	122.8
6.5-7.5	26	121.2	5.4	111.7	112.2	119.7	129.4	135.3
7.5-8.5	19	125.8	4.6	116.1	**	125.2	**	137.5
8.5-9.5	30	132.6	6.0	123.0	124.2	130.1	140.9	151.4
9.5-10.5	22	138.2	5.2	128.8	129.1	137.3	146.8	149.0
10.5-11.5	27	146.7	7.0	134.3	134.5	147.2	155.5	160.0
11.5-12.5	24	150.6	8.3	134.3	135.3	151.1	161.6	161.8
12.5-13.5	31	157.1	7.7	141.5	141.7	156.2	169.1	173.4
13.5-14.5	22	161.1	8.2	136.5	138.0	161.0	171.4	177.0
14.5-15.5	27	163.9	6.8	152.2	152.5	163.0	174.6	176.5
15.5-16.5	22	165.1	6.3	154.1	154.2	163.8	174.3	176.2
16.5-17.5	19	164.7	4.0	157.0	**	164.4	**	175.2
17.5-19.0	13	165.2	6.6	157.7	**	163.1	**	183.6

STANDING CENTER OF GRAVITY

Subject lies on back on the CG device with the feet placed firmly against the foot reference plane. The arms are placed at the sides with the legs straight. The horizontal distance of the center of gravity from the reference plane (D_1) is computed. The distance is reported as measured and as a percent of supine stature. [(D_1/supine stature) x 100)].



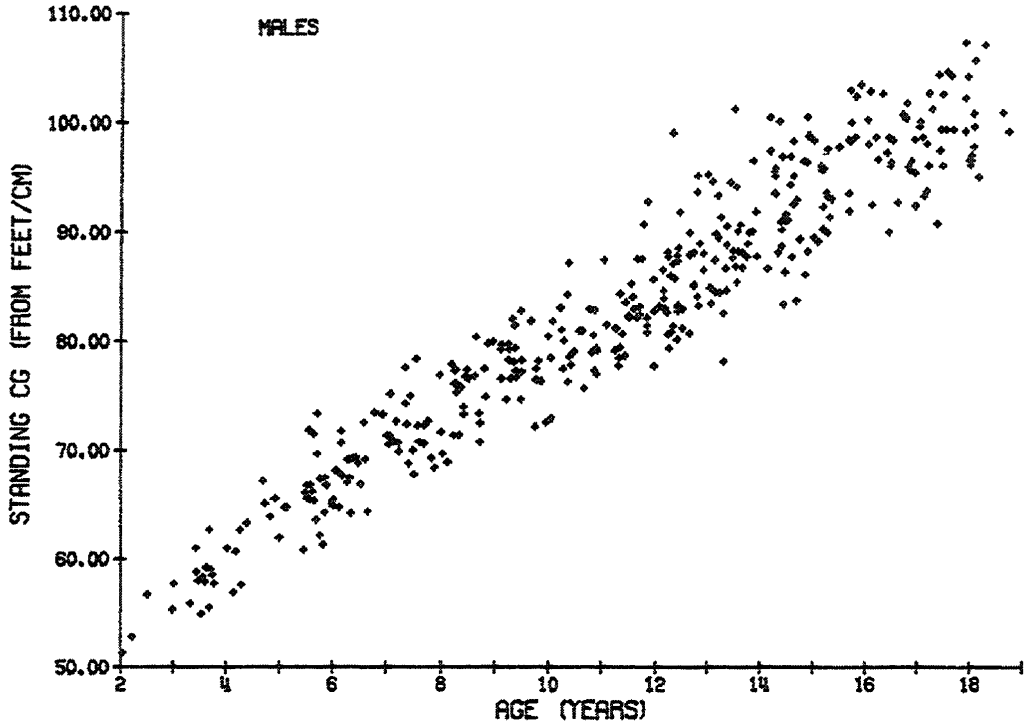


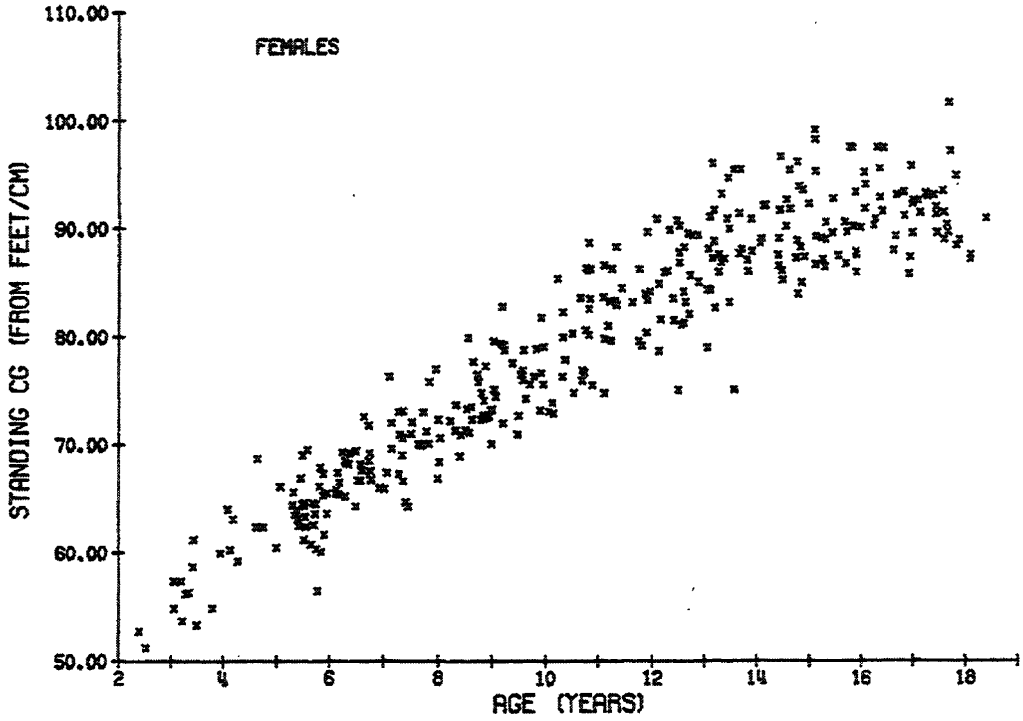


STANDING CG (FROM FEET) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	20	56.0	2.9	51.2	**	56.2	**	61.2
3.5-4.5	21	59.4	2.7	54.9	54.9	59.0	63.3	64.0
4.5-5.5	26	64.5	2.3	60.5	60.6	64.5	68.2	69.0
5.5-6.5	67	66.2	3.1	56.5	60.5	65.9	71.2	73.4
6.5-7.5	47	70.0	3.2	64.3	64.5	69.9	75.1	77.6
7.5-8.5	46	72.8	3.1	66.9	67.9	72.2	77.4	78.4
8.5-9.5	57	76.3	3.3	70.1	71.0	76.6	81.6	82.8
9.5-10.5	43	78.1	3.5	72.2	72.6	77.6	84.1	87.2
10.5-11.5	53	81.4	3.5	74.8	75.3	81.1	86.9	88.7
11.5-12.5	65	84.6	4.2	75.1	78.4	83.6	90.9	99.1
12.5-13.5	66	87.7	4.5	78.2	80.9	87.6	95.0	101.3
13.5-14.5	57	90.5	4.4	75.1	85.0	90.1	97.1	100.6
14.5-15.5	59	92.2	4.2	83.8	84.9	92.3	98.5	100.6
15.5-16.5	43	95.0	4.9	86.0	86.9	95.4	103.0	103.6
16.5-17.5	45	95.1	4.5	85.8	87.5	93.6	102.5	104.5
17.5-19.0	33	97.2	6.0	87.2	87.5	97.1	106.4	107.5

(8)


MALES
STANDING CG (FROM FEET/CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

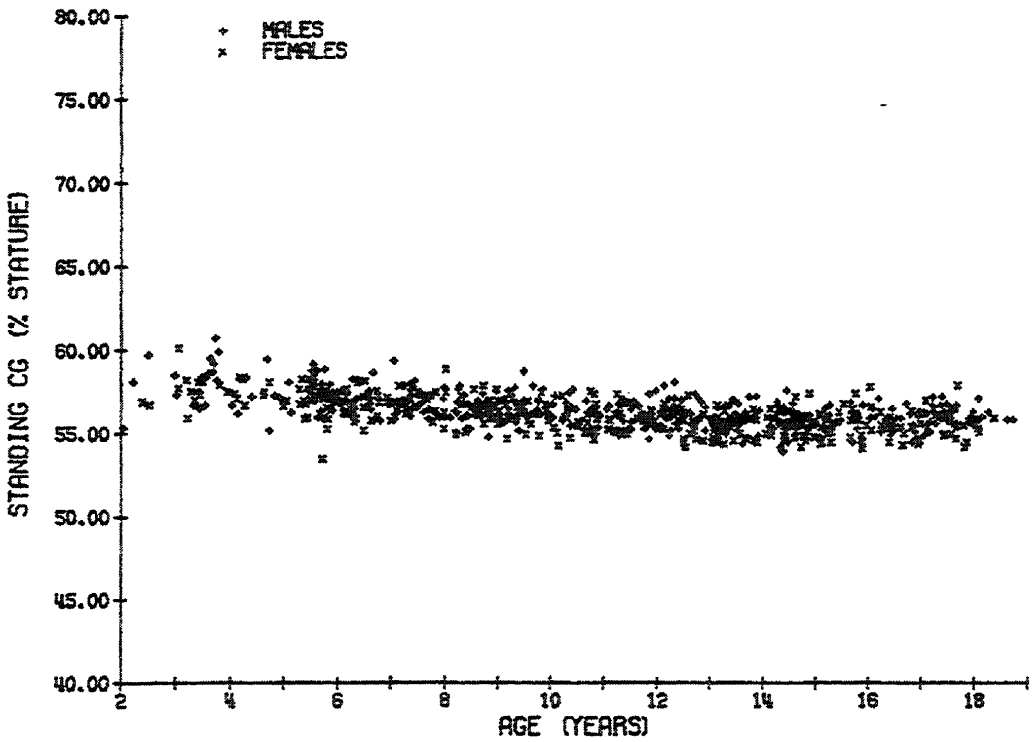

FEMALES
STANDING CG (FROM FEET/CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

STANDING CG (FROM FEET) (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	56.4	3.0	51.3	**	56.3	**	61.0
3.5-4.5	15	59.1	2.6	54.9	**	58.4	**	63.3
4.5-5.5	10	64.7	2.0	60.8	**	64.8	**	67.2
5.5-6.5	35	67.2	2.8	61.3	62.0	67.0	71.8	73.4
6.5-7.5	21	71.4	3.0	64.4	64.5	71.1	75.2	77.6
7.5-8.5	27	73.9	3.1	68.4	68.6	73.6	77.7	78.4
8.5-9.5	27	77.7	2.9	70.8	71.4	77.8	81.9	82.8
9.5-10.5	21	78.8	3.8	72.2	72.2	78.3	84.2	87.2
10.5-11.5	26	80.7	2.6	75.7	76.1	80.7	84.2	87.5
11.5-12.5	41	84.8	4.1	77.8	79.4	83.3	91.8	99.1
12.5-13.5	35	88.1	4.8	78.2	80.1	87.8	95.2	101.3
13.5-14.5	35	91.3	4.2	83.4	85.0	90.5	98.2	100.6
14.5-15.5	32	93.4	4.1	83.8	85.2	93.1	98.7	100.6
15.5-16.5	21	98.2	3.8	90.1	90.2	98.5	103.1	103.6
16.5-17.5	26	97.9	3.5	90.9	91.4	98.2	102.8	104.5
17.5-19.0	20	100.8	3.8	95.2	**	99.5	**	107.5

STANDING CG (FROM FEET) (cm)
(Females)

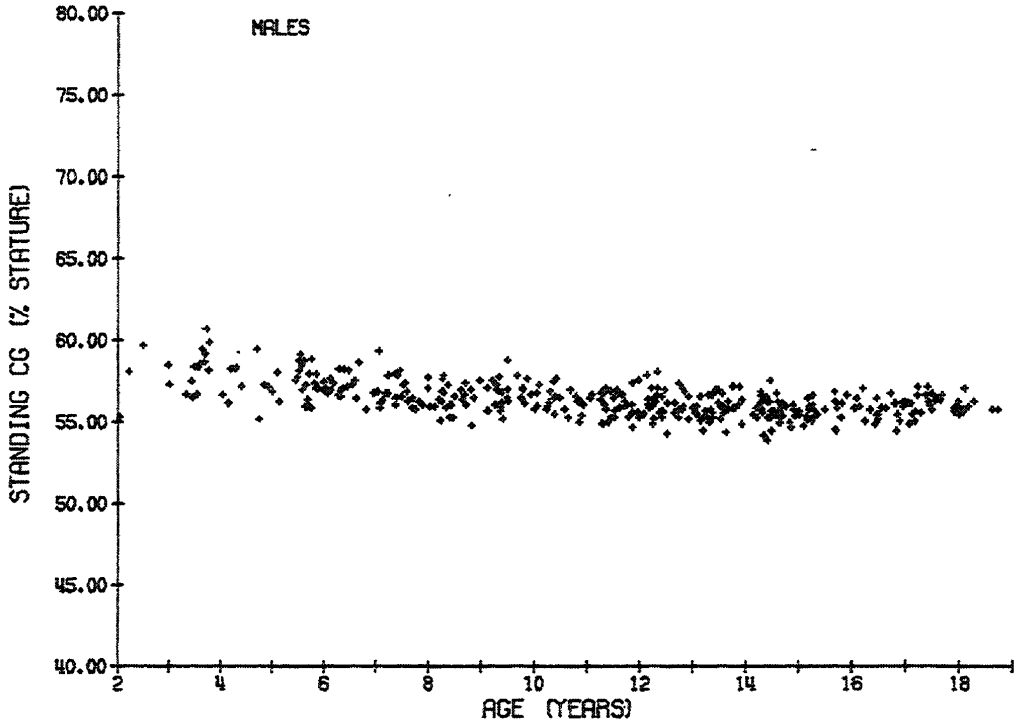
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	11	55.7	2.9	51.2	**	55.5	**	61.2
3.5-4.5	6	60.2	3.2	54.9	**	60.0	**	64.0
4.5-5.5	16	64.3	2.4	60.5	**	63.9	**	69.0
5.5-6.5	32	65.1	3.1	56.5	58.7	65.3	69.3	69.5
6.5-7.5	26	69.0	2.9	64.3	64.4	68.2	73.1	76.3
7.5-8.5	19	71.4	2.4	66.9	**	71.0	**	77.0
8.5-9.5	30	74.9	3.2	70.1	70.5	73.5	79.7	82.8
9.5-10.5	22	77.4	3.2	72.9	72.9	76.6	82.2	85.4
10.5-11.5	27	82.0	4.2	74.8	74.8	83.0	87.7	88.7
11.5-12.5	24	84.3	4.4	75.1	75.5	84.0	90.7	90.9
12.5-13.5	31	87.1	4.1	79.0	80.2	87.2	93.9	96.1
13.5-14.5	22	89.2	4.5	75.1	76.1	88.7	95.3	96.7
14.5-15.5	27	90.8	3.9	84.0	84.3	89.9	97.6	99.2
15.5-16.5	22	91.9	3.7	86.0	86.1	90.9	97.5	97.6
16.5-17.5	19	91.3	2.5	85.8	**	91.7	**	95.8
17.5-19.0	13	91.6	4.2	87.2	**	90.0	**	101.7

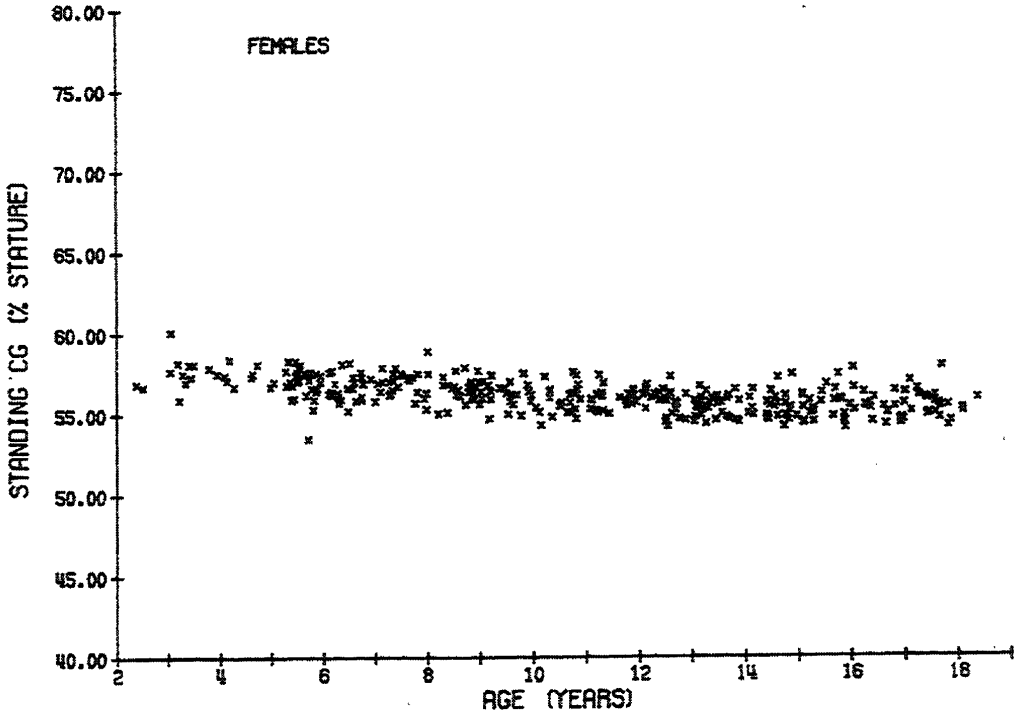


STANDING CG (% STATURE)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	20	57.6	1.2	55.3	**	57.4	**	60.1
3.5-4.5	21	58.1	1.1	56.2	56.2	58.2	59.9	60.7
4.5-5.5	26	57.3	0.9	55.2	55.4	57.2	58.3	59.5
5.5-6.5	67	57.1	1.0	53.5	55.4	57.0	58.6	59.2
6.5-7.5	47	57.0	0.8	55.8	55.8	56.9	58.2	59.4
7.5-8.5	46	56.6	0.9	55.0	55.1	56.5	57.8	58.9
8.5-9.5	57	56.6	0.8	54.7	55.1	56.5	57.7	58.8
9.5-10.5	43	56.3	0.8	54.3	54.8	56.2	57.6	57.9
10.5-11.5	53	56.0	0.7	54.7	54.9	56.0	57.2	57.6
11.5-12.5	65	56.1	0.8	54.3	54.6	56.0	57.3	58.1
12.5-13.5	66	55.8	0.7	54.2	54.5	55.7	57.0	57.4
13.5-14.5	57	55.7	0.8	53.9	54.4	55.7	56.9	57.6
14.5-15.5	59	55.6	0.7	54.2	54.4	55.5	56.7	57.4
15.5-16.5	43	55.8	0.8	54.1	54.3	55.7	57.1	57.8
16.5-17.5	45	55.8	0.8	54.3	54.4	55.8	56.9	57.2
17.5-19.0	33	55.8	0.7	54.2	54.4	55.7	56.8	57.9

(8)


MALES
STANDING CG (% STATURE)
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
STANDING CG (% STATURE)
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

STANDING CG (% STATURE)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	57.6	1.3	55.3	**	57.4	**	59.7
3.5-4.5	15	58.3	1.2	56.2	**	58.3	**	60.7
4.5-5.5	10	57.4	1.2	55.2	**	57.3	**	59.5
5.5-6.5	35	57.4	0.8	55.9	55.9	57.1	58.8	59.2
6.5-7.5	21	57.1	1.0	55.8	55.8	56.8	58.7	59.4
7.5-8.5	27	56.5	0.7	55.1	55.1	56.3	57.8	57.9
8.5-9.5	27	56.7	0.9	54.8	54.9	56.6	57.7	58.8
9.5-10.5	21	56.7	0.7	55.5	55.5	56.5	57.7	57.9
10.5-11.5	26	56.1	0.7	54.9	54.9	56.1	57.0	57.1
11.5-12.5	41	56.2	0.8	54.3	54.7	56.0	57.6	58.1
12.5-13.5	35	56.0	0.7	54.5	54.9	55.8	57.0	57.4
13.5-14.5	35	55.9	0.8	53.9	54.1	55.8	57.1	57.6
14.5-15.5	32	55.7	0.5	54.7	54.8	55.6	56.6	56.8
15.5-16.5	21	55.8	0.7	54.5	54.5	55.8	56.9	57.1
16.5-17.5	26	56.0	0.7	54.5	54.6	56.1	56.9	57.2
17.5-19.0	20	56.1	0.4	55.5	**	55.8	**	57.1

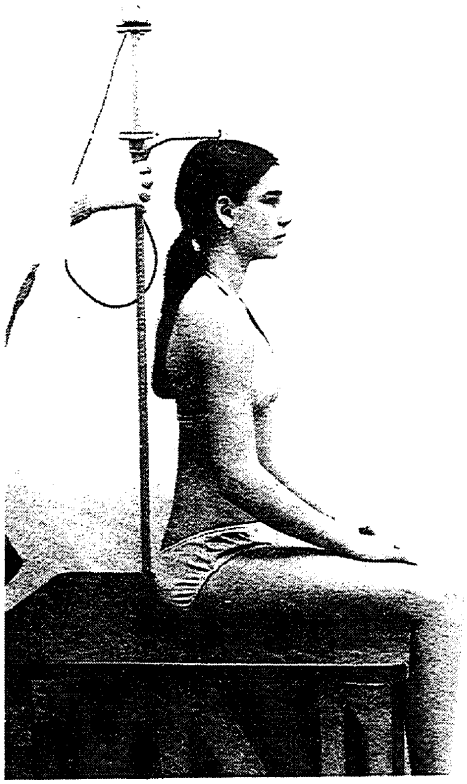
STANDING CG (% STATURE)
(Females)

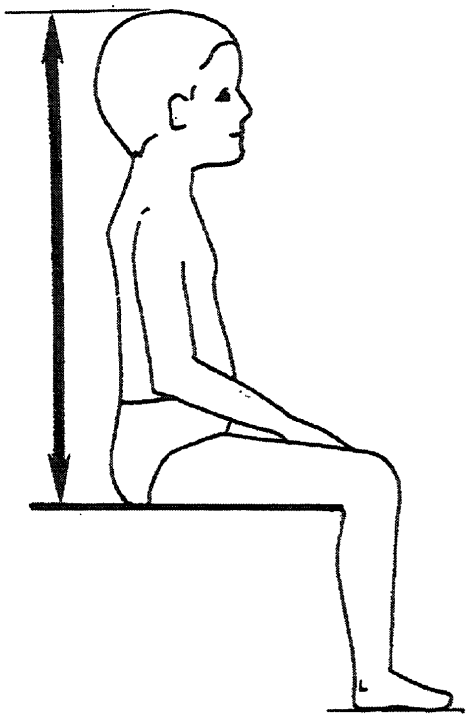
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	11	57.6	1.1	55.9	**	57.4	**	60.1
3.5-4.5	6	57.5	0.6	56.7	**	57.4	**	58.4
4.5-5.5	16	57.2	0.7	55.9	**	57.0	**	58.3
5.5-6.5	32	56.7	1.0	53.5	54.5	56.6	57.9	58.1
6.5-7.5	26	56.9	0.7	55.8	55.8	56.9	57.9	58.2
7.5-8.5	19	56.7	1.0	55.0	**	56.7	**	58.9
8.5-9.5	30	56.5	0.7	54.7	54.9	56.4	57.6	57.9
9.5-10.5	22	56.0	0.8	54.3	54.3	56.0	57.3	57.5
10.5-11.5	27	55.9	0.8	54.7	54.8	55.8	57.3	57.6
11.5-12.5	24	56.0	0.6	54.5	54.5	56.0	56.6	56.8
12.5-13.5	31	55.5	0.7	54.2	54.3	55.4	56.5	57.3
13.5-14.5	22	55.4	0.7	54.5	54.5	55.0	56.4	56.5
14.5-15.5	27	55.4	0.8	54.2	54.3	55.3	56.9	57.4
15.5-16.5	22	55.7	1.0	54.1	54.1	55.5	57.3	57.8
16.5-17.5	19	55.4	0.8	54.3	**	55.2	**	57.0
17.5-19.0	13	55.5	0.9	54.2	**	55.3	**	57.9

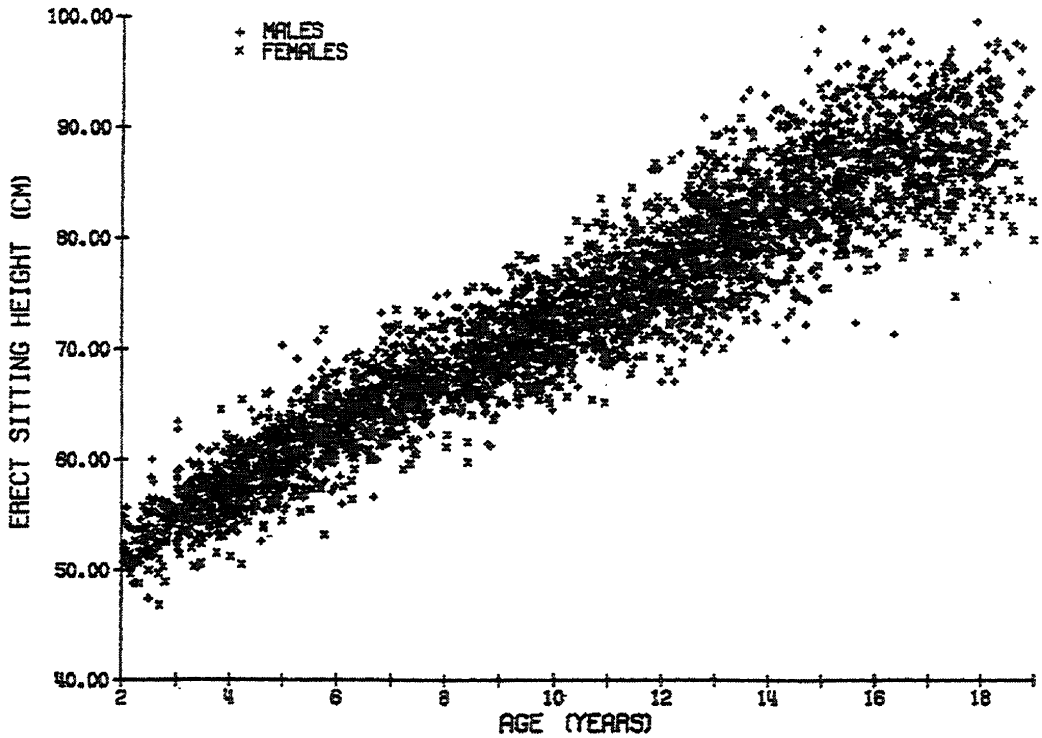
(9)

ERECT SITTING HEIGHT

Subject sits erect with head oriented in the Frankfort Plane, arms hanging at sides. With the paddle blade of an automated anthropometer, measure the vertical distance from the sitting surface to vertex (top of the head).



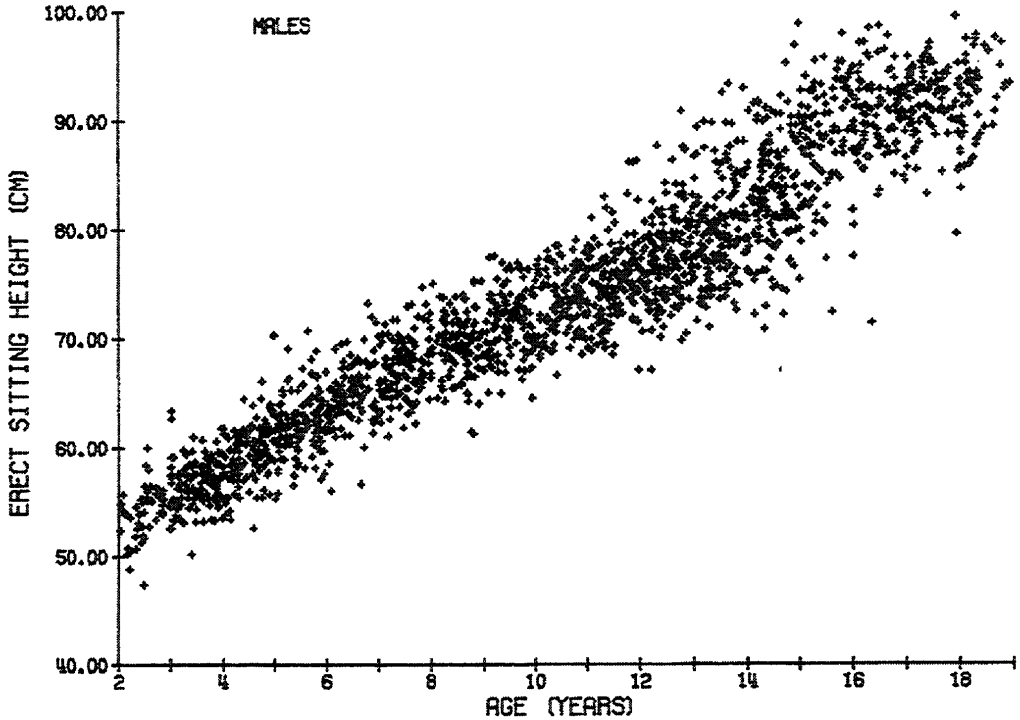


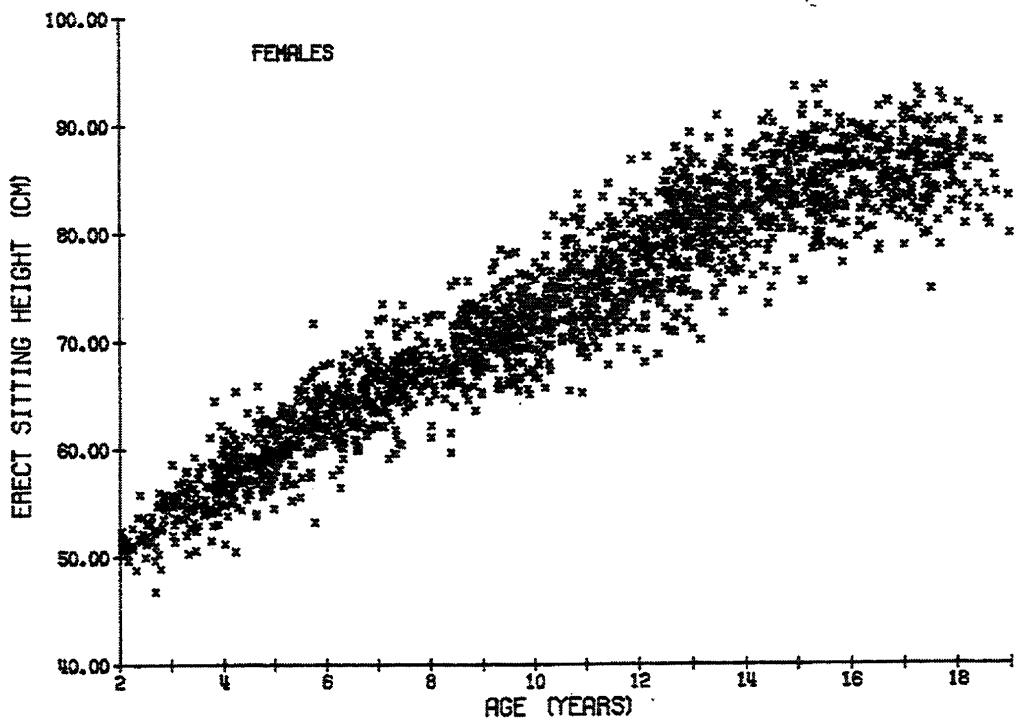


ERECT SITTING HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	209	54.4	2.7	46.8	50.2	54.6	58.8	63.4
3.5-4.5	224	57.6	2.5	50.5	53.7	57.5	61.5	65.4
4.5-5.5	265	60.5	2.7	52.6	56.0	60.5	64.9	70.3
5.5-6.5	241	63.4	2.8	53.2	58.1	63.3	67.7	71.7
6.5-7.5	230	65.8	3.0	56.6	60.7	65.7	70.9	73.5
7.5-8.5	197	68.2	2.8	59.7	63.8	68.0	73.0	75.6
8.5-9.5	254	70.3	3.0	61.2	65.3	70.3	75.2	78.5
9.5-10.5	255	72.1	3.1	64.5	66.7	72.1	76.9	81.6
10.5-11.5	276	74.5	3.5	65.2	69.3	74.2	80.7	84.6
11.5-12.5	284	76.7	3.7	67.1	71.2	76.3	83.2	87.7
12.5-13.5	312	79.7	4.3	69.8	72.9	79.7	87.0	92.6
13.5-14.5	270	82.4	4.4	70.8	74.8	82.3	90.0	93.4
14.5-15.5	262	85.2	4.5	72.2	78.3	84.8	92.8	98.9
15.5-16.5	196	87.7	4.7	71.4	80.2	87.6	95.1	98.7
16.5-17.5	221	88.5	4.2	74.8	82.0	88.4	95.3	97.8
17.5-19.0	156	89.4	4.4	78.9	81.8	89.3	96.5	99.6

(9)


MALES
ERECT SITTING HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ERECT SITTING HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ERECT SITTING HEIGHT (cm)
(Males)

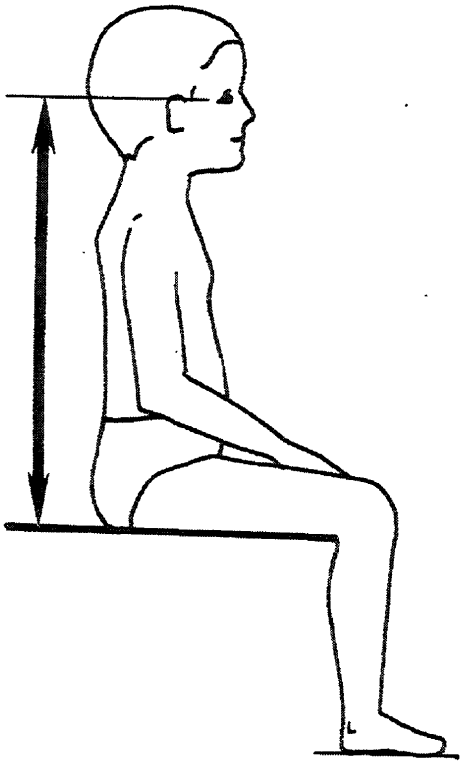
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	113	55.3	2.7	47.4	50.5	55.2	59.6	63.4
3.5-4.5	116	57.9	2.3	53.2	53.7	57.6	61.4	64.5
4.5-5.5	140	61.0	2.7	52.6	56.1	60.9	65.2	70.3
5.5-6.5	116	63.6	2.7	56.0	58.4	63.4	68.2	70.7
6.5-7.5	105	66.3	2.8	56.6	61.9	66.0	71.1	73.2
7.5-8.5	103	68.7	2.9	62.2	64.1	68.5	73.2	75.0
8.5-9.5	117	70.4	3.2	61.2	64.9	70.4	75.3	77.5
9.5-10.5	121	72.3	3.0	64.5	67.1	72.1	77.0	78.5
10.5-11.5	139	74.1	3.1	68.5	69.3	73.8	79.0	83.0
11.5-12.5	152	76.3	3.5	67.1	71.6	75.9	82.6	87.7
12.5-13.5	152	78.8	4.4	69.8	72.9	78.3	87.2	92.6
13.5-14.5	154	82.3	4.8	70.8	74.6	82.0	90.5	93.4
14.5-15.5	131	85.5	5.3	72.2	76.9	85.2	93.4	98.9
15.5-16.5	98	90.1	4.8	71.4	81.7	90.5	96.3	98.7
16.5-17.5	104	91.5	3.1	83.3	85.5	91.3	95.9	97.8
17.5-19.0	88	91.9	3.6	79.6	85.5	92.5	97.3	99.6

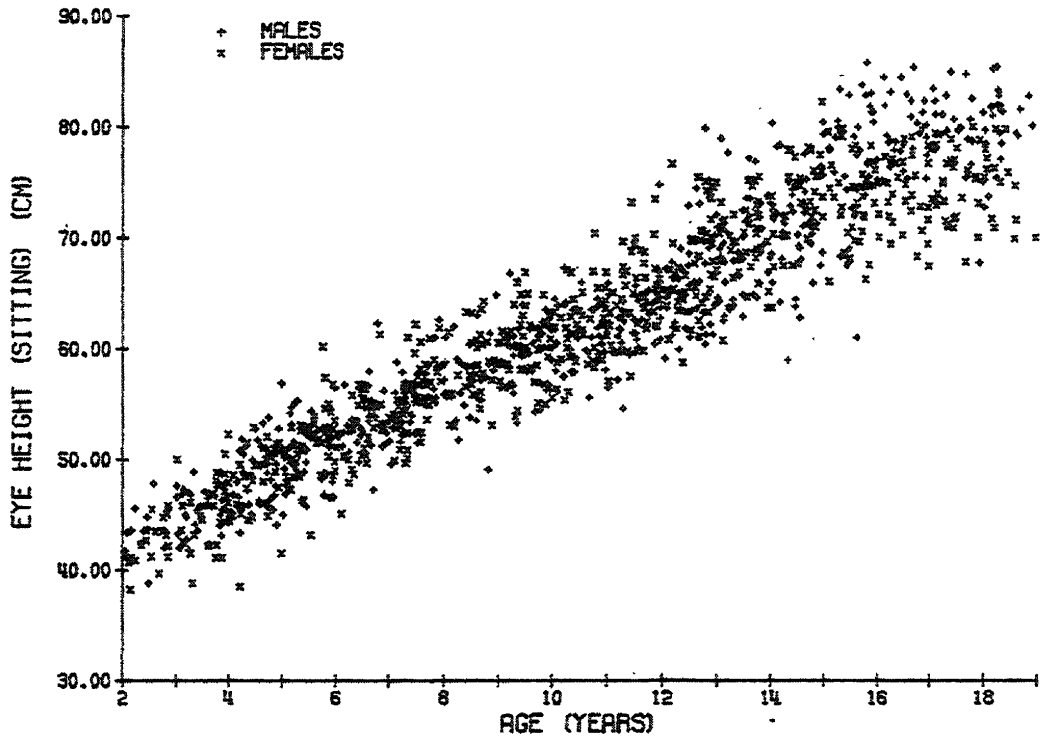
ERECT SITTING HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	96	53.4	2.4	46.8	49.6	53.2	56.9	59.3
3.5-4.5	108	57.3	2.6	50.5	53.3	57.2	61.4	65.4
4.5-5.5	125	60.0	2.6	53.8	55.7	59.8	63.9	65.9
5.5-6.5	125	63.2	2.8	53.2	57.9	63.2	67.4	71.7
6.5-7.5	125	65.4	3.1	59.1	60.1	65.4	70.7	73.5
7.5-8.5	94	67.7	2.7	59.7	63.1	67.6	72.1	75.6
8.5-9.5	137	70.2	2.8	63.6	65.6	70.2	74.9	78.5
9.5-10.5	134	71.9	3.1	65.1	66.6	71.9	76.4	81.6
10.5-11.5	137	74.8	3.8	65.2	69.3	74.8	81.1	84.6
11.5-12.5	132	77.1	3.8	68.0	71.1	77.2	83.5	87.1
12.5-13.5	160	80.6	4.1	70.1	72.5	80.9	86.6	90.9
13.5-14.5	116	82.5	3.8	72.6	75.9	82.4	88.3	91.0
14.5-15.5	131	84.8	3.6	75.5	79.1	84.6	90.0	93.7
15.5-16.5	98	85.4	3.2	77.2	79.1	86.0	89.8	91.7
16.5-17.5	117	85.9	3.3	74.8	80.7	85.5	91.3	93.4
17.5-19.0	68	86.3	3.1	78.9	80.7	86.5	91.0	93.0

EYE HEIGHT (SITTING)

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blade of an automated anthropometer, measure the vertical distance from the sitting surface to the external canthus (outer corner) of the right eye.

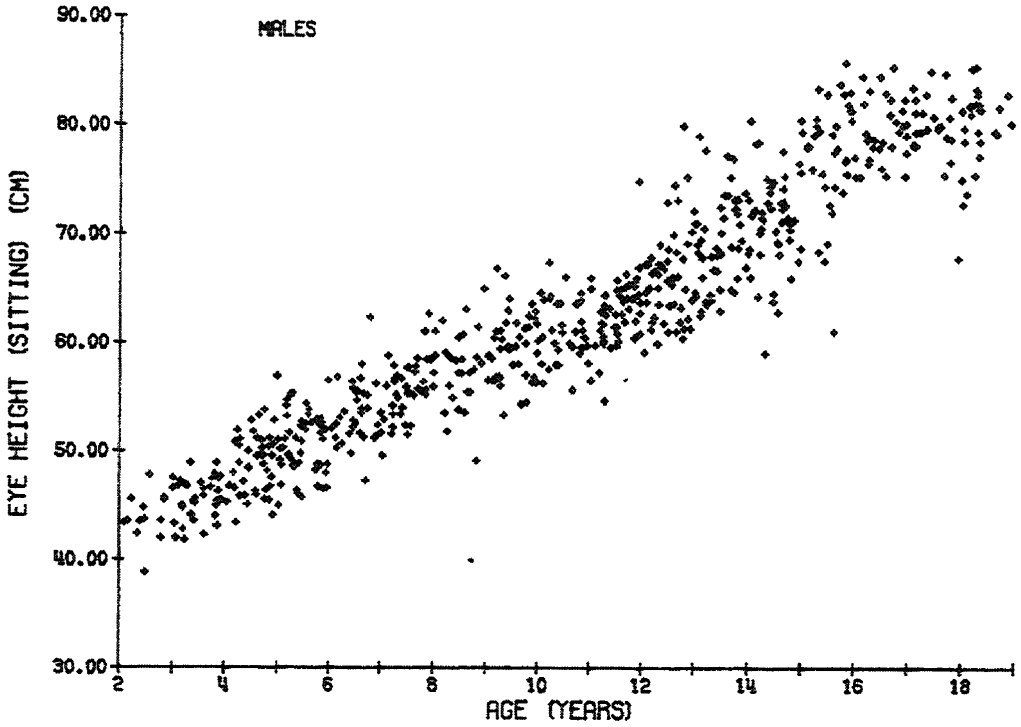


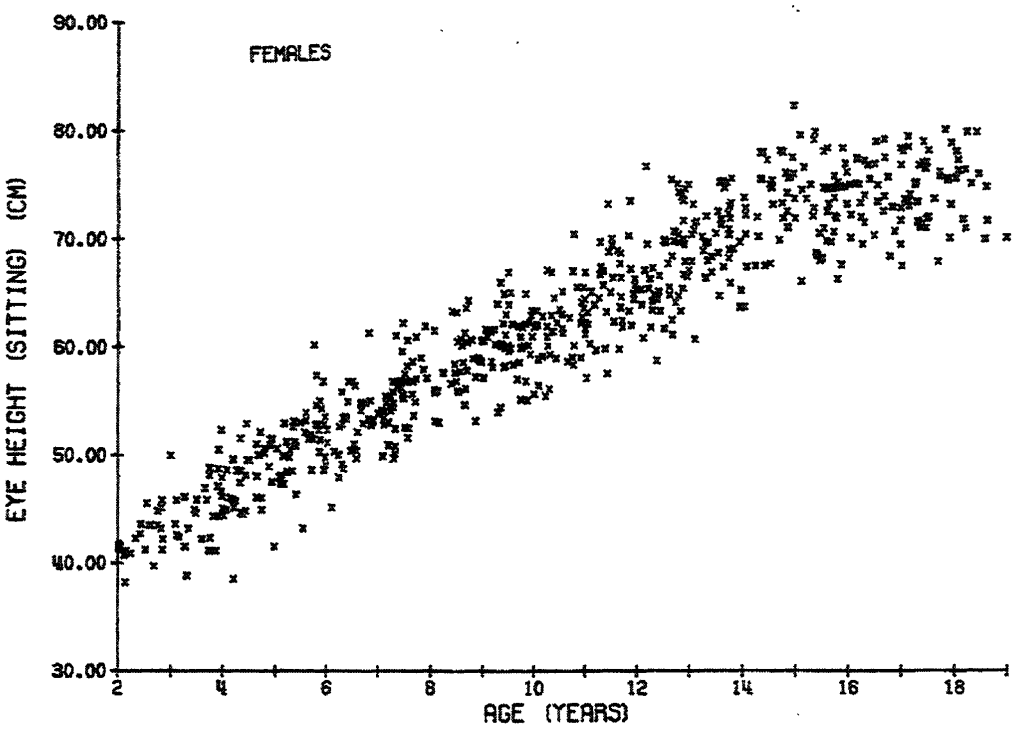


EYE HEIGHT (SITTING) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	64	43.7	2.5	38.2	39.0	43.5	47.5	50.0
3.5-4.5	75	46.8	2.8	38.5	41.9	46.6	51.6	52.9
4.5-5.5	90	49.8	2.8	41.5	45.2	49.7	54.5	56.9
5.5-6.5	79	51.9	2.9	43.2	46.6	52.2	56.6	60.2
6.5-7.5	87	54.4	2.8	47.3	49.8	54.1	59.3	62.3
7.5-8.5	67	57.1	2.9	51.5	52.0	57.1	62.0	63.3
8.5-9.5	90	59.4	3.2	49.1	53.7	59.3	64.7	66.9
9.5-10.5	84	60.5	3.0	54.3	55.2	60.6	64.8	67.3
10.5-11.5	85	62.5	3.5	54.6	57.1	62.4	69.2	73.2
11.5-12.5	97	65.0	3.2	58.7	60.1	64.8	69.9	76.7
12.5-13.5	107	68.1	4.2	60.4	61.2	68.0	75.1	79.9
13.5-14.5	89	71.1	4.1	59.0	64.0	71.6	77.6	80.4
14.5-15.5	81	73.9	4.3	62.8	66.8	73.6	80.5	83.4
15.5-16.5	77	76.0	4.4	61.0	69.2	75.9	83.3	85.8
16.5-17.5	66	76.9	4.2	67.5	69.9	77.3	83.0	85.4
17.5-19.0	63	77.9	4.3	67.8	70.0	78.7	83.4	85.5

(10)


MALES
EYE HEIGHT (SITTING) (CM)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
EYE HEIGHT (SITTING) (CM)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

EYE HEIGHT (SITTING) (cm)
(Males)

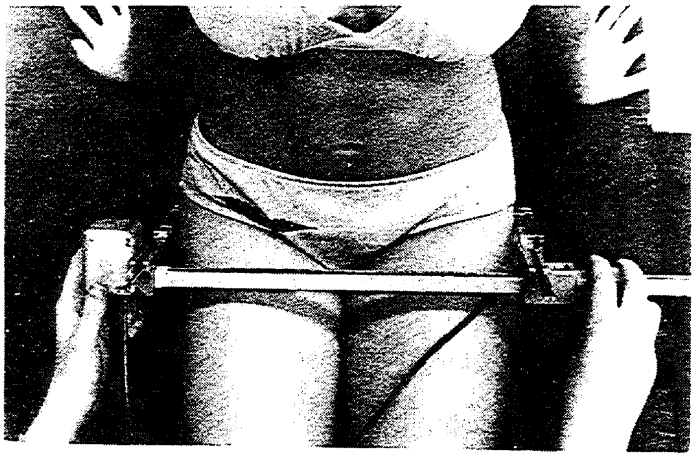
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	44.7	2.2	38.8	40.4	44.6	47.7	48.9
3.5-4.5	35	47.1	2.5	42.3	42.9	46.7	51.3	52.8
4.5-5.5	56	50.0	3.0	44.1	45.4	49.7	55.2	56.9
5.5-6.5	38	51.8	2.6	46.5	46.6	52.1	56.4	56.8
6.5-7.5	41	54.3	2.7	47.3	49.7	53.9	58.0	62.3
7.5-8.5	35	57.0	2.7	51.5	51.7	57.0	61.2	62.6
8.5-9.5	42	58.9	3.4	49.1	53.3	58.6	64.8	66.8
9.5-10.5	39	60.3	3.0	54.3	54.5	60.2	64.2	67.3
10.5-11.5	41	61.2	2.6	54.6	55.6	61.1	64.9	66.0
11.5-12.5	55	64.7	3.0	59.1	60.0	64.6	68.7	74.8
12.5-13.5	58	67.2	4.5	60.4	61.1	66.1	75.5	79.9
13.5-14.5	48	71.1	4.3	59.0	64.0	71.7	77.9	80.4
14.5-15.5	42	73.8	4.9	62.8	66.0	72.9	80.6	83.4
15.5-16.5	36	78.5	4.5	61.0	69.8	78.5	84.2	85.8
16.5-17.5	28	80.4	2.5	75.4	75.4	80.2	84.4	85.4
17.5-19.0	38	79.8	3.6	67.8	72.3	80.0	84.8	85.5

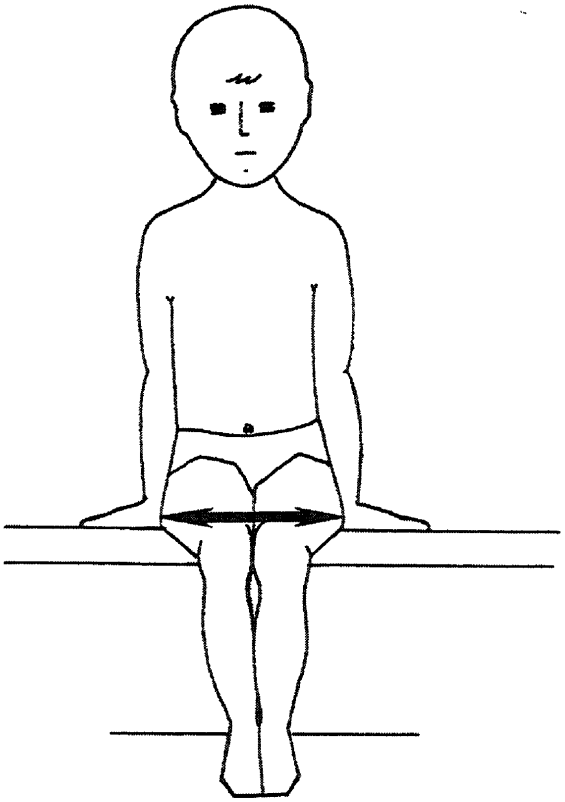
EYE HEIGHT (SITTING) (cm)
(Females)

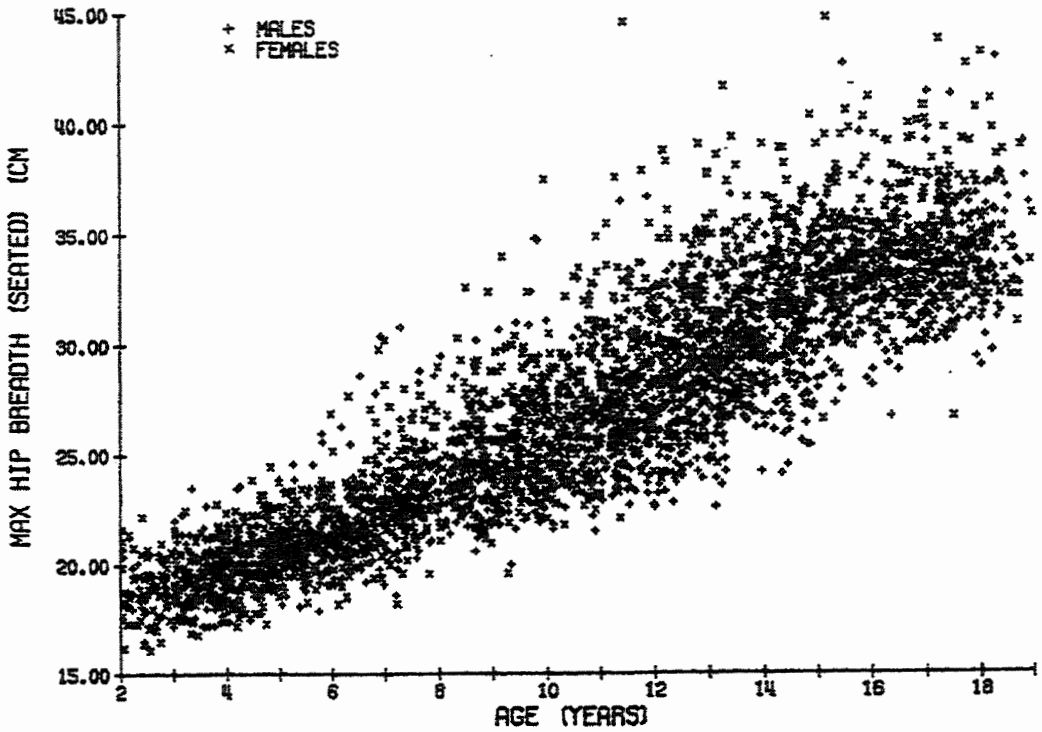
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	42.8	2.4	38.2	38.6	42.3	45.9	50.0
3.5-4.5	40	46.4	3.1	38.5	39.8	46.0	51.5	52.9
4.5-5.5	34	49.4	2.6	41.5	43.9	49.9	52.9	53.1
5.5-6.5	41	52.1	3.2	43.2	45.2	52.2	56.8	60.2
6.5-7.5	46	54.4	2.9	49.7	49.8	54.1	60.6	62.2
7.5-8.5	32	57.3	3.1	51.6	51.9	57.0	62.4	63.3
8.5-9.5	48	59.8	3.0	53.1	54.1	60.0	64.7	66.9
9.5-10.5	45	60.7	3.0	55.0	55.2	60.8	65.0	67.1
10.5-11.5	44	63.8	3.8	57.1	57.7	63.2	69.9	73.2
11.5-12.5	42	65.4	3.5	58.7	59.9	64.9	70.2	76.7
12.5-13.5	49	69.2	3.6	60.7	61.7	69.6	74.8	75.5
13.5-14.5	41	71.1	3.8	63.7	63.7	71.1	77.2	78.0
14.5-15.5	39	74.0	3.7	66.1	67.9	73.9	79.6	82.3
15.5-16.5	41	73.9	3.0	66.3	67.7	74.4	77.9	79.0
16.5-17.5	38	74.3	3.2	67.5	68.3	73.6	79.0	79.5
17.5-19.0	25	74.8	3.4	67.9	68.4	75.4	79.8	80.1

MAXIMUM HIP BREADTH, SITTING

Subject sits erect with knees together, feet resting on a platform adjusted for 90° knee flexion. With the paddle blades of an automated anthropometer, measure the maximum breadth across the hips parallel to the seated surface at a fixed pressure value.



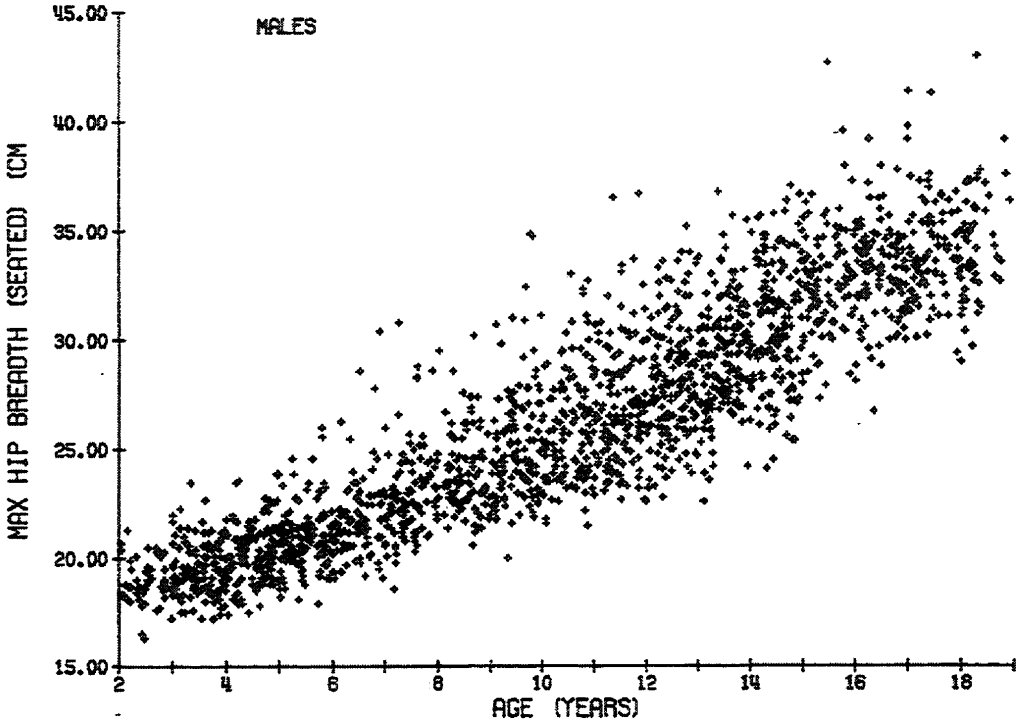


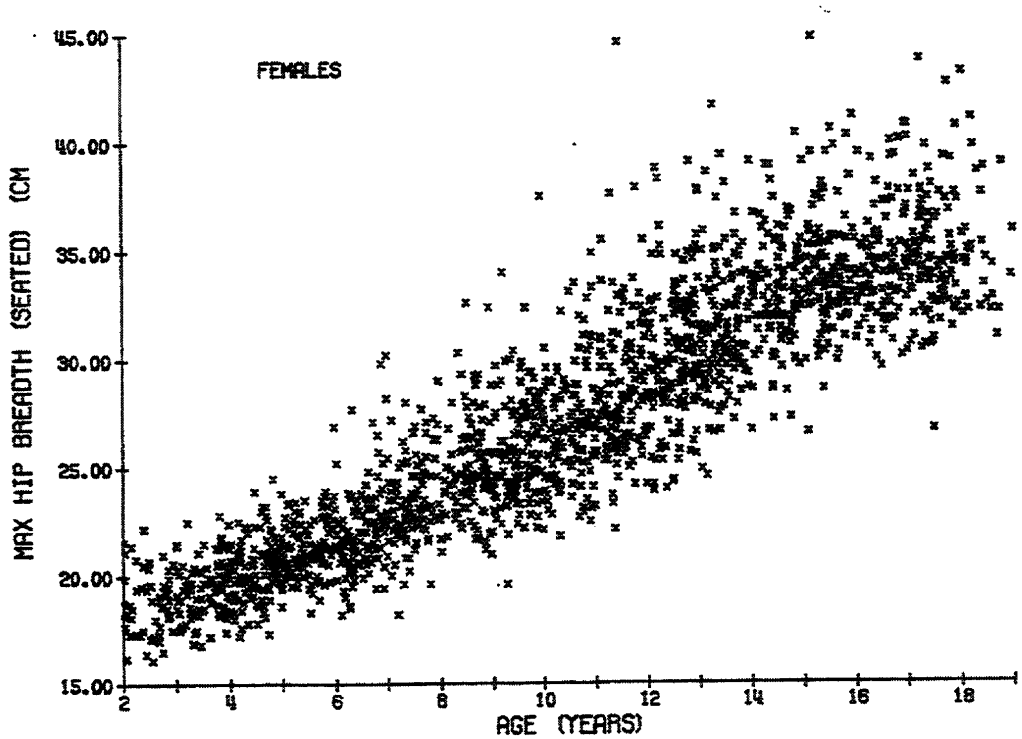


MAXIMUM HIP BREADTH (SEATED) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	210	19.1	1.3	16.1	17.1	19.0	21.3	23.5
3.5-4.5	225	19.9	1.3	17.2	17.8	19.8	21.9	23.9
4.5-5.5	257	20.7	1.3	17.3	18.6	20.5	23.0	24.6
5.5-6.5	214	21.5	1.6	17.9	19.1	21.3	23.8	27.7
6.5-7.5	225	22.7	2.1	18.2	19.8	22.3	26.6	30.8
7.5-8.5	190	23.9	2.0	19.6	21.1	23.5	28.1	32.6
8.5-9.5	249	24.9	2.3	19.6	21.6	24.6	29.2	34.0
9.5-10.5	251	26.0	2.5	21.6	22.5	25.7	29.7	37.5
10.5-11.5	276	27.2	3.0	21.5	23.2	26.8	32.8	44.6
11.5-12.5	283	28.3	3.0	22.6	23.9	28.0	33.2	38.8
12.5-13.5	311	29.9	3.1	22.6	25.1	29.4	35.0	41.7
13.5-14.5	269	31.1	2.8	24.1	26.6	31.1	35.7	39.1
14.5-15.5	259	32.7	2.9	25.4	27.7	32.6	37.1	44.8
15.5-16.5	195	33.6	2.3	26.7	29.8	33.5	38.0	41.2
16.5-17.5	220	34.2	2.6	26.7	30.5	33.9	39.3	43.8
17.5-19.0	156	34.6	2.5	29.0	31.1	34.2	39.1	43.2

(11)


MALES
MAX HIP BREADTH (SEATED) (CM
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MAX HIP BREADTH (SEATED) (CM
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MAXIMUM HIP BREADTH (SEATED) (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	112	19.3	1.2	16.3	17.5	19.0	21.3	23.5
3.5-4.5	116	19.8	1.3	17.2	17.7	19.7	21.7	23.6
4.5-5.5	139	20.5	1.3	17.8	18.6	20.3	22.7	24.6
5.5-6.5	106	21.4	1.5	17.9	19.1	21.2	23.9	26.3
6.5-7.5	104	22.4	2.1	18.6	19.6	22.1	25.9	30.8
7.5-8.5	97	23.6	1.9	20.3	21.0	23.3	27.7	29.5
8.5-9.5	112	24.5	2.1	20.0	21.5	24.2	27.5	31.0
9.5-10.5	122	25.6	2.6	21.6	22.1	25.0	29.5	34.8
10.5-11.5	137	26.6	2.7	21.5	23.2	26.2	31.6	36.5
11.5-12.5	150	27.4	2.6	22.6	23.3	27.1	32.5	36.7
12.5-13.5	152	28.7	2.7	22.6	24.6	28.3	33.7	36.8
13.5-14.5	153	30.1	2.6	24.1	26.3	29.9	34.6	35.8
14.5-15.5	128	31.7	2.8	25.4	27.2	31.7	35.9	42.7
15.5-16.5	97	33.2	2.4	26.7	28.8	33.2	37.2	39.6
16.5-17.5	104	33.6	2.3	30.0	30.2	33.4	37.6	41.4
17.5-19.0	88	34.3	2.3	29.0	30.5	34.1	37.5	43.0

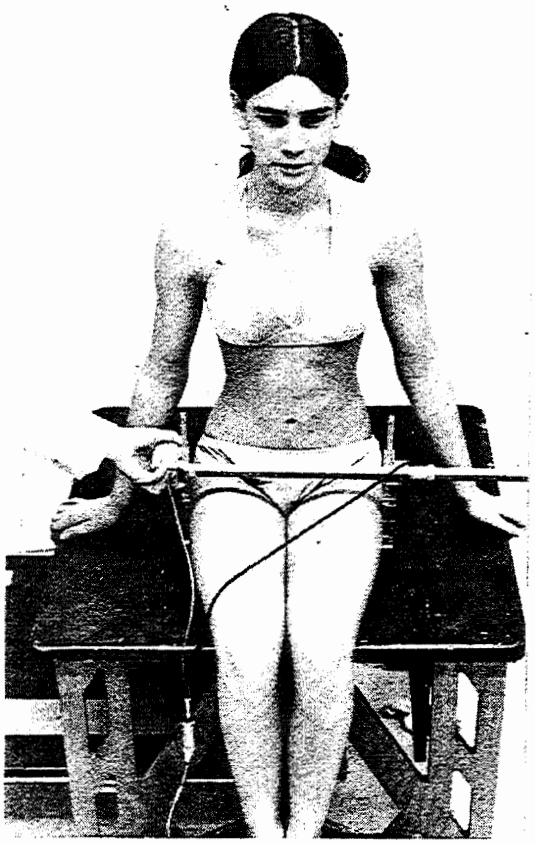
MAXIMUM HIP BREADTH (SEATED) (cm)
(Females)

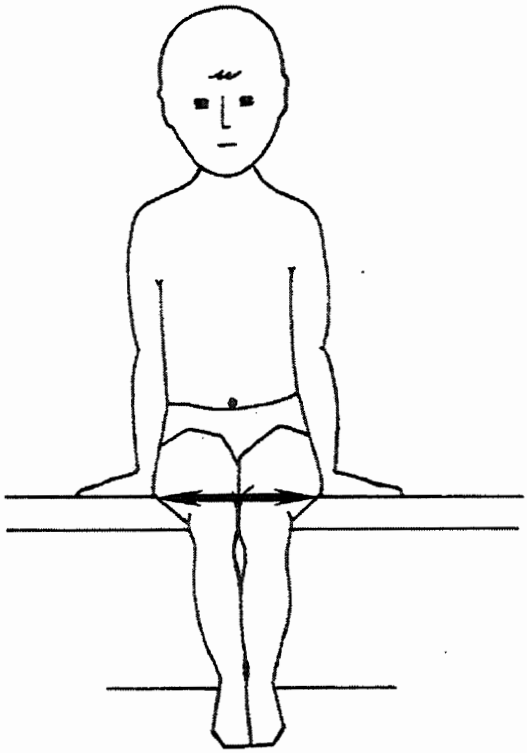
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	19.0	1.4	16.1	16.8	18.9	21.3	22.5
3.5-4.5	109	20.0	1.3	17.2	17.9	19.9	22.2	23.9
4.5-5.5	118	20.9	1.3	17.3	18.5	20.7	23.2	24.5
5.5-6.5	108	21.6	1.6	18.2	18.9	21.3	23.7	27.7
6.5-7.5	121	22.9	2.1	18.2	20.0	22.5	26.6	30.2
7.5-8.5	93	24.3	2.2	19.6	21.6	23.9	28.1	32.6
8.5-9.5	137	25.3	2.3	19.6	21.7	24.9	29.4	34.0
9.5-10.5	129	26.4	2.5	21.8	22.7	26.3	29.7	37.5
10.5-11.5	139	27.8	3.2	22.1	23.1	27.2	33.3	44.6
11.5-12.5	133	29.2	3.1	23.9	24.3	28.8	34.4	38.8
12.5-13.5	159	31.0	3.1	24.6	26.5	30.6	36.0	41.7
13.5-14.5	116	32.4	2.6	26.7	28.4	32.3	36.7	39.1
14.5-15.5	131	33.6	2.7	26.6	29.8	33.4	37.9	44.8
15.5-16.5	98	34.1	2.3	29.6	30.6	33.8	38.5	41.2
16.5-17.5	116	34.7	2.7	26.7	30.6	34.4	39.8	43.8
17.5-19.0	68	34.9	2.8	31.0	31.8	34.3	40.3	43.2

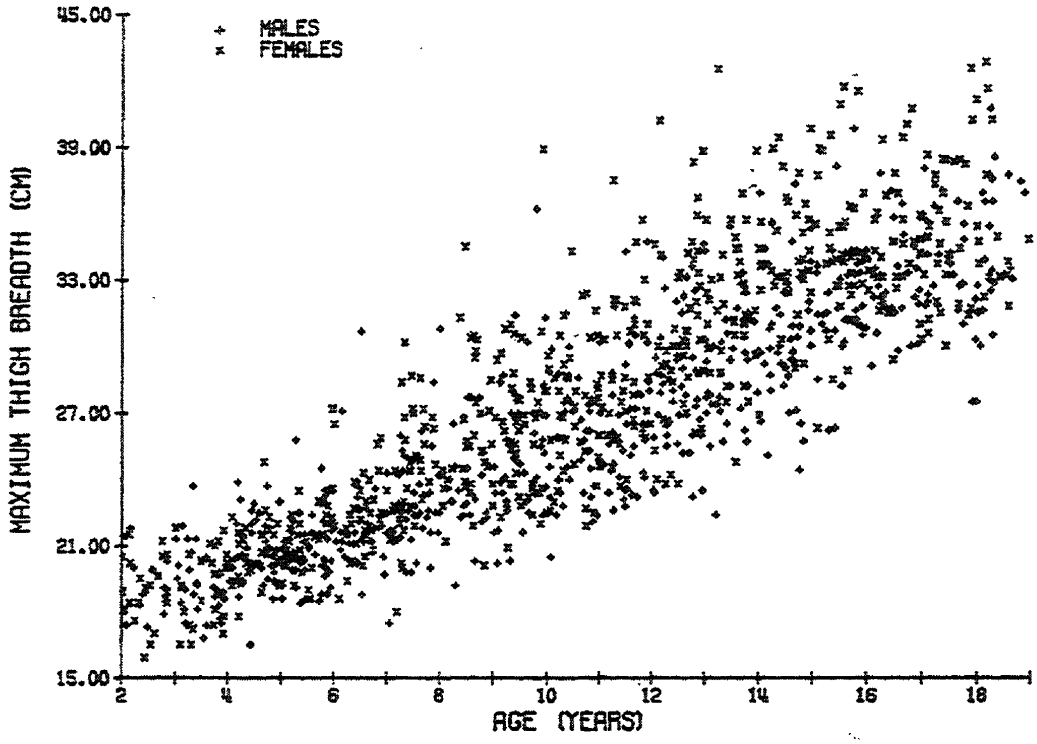
(12)

MAXIMUM THIGH BREADTH, SITTING

Subject sits erect with knees together, feet resting on a platform adjusted for 90° flexion. With the paddle blades of an automated anthropometer, measure the maximum breadth across the thighs at a fixed pressure value.



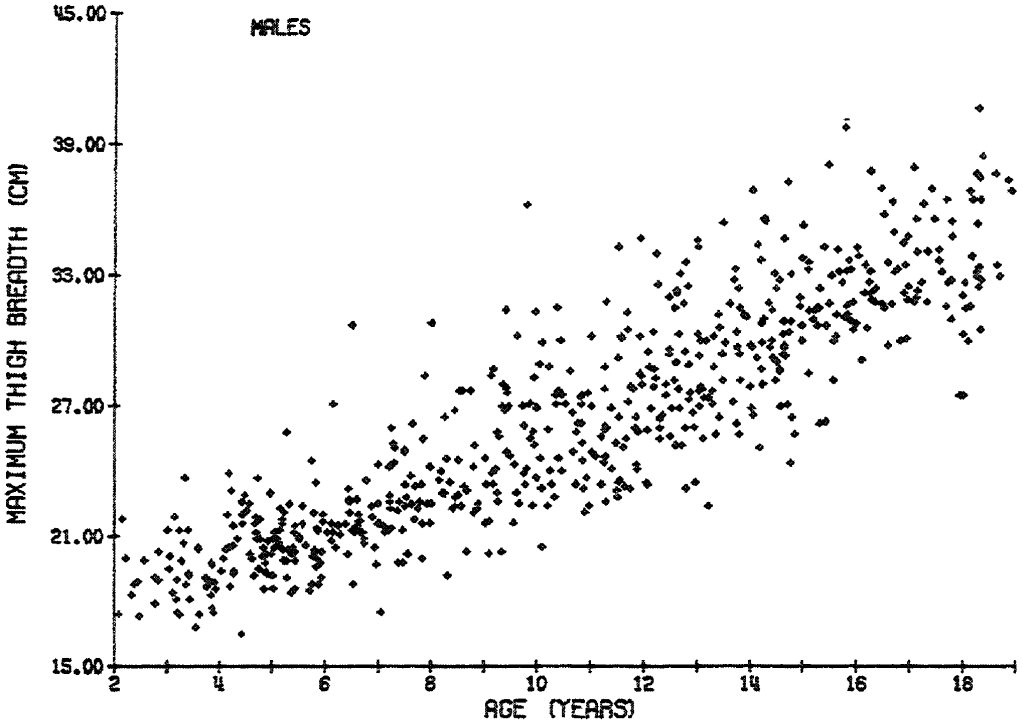


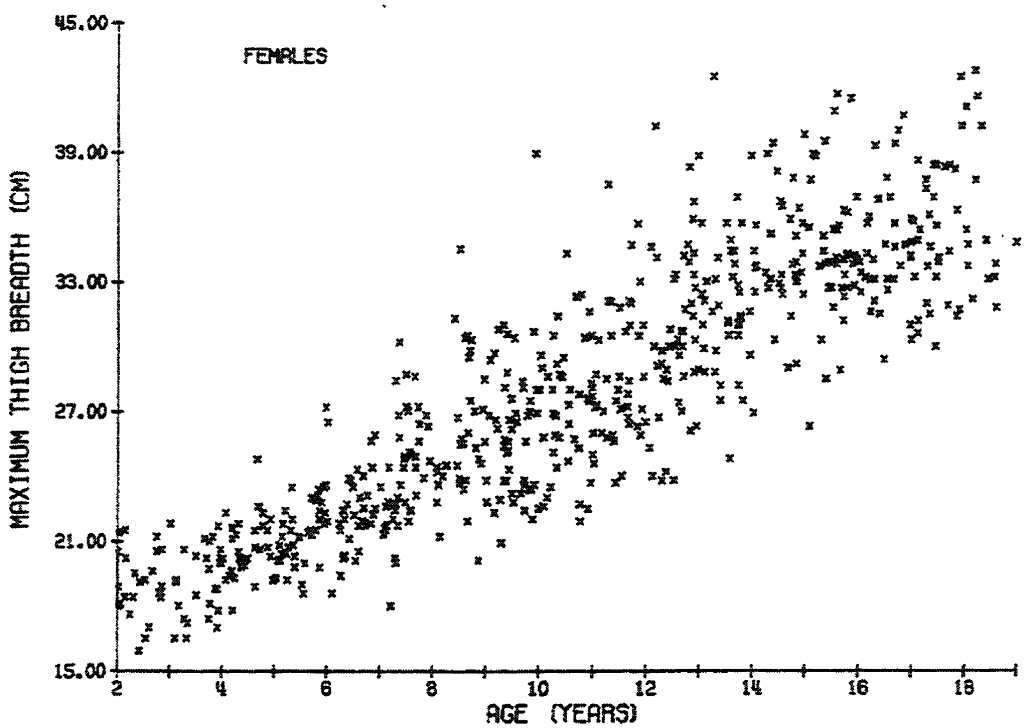


MAXIMUM THIGH BREADTH (SEATED) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	63	19.2	1.6	15.9	16.3	19.0	21.6	23.7
3.5-4.5	67	19.9	1.6	16.5	17.1	19.9	22.5	23.9
4.5-5.5	85	20.9	1.4	18.4	18.7	20.6	22.9	25.8
5.5-6.5	76	21.7	1.8	18.5	18.7	21.5	24.0	27.2
6.5-7.5	87	22.7	2.4	17.5	19.7	22.2	27.1	30.7
7.5-8.5	65	24.3	2.6	19.2	20.4	23.8	28.5	34.5
8.5-9.5	88	25.6	2.8	20.1	20.5	25.4	30.5	31.4
9.5-10.5	84	26.4	3.3	20.5	22.2	26.1	31.4	38.9
10.5-11.5	84	26.9	3.5	21.9	22.5	26.2	32.1	45.2
11.5-12.5	93	28.3	3.3	23.2	23.5	27.9	34.4	40.2
12.5-13.5	95	30.2	3.5	22.4	25.0	29.9	35.8	42.5
13.5-14.5	80	31.6	3.2	24.8	26.2	31.3	36.9	39.4
14.5-15.5	81	32.4	3.5	24.4	26.3	32.4	38.8	40.9
15.5-16.5	76	33.5	2.7	28.2	29.3	33.1	38.1	41.7
16.5-17.5	66	34.3	2.6	29.8	30.0	34.0	38.5	40.7
17.5-19.0	63	34.8	3.4	27.5	30.0	33.8	41.0	42.8

(12)


MALES
MAXIMUM THIGH BREADTH (CM)
45.00
39.00
33.00
27.00
21.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MAXIMUM THIGH BREADTH (CM)
45.00
39.00
33.00
27.00
21.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MAXIMUM THIGH BREADTH (SEATED) (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	19.5	1.6	17.3	17.3	19.1	21.8	23.7
3.5-4.5	33	19.9	1.8	16.5	16.7	19.5	23.0	23.9
4.5-5.5	53	20.8	1.4	18.4	18.5	20.5	22.8	25.8
5.5-6.5	38	21.2	1.6	18.5	18.6	21.1	23.6	27.1
6.5-7.5	41	22.1	2.2	17.5	18.8	21.6	25.3	30.7
7.5-8.5	35	23.5	2.3	19.2	19.8	22.9	27.2	30.8
8.5-9.5	39	24.8	2.7	20.2	20.2	24.3	28.4	31.4
9.5-10.5	39	26.0	3.3	20.5	21.5	25.3	31.3	36.2
10.5-11.5	40	25.6	2.2	22.1	22.4	25.3	28.8	31.8
11.5-12.5	53	27.7	2.8	23.2	23.4	27.6	33.1	34.7
12.5-13.5	50	28.7	2.9	22.4	23.3	27.9	33.9	35.4
13.5-14.5	41	30.4	2.7	25.1	25.7	29.9	35.4	36.9
14.5-15.5	42	30.8	3.0	24.4	25.7	30.8	35.2	38.1
15.5-16.5	36	32.5	2.3	28.2	28.9	31.9	37.2	39.8
16.5-17.5	27	33.5	2.1	29.8	29.9	33.2	36.8	38.0
17.5-19.0	38	33.9	3.0	27.5	27.5	33.2	37.8	40.7

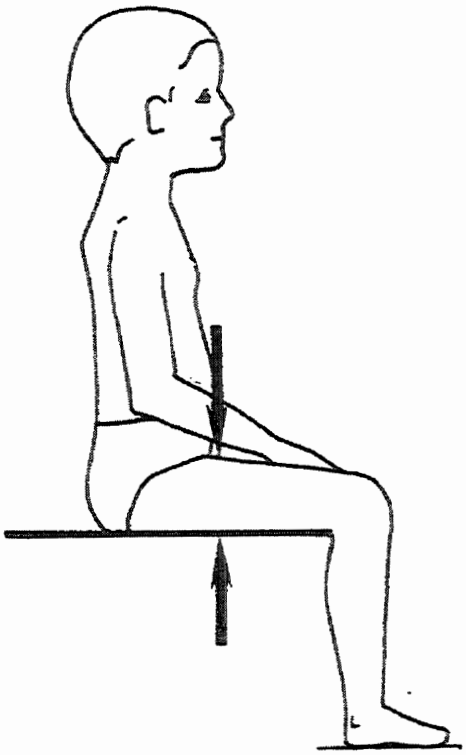
MAXIMUM THIGH BREADTH (SEATED) (cm)
(Females)

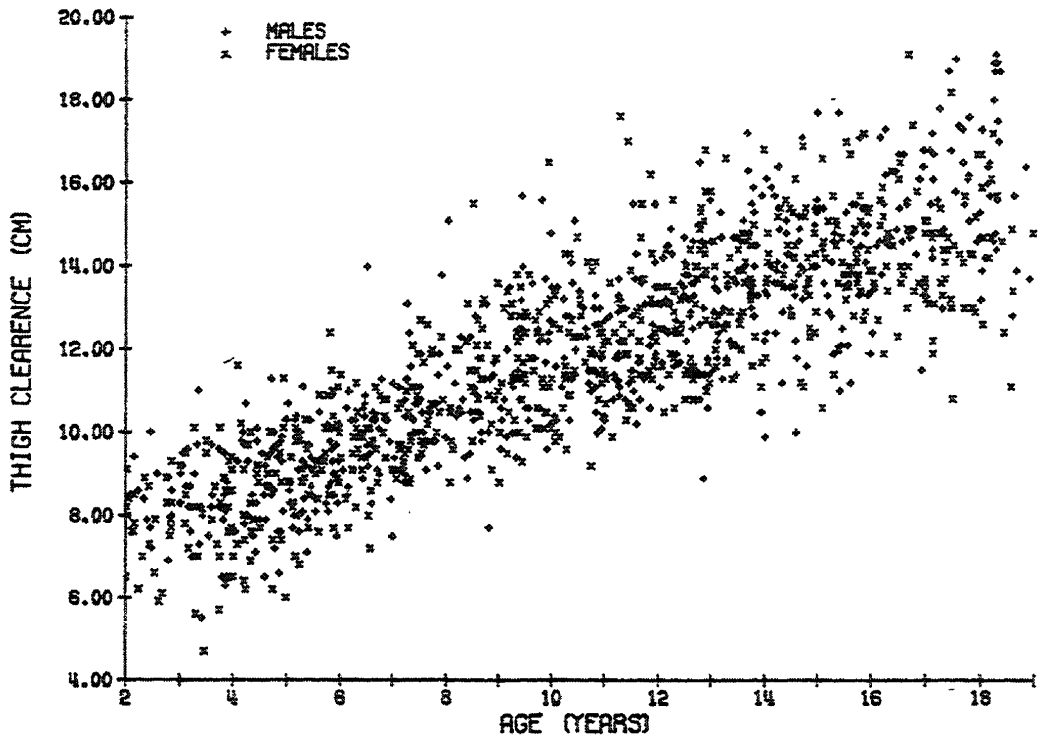
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	18.9	1.6	15.9	16.0	18.7	21.4	21.8
3.5-4.5	34	19.9	1.3	17.0	17.3	20.0	21.7	22.3
4.5-5.5	32	21.0	1.3	18.9	19.0	20.7	23.0	24.8
5.5-6.5	38	22.1	1.9	18.6	18.6	22.0	24.2	27.2
6.5-7.5	46	23.3	2.4	18.0	20.0	22.6	28.0	30.2
7.5-8.5	30	25.2	2.7	21.2	21.5	24.4	30.0	34.5
8.5-9.5	49	26.2	2.7	20.1	21.3	25.7	30.6	31.0
9.5-10.5	45	26.8	3.4	22.0	22.4	26.8	31.2	38.9
10.5-11.5	44	28.1	4.1	21.9	22.5	27.5	32.4	45.2
11.5-12.5	40	29.2	3.7	23.8	23.8	28.6	34.7	40.2
12.5-13.5	45	31.8	3.5	26.1	26.5	31.5	37.9	42.5
13.5-14.5	39	32.9	3.3	24.8	26.8	32.8	38.8	39.4
14.5-15.5	39	34.2	3.2	26.3	28.4	33.8	39.5	40.9
15.5-16.5	40	34.3	2.7	28.9	29.4	33.9	39.3	41.7
16.5-17.5	39	34.8	2.7	30.0	30.3	34.5	39.4	40.7
17.5-19.0	25	36.2	3.7	31.4	31.5	34.8	42.3	42.8

(13)

THIGH CLEARANCE

Subject sits erect, feet resting together on a platform adjusted for 90° knee flexion. With the paddle blades of an automated anthropometer, measure the vertical distance from the sitting surface to the highest point on the superior surface of the thigh at the abdominal-thigh junction.

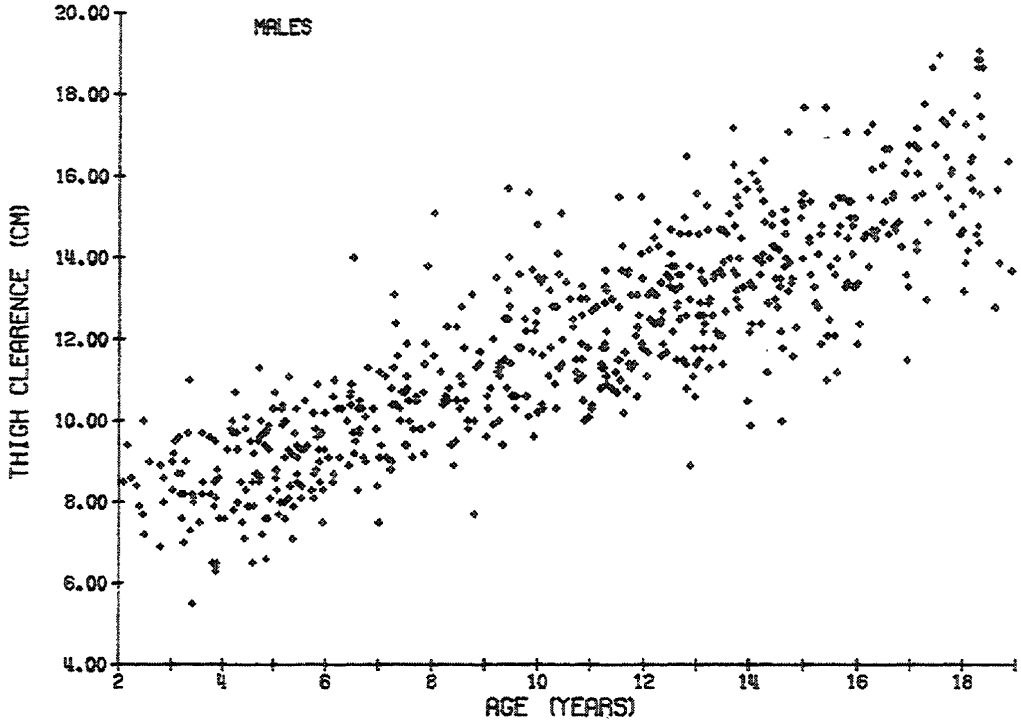


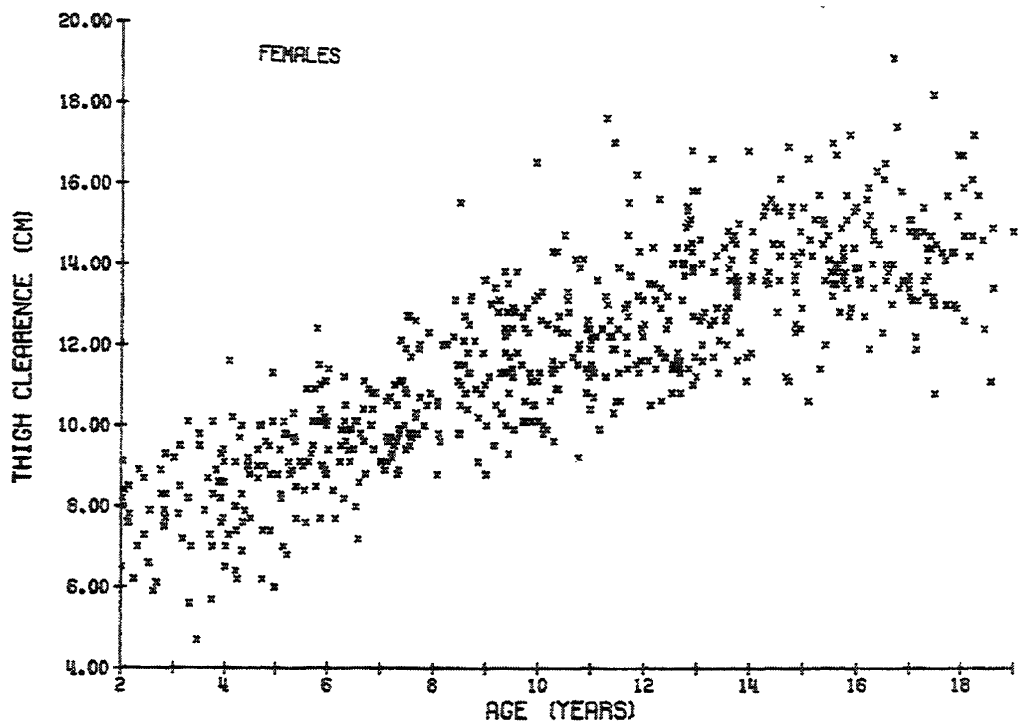


THIGH CLEARENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	8.1	1.2	4.7	5.7	8.1	9.7	11.0
3.5-4.5	75	8.4	1.2	5.7	6.3	8.3	10.1	11.6
4.5-5.5	89	8.9	1.1	6.0	6.7	9.0	10.4	11.3
5.5-6.5	78	9.6	1.0	7.5	7.7	9.4	11.1	12.4
6.5-7.5	84	10.1	1.2	7.2	8.3	10.0	12.1	14.0
7.5-8.5	66	10.8	1.4	8.8	9.1	10.5	13.0	15.5
8.5-9.5	87	11.5	1.3	7.7	9.3	11.3	13.5	15.7
9.5-10.5	83	11.9	1.5	9.6	9.9	11.6	14.6	16.5
10.5-11.5	85	12.1	1.3	9.2	10.1	11.9	13.9	17.6
11.5-12.5	97	12.8	1.3	10.2	10.6	12.7	14.9	16.2
12.5-13.5	105	13.1	1.5	8.9	10.9	12.8	15.5	16.8
13.5-14.5	89	13.9	1.4	9.9	11.4	13.7	16.0	17.2
14.5-15.5	81	13.9	1.6	10.0	11.1	13.9	16.9	17.7
15.5-16.5	78	14.5	1.3	11.2	12.1	14.5	16.7	17.3
16.5-17.5	67	14.7	1.7	10.8	12.0	14.5	17.7	19.1
17.5-19.0	63	15.5	1.8	11.1	12.6	15.4	18.8	19.1

(13)


MALES
THIGH CLEARENCE (CM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
THIGH CLEARENCE (CM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

THIGH CLEARENCE (cm)
(Males)

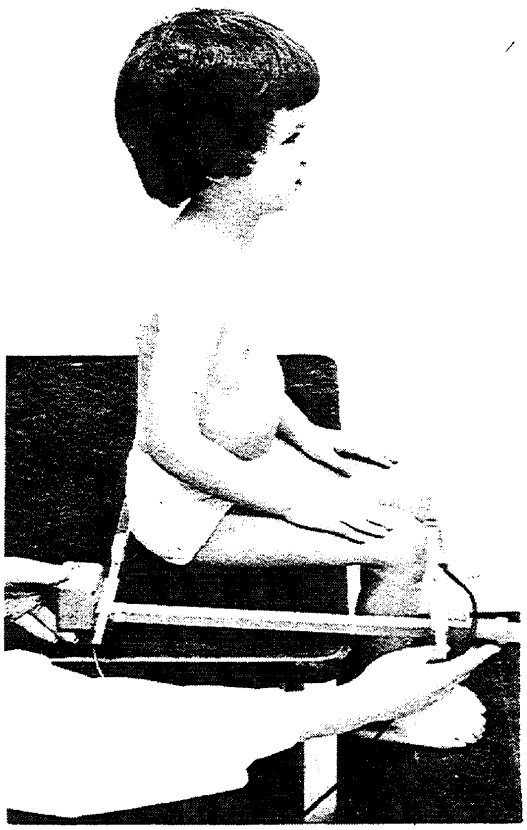
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	8.4	1.0	5.5	6.3	8.4	9.8	11.0
3.5-4.5	35	8.5	1.2	6.3	6.4	8.3	10.0	10.7
4.5-5.5	55	9.0	1.1	6.5	7.0	8.9	10.5	11.3
5.5-6.5	37	9.4	0.9	7.5	7.8	9.2	10.8	11.0
6.5-7.5	40	10.2	1.3	7.5	8.3	10.1	12.4	14.0
7.5-8.5	34	10.7	1.3	8.9	9.0	10.5	12.8	15.1
8.5-9.5	38	11.3	1.5	7.7	9.2	11.2	13.6	15.7
9.5-10.5	38	12.1	1.5	9.6	10.0	11.8	14.8	15.6
10.5-11.5	41	11.8	1.0	10.0	10.1	11.5	13.3	13.7
11.5-12.5	55	12.8	1.2	10.2	10.7	12.8	14.8	15.5
12.5-13.5	56	12.9	1.4	8.9	10.8	12.8	15.1	16.5
13.5-14.5	48	14.0	1.5	9.9	10.8	13.9	16.2	17.2
14.5-15.5	42	13.9	1.6	10.0	11.1	13.8	17.0	17.7
15.5-16.5	37	14.6	1.4	11.2	11.8	14.6	16.9	17.3
16.5-17.5	28	15.4	1.6	11.5	12.1	15.5	17.6	18.7
17.5-19.0	38	16.1	1.7	12.8	13.2	16.0	18.9	19.1

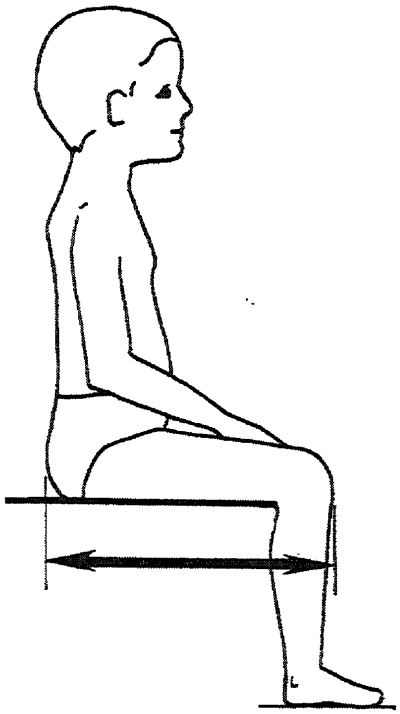
THIGH CLEARENCE (cm)
(Females)

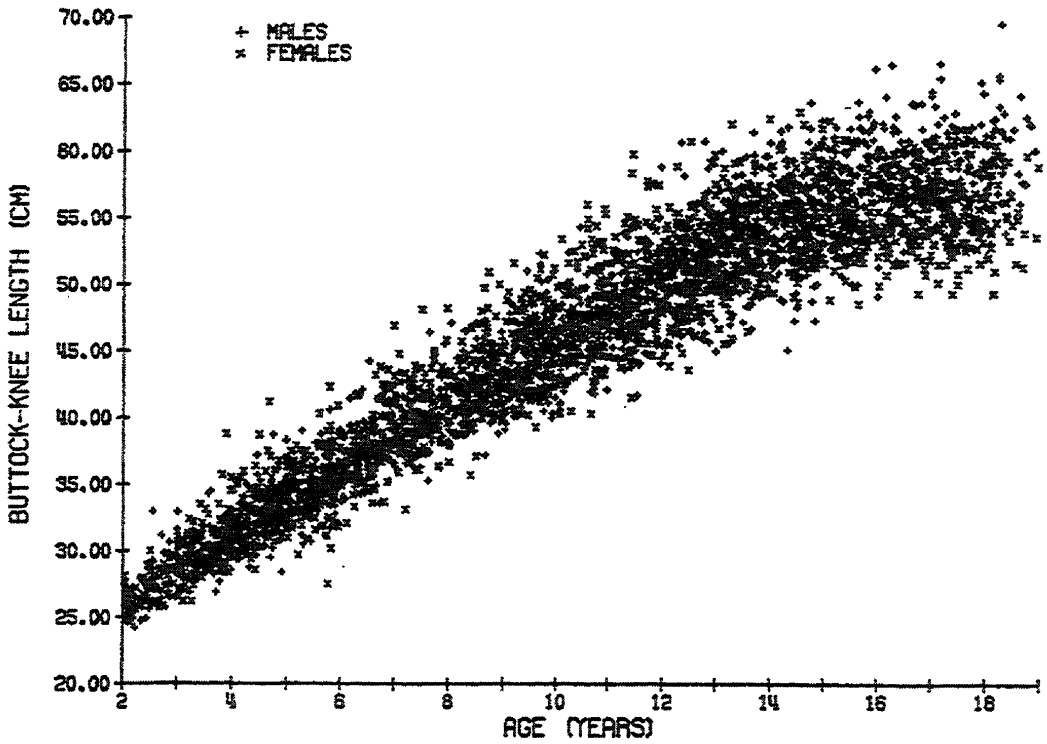
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	7.8	1.2	4.7	5.4	7.8	9.3	10.1
3.5-4.5	40	8.4	1.2	5.7	6.2	8.3	10.1	11.6
4.5-5.5	34	8.8	1.2	6.0	6.1	8.9	10.2	11.3
5.5-6.5	41	9.7	1.1	7.6	7.7	9.5	11.4	12.4
6.5-7.5	44	10.0	1.1	7.2	8.1	9.9	11.7	12.7
7.5-8.5	32	10.9	1.4	8.8	9.2	10.5	12.9	15.5
8.5-9.5	49	11.6	1.2	8.8	9.2	11.3	13.5	13.8
9.5-10.5	45	11.8	1.5	9.6	9.8	11.4	14.2	16.5
10.5-11.5	44	12.3	1.6	9.2	10.0	12.1	14.1	17.6
11.5-12.5	42	12.7	1.4	10.5	10.6	12.5	15.4	16.2
12.5-13.5	49	13.2	1.6	10.8	10.9	12.8	15.7	16.8
13.5-14.5	41	13.8	1.2	11.1	11.6	13.6	15.4	16.8
14.5-15.5	39	14.0	1.6	10.6	11.1	14.1	16.6	17.0
15.5-16.5	41	14.4	1.2	11.9	12.3	14.0	16.5	17.2
16.5-17.5	39	14.2	1.6	10.8	11.8	13.7	17.4	19.1
17.5-19.0	25	14.5	1.5	11.1	11.4	14.4	16.6	17.2

BUTTOCK-KNEE LENGTH

Subject sits erect, feet resting on a platform adjusted for 90° knee flexion. With the paddle blades of an automated anthropometer, measure the distance from the posterior surface of the right buttock to the anterior surface of the knee parallel to the long axis of the upper leg.



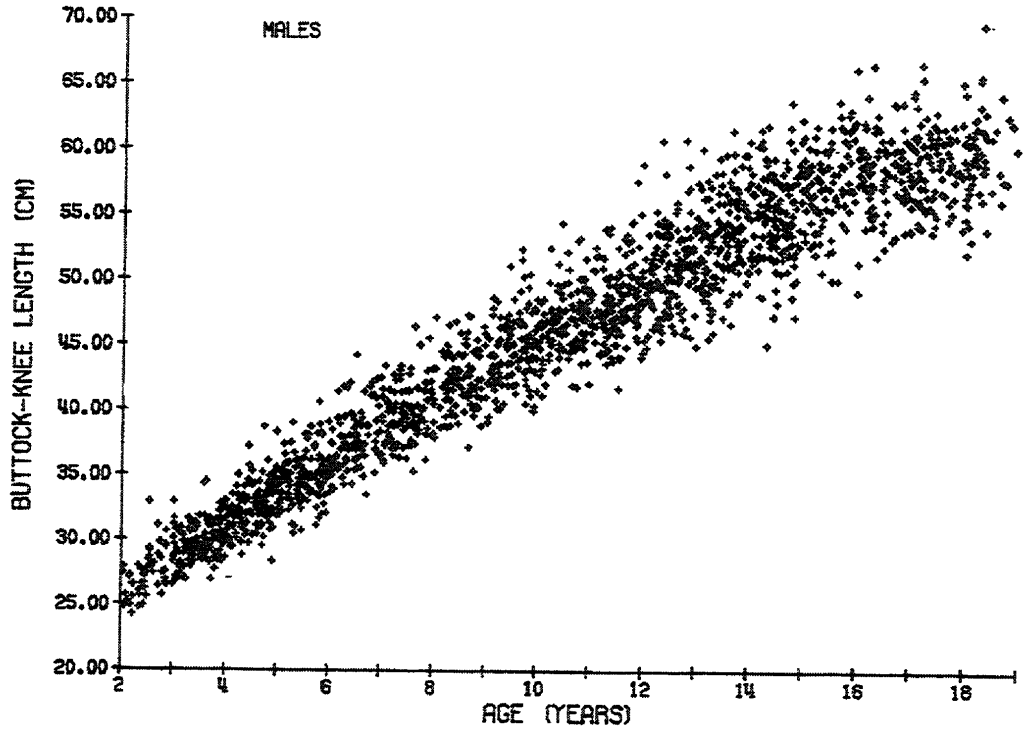


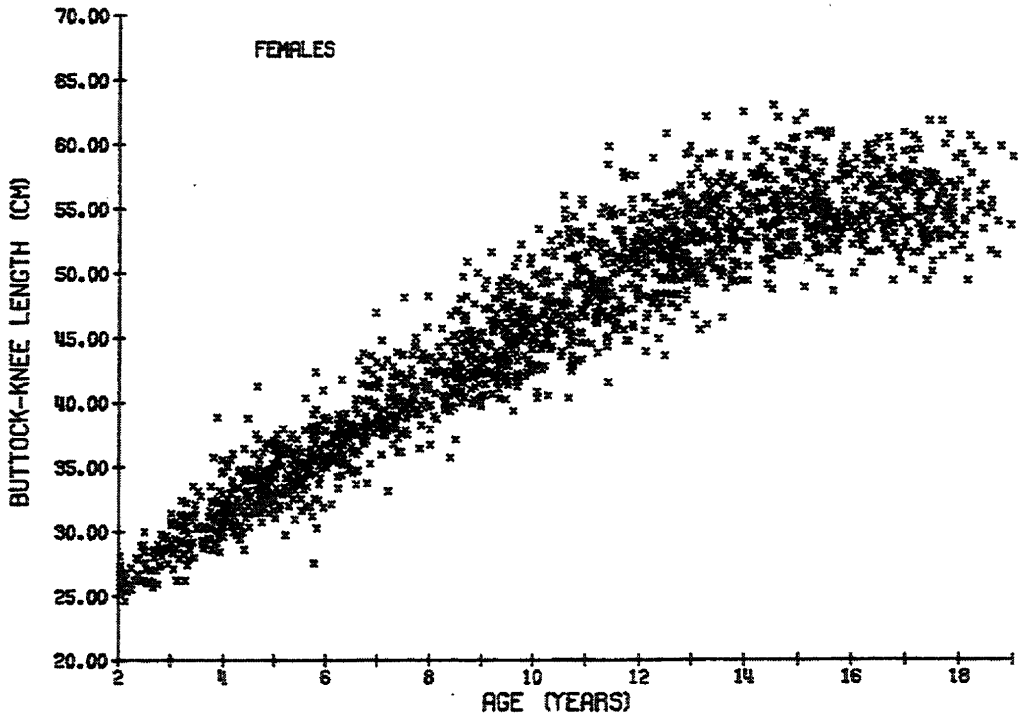


BUTTOCK-KNEE LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	211	28.4	1.9	24.2	25.5	28.4	31.4	33.5
3.5-4.5	225	31.4	2.0	26.9	28.5	31.2	35.0	38.8
4.5-5.5	267	33.9	1.9	28.4	30.9	33.8	37.0	41.2
5.5-6.5	241	36.1	2.2	27.5	32.1	35.8	39.4	42.3
6.5-7.5	229	39.1	2.4	33.1	35.5	38.8	43.3	48.1
7.5-8.5	196	41.3	2.4	35.3	37.7	41.0	45.7	48.2
8.5-9.5	257	43.8	2.6	37.2	40.1	43.3	48.2	51.6
9.5-10.5	257	45.9	2.8	39.3	41.5	45.7	51.1	54.3
10.5-11.5	278	48.2	3.1	40.3	43.6	47.8	53.9	59.8
11.5-12.5	286	50.3	3.2	41.7	45.3	50.0	55.4	60.8
12.5-13.5	314	52.4	3.1	45.0	47.2	52.3	57.6	62.1
13.5-14.5	270	54.3	3.2	45.1	49.0	54.3	59.5	62.5
14.5-15.5	263	55.8	3.0	47.3	51.2	55.5	60.8	63.7
15.5-16.5	196	56.9	3.4	48.6	51.6	57.1	62.1	66.6
16.5-17.5	220	57.0	3.2	49.4	51.9	56.9	62.1	66.7
17.5-19.0	156	57.7	3.5	49.4	52.2	57.7	62.8	69.7

(14)


MALES
BUTTOCK-KNEE LENGTH (CM)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
BUTTOCK-KNEE LENGTH (CM)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

BUTTOCK-KNEE LENGTH (cm)
(Males)

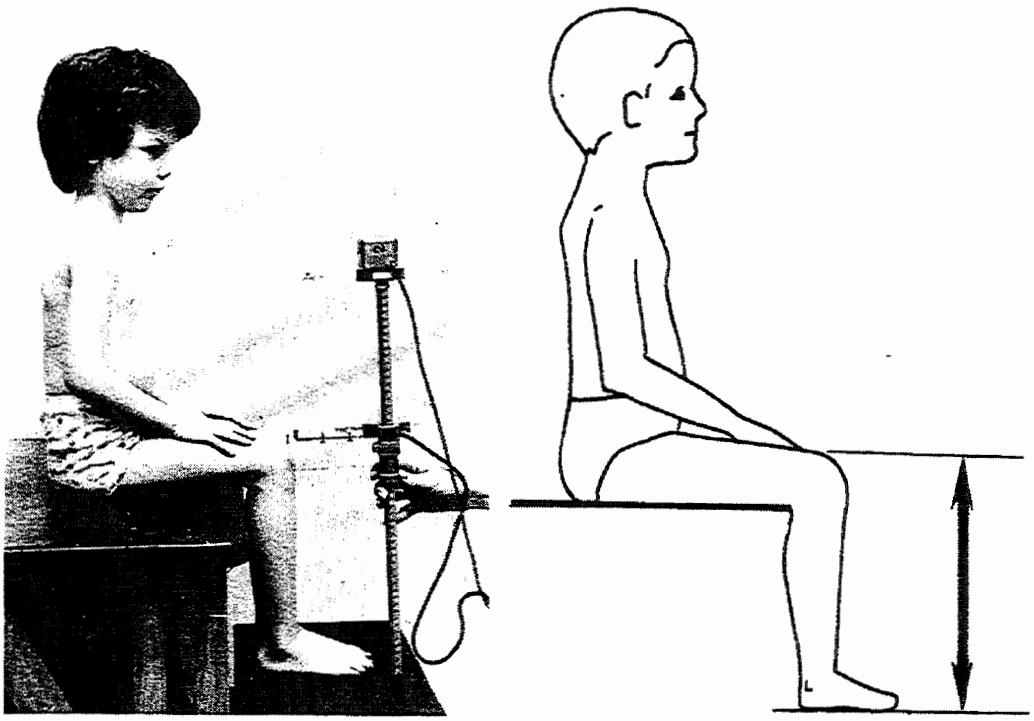
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	113	28.5	1.9	24.2	25.1	28.5	31.4	32.9
3.5-4.5	117	31.0	1.9	26.9	28.4	30.8	34.3	37.2
4.5-5.5	141	33.6	1.9	28.4	30.7	33.5	36.6	39.0
5.5-6.5	117	36.1	2.2	31.1	32.8	35.8	39.6	42.1
6.5-7.5	105	39.0	2.2	33.5	35.7	38.8	42.6	44.2
7.5-8.5	102	41.2	2.5	35.3	37.7	40.9	45.9	47.1
8.5-9.5	117	43.6	2.4	37.2	39.9	43.3	47.2	51.0
9.5-10.5	123	45.7	2.7	40.0	41.3	45.4	50.1	54.3
10.5-11.5	140	47.6	2.5	41.8	43.8	47.4	52.1	54.1
11.5-12.5	153	49.8	3.1	41.7	45.0	49.5	54.5	60.7
12.5-13.5	154	51.9	3.3	45.0	46.3	51.4	57.6	60.8
13.5-14.5	154	54.5	3.3	45.1	48.7	54.4	59.7	61.9
14.5-15.5	131	56.1	3.2	47.3	50.7	56.3	60.9	63.7
15.5-16.5	99	58.5	3.1	49.2	52.6	58.7	62.8	66.6
16.5-17.5	104	58.8	2.8	53.2	53.9	58.8	63.6	66.7
17.5-19.0	88	59.5	3.0	52.2	54.2	59.4	64.4	69.7

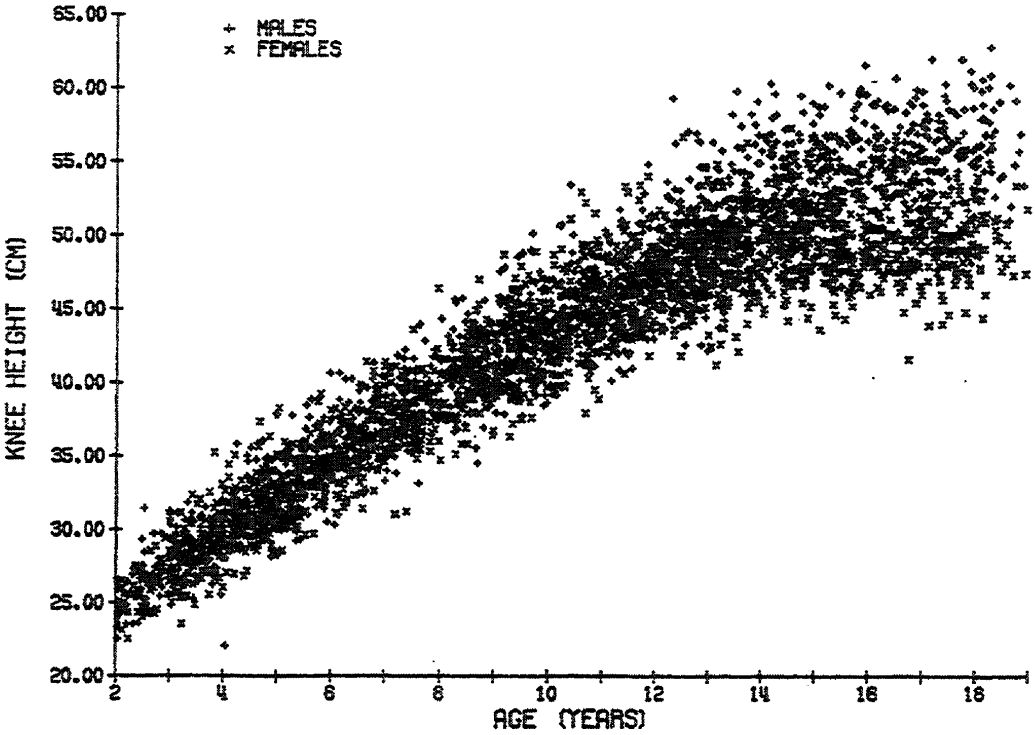
BUTTOCK-KNEE LENGTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	28.4	1.9	24.6	25.6	28.4	31.4	33.5
3.5-4.5	108	31.9	2.1	28.4	28.8	31.7	35.5	38.8
4.5-5.5	126	34.2	1.9	29.7	31.2	34.1	37.1	41.2
5.5-6.5	124	36.1	2.3	27.5	31.8	36.0	39.0	42.3
6.5-7.5	124	39.2	2.6	33.1	34.8	38.8	43.6	48.1
7.5-8.5	94	41.3	2.4	35.7	37.4	41.0	45.3	48.2
8.5-9.5	140	44.0	2.6	39.7	40.2	43.3	48.9	51.6
9.5-10.5	134	46.1	2.9	39.3	41.6	46.0	51.2	53.4
10.5-11.5	138	48.8	3.5	40.3	43.2	48.5	54.8	59.8
11.5-12.5	133	50.8	3.3	43.6	45.5	51.0	55.9	60.8
12.5-13.5	160	52.9	3.0	45.6	48.0	52.6	57.6	62.1
13.5-14.5	116	54.1	3.0	46.5	49.3	53.8	59.0	62.5
14.5-15.5	132	55.5	2.8	48.9	51.5	55.1	60.7	63.0
15.5-16.5	97	55.2	2.7	48.6	51.1	54.5	59.8	61.0
16.5-17.5	116	55.3	2.6	49.4	50.9	55.1	59.6	61.8
17.5-19.0	68	55.4	2.6	49.4	51.3	55.0	59.9	61.8

KNEE HEIGHT

Subject sits erect, feet resting on a platform adjusted for 90° knee flexion. With the paddle blade of an automated anthropometer, measure the vertical distance from the foot-resting surface to the top of the right knee, just in back and above the patella (knee cap).

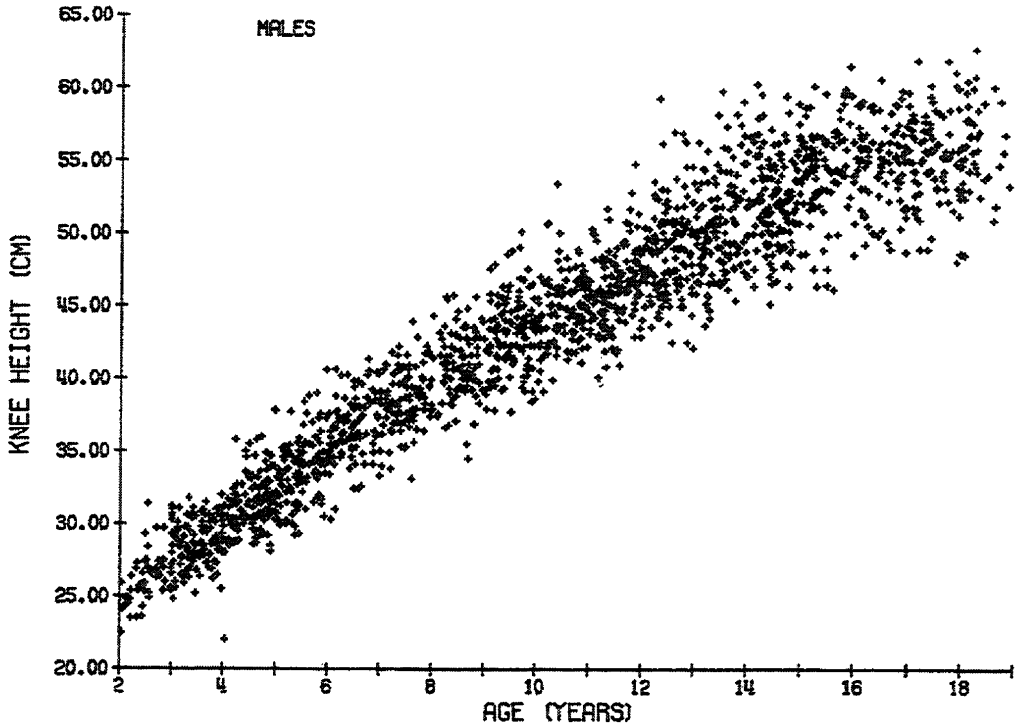


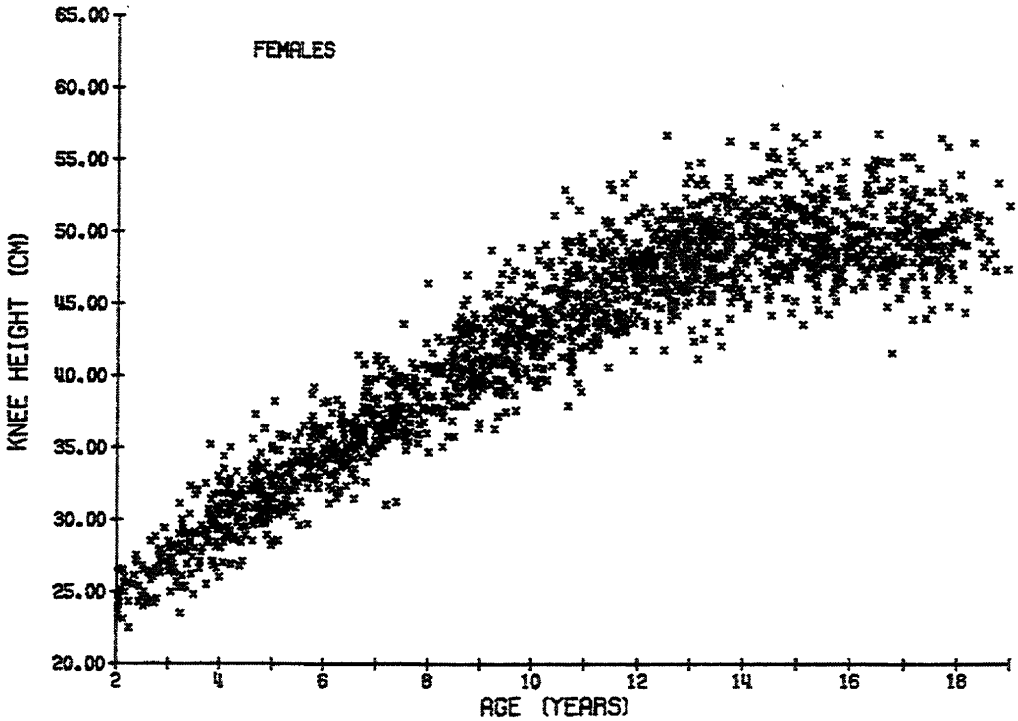


KNEE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	203	27.0	2.0	22.5	23.7	26.9	30.6	32.3
3.5-4.5	206	29.9	2.0	22.0	26.7	29.8	33.1	35.8
4.5-5.5	241	32.3	2.0	28.1	29.2	32.2	35.6	38.2
5.5-6.5	214	34.9	2.0	29.6	31.5	34.7	38.3	40.6
6.5-7.5	219	37.3	2.2	31.0	33.5	37.2	40.9	43.6
7.5-8.5	188	39.4	2.3	33.1	35.7	39.3	43.3	46.4
8.5-9.5	249	41.7	2.5	34.5	37.9	41.5	45.7	48.7
9.5-10.5	250	43.6	2.6	37.6	39.4	43.5	48.1	53.4
10.5-11.5	279	45.6	2.6	37.9	41.3	45.5	49.8	53.3
11.5-12.5	277	47.5	2.7	40.9	43.3	47.3	52.3	59.3
12.5-13.5	297	49.0	3.0	41.2	44.5	49.0	54.2	59.8
13.5-14.5	252	50.7	3.3	42.1	45.6	50.5	56.5	60.3
14.5-15.5	259	51.5	3.3	43.6	46.7	51.5	56.8	60.2
15.5-16.5	185	52.4	3.9	44.3	46.5	52.5	58.9	61.6
16.5-17.5	212	52.1	3.9	41.6	46.1	51.6	58.5	62.0
17.5-19.0	151	53.0	4.0	44.4	47.2	52.8	60.0	62.8

(15)


MALES
KNEE HEIGHT (CM)
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
KNEE HEIGHT (CM)
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SEATED CG (FROM BACK) (cm)
(Males)

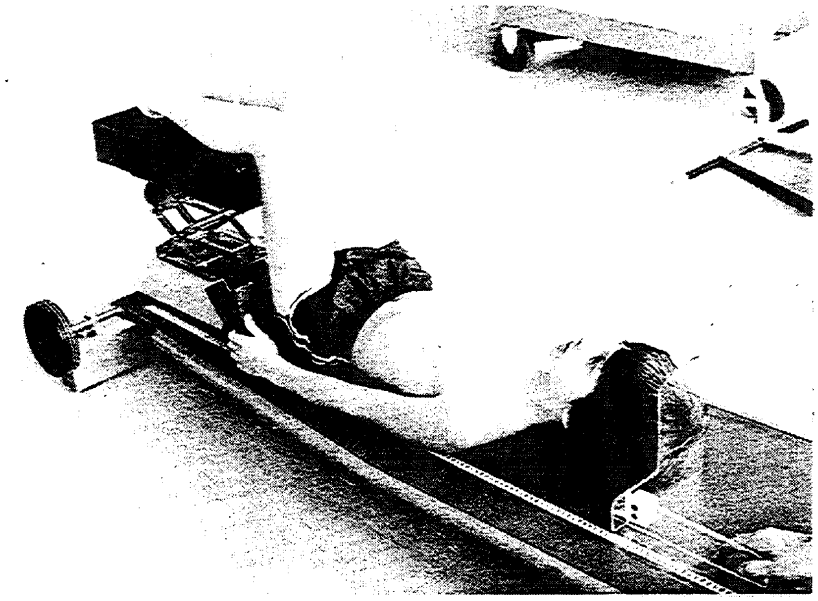
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	6	14.0	2.0	11.8	**	13.4	**	17.8
3.5-4.5	13	13.4	1.3	11.8	**	12.7	**	16.0
4.5-5.5	10	15.1	2.7	12.0	**	14.3	**	21.1
5.5-6.5	25	16.0	2.1	12.7	12.8	15.5	19.8	21.0
6.5-7.5	18	17.4	1.8	13.7	**	17.5	**	20.6
7.5-8.5	21	18.4	1.6	16.4	16.4	18.0	21.3	21.8
8.5-9.5	23	18.8	1.9	14.9	15.0	18.9	21.7	22.4
9.5-10.5	21	20.0	2.0	16.9	16.9	19.7	23.1	24.0
10.5-11.5	26	20.3	1.6	17.4	17.4	20.7	22.8	23.2
11.5-12.5	40	21.7	1.9	18.3	18.6	21.2	24.5	25.7
12.5-13.5	34	21.9	2.1	17.8	18.6	21.5	25.3	26.7
13.5-14.5	33	23.2	2.2	18.8	19.0	23.4	25.2	29.8
14.5-15.5	33	23.7	2.0	17.6	19.8	23.7	27.2	27.6
15.5-16.5	20	24.1	2.0	19.4	**	23.7	**	28.0
16.5-17.5	26	24.6	2.1	21.5	21.6	24.3	28.0	29.8
17.5-19.0	18	25.5	2.4	22.0	**	25.0	**	30.5

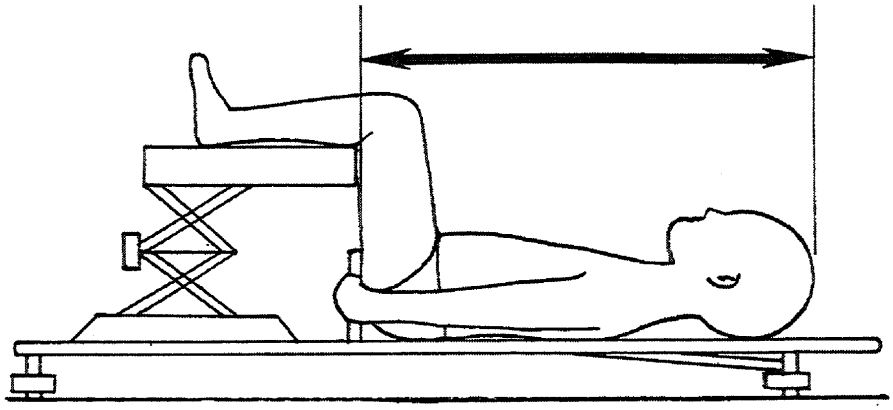
SEATED CG (FROM BACK) (cm)
(Females)

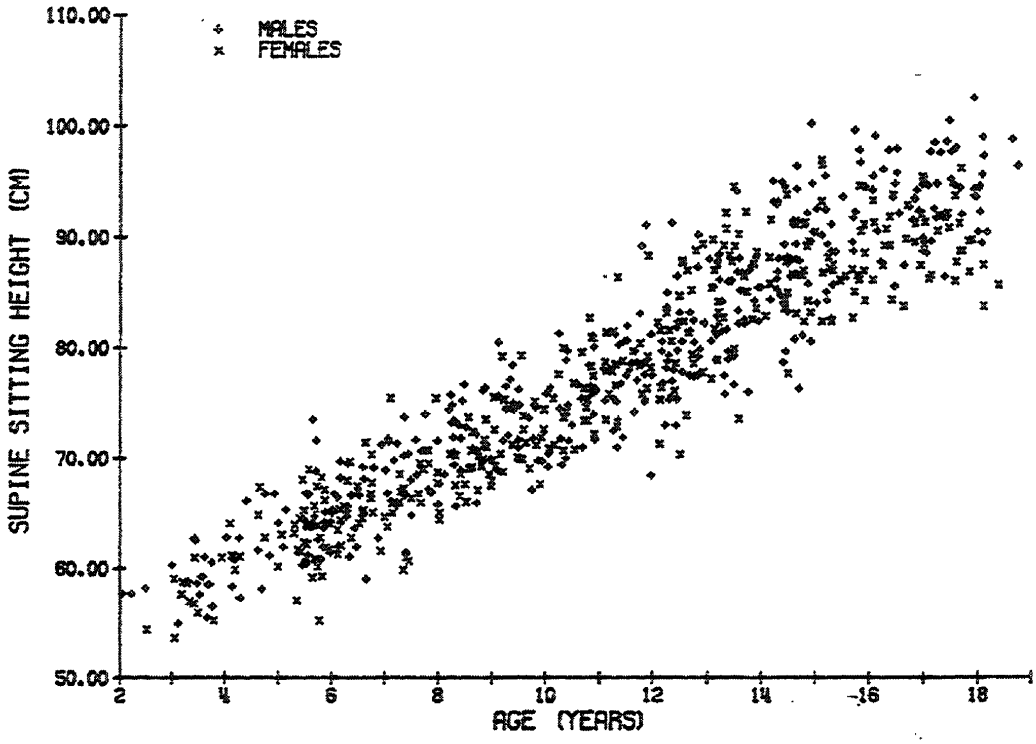
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	12.5	1.2	10.6	**	12.2	**	14.1
3.5-4.5	5	13.6	0.3	13.2	**	13.4	**	13.9
4.5-5.5	15	14.6	1.7	12.5	**	14.4	**	19.1
5.5-6.5	30	14.7	1.9	10.4	10.5	14.8	17.8	18.2
6.5-7.5	24	15.3	1.5	12.8	12.8	15.2	17.7	18.8
7.5-8.5	17	16.9	1.6	14.0	**	16.7	**	19.6
8.5-9.5	28	17.5	2.0	14.4	14.5	17.3	21.0	21.7
9.5-10.5	20	18.8	1.8	15.9	**	18.4	**	22.6
10.5-11.5	26	20.7	2.1	17.1	17.1	20.4	23.7	24.9
11.5-12.5	22	20.3	2.1	16.8	16.8	19.9	23.3	25.1
12.5-13.5	30	21.7	2.1	18.2	18.7	21.4	25.3	27.8
13.5-14.5	21	22.2	2.1	16.7	16.8	22.3	24.5	25.6
14.5-15.5	27	22.8	1.9	19.7	19.8	22.7	26.0	26.4
15.5-16.5	21	23.6	1.5	21.4	21.4	23.4	25.5	26.8
16.5-17.5	17	22.8	1.2	20.8	**	22.3	**	25.0
17.5-19.0	13	22.9	1.2	20.7	**	22.6	**	24.7

SUPINE SITTING HEIGHT

Subject lies on back on the CG device with legs placed over the adjustable support so that the knees form a 90 degree angle, the buttocks are firmly against the reference plane, and the upper legs are approximately 90 degrees to the torso. The arms are placed at the sides. Using the block and tape on the CG device, measure the location of the top of the head. The measurement is typed into the computer and the distance from the buttocks reference plane to the top of the head is computed.



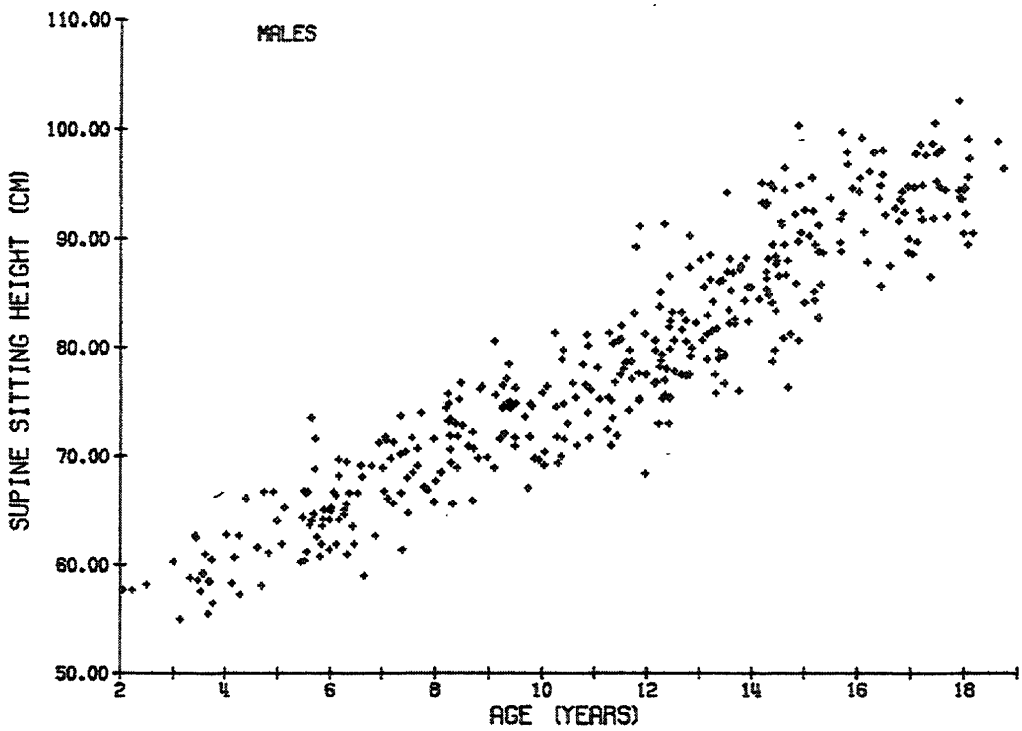


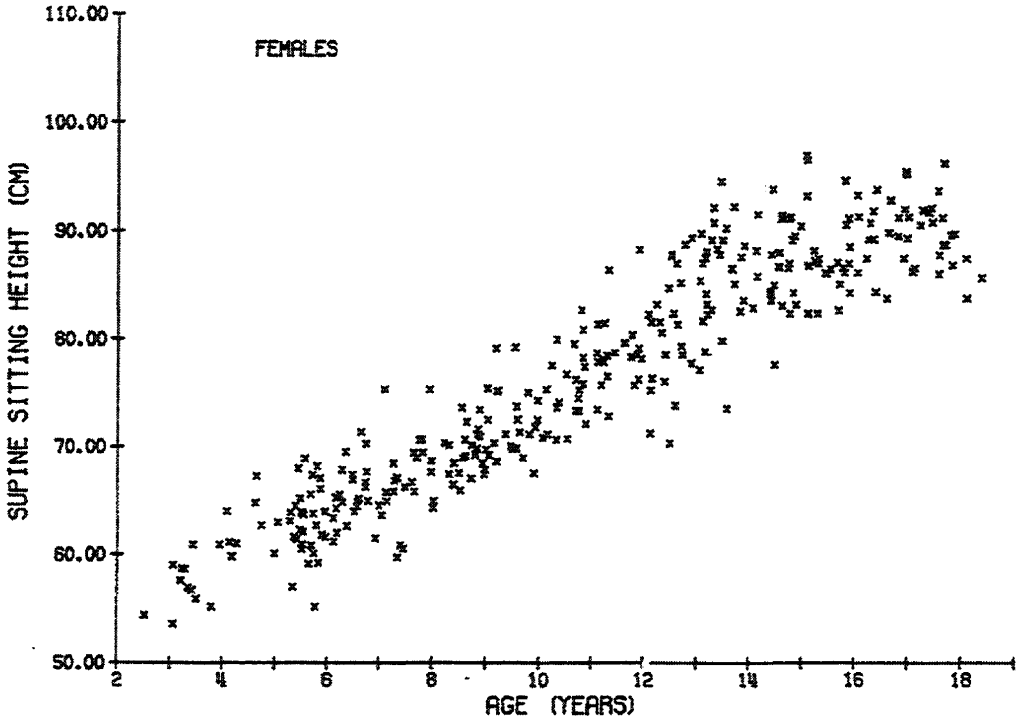


SUPINE SITTING HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	19	58.1	2.4	53.6	**	57.9	**	62.7
3.5-4.5	21	59.8	2.7	55.2	55.2	59.5	63.9	66.1
4.5-5.5	27	63.2	2.8	57.0	57.4	63.0	67.1	68.0
5.5-6.5	65	64.5	3.2	55.2	59.4	64.2	69.6	73.5
6.5-7.5	48	66.8	3.6	59.0	60.1	66.6	71.7	75.4
7.5-8.5	44	70.1	3.2	64.4	65.1	69.4	75.4	76.7
8.5-9.5	56	72.1	3.3	65.9	66.9	71.2	77.4	80.5
9.5-10.5	42	73.3	3.5	67.1	67.7	72.6	79.7	81.3
10.5-11.5	52	76.9	3.5	70.8	71.0	76.6	81.7	86.4
11.5-12.5	64	79.5	4.8	68.4	71.5	78.6	88.2	91.3
12.5-13.5	64	83.4	4.8	73.9	76.8	82.4	90.7	94.6
13.5-14.5	57	86.2	4.5	73.6	77.4	86.0	94.0	95.1
14.5-15.5	59	88.4	4.7	76.3	80.8	88.1	96.5	100.3
15.5-16.5	42	91.2	4.6	82.7	84.3	90.8	98.1	99.7
16.5-17.5	44	92.2	3.7	83.8	86.3	92.0	98.4	100.6
17.5-19.0	32	92.5	4.4	83.8	84.9	92.3	99.0	102.6

(16)


MALES
SUPINE SITTING HEIGHT (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SUPINE SITTING HEIGHT (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SUPINE SITTING HEIGHT (cm)
(Males)

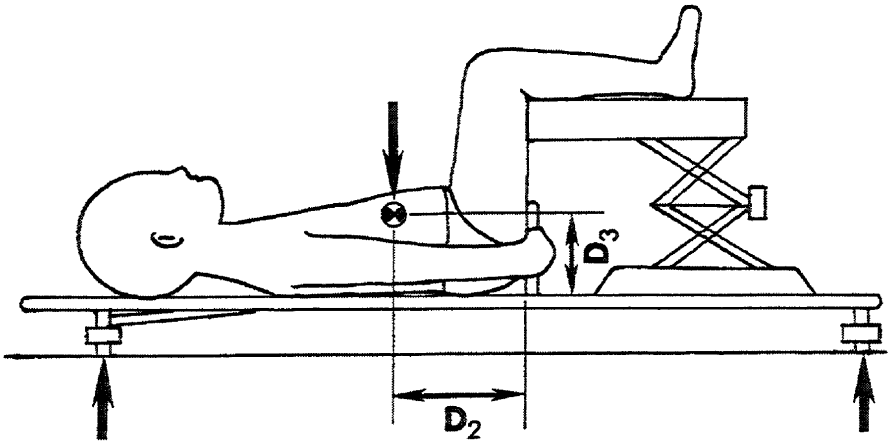
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	59.1	2.4	55.0	**	58.4	**	62.7
3.5-4.5	15	59.6	2.8	55.5	**	58.7	**	66.1
4.5-5.5	11	63.4	2.9	58.1	**	63.0	**	66.8
5.5-6.5	34	65.0	3.1	60.4	60.7	64.4	70.3	73.5
6.5-7.5	22	67.9	3.6	59.0	59.2	68.1	71.8	73.7
7.5-8.5	26	71.1	3.2	65.6	65.7	71.6	75.5	76.7
8.5-9.5	26	73.6	3.3	65.9	66.8	74.4	78.0	80.5
9.5-10.5	21	73.2	3.8	67.1	67.2	72.4	79.7	81.3
10.5-11.5	26	76.5	3.4	71.0	71.0	76.2	81.2	82.0
11.5-12.5	40	79.3	4.8	68.4	70.7	78.5	89.2	91.3
12.5-13.5	34	82.1	4.3	75.8	76.4	81.5	89.0	94.2
13.5-14.5	36	86.5	4.5	76.0	78.2	86.3	94.7	95.1
14.5-15.5	32	88.8	5.3	76.3	78.9	89.1	96.0	100.3
15.5-16.5	20	94.1	4.0	85.6	**	94.6	**	99.7
16.5-17.5	26	93.4	3.7	86.5	86.8	92.8	98.7	100.6
17.5-19.0	19	94.9	3.3	89.5	**	94.5	**	102.6

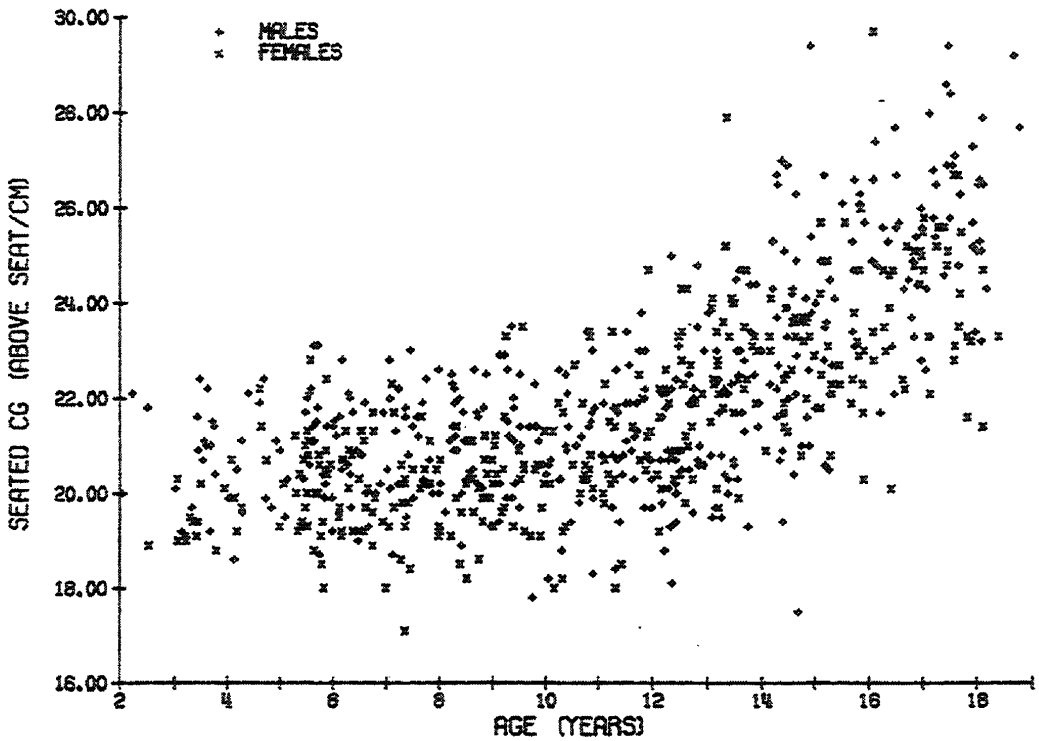
SUPINE SITTING HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	10	57.2	2.2	53.6	**	56.9	**	60.9
3.5-4.5	6	60.3	2.9	55.2	**	60.9	**	64.0
4.5-5.5	16	63.1	2.7	57.0	**	63.0	**	68.0
5.5-6.5	31	63.9	3.3	55.2	57.3	63.7	68.5	69.6
6.5-7.5	26	65.9	3.4	59.8	60.0	65.8	71.1	75.4
7.5-8.5	18	68.5	2.6	64.4	**	68.5	**	75.4
8.5-9.5	30	70.8	2.9	66.0	66.5	70.1	75.4	79.2
9.5-10.5	21	73.3	3.3	67.6	67.7	72.4	79.2	80.0
10.5-11.5	26	77.3	3.6	70.8	71.2	77.5	82.3	86.4
11.5-12.5	24	80.0	4.9	70.4	70.6	79.2	87.9	88.3
12.5-13.5	30	84.8	5.0	73.9	75.5	85.2	91.5	94.6
13.5-14.5	21	85.8	4.7	73.6	73.8	85.4	92.3	93.9
14.5-15.5	27	88.0	4.0	82.4	82.4	87.1	95.4	97.0
15.5-16.5	22	88.6	3.3	82.7	82.9	87.5	93.8	94.7
16.5-17.5	18	90.5	3.0	83.8	**	90.9	**	95.5
17.5-19.0	13	88.9	3.4	83.8	**	88.0	**	96.3

SEATED CENTER OF GRAVITY

Subject lies on back on the CG device with legs placed over the adjustable support so that the knees from a 90 angle, the buttocks are firmly against the reference plane, and the upper legs are approximately 90 to the torso. The arms are placed at the sides. The horizontal distance of the center of gravity from the buttocks reference plane (D_2) and vertical distance of the center of gravity from the CG platform (D_3) are computed. The horizontal distance is reported as measured and as a percent of supine sitting height [(D_2/supine sitting ht) x 100)]. The vertical distance is also reported as measured and as a percent of buttock-knee length [(D_3/buttock-knee L) x 100)].

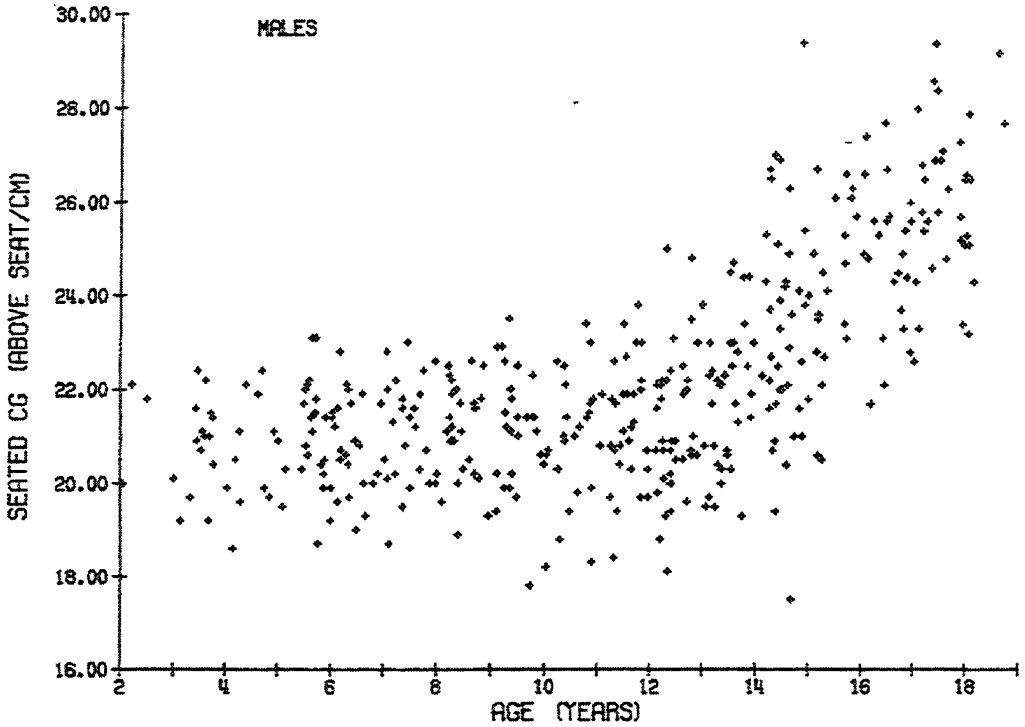


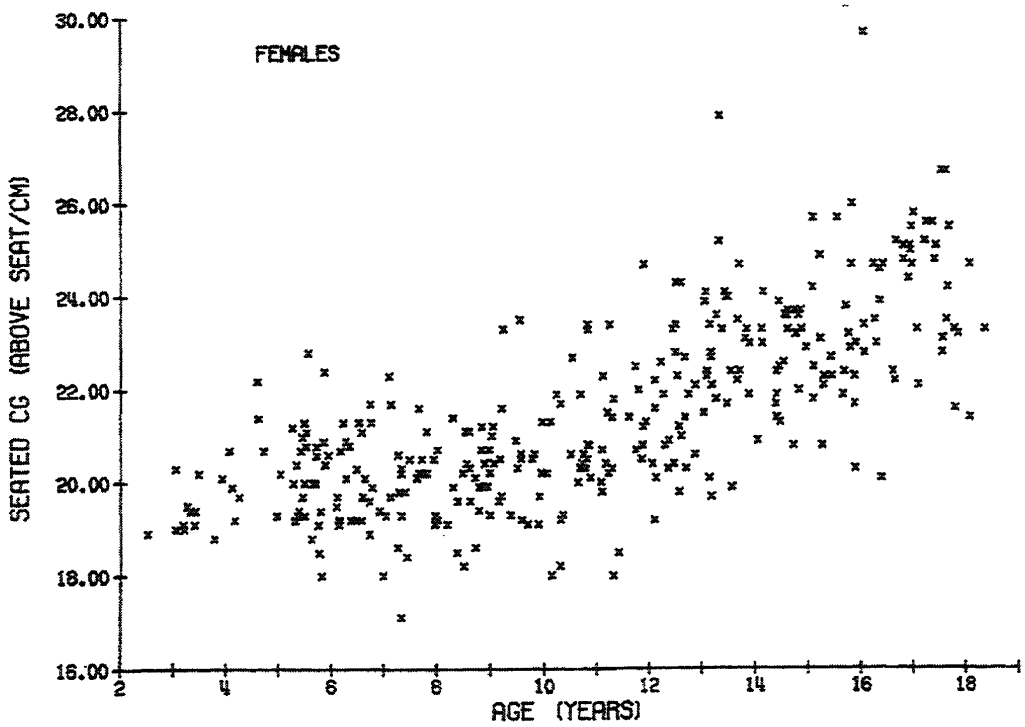


SEATED CG (ABOVE SEAT) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	19	20.1	1.1	18.9	**	19.6	**	22.4
3.5-4.5	21	20.4	1.0	18.6	18.6	20.4	22.1	22.2
4.5-5.5	27	20.6	1.0	19.2	19.2	20.3	22.1	22.4
5.5-6.5	65	20.6	1.2	18.0	18.7	20.5	22.5	23.1
6.5-7.5	48	20.4	1.3	17.1	18.2	20.1	22.3	23.0
7.5-8.5	44	20.7	1.1	18.5	18.9	20.5	22.4	22.6
8.5-9.5	57	20.7	1.2	18.2	18.8	20.4	22.8	23.5
9.5-10.5	41	20.5	1.3	17.8	18.0	20.5	22.5	23.5
10.5-11.5	53	21.0	1.3	18.0	18.4	20.7	23.3	23.4
11.5-12.5	64	21.4	1.4	18.1	19.2	21.0	23.7	25.0
12.5-13.5	65	22.0	1.6	19.5	19.6	22.0	24.4	27.9
13.5-14.5	57	22.8	1.7	19.3	19.8	22.5	26.5	27.0
14.5-15.5	59	23.2	1.8	17.5	20.5	23.2	26.1	29.4
15.5-16.5	42	24.3	2.0	20.1	20.4	24.6	27.3	29.7
16.5-17.5	44	25.1	1.6	22.1	22.2	25.1	28.3	29.4
17.5-19.0	32	25.1	1.9	21.4	21.5	25.1	27.8	29.2

(17)


MALES
SEATED CG (ABOVE SEAT/CM)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

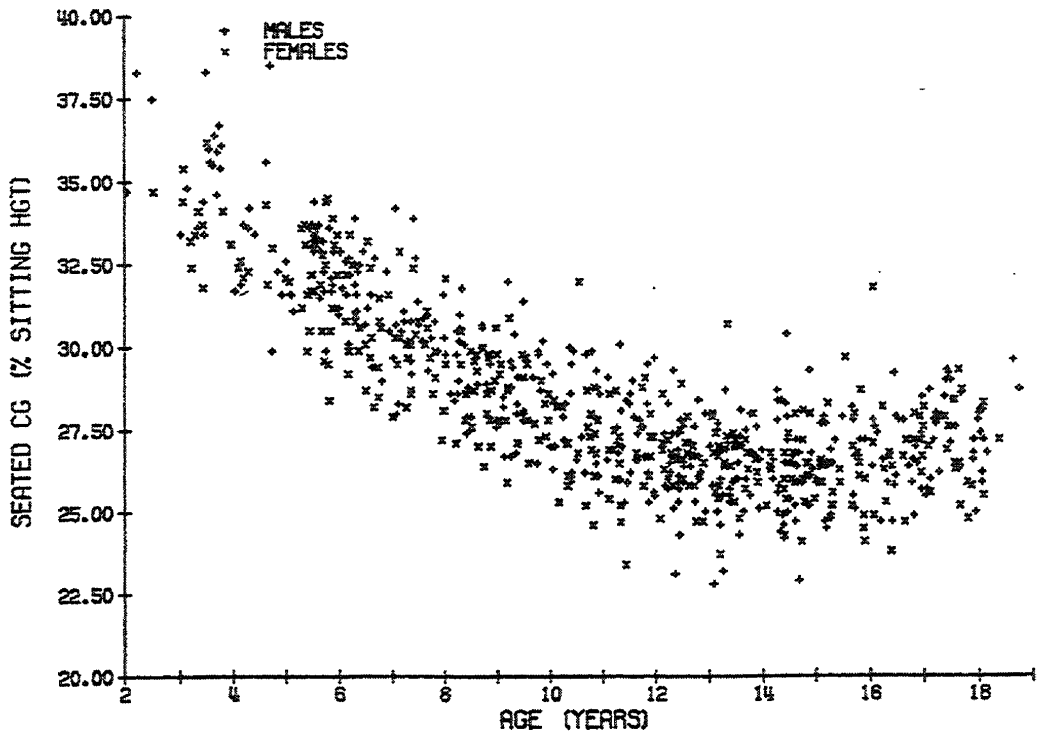

FEMALES
SEATED CG (ABOVE SEAT/CM)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SEATED CG (ABOVE SEAT) (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	20.9	1.2	19.2	**	20.5	**	22.4
3.5-4.5	15	20.7	1.0	18.6	**	20.8	**	22.2
4.5-5.5	11	20.9	1.0	19.5	**	20.6	**	22.4
5.5-6.5	34	21.0	1.1	18.7	18.9	20.9	22.8	23.1
6.5-7.5	22	20.9	1.2	18.7	18.8	20.6	22.7	23.0
7.5-8.5	26	21.1	1.0	18.9	19.1	21.1	22.5	22.6
8.5-9.5	27	21.3	1.2	19.3	19.3	21.3	22.8	23.5
9.5-10.5	21	20.7	1.3	17.8	17.8	20.8	22.5	22.6
10.5-11.5	26	21.1	1.3	18.3	18.3	21.1	23.1	23.4
11.5-12.5	40	21.2	1.4	18.1	18.8	20.8	23.1	25.0
12.5-13.5	34	21.5	1.4	19.5	19.5	21.0	24.0	24.8
13.5-14.5	36	23.0	2.0	19.3	19.4	22.7	26.7	27.0
14.5-15.5	32	23.3	2.3	17.5	19.2	23.5	26.5	29.4
15.5-16.5	20	25.1	1.7	21.7	**	25.3	**	27.7
16.5-17.5	26	25.5	1.8	22.6	22.7	25.4	28.5	29.4
17.5-19.0	19	26.0	1.5	23.2	**	26.0	**	29.2

SEATED CG (ABOVE SEAT) (cm)
(Females)

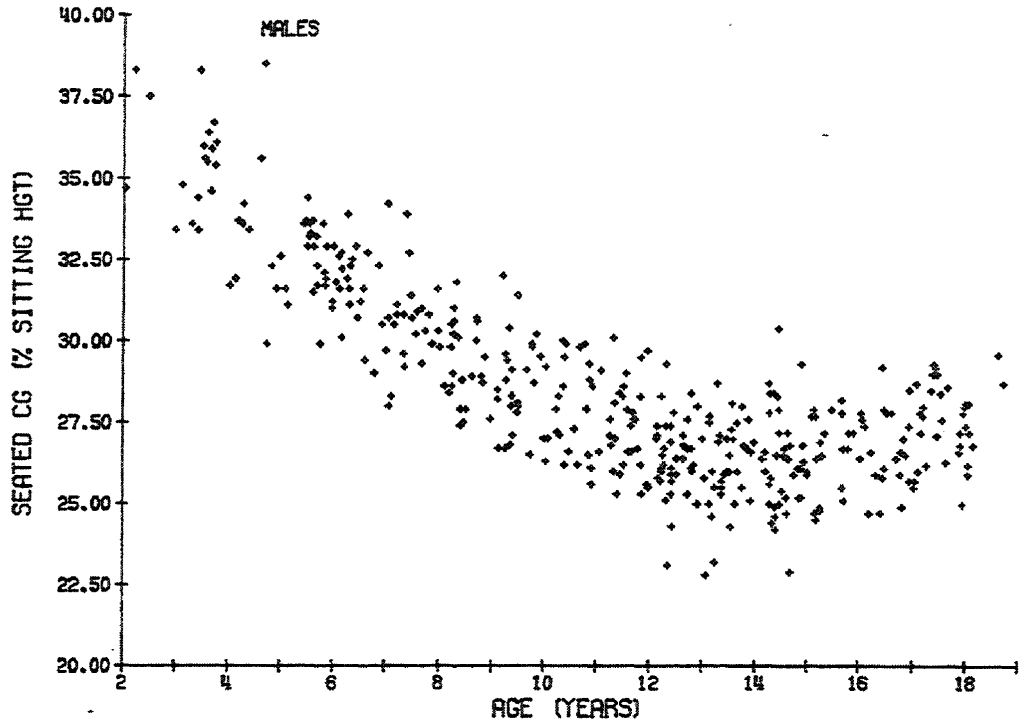
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	10	19.4	0.5	18.9	**	19.1	**	20.3
3.5-4.5	6	19.7	0.7	18.8	**	19.7	**	20.7
4.5-5.5	16	20.4	0.9	19.2	**	20.2	**	22.2
5.5-6.5	31	20.1	1.1	18.0	18.3	20.0	21.8	22.8
6.5-7.5	26	19.9	1.2	17.1	17.4	19.7	21.6	22.3
7.5-8.5	18	20.1	0.8	18.5	**	20.1	**	21.6
8.5-9.5	30	20.3	1.0	18.2	18.4	20.2	21.4	23.3
9.5-10.5	20	20.2	1.3	18.0	**	20.2	**	23.5
10.5-11.5	27	20.9	1.3	18.0	18.2	20.4	23.3	23.4
11.5-12.5	24	21.6	1.4	19.2	19.4	21.3	24.1	24.7
12.5-13.5	31	22.5	1.7	19.7	19.8	22.2	24.7	27.9
13.5-14.5	21	22.5	1.1	19.9	19.9	22.4	24.1	24.7
14.5-15.5	27	23.1	1.2	20.8	20.8	23.2	25.2	25.7
15.5-16.5	22	23.6	2.0	20.1	20.1	23.2	26.0	29.7
16.5-17.5	18	24.5	1.2	22.1	**	25.0	**	25.8
17.5-19.0	13	23.8	1.7	21.4	**	23.3	**	26.7

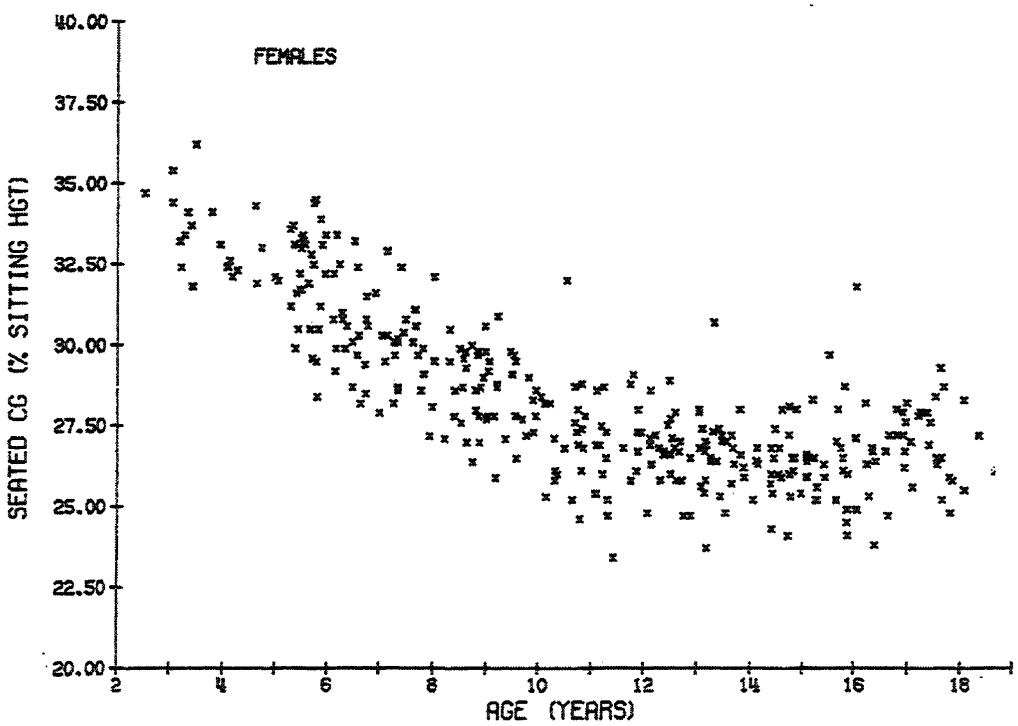


SEATED CG (% SITTING HEIGHT)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	19	34.6	1.8	31.8	**	34.2	**	38.3
3.5-4.5	21	34.2	1.6	31.7	31.7	33.9	36.4	36.7
4.5-5.5	27	32.6	1.8	29.9	29.9	32.2	35.1	38.5
5.5-6.5	65	31.9	1.4	28.4	29.3	32.1	33.9	34.5
6.5-7.5	48	30.5	1.6	27.9	28.0	30.4	33.1	34.2
7.5-8.5	44	29.5	1.3	27.1	27.2	29.7	31.5	32.1
8.5-9.5	56	28.7	1.3	25.9	26.5	28.7	30.7	32.0
9.5-10.5	41	27.9	1.4	25.3	25.8	27.8	29.9	30.2
10.5-11.5	52	27.2	1.6	23.4	24.7	27.1	29.8	32.0
11.5-12.5	64	26.9	1.3	23.1	24.9	26.7	29.1	29.7
12.5-13.5	64	26.4	1.3	22.8	23.9	26.4	28.0	30.7
13.5-14.5	57	26.5	1.3	24.2	24.3	26.4	28.4	30.4
14.5-15.5	59	26.2	1.1	22.9	24.5	26.1	28.0	29.3
15.5-16.5	42	26.6	1.6	23.8	24.1	26.6	29.1	31.8
16.5-17.5	44	27.2	1.1	24.7	25.0	27.2	29.0	29.3
17.5-19.0	32	27.1	1.3	24.8	24.9	26.9	28.9	29.6

(17)


MALES
SEATED CG (% SITTING HGT)
40.00
37.50
35.00
32.50
30.00
27.50
25.00
22.50
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

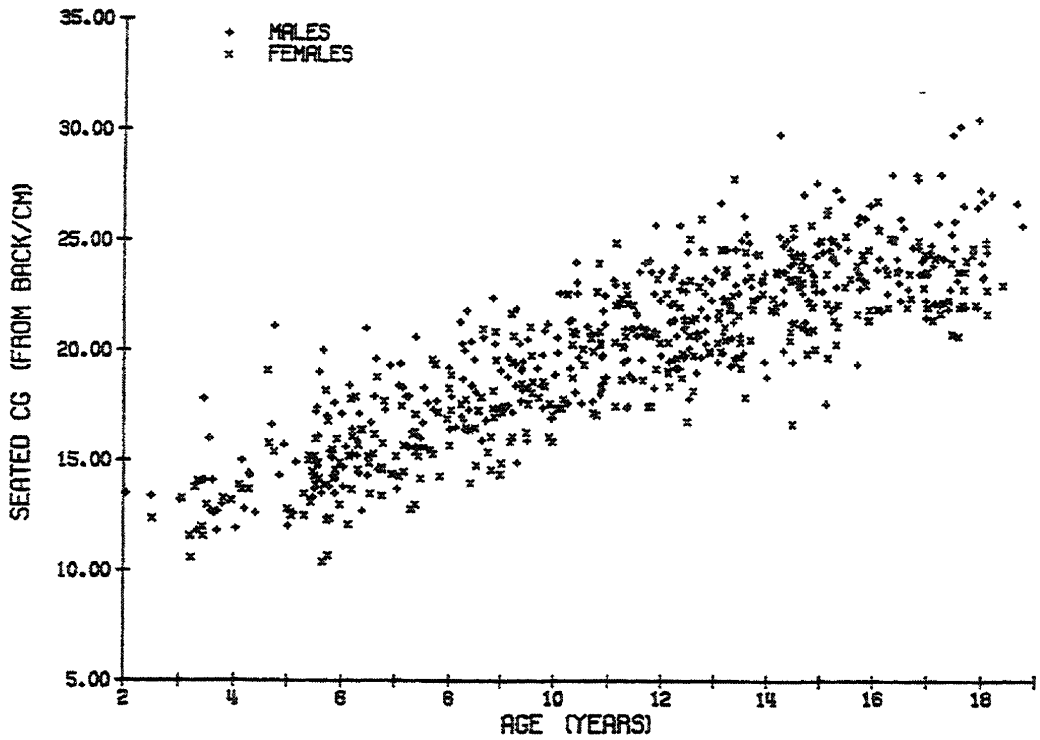

FEMALES
SEATED CG (% SITTING HGT)
40.00
37.50
35.00
32.50
30.00
27.50
25.00
22.50
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SEATED CG (% SITTING HEIGHT)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	35.4	2.1	33.4	**	34.5	**	38.3
3.5-4.5	15	34.7	1.6	31.7	**	35.0	**	36.7
4.5-5.5	11	33.0	2.4	29.9	**	32.4	**	38.5
5.5-6.5	34	32.3	1.1	29.9	30.0	32.2	33.8	34.4
6.5-7.5	22	30.8	1.6	28.0	28.0	30.7	33.8	34.2
7.5-8.5	26	29.7	1.3	27.4	27.4	29.9	31.4	31.8
8.5-9.5	26	28.8	1.4	26.7	26.7	28.7	31.2	32.0
9.5-10.5	21	28.3	1.4	26.2	26.2	28.4	30.0	30.2
10.5-11.5	26	27.6	1.4	25.3	25.4	27.3	29.9	30.1
11.5-12.5	40	26.8	1.4	23.1	24.3	26.6	29.3	29.7
12.5-13.5	34	26.2	1.3	22.8	23.1	26.1	28.1	28.7
13.5-14.5	36	26.6	1.5	24.2	24.3	26.5	28.5	30.4
14.5-15.5	32	26.2	1.3	22.9	23.9	26.3	27.8	29.3
15.5-16.5	20	26.7	1.2	24.7	**	26.6	**	29.2
16.5-17.5	26	27.3	1.3	24.9	25.1	27.2	29.1	29.3
17.5-19.0	19	27.4	1.1	25.0	**	27.3	**	29.6

SEATED CG (% SITTING HEIGHT)
(Females)

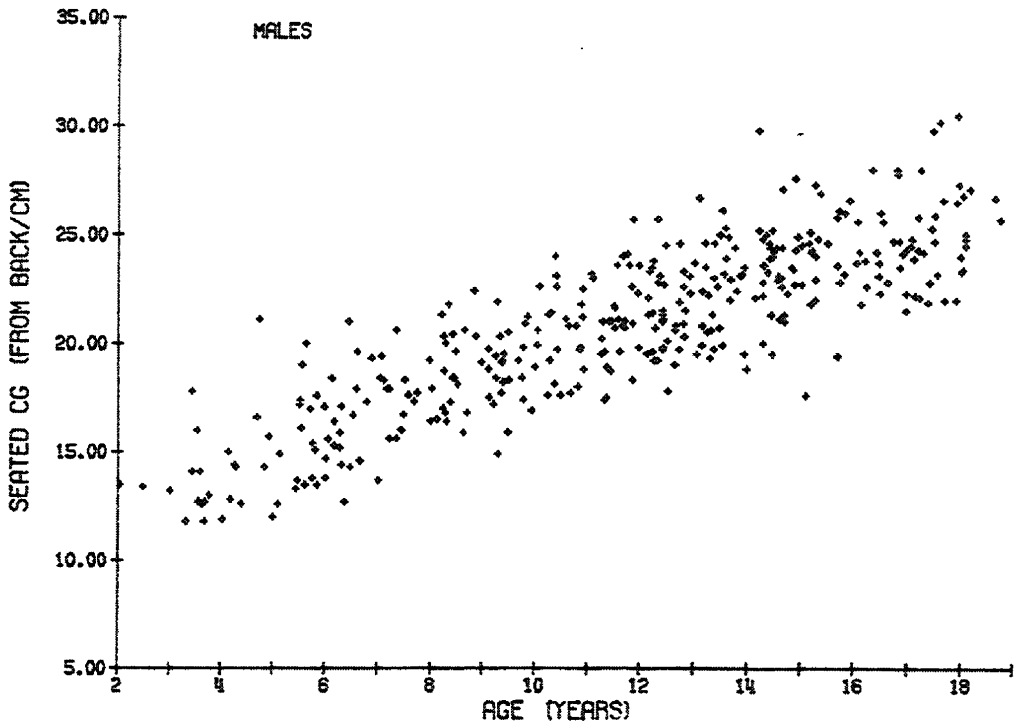
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	10	33.9	1.3	31.8	**	33.7	**	36.2
3.5-4.5	6	32.8	0.7	32.1	**	32.4	**	34.1
4.5-5.5	16	32.3	1.2	29.9	**	32.1	**	34.3
5.5-6.5	31	31.6	1.7	28.4	28.6	31.4	34.1	34.5
6.5-7.5	26	30.2	1.5	27.9	27.9	30.2	32.7	33.2
7.5-8.5	18	29.3	1.4	27.1	**	29.3	**	32.1
8.5-9.5	30	28.7	1.2	25.9	26.1	28.7	30.3	30.9
9.5-10.5	20	27.6	1.2	25.3	**	27.7	**	29.7
10.5-11.5	26	26.9	1.8	23.4	23.8	26.9	28.8	32.0
11.5-12.5	24	27.1	1.1	24.8	24.9	26.8	28.9	29.1
12.5-13.5	30	26.6	1.3	23.7	23.9	26.7	27.9	30.7
13.5-14.5	21	26.3	0.9	24.3	24.3	26.3	27.4	28.0
14.5-15.5	27	26.3	1.0	24.1	24.3	26.0	28.1	28.3
15.5-16.5	22	26.6	1.9	23.8	23.8	26.4	29.6	31.8
16.5-17.5	18	27.1	0.9	24.7	**	27.1	**	28.2
17.5-19.0	13	26.8	1.5	24.8	**	26.3	**	29.3

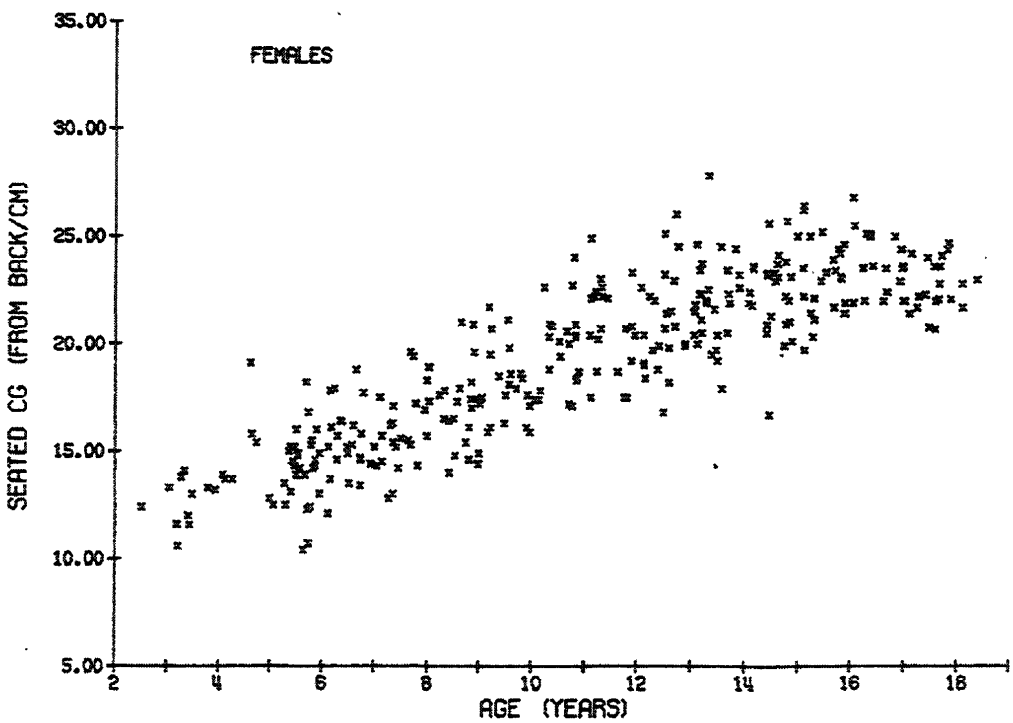


SEATED CG (FROM BACK) (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	15	13.1	1.7	10.6	**	13.1	**	17.8
3.5-4.5	18	13.4	1.1	11.8	**	13.2	**	16.0
4.5-5.5	25	14.8	2.1	12.0	12.1	14.4	18.6	21.1
5.5-6.5	55	15.3	2.1	10.4	11.7	15.1	18.6	21.0
6.5-7.5	42	16.2	1.9	12.8	13.0	15.8	19.4	20.6
7.5-8.5	38	17.7	1.8	14.0	14.3	17.4	20.5	21.8
8.5-9.5	51	18.1	2.0	14.4	14.7	17.7	21.3	22.4
9.5-10.5	41	19.4	2.0	15.9	16.1	19.0	22.6	24.0
10.5-11.5	52	20.5	1.9	17.1	17.3	20.6	23.1	24.9
11.5-12.5	62	21.2	2.1	16.8	17.6	20.9	24.5	25.7
12.5-13.5	64	21.8	2.1	17.8	19.0	21.5	25.8	27.8
13.5-14.5	54	22.8	2.2	16.7	18.5	23.1	25.2	29.8
14.5-15.5	60	23.3	2.0	17.6	19.9	23.1	26.9	27.6
15.5-16.5	41	23.8	1.8	19.4	20.4	23.6	26.6	28.0
16.5-17.5	43	23.9	2.0	20.8	21.4	23.7	27.9	29.8
17.5-19.0	31	24.4	2.4	20.7	21.2	23.8	28.6	30.5

(17)


MALES
SEATED CG (FROM BACK/CM)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

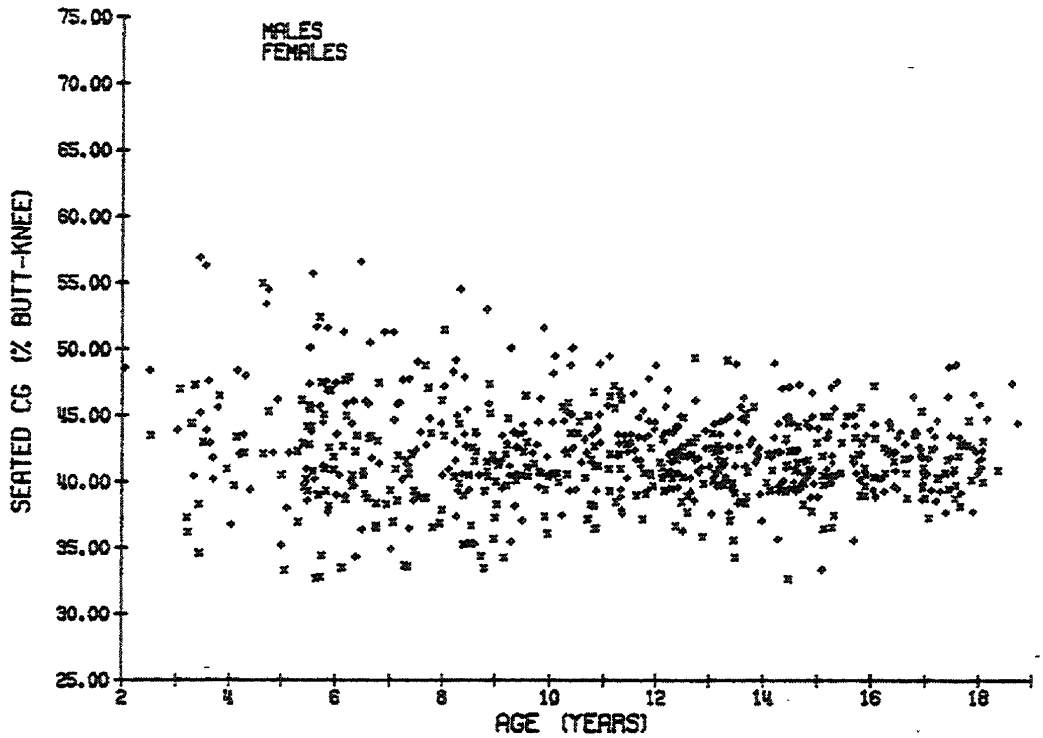

FEMALES
SEATED CG (FROM BACK/CM)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SEATED CG (FROM BACK) (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	6	14.0	2.0	11.8	**	13.4	**	17.8
3.5-4.5	13	13.4	1.3	11.8	**	12.7	**	16.0
4.5-5.5	10	15.1	2.7	12.0	**	14.3	**	21.1
5.5-6.5	25	16.0	2.1	12.7	12.8	15.5	19.8	21.0
6.5-7.5	18	17.4	1.8	13.7	**	17.5	**	20.6
7.5-8.5	21	18.4	1.6	16.4	16.4	18.0	21.3	21.8
8.5-9.5	23	18.8	1.9	14.9	15.0	18.9	21.7	22.4
9.5-10.5	21	20.0	2.0	16.9	16.9	19.7	23.1	24.0
10.5-11.5	26	20.3	1.6	17.4	17.4	20.7	22.8	23.2
11.5-12.5	40	21.7	1.9	18.3	18.6	21.2	24.5	25.7
12.5-13.5	34	21.9	2.1	17.8	18.6	21.5	25.3	26.7
13.5-14.5	33	23.2	2.2	18.8	19.0	23.4	25.2	29.8
14.5-15.5	33	23.7	2.0	17.6	19.8	23.7	27.2	27.6
15.5-16.5	20	24.1	2.0	19.4	**	23.7	**	28.0
16.5-17.5	26	24.6	2.1	21.5	21.6	24.3	28.0	29.8
17.5-19.0	18	25.5	2.4	22.0	**	25.0	**	30.5

SEATED CG (FROM BACK) (cm)
(Females)

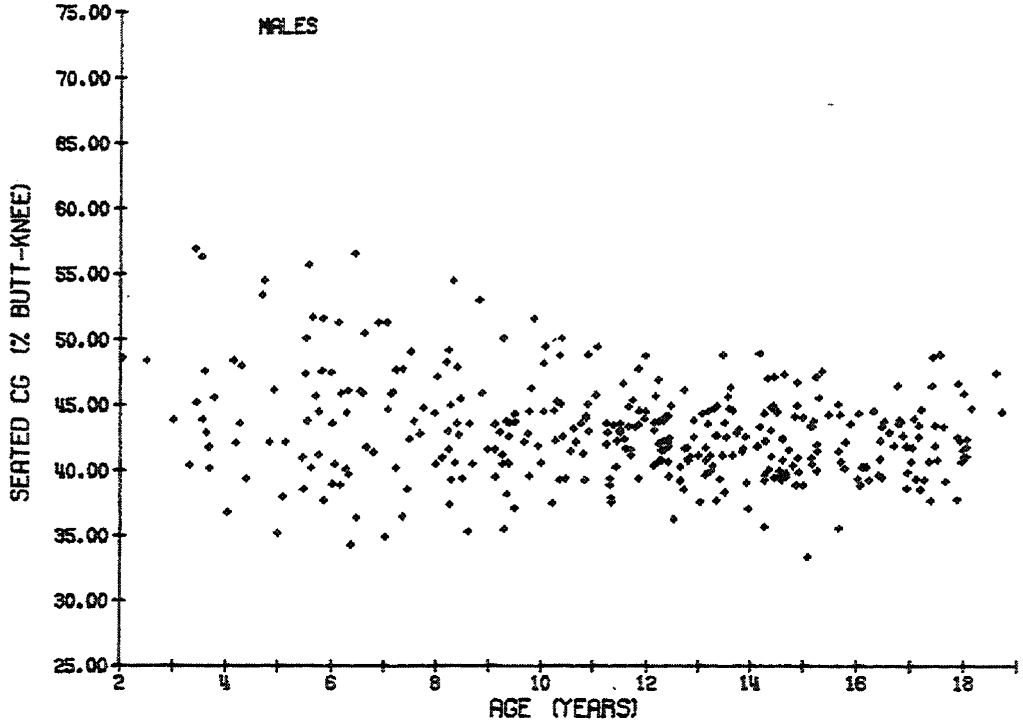
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	12.5	1.2	10.6	**	12.2	**	14.1
3.5-4.5	5	13.6	0.3	13.2	**	13.4	**	13.9
4.5-5.5	15	14.6	1.7	12.5	**	14.4	**	19.1
5.5-6.5	30	14.7	1.9	10.4	10.5	14.8	17.8	18.2
6.5-7.5	24	15.3	1.5	12.8	12.8	15.2	17.7	18.8
7.5-8.5	17	16.9	1.6	14.0	**	16.7	**	19.6
8.5-9.5	28	17.5	2.0	14.4	14.5	17.3	21.0	21.7
9.5-10.5	20	18.8	1.8	15.9	**	18.4	**	22.6
10.5-11.5	26	20.7	2.1	17.1	17.1	20.4	23.7	24.9
11.5-12.5	22	20.3	2.1	16.8	16.8	19.9	23.3	25.1
12.5-13.5	30	21.7	2.1	18.2	18.7	21.4	25.3	27.8
13.5-14.5	21	22.2	2.1	16.7	16.8	22.3	24.5	25.6
14.5-15.5	27	22.8	1.9	19.7	19.8	22.7	26.0	26.4
15.5-16.5	21	23.6	1.5	21.4	21.4	23.4	25.5	26.8
16.5-17.5	17	22.8	1.2	20.8	**	22.3	**	25.0
17.5-19.0	13	22.9	1.2	20.7	**	22.6	**	24.7

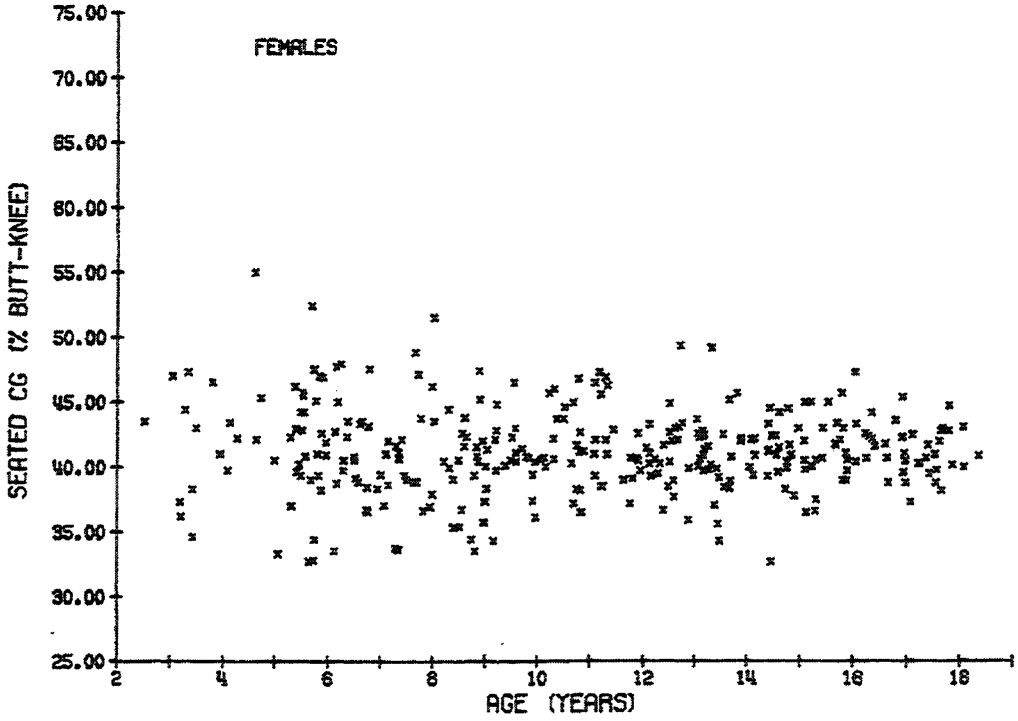


SEATED CG (% BUTTOCK-KNEE LENGTH)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	15	43.7	5.8	34.6	**	43.7	**	56.9
3.5-4.5	18	43.9	4.4	36.8	**	42.9	**	56.3
4.5-5.5	25	43.0	5.5	33.3	33.8	42.2	54.2	55.0
5.5-6.5	55	43.1	5.4	32.7	33.3	42.4	51.9	56.6
6.5-7.5	42	41.8	4.6	33.6	33.8	41.1	50.4	51.3
7.5-8.5	38	42.9	4.4	35.3	36.5	42.8	49.4	54.5
8.5-9.5	51	41.1	3.8	33.5	34.4	41.2	46.6	53.0
9.5-10.5	41	42.9	3.6	36.1	37.4	42.1	49.5	51.6
10.5-11.5	52	42.3	3.1	36.5	36.9	42.2	47.1	49.5
11.5-12.5	61	42.1	2.5	36.7	38.5	41.7	46.7	48.8
12.5-13.5	64	41.3	2.9	34.3	36.0	41.1	46.0	49.4
13.5-14.5	54	42.1	3.0	32.7	36.7	42.1	46.6	49.0
14.5-15.5	60	41.6	2.8	33.4	36.6	40.9	46.8	47.6
15.5-16.5	41	41.8	2.3	35.6	38.9	41.6	45.1	47.3
16.5-17.5	43	41.8	2.5	37.3	37.8	41.8	45.9	48.7
17.5-19.0	31	42.3	2.6	37.8	38.0	41.9	47.1	48.9

(17)


MALES
SEATED CG (% BUTT-KNEE)
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SEATED CG (% BUTT-KNEE)
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SEATED CG (% BUTTOCK-KNEE LENGTH)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	6	47.2	5.6	40.4	**	45.2	**	56.9
3.5-4.5	13	44.4	5.0	36.8	**	43.2	**	56.3
4.5-5.5	10	43.9	6.4	35.2	**	41.6	**	54.5
5.5-6.5	25	44.6	5.9	34.3	34.8	44.1	54.7	56.6
6.5-7.5	18	44.6	4.9	34.9	**	45.3	**	51.3
7.5-8.5	21	43.9	4.0	37.4	37.5	43.3	49.2	54.5
8.5-9.5	23	42.1	4.1	35.3	35.3	41.5	49.5	53.0
9.5-10.5	21	44.1	3.9	37.5	37.6	43.2	50.1	51.6
10.5-11.5	26	42.7	2.9	37.6	37.7	42.9	48.0	49.5
11.5-12.5	39	43.1	2.3	39.4	39.5	42.8	47.0	48.8
12.5-13.5	34	41.6	2.6	36.3	37.2	41.1	45.4	48.9
13.5-14.5	33	42.6	3.0	35.7	36.6	42.5	47.1	49.0
14.5-15.5	33	42.1	3.1	33.4	35.2	41.5	47.3	47.6
15.5-16.5	20	41.3	2.4	35.6	**	40.7	**	45.1
16.5-17.5	26	42.4	2.6	37.7	38.0	42.6	46.2	48.7
17.5-19.0	18	42.9	2.9	37.8	**	42.3	**	48.9

SEATED CG (% BUTTOCK-KNEE LENGTH)
(Females)

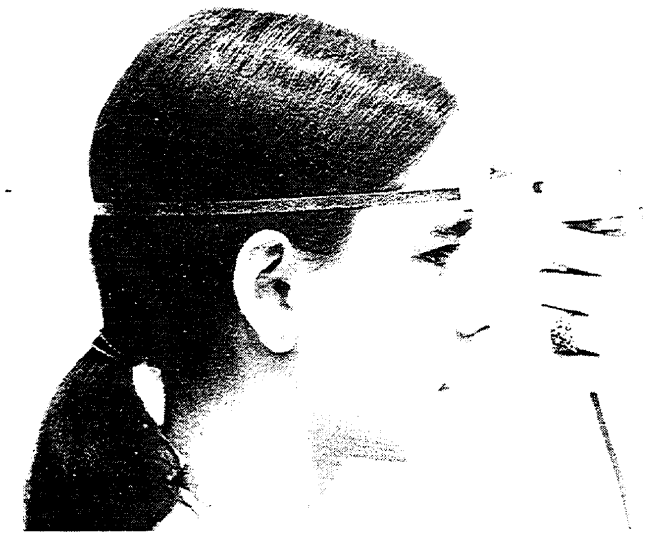
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	9	41.3	4.8	34.6	**	40.6	**	47.3
3.5-4.5	5	42.6	2.6	39.7	**	41.6	**	46.5
4.5-5.5	15	42.4	4.9	33.3	**	42.2	**	55.0
5.5-6.5	30	41.8	4.7	32.7	32.7	41.0	47.8	52.4
6.5-7.5	24	39.8	3.1	33.6	33.6	39.3	43.5	47.5
7.5-8.5	17	41.7	4.6	35.3	**	40.1	**	51.5
8.5-9.5	28	40.2	3.5	33.5	33.8	40.5	45.0	47.4
9.5-10.5	20	41.5	2.7	36.1	**	40.7	**	46.5
10.5-11.5	26	41.9	3.4	36.5	36.5	41.2	46.9	47.3
11.5-12.5	22	40.5	1.9	36.7	36.7	40.4	43.2	44.9
12.5-13.5	30	41.0	3.3	34.3	34.9	40.9	46.5	49.4
13.5-14.5	21	41.1	2.8	32.7	33.0	41.2	45.2	45.7
14.5-15.5	27	40.9	2.3	36.5	36.5	40.6	44.7	45.0
15.5-16.5	21	42.2	2.1	39.0	39.0	41.9	45.7	47.3
16.5-17.5	17	40.9	1.9	37.3	**	40.5	**	45.4
17.5-19.0	13	41.3	1.9	38.2	**	40.9	**	44.7

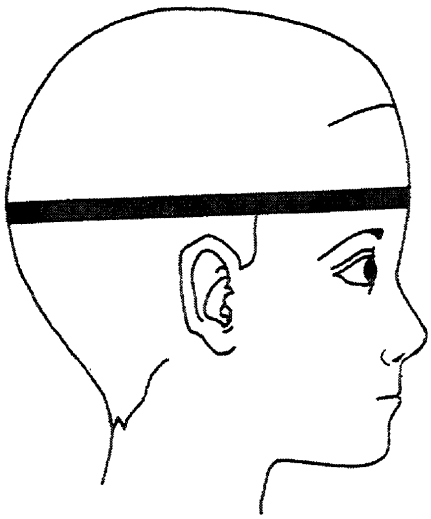
HEAD, FACE, AND NECK MEASUREMENTS

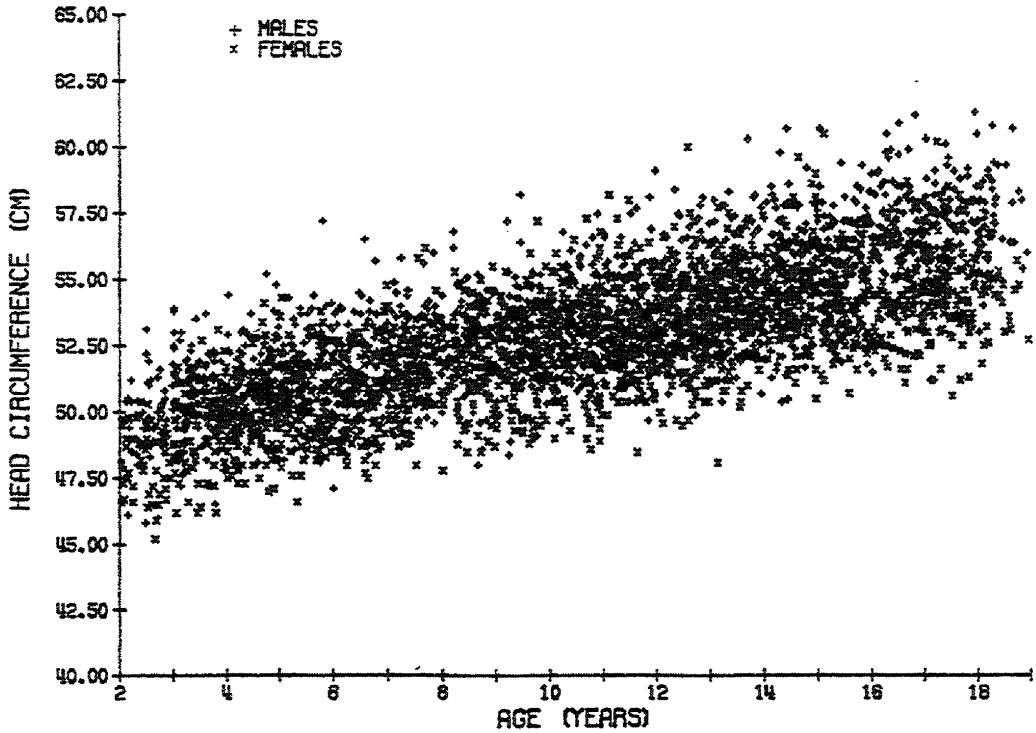
(18)

HEAD CIRCUMFERENCE

Subject stands erect, arms hanging at sides. With an automated tape device, measure the circumference of the head at the level of the plane passing above glabella (most anterior protrusion of forehead) and through opisthocranion (most posterior protrusion from glabella on the back of the head), perpendicular to the mid-sagittal plane.



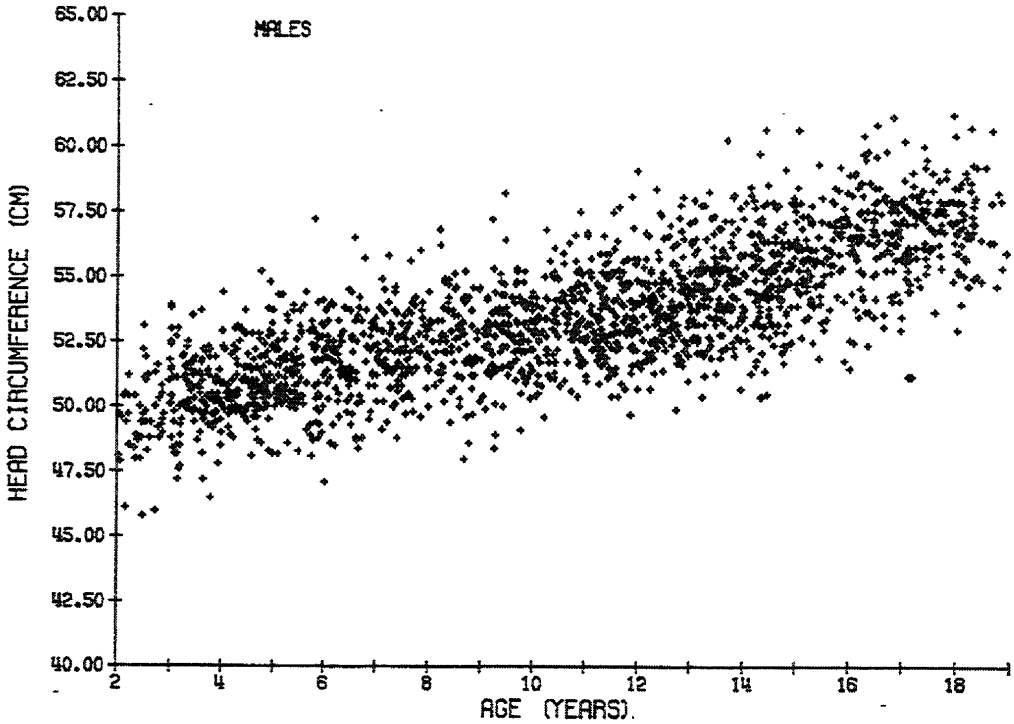


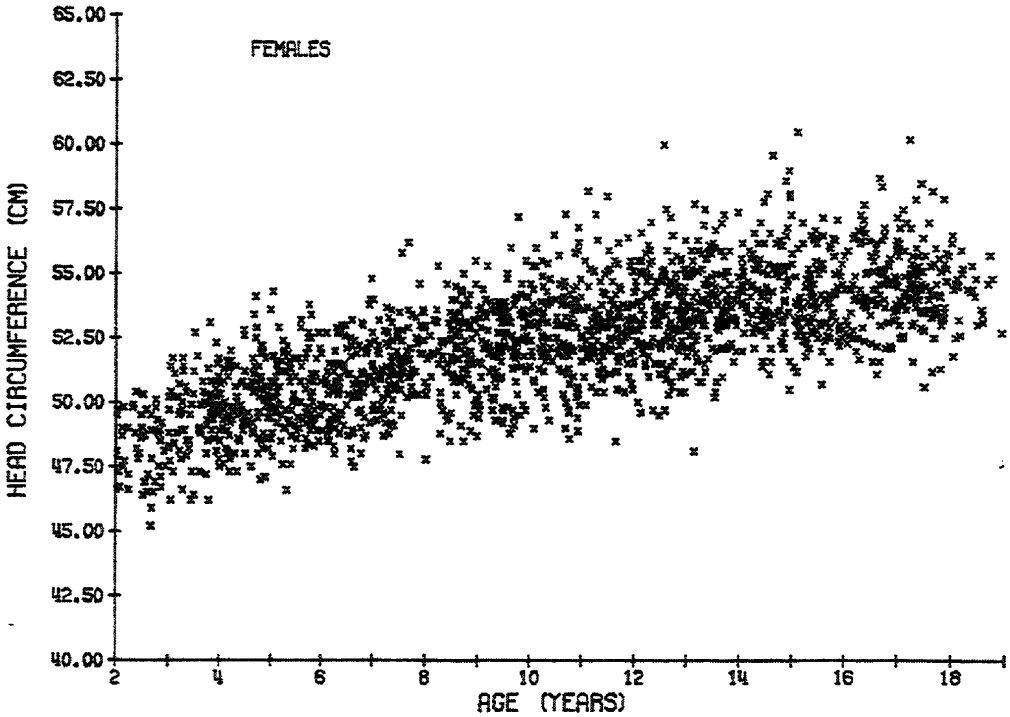


HEAD CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	211	49.5	1.7	45.2	46.5	49.5	52.2	53.9
3.5-4.5	226	50.2	1.4	46.2	47.7	50.1	52.7	54.4
4.5-5.5	262	50.7	1.5	46.6	48.2	50.7	53.4	55.2
5.5-6.5	219	51.1	1.6	47.1	48.5	51.0	53.7	57.2
6.5-7.5	224	51.5	1.6	47.5	48.7	51.3	53.9	56.5
7.5-8.5	188	52.2	1.6	47.8	49.5	52.1	54.8	56.8
8.5-9.5	250	52.3	1.6	48.0	49.4	52.4	54.5	58.2
9.5-10.5	249	52.8	1.6	48.8	49.8	52.8	55.2	57.2
10.5-11.5	280	53.2	1.7	48.6	50.3	53.0	56.2	58.2
11.5-12.5	285	53.5	1.7	48.5	50.7	53.3	56.2	59.1
12.5-13.5	311	54.0	1.7	48.1	51.1	53.9	57.0	60.0
13.5-14.5	271	54.5	1.8	50.2	51.7	54.3	57.6	60.7
14.5-15.5	261	54.9	1.8	50.5	52.1	54.8	57.9	60.7
15.5-16.5	196	55.4	2.1	50.7	52.3	55.4	58.7	60.9
16.5-17.5	220	55.6	1.9	50.6	52.2	55.6	58.5	61.2
17.5-19.0	154	56.0	2.1	51.2	52.7	55.8	59.1	61.3

(18)


MALES
HEAD CIRCUMFERENCE (CM)
65.00
62.50
60.00
57.50
55.00
52.50
50.00
47.50
45.00
42.50
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HEAD CIRCUMFERENCE (CM)
65.00
62.50
60.00
57.50
55.00
52.50
50.00
47.50
45.00
42.50
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HEAD CIRCUMFERENCE (cm)
(Males)

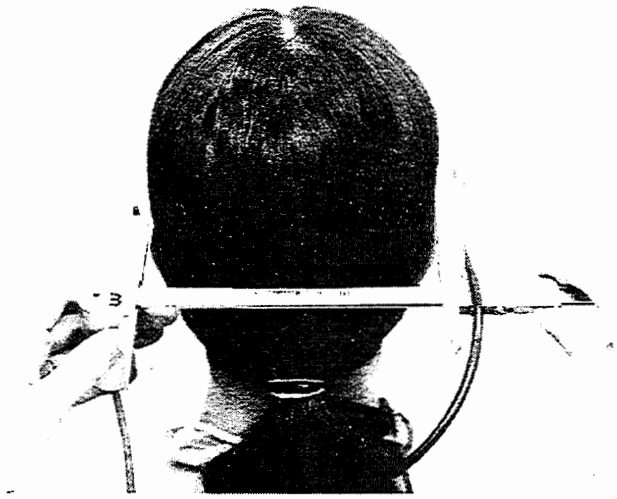
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	50.2	1.6	45.8	47.7	50.0	52.7	53.9
3.5-4.5	118	50.7	1.3	46.5	48.7	50.4	52.9	54.4
4.5-5.5	142	51.2	1.3	48.1	48.6	50.9	53.6	55.2
5.5-6.5	108	51.6	1.6	47.1	48.7	51.7	53.9	57.2
6.5-7.5	104	51.9	1.6	48.4	48.9	51.9	54.5	56.5
7.5-8.5	95	52.6	1.5	49.4	49.9	52.5	54.9	56.8
8.5-9.5	114	52.6	1.7	48.0	49.7	52.8	54.9	58.2
9.5-10.5	124	52.9	1.4	49.1	50.5	52.8	55.1	56.8
10.5-11.5	141	53.6	1.5	50.4	51.1	53.4	55.9	57.5
11.5-12.5	154	53.8	1.7	49.7	51.1	53.6	56.6	59.1
12.5-13.5	154	54.3	1.7	49.9	51.8	54.2	57.3	58.3
13.5-14.5	155	54.8	1.9	50.4	51.9	54.7	58.0	60.7
14.5-15.5	131	55.4	1.7	51.7	52.4	55.4	57.9	60.7
15.5-16.5	100	56.5	1.9	51.5	52.6	56.6	59.6	60.9
16.5-17.5	104	56.7	1.7	51.2	53.5	56.7	59.3	61.2
17.5-19.0	88	57.2	1.6	53.0	54.5	57.1	59.4	61.3

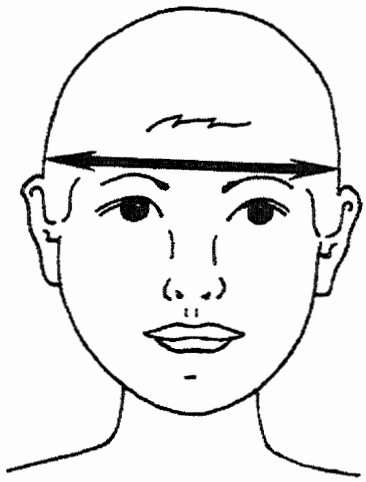
HEAD CIRCUMFERENCE (cm)
(Females)

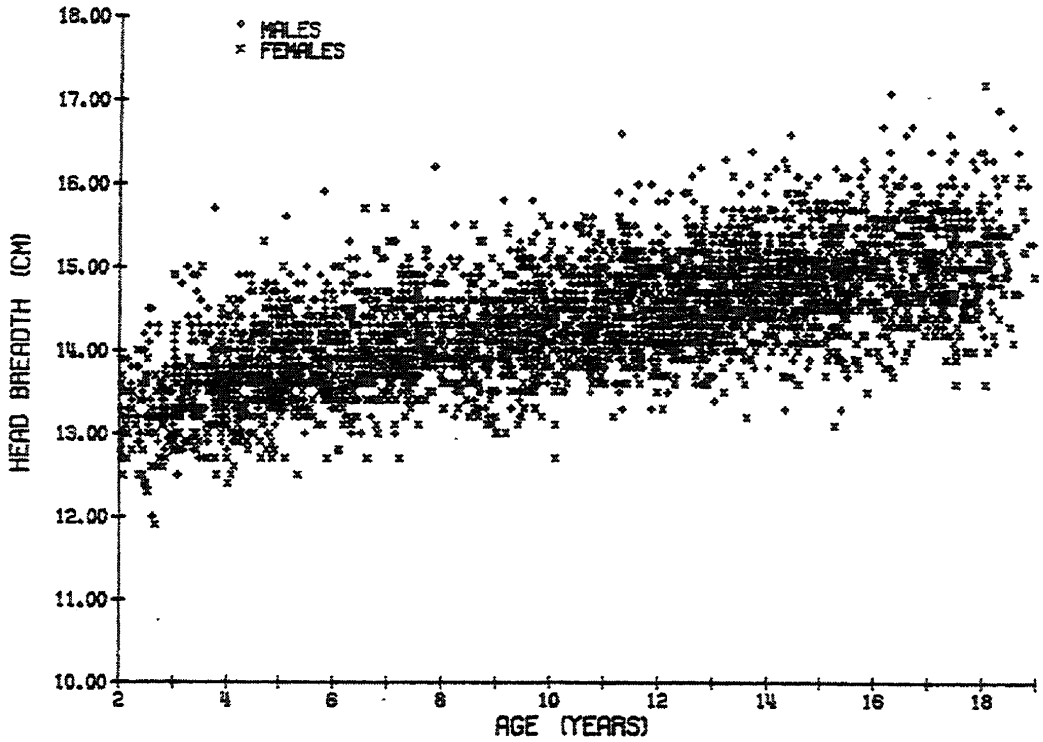
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	48.7	1.5	45.2	46.4	48.7	51.1	51.7
3.5-4.5	108	49.7	1.4	46.2	47.3	49.6	51.9	53.1
4.5-5.5	120	50.2	1.5	46.6	47.5	50.2	52.5	54.3
5.5-6.5	111	50.5	1.4	48.0	48.4	50.4	52.9	53.8
6.5-7.5	120	51.1	1.5	47.5	48.6	51.0	53.5	54.8
7.5-8.5	93	51.8	1.6	47.8	49.0	51.7	54.1	56.2
8.5-9.5	136	52.0	1.6	48.5	49.3	52.0	54.3	55.5
9.5-10.5	125	52.7	1.7	48.8	49.4	52.6	55.4	57.2
10.5-11.5	139	52.8	1.9	48.6	49.8	52.8	56.2	58.2
11.5-12.5	131	53.1	1.6	48.5	50.4	53.1	55.6	57.0
12.5-13.5	157	53.7	1.8	48.1	50.7	53.6	56.3	60.0
13.5-14.5	116	54.0	1.5	50.2	51.5	53.8	56.6	57.8
14.5-15.5	130	54.3	1.8	50.5	51.7	54.1	57.7	60.5
15.5-16.5	96	54.2	1.6	50.7	52.0	54.1	56.8	57.7
16.5-17.5	116	54.6	1.6	50.6	51.8	54.5	57.3	60.2
17.5-19.0	66	54.3	1.4	51.2	51.9	54.3	56.4	58.2

HEAD BREADTH

Subject sits erect with head oriented in the Frankfort Plane, arms hanging at sides. With the paddle blades of an automated sliding caliper, measure the maximum breadth of the head above and behind the ears.



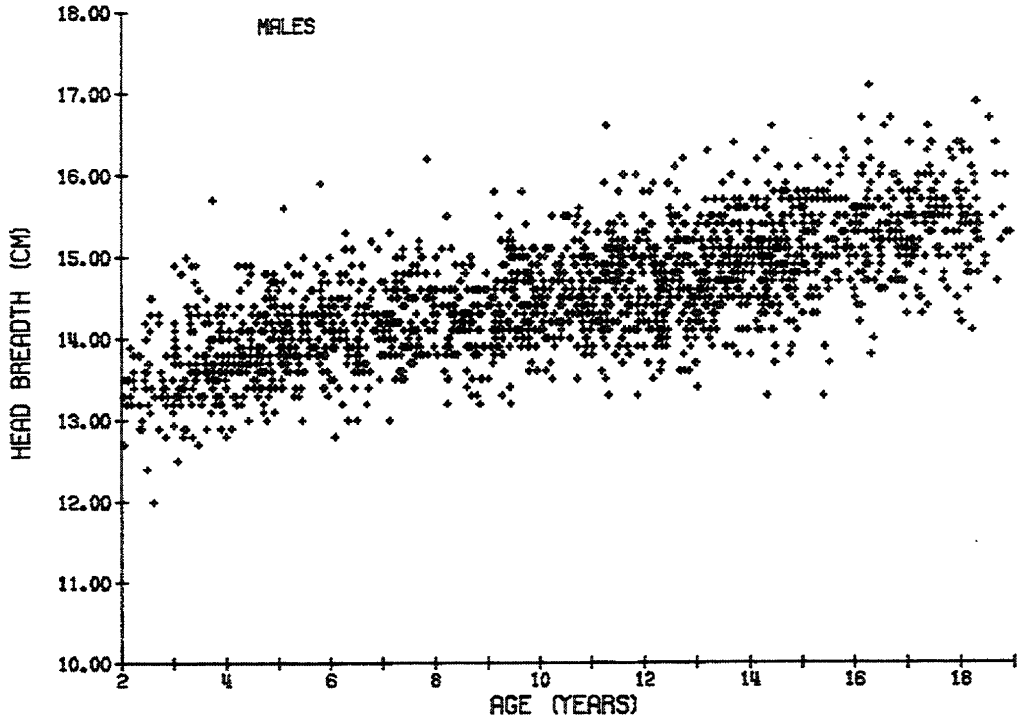


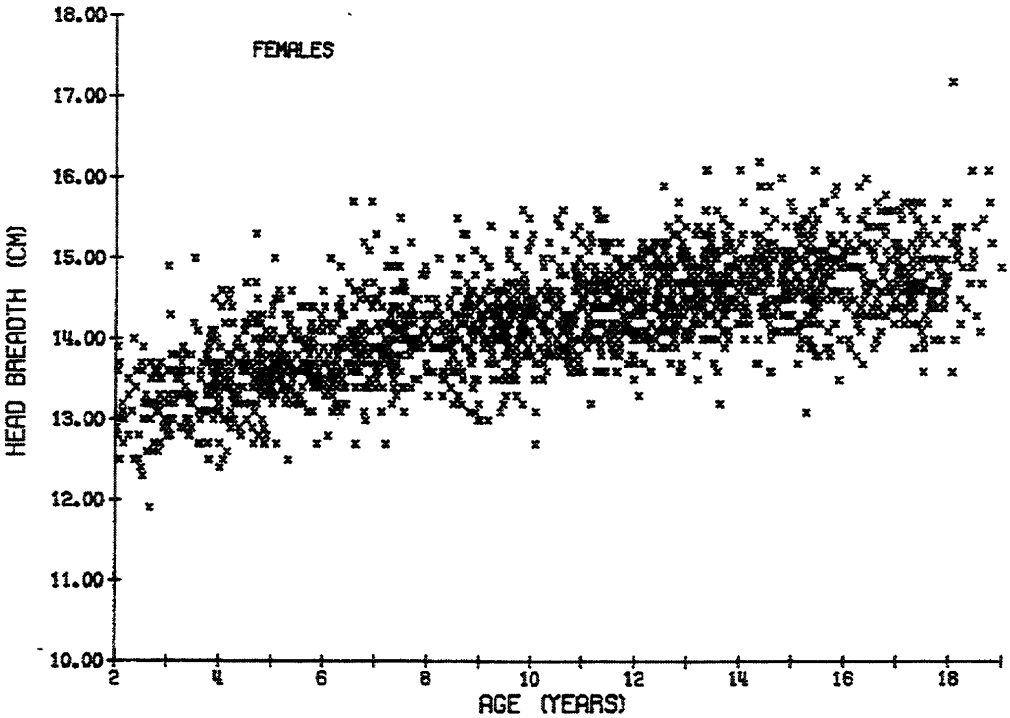


HEAD BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	210	13.4	0.6	11.9	12.5	13.4	14.4	15.0
3.5-4.5	225	13.7	0.6	12.4	12.8	13.6	14.5	17.9
4.5-5.5	257	13.8	0.5	12.5	13.1	13.7	14.7	15.6
5.5-6.5	219	13.9	0.5	12.7	13.1	13.9	14.8	15.9
6.5-7.5	222	14.1	0.5	12.7	13.3	14.0	15.0	15.7
7.5-8.5	190	14.2	0.5	13.1	13.4	14.1	14.9	16.2
8.5-9.5	248	14.2	0.5	13.0	13.2	14.2	15.1	15.8
9.5-10.5	247	14.4	0.5	12.7	13.5	14.3	15.1	15.8
10.5-11.5	277	14.5	0.5	13.2	13.7	14.4	15.4	16.6
11.5-12.5	283	14.6	0.5	13.3	13.7	14.5	15.3	16.0
12.5-13.5	308	14.7	0.5	13.4	13.8	14.7	15.5	16.3
13.5-14.5	270	14.8	0.5	13.2	13.9	14.8	15.7	16.6
14.5-15.5	260	14.9	0.6	13.1	13.9	14.8	15.8	16.2
15.5-16.5	194	15.1	0.6	13.5	14.0	15.0	16.0	17.1
16.5-17.5	221	15.1	0.6	13.6	14.2	15.0	16.0	16.7
17.5-19.0	155	15.2	0.6	13.6	14.2	15.1	16.3	17.2

(19)


MALES
HEAD BREADTH (CM)
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HEAD BREADTH (CM)
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HEAD BREADTH (cm)
(Males)

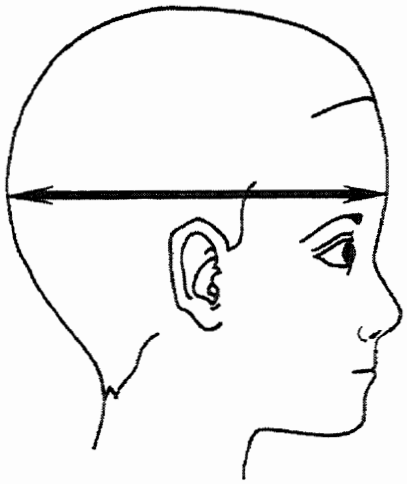
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	113	13.6	0.6	12.0	12.7	13.5	14.7	15.0
3.5-4.5	116	13.8	0.6	12.8	13.0	13.7	14.7	17.9
4.5-5.5	139	14.0	0.5	13.0	13.2	13.9	14.7	15.6
5.5-6.5	108	14.1	0.5	12.8	13.3	14.0	14.9	15.9
6.5-7.5	104	14.2	0.5	13.0	13.5	14.1	14.9	15.3
7.5-8.5	97	14.3	0.5	13.2	13.7	14.2	15.0	16.2
8.5-9.5	114	14.3	0.5	13.2	13.3	14.2	15.1	15.8
9.5-10.5	123	14.5	0.4	13.5	13.7	14.4	15.1	15.8
10.5-11.5	141	14.6	0.5	13.3	13.8	14.5	15.4	16.6
11.5-12.5	154	14.7	0.5	13.3	13.8	14.6	15.5	16.0
12.5-13.5	153	14.8	0.5	13.4	13.8	14.7	15.6	16.3
13.5-14.5	154	14.9	0.5	13.3	13.9	14.9	15.7	16.6
14.5-15.5	130	15.1	0.6	13.3	14.0	15.1	15.8	16.2
15.5-16.5	98	15.3	0.6	13.8	14.4	15.2	16.2	17.1
16.5-17.5	104	15.4	0.5	14.3	14.5	15.3	16.3	16.7
17.5-19.0	88	15.4	0.6	14.1	14.5	15.4	16.4	16.9

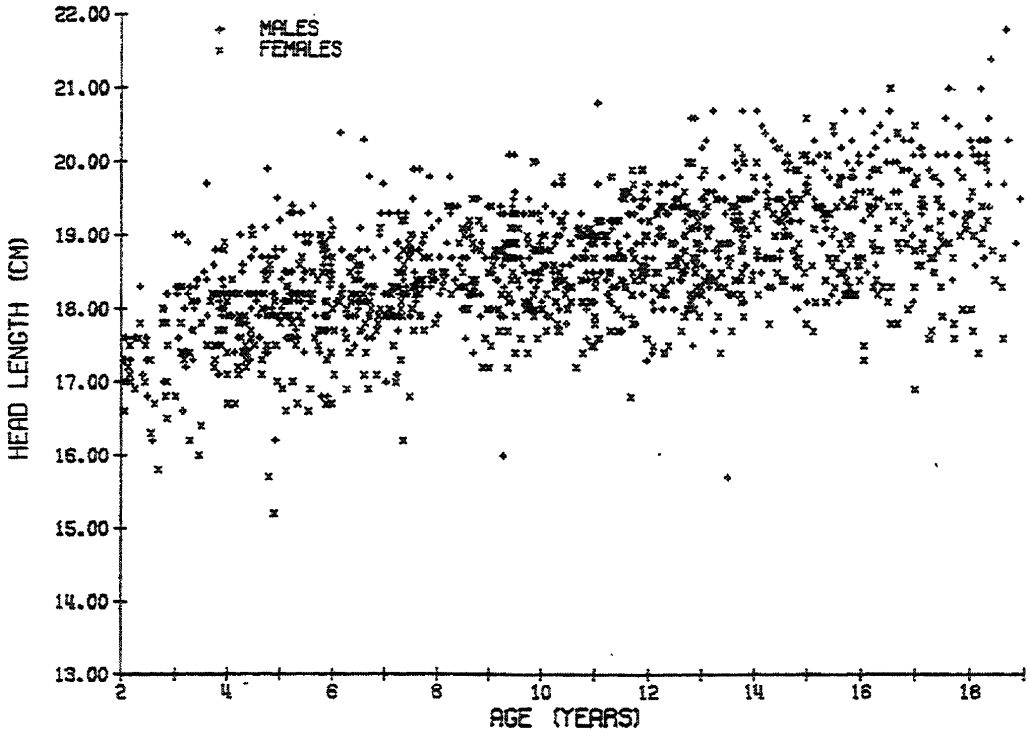
HEAD BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	13.2	0.5	11.9	12.5	13.2	13.9	14.9
3.5-4.5	109	13.6	0.5	12.4	12.6	13.5	14.4	15.0
4.5-5.5	118	13.7	0.5	12.5	12.8	13.6	14.5	15.3
5.5-6.5	111	13.8	0.4	12.7	13.0	13.6	14.4	15.0
6.5-7.5	118	14.0	0.6	12.7	13.2	13.9	15.0	15.7
7.5-8.5	93	14.0	0.4	13.1	13.3	14.0	14.7	15.2
8.5-9.5	134	14.2	0.5	13.0	13.1	14.1	15.0	15.5
9.5-10.5	124	14.2	0.5	12.7	13.4	14.2	15.1	15.6
10.5-11.5	136	14.4	0.5	13.2	13.5	14.3	15.3	15.6
11.5-12.5	129	14.4	0.5	13.3	13.6	14.4	15.1	15.9
12.5-13.5	155	14.6	0.5	13.5	13.8	14.6	15.3	16.1
13.5-14.5	116	14.7	0.5	13.2	13.9	14.6	15.5	16.2
14.5-15.5	130	14.7	0.5	13.1	13.8	14.6	15.5	16.1
15.5-16.5	96	14.8	0.5	13.5	13.8	14.8	15.7	16.0
16.5-17.5	117	14.8	0.5	13.6	14.0	14.7	15.6	15.8
17.5-19.0	67	14.9	0.6	13.6	13.9	14.8	15.7	17.2

HEAD LENGTH

Subject stands erect with head oriented in the Frankfort Plane. With the paddle blades of an automated anthropometer or sliding caliper, measure the distance from the glabella (most anterior protrusion of the forehead) to opisthocranion (most posterior point from glabella on the back of the head).

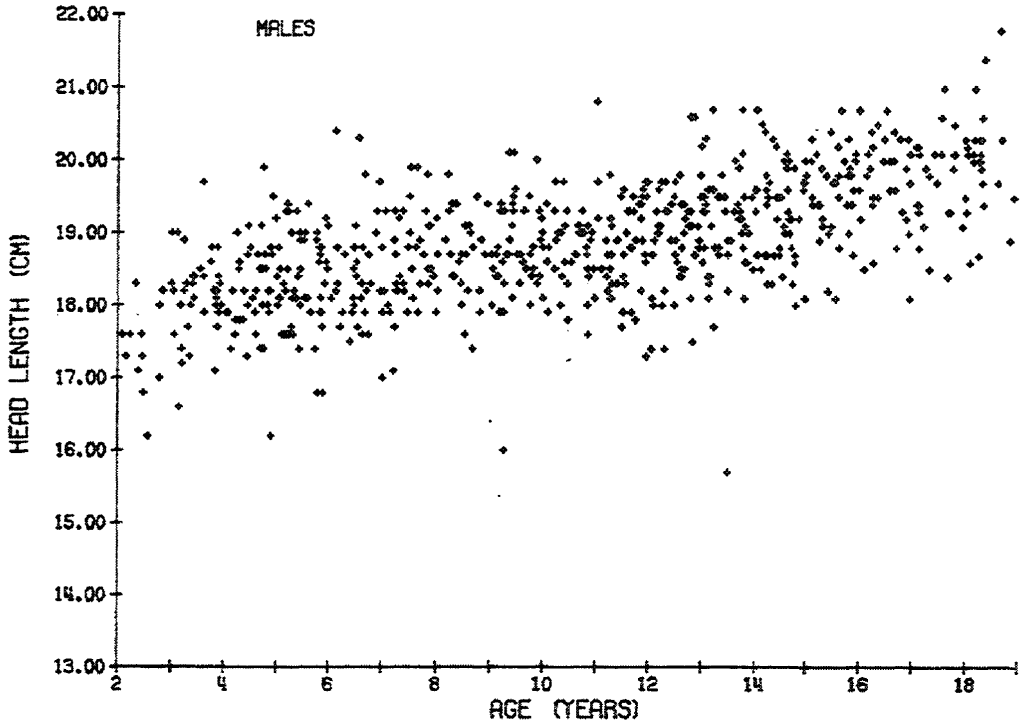


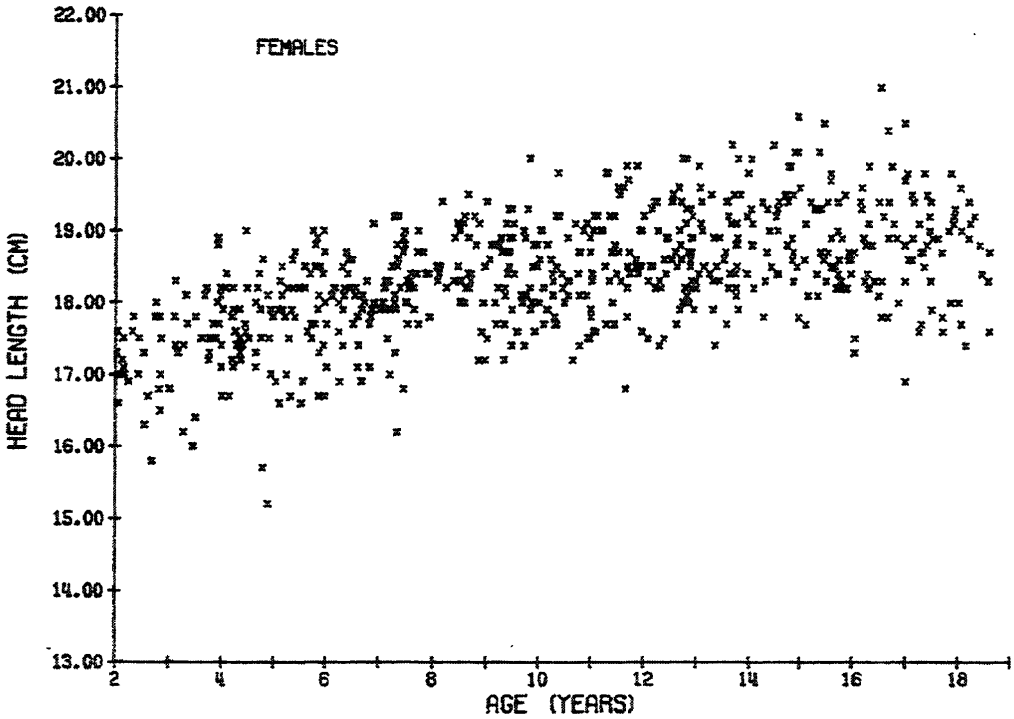


HEAD LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	17.5	0.7	15.8	16.1	17.4	18.4	19.0
3.5-4.5	75	17.9	0.6	16.4	16.8	17.9	18.9	19.7
4.5-5.5	90	18.1	0.8	15.2	16.6	18.1	19.2	19.9
5.5-6.5	80	18.2	0.7	16.6	16.7	18.1	19.0	20.4
6.5-7.5	87	18.2	0.7	16.2	17.0	18.1	19.3	20.3
7.5-8.5	67	18.6	0.5	17.7	17.8	18.4	19.6	19.9
8.5-9.5	90	18.6	0.7	16.0	17.2	18.6	19.4	20.1
9.5-10.5	82	18.6	0.6	17.4	17.6	18.5	19.6	20.0
10.5-11.5	84	18.6	0.6	17.2	17.5	18.6	19.7	20.8
11.5-12.5	95	18.8	0.7	16.8	17.4	18.8	19.7	19.9
12.5-13.5	107	18.9	0.7	15.7	17.7	18.8	20.0	20.7
13.5-14.5	89	19.1	0.7	17.7	18.0	19.1	20.3	20.7
14.5-15.5	80	19.2	0.7	17.7	18.0	19.2	20.1	20.6
15.5-16.5	78	19.2	0.8	17.3	18.1	19.3	20.6	21.0
16.5-17.5	67	19.2	0.8	16.9	17.7	19.1	20.3	20.5
17.5-19.0	62	19.5	1.0	17.4	17.6	19.4	20.8	21.8

(20)


MALES
HEAD LENGTH (CM)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HEAD LENGTH (CM)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HEAD LENGTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	17.8	0.7	16.2	16.4	17.8	18.9	19.0
3.5-4.5	35	18.2	0.5	17.1	17.2	18.1	19.0	19.7
4.5-5.5	56	18.3	0.7	16.2	16.9	18.2	19.3	19.9
5.5-6.5	39	18.4	0.7	16.8	16.8	18.3	19.2	20.4
6.5-7.5	41	18.4	0.7	17.0	17.1	18.2	19.7	20.3
7.5-8.5	35	18.8	0.6	17.9	17.9	18.7	19.8	19.9
8.5-9.5	42	18.7	0.8	16.0	17.4	18.7	19.6	20.1
9.5-10.5	39	18.8	0.5	17.8	17.8	18.7	19.6	20.0
10.5-11.5	41	18.7	0.6	17.6	17.7	18.7	19.7	20.8
11.5-12.5	55	18.9	0.7	17.3	17.4	19.0	19.6	19.7
12.5-13.5	58	19.0	0.8	15.7	17.7	19.0	20.3	20.7
13.5-14.5	48	19.3	0.6	18.1	18.2	19.2	20.5	20.7
14.5-15.5	42	19.3	0.6	18.0	18.1	19.3	20.1	20.4
15.5-16.5	37	19.7	0.6	18.1	18.4	19.8	20.6	20.7
16.5-17.5	28	19.6	0.6	18.1	18.3	19.6	20.3	20.4
17.5-19.0	38	20.0	0.7	18.4	18.6	20.0	21.0	21.8

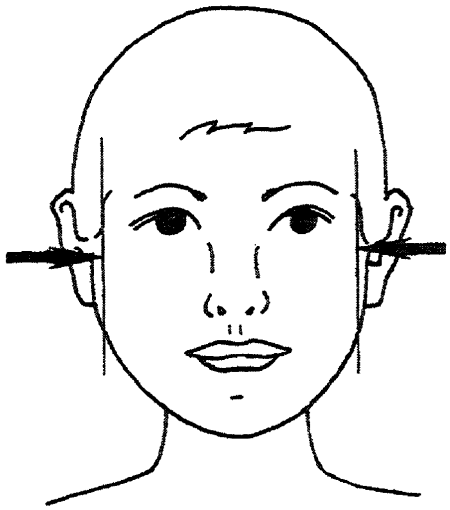
HEAD LENGTH (cm)
(Females)

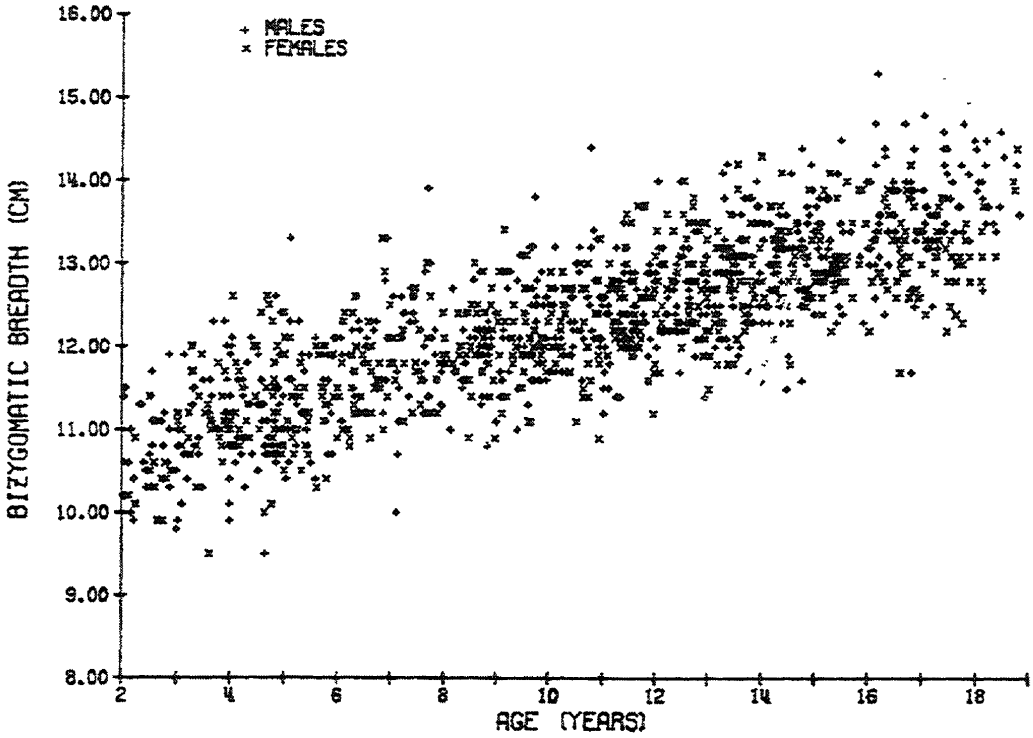
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	17.2	0.6	15.8	15.9	17.2	18.0	18.3
3.5-4.5	40	17.7	0.6	16.4	16.5	17.6	18.8	19.0
4.5-5.5	34	17.7	0.8	15.2	15.5	17.8	18.6	18.7
5.5-6.5	41	18.0	0.7	16.6	16.7	18.0	18.9	19.0
6.5-7.5	46	18.0	0.7	16.2	16.8	18.0	19.1	19.2
7.5-8.5	32	18.4	0.4	17.7	17.7	18.3	19.0	19.4
8.5-9.5	48	18.4	0.6	17.2	17.2	18.4	19.3	19.5
9.5-10.5	43	18.4	0.6	17.4	17.5	18.2	19.3	20.0
10.5-11.5	43	18.5	0.7	17.2	17.4	18.4	19.5	19.8
11.5-12.5	40	18.6	0.7	16.8	17.4	18.5	19.7	19.9
12.5-13.5	49	18.7	0.6	17.4	17.7	18.6	19.8	20.0
13.5-14.5	41	18.9	0.6	17.7	17.8	18.8	20.0	20.2
14.5-15.5	38	19.1	0.7	17.7	17.8	19.1	20.1	20.6
15.5-16.5	41	18.7	0.7	17.3	17.5	18.5	19.8	21.0
16.5-17.5	39	18.9	0.8	16.9	17.6	18.8	19.9	20.5
17.5-19.0	24	18.6	0.7	17.4	17.4	18.8	19.6	19.8

(21)

BIZYGOMATIC BREADTH

Subject sits erect with head oriented in the Frankfort Plane. With the paddle blades of an automated sliding caliper, measure the maximum horizontal breadth of the face between the zygomatic arches.

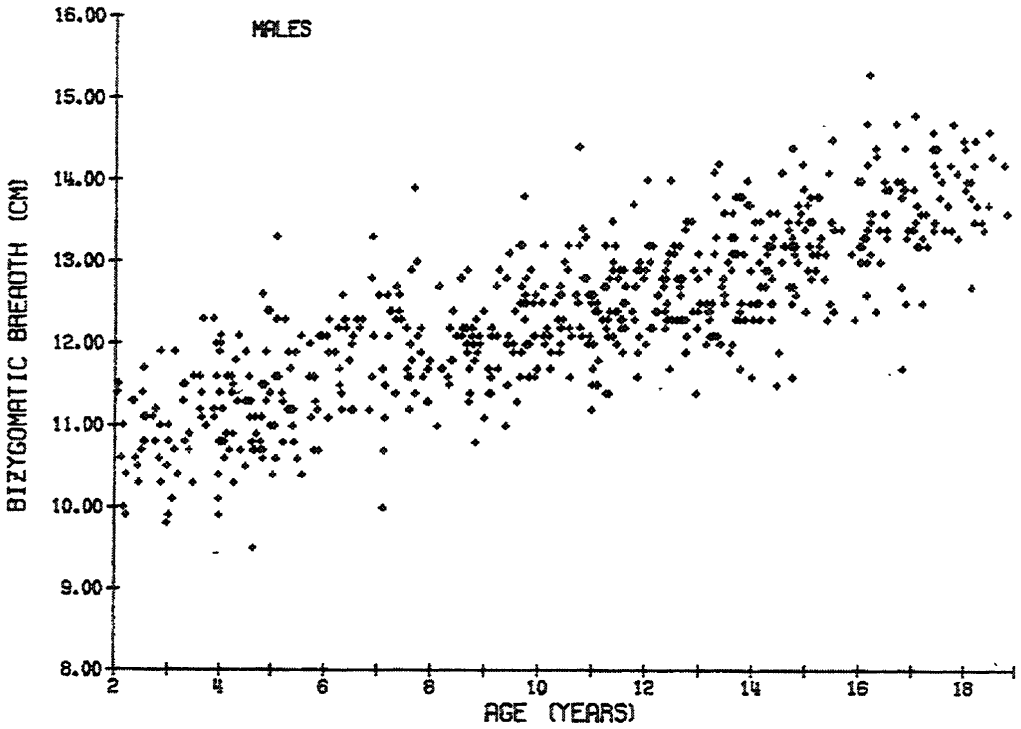


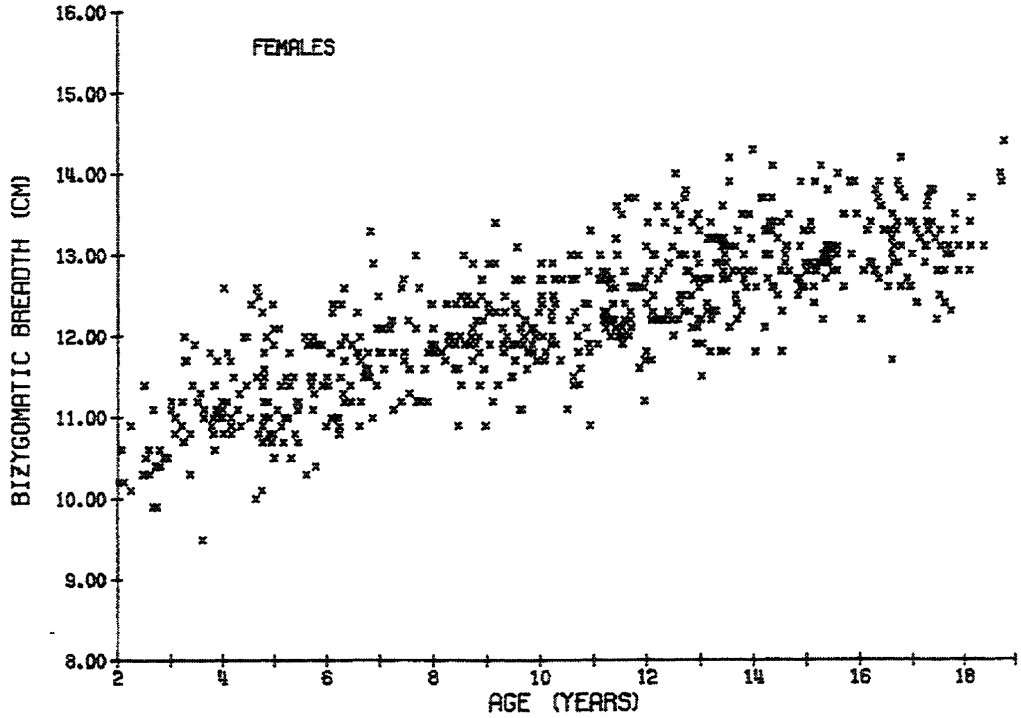


BIZYGOMATIC BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	10.8	0.5	9.8	9.9	10.7	11.7	12.0
3.5-4.5	71	11.2	0.6	9.5	10.2	11.1	12.1	12.6
4.5-5.5	94	11.3	0.6	9.5	10.4	11.2	12.4	13.3
5.5-6.5	62	11.6	0.6	10.3	10.4	11.5	12.3	12.6
6.5-7.5	63	11.9	0.6	10.0	10.9	11.9	12.8	13.3
7.5-8.5	60	11.9	0.5	10.9	11.0	11.8	12.9	13.9
8.5-9.5	79	12.1	0.5	10.8	11.1	12.0	12.9	13.4
9.5-10.5	92	12.2	0.5	11.1	11.3	12.1	13.0	13.8
10.5-11.5	98	12.4	0.6	10.9	11.3	12.4	13.3	14.4
11.5-12.5	94	12.6	0.6	11.2	11.7	12.4	13.6	14.0
12.5-13.5	107	12.7	0.6	11.4	11.8	12.7	13.7	14.2
13.5-14.5	98	13.0	0.6	11.5	11.8	13.0	13.8	14.3
14.5-15.5	95	13.1	0.5	11.6	12.3	13.0	14.0	14.5
15.5-16.5	56	13.4	0.6	12.2	12.4	13.3	14.3	15.3
16.5-17.5	80	13.4	0.6	11.7	12.4	13.3	14.3	14.8
17.5-19.0	46	13.6	0.6	12.3	12.4	13.6	14.5	14.7

((21)


MALES
BIZYGOMATIC BREADTH (CM)
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
BIZYGOMATIC BREADTH (CM)
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

BIZYGOMATIC BREADTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	10.9	0.5	9.8	9.9	10.8	11.7	11.9
3.5-4.5	37	11.3	0.6	9.9	10.1	11.2	12.1	12.3
4.5-5.5	50	11.3	0.7	9.5	10.4	11.2	12.4	13.3
5.5-6.5	26	11.7	0.6	10.4	10.4	11.7	12.3	12.6
6.5-7.5	30	12.0	0.7	10.0	10.3	12.1	12.7	13.3
7.5-8.5	30	11.9	0.6	11.0	11.1	11.7	12.9	13.9
8.5-9.5	39	12.0	0.5	10.8	11.0	12.0	12.9	13.1
9.5-10.5	47	12.3	0.5	11.3	11.4	12.2	13.1	13.8
10.5-11.5	52	12.5	0.6	11.2	11.4	12.4	13.3	14.4
11.5-12.5	46	12.6	0.5	11.6	11.7	12.5	13.5	14.0
12.5-13.5	46	12.7	0.6	11.4	11.9	12.5	13.7	14.2
13.5-14.5	54	12.9	0.6	11.5	11.7	13.0	13.7	14.0
14.5-15.5	50	13.3	0.6	11.6	12.3	13.2	14.1	14.5
15.5-16.5	31	13.5	0.6	12.3	12.4	13.4	14.5	15.3
16.5-17.5	38	13.7	0.6	11.7	12.1	13.6	14.6	14.8
17.5-19.0	27	13.9	0.5	12.7	12.9	13.8	14.6	14.7

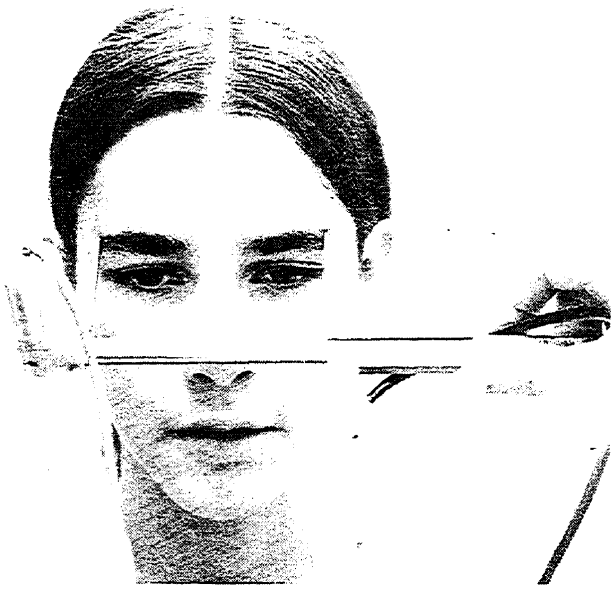
BIZYGOMATIC BREADTH (cm)
(Females)

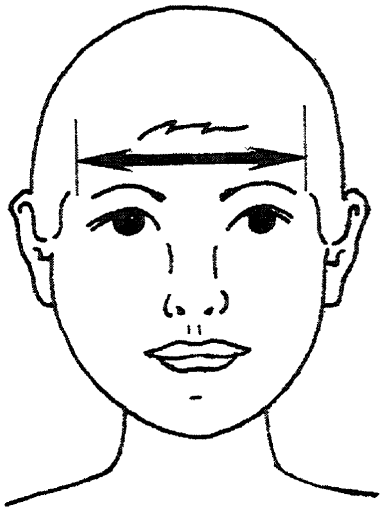
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	10.8	0.6	9.9	9.9	10.6	11.8	12.0
3.5-4.5	34	11.2	0.5	9.5	10.3	11.0	11.9	12.6
4.5-5.5	44	11.3	0.6	10.0	10.1	11.1	12.4	12.6
5.5-6.5	36	11.5	0.5	10.3	10.4	11.4	12.4	12.6
6.5-7.5	33	11.9	0.5	10.9	11.0	11.7	12.8	13.3
7.5-8.5	30	11.9	0.5	10.9	10.9	11.8	12.5	13.0
8.5-9.5	40	12.1	0.5	10.9	11.2	12.0	12.9	13.4
9.5-10.5	45	12.1	0.5	11.1	11.1	12.1	12.8	13.1
10.5-11.5	46	12.4	0.6	10.9	11.2	12.3	13.3	13.6
11.5-12.5	48	12.5	0.6	11.2	11.6	12.3	13.6	13.7
12.5-13.5	61	12.7	0.6	11.5	11.7	12.7	13.6	14.0
13.5-14.5	44	13.0	0.6	11.8	11.9	12.9	14.1	14.3
14.5-15.5	45	13.0	0.4	11.8	12.2	12.9	13.8	14.1
15.5-16.5	25	13.2	0.5	12.2	12.2	13.0	13.9	14.0
16.5-17.5	42	13.1	0.5	11.7	12.2	13.1	13.8	14.2
17.5-19.0	19	13.2	0.6	12.3	**	13.0	**	14.4

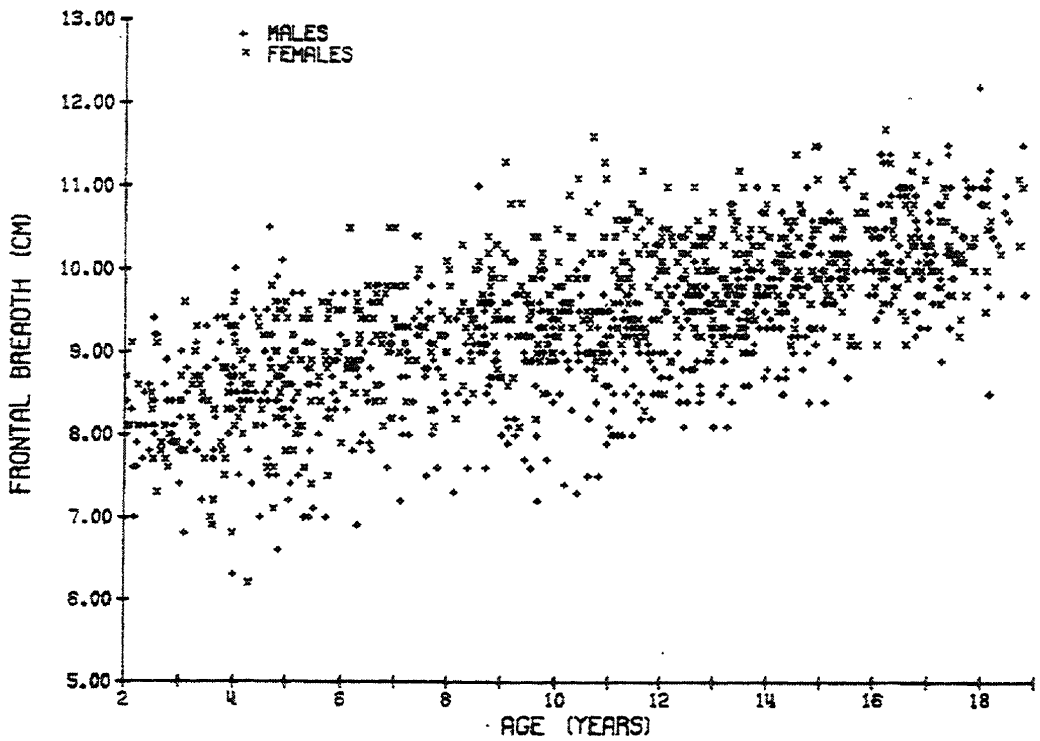
(22)

FRONTAL BREADTH

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blades of an automated sliding caliper, measure the horizontal distances across the lateral bony ends of the brow ridges.



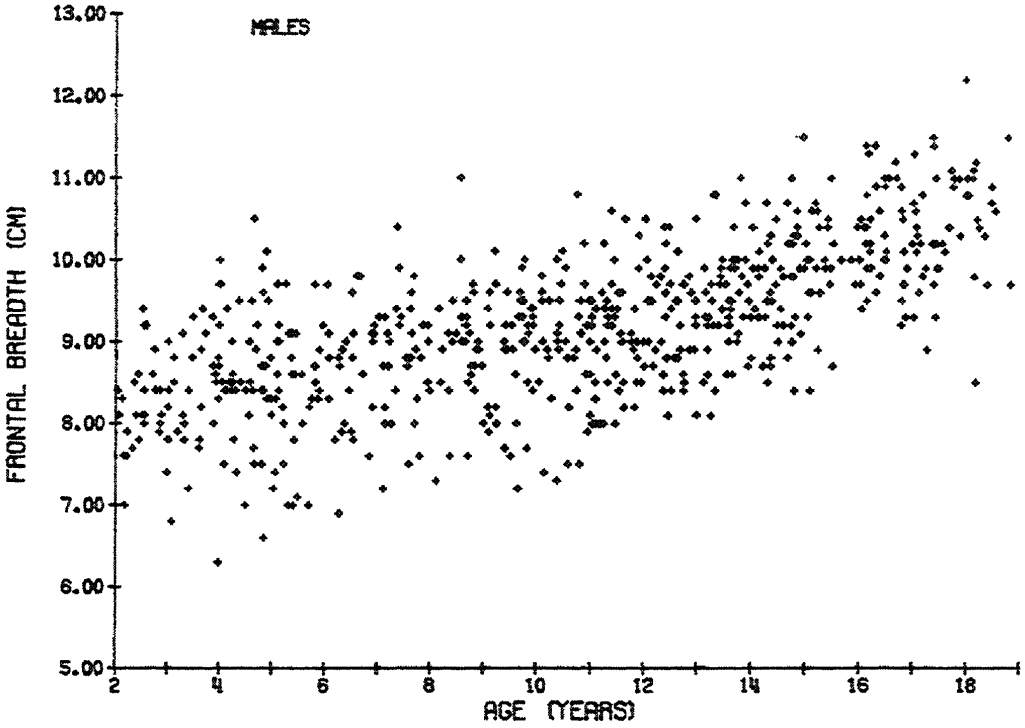


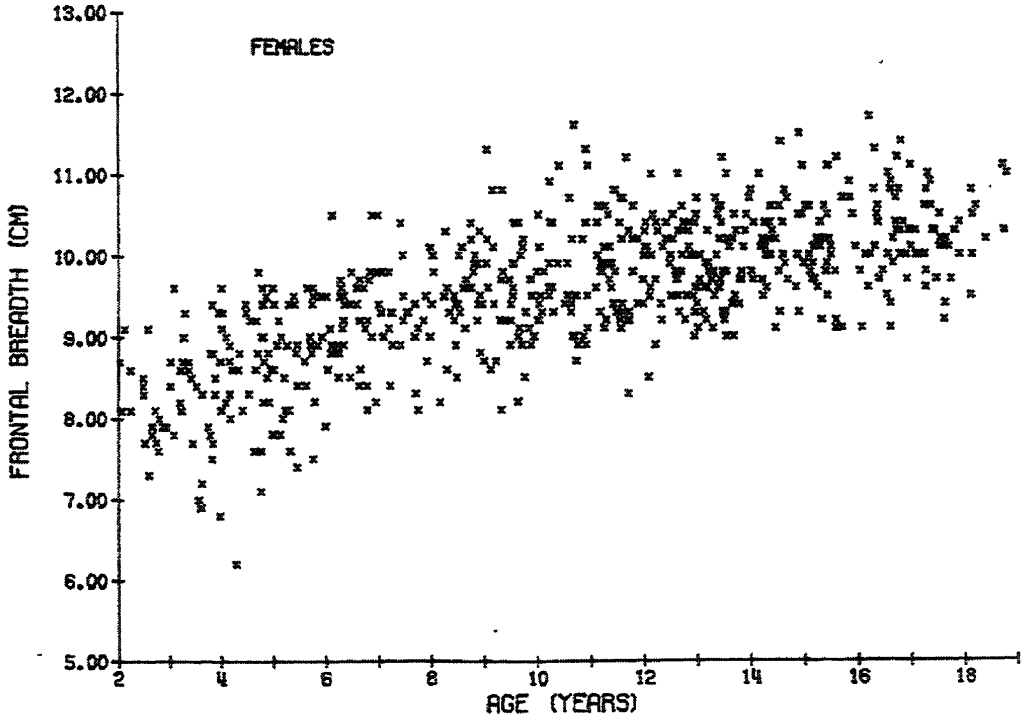


FRONTAL BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	8.3	0.6	6.8	7.3	8.1	9.2	9.6
3.5-4.5	71	8.5	0.8	6.2	6.9	8.4	9.5	10.0
4.5-5.5	94	8.6	0.8	6.6	7.0	8.6	9.7	10.5
5.5-6.5	62	8.8	0.7	6.9	7.5	8.8	9.7	10.5
6.5-7.5	63	9.1	0.7	7.2	7.8	9.1	10.2	10.5
7.5-8.5	60	9.0	0.6	7.3	7.5	9.0	9.9	10.3
8.5-9.5	79	9.3	0.7	7.6	7.9	9.3	10.4	11.3
9.5-10.5	92	9.3	0.7	7.2	7.7	9.3	10.3	11.1
10.5-11.5	99	9.4	0.8	7.5	7.9	9.3	10.7	11.6
11.5-12.5	94	9.5	0.7	8.1	8.3	9.5	10.5	11.2
12.5-13.5	107	9.7	0.6	8.1	8.5	9.6	10.6	11.2
13.5-14.5	98	9.8	0.6	8.5	8.7	9.7	10.7	11.0
14.5-15.5	95	10.0	0.6	8.4	8.9	10.0	11.0	11.5
15.5-16.5	56	10.2	0.6	9.1	9.1	10.1	11.3	11.7
16.5-17.5	80	10.3	0.6	8.9	9.2	10.2	11.2	11.5
17.5-19.0	47	10.4	0.7	8.5	9.3	10.3	11.2	12.2

(22)


MALES
FRONTAL BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FRONTAL BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FRONTAL BREADTH (cm)
(Males)

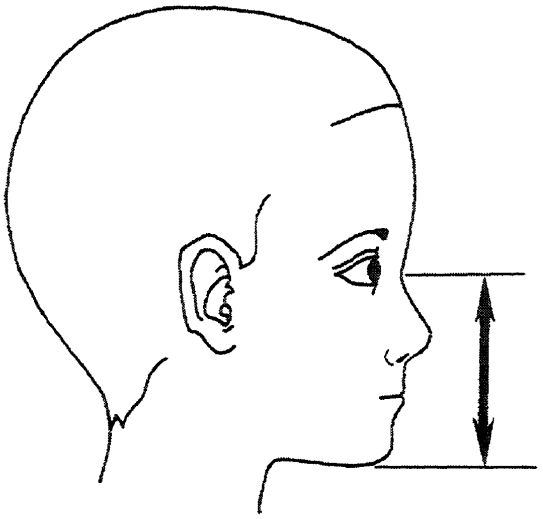
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	8.2	0.6	6.8	7.0	8.1	9.2	9.4
3.5-4.5	37	8.6	0.7	6.3	7.2	8.5	9.6	10.0
4.5-5.5	50	8.5	0.9	6.6	6.8	8.5	9.8	10.5
5.5-6.5	26	8.5	0.7	6.9	6.9	8.5	9.4	9.7
6.5-7.5	30	8.9	0.7	7.2	7.4	9.0	9.8	10.4
7.5-8.5	30	8.7	0.6	7.3	7.4	8.8	9.5	9.8
8.5-9.5	39	9.0	0.7	7.6	7.7	8.9	10.0	11.0
9.5-10.5	46	9.0	0.7	7.2	7.3	9.1	9.9	10.1
10.5-11.5	52	9.0	0.7	7.5	7.7	9.1	10.1	10.8
11.5-12.5	46	9.2	0.7	8.1	8.2	9.0	10.4	10.5
12.5-13.5	46	9.3	0.6	8.1	8.1	9.3	10.4	10.8
13.5-14.5	54	9.6	0.6	8.5	8.6	9.5	10.5	11.0
14.5-15.5	50	9.9	0.7	8.4	8.5	9.9	10.8	11.5
15.5-16.5	31	10.3	0.5	9.4	9.5	10.1	11.3	11.4
16.5-17.5	38	10.2	0.7	8.9	9.2	10.1	11.3	11.5
17.5-19.0	27	10.6	0.7	8.5	8.7	10.6	11.4	12.2

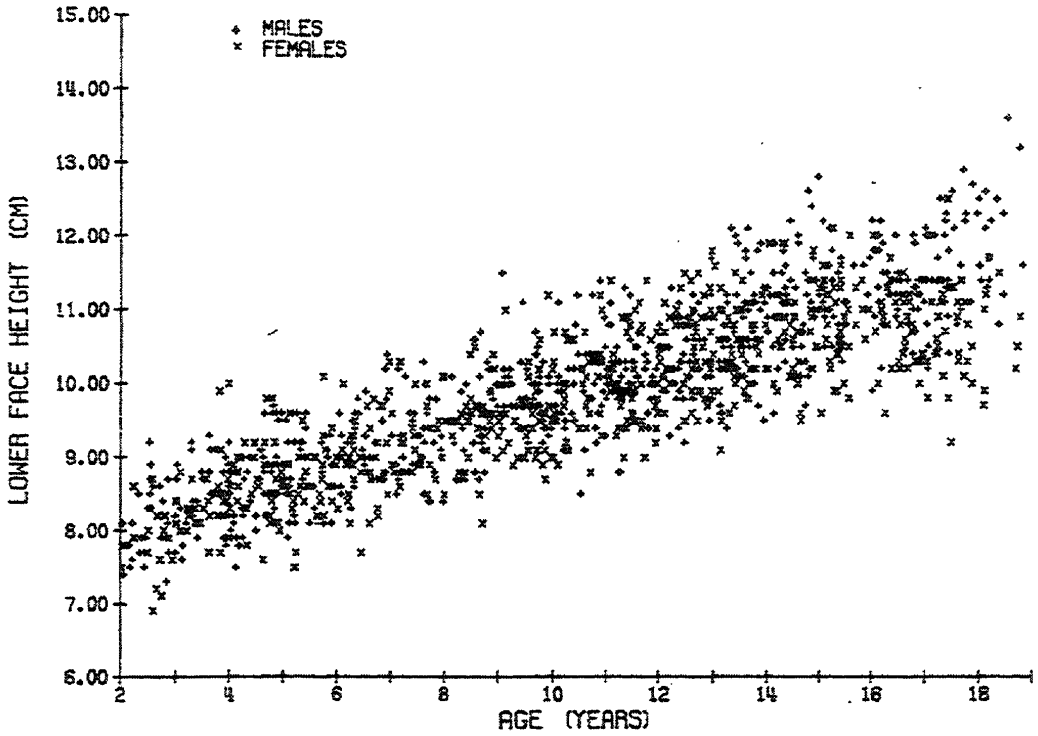
FRONTAL BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	8.3	0.5	7.3	7.5	8.2	9.2	9.6
3.5-4.5	34	8.3	0.8	6.2	6.6	8.4	9.4	9.6
4.5-5.5	44	8.7	0.7	7.1	7.4	8.7	9.5	9.8
5.5-6.5	36	9.1	0.6	7.5	7.8	8.9	9.7	10.5
6.5-7.5	33	9.3	0.6	8.1	8.2	9.2	10.4	10.5
7.5-8.5	30	9.2	0.5	8.1	8.1	9.3	10.0	10.3
8.5-9.5	40	9.6	0.6	8.1	8.6	9.6	10.6	11.3
9.5-10.5	46	9.7	0.6	8.2	8.6	9.5	10.5	11.1
10.5-11.5	47	9.8	0.7	8.7	8.8	9.7	11.0	11.6
11.5-12.5	48	9.8	0.6	8.3	8.7	9.9	10.7	11.2
12.5-13.5	61	9.9	0.5	9.0	9.1	9.7	10.6	11.2
13.5-14.5	44	10.0	0.5	9.0	9.0	10.0	10.8	11.0
14.5-15.5	45	10.2	0.5	9.2	9.3	10.0	11.1	11.5
15.5-16.5	25	10.2	0.7	9.1	9.1	10.0	11.3	11.7
16.5-17.5	42	10.3	0.5	9.1	9.4	10.2	11.1	11.4
17.5-19.0	20	10.2	0.5	9.2	**	10.1	**	11.1

LOWER FACE HEIGHT

Subject sits erect with head oriented in the Frankfort Plane, with jaws closed. With the pointed blades of an automated sliding caliper, measure the vertical distance of the lower face from menton to sellion.

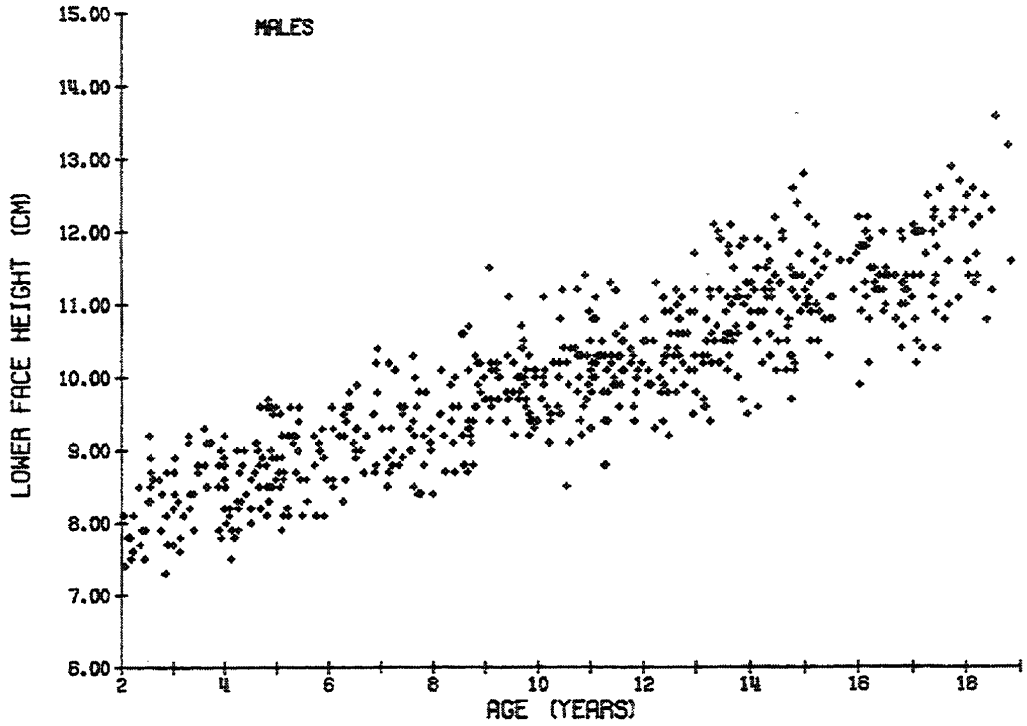


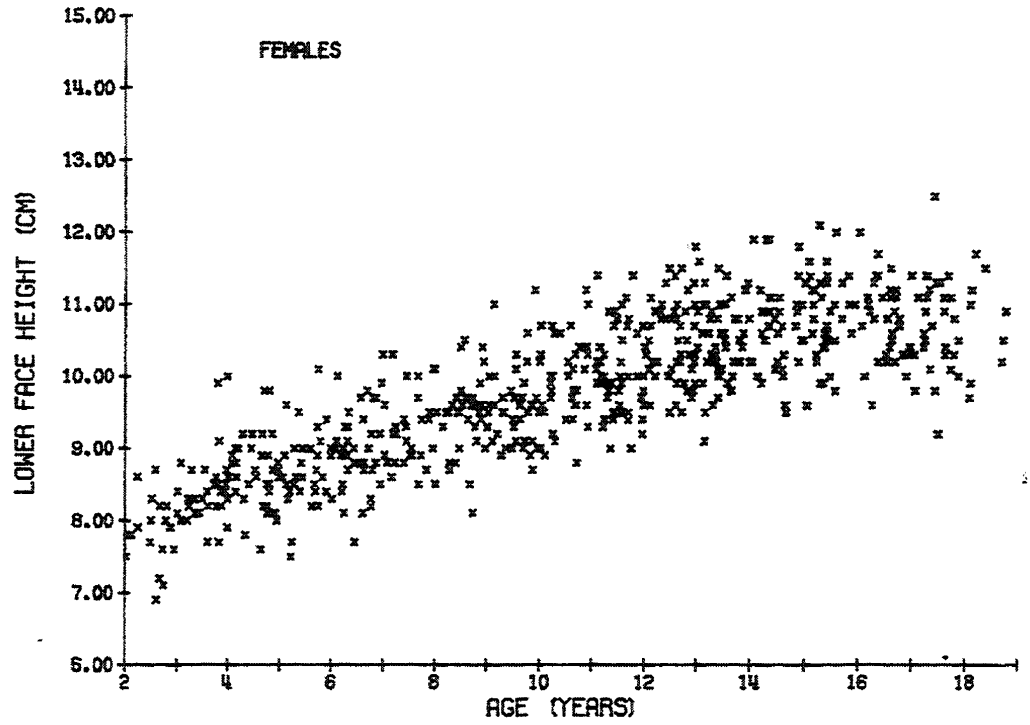


LOWER FACE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	76	8.1	0.5	6.9	7.3	8.1	8.9	9.2
3.5-4.5	70	8.5	0.5	7.5	7.7	8.5	9.2	10.0
4.5-5.5	93	8.7	0.5	7.5	7.9	8.6	9.6	9.8
5.5-6.5	62	8.9	0.5	7.7	8.0	8.9	9.6	10.1
6.5-7.5	63	9.2	0.6	8.1	8.3	9.1	10.2	10.4
7.5-8.5	60	9.3	0.5	8.4	8.4	9.3	10.1	10.4
8.5-9.5	79	9.7	0.6	8.1	8.7	9.6	10.6	11.5
9.5-10.5	93	9.8	0.5	8.7	9.0	9.7	10.7	11.2
10.5-11.5	99	10.1	0.6	8.5	9.0	10.0	11.1	11.4
11.5-12.5	94	10.2	0.6	9.0	9.3	10.1	11.1	11.5
12.5-13.5	107	10.5	0.6	9.1	9.5	10.4	11.6	12.1
13.5-14.5	98	10.8	0.6	9.5	9.8	10.8	11.8	12.2
14.5-15.5	95	10.9	0.7	9.5	9.8	10.9	12.1	12.8
15.5-16.5	56	11.2	0.6	9.6	9.9	11.2	12.0	12.2
16.5-17.5	80	11.0	0.7	9.2	10.0	11.0	12.2	12.6
17.5-19.0	47	11.4	0.9	9.7	9.9	11.3	12.8	13.6

(23)


MALES
LOWER FACE HEIGHT (CM)
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
LOWER FACE HEIGHT (CM)
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

LOWER FACE HEIGHT (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	8.2	0.5	7.3	7.4	8.2	9.1	9.2
3.5-4.5	36	8.5	0.5	7.5	7.6	8.5	9.1	9.3
4.5-5.5	50	8.8	0.5	7.9	8.0	8.7	9.6	9.7
5.5-6.5	26	9.0	0.5	8.1	8.1	9.0	9.6	9.8
6.5-7.5	30	9.3	0.5	8.5	8.5	9.2	10.2	10.4
7.5-8.5	30	9.3	0.5	8.4	8.4	9.2	10.0	10.3
8.5-9.5	39	9.8	0.6	8.7	8.7	9.7	10.7	11.5
9.5-10.5	47	9.9	0.5	9.1	9.2	9.9	10.8	11.2
10.5-11.5	52	10.1	0.6	8.5	8.7	10.1	11.2	11.4
11.5-12.5	46	10.2	0.5	9.2	9.3	10.1	10.9	11.3
12.5-13.5	46	10.5	0.6	9.4	9.5	10.4	11.8	12.1
13.5-14.5	54	11.0	0.6	9.5	9.7	11.0	11.9	12.2
14.5-15.5	50	11.1	0.7	9.7	10.0	11.0	12.3	12.8
15.5-16.5	31	11.4	0.5	9.9	10.1	11.4	12.0	12.2
16.5-17.5	38	11.4	0.6	10.2	10.3	11.3	12.3	12.6
17.5-19.0	27	11.9	0.7	10.8	10.8	11.8	13.1	13.6

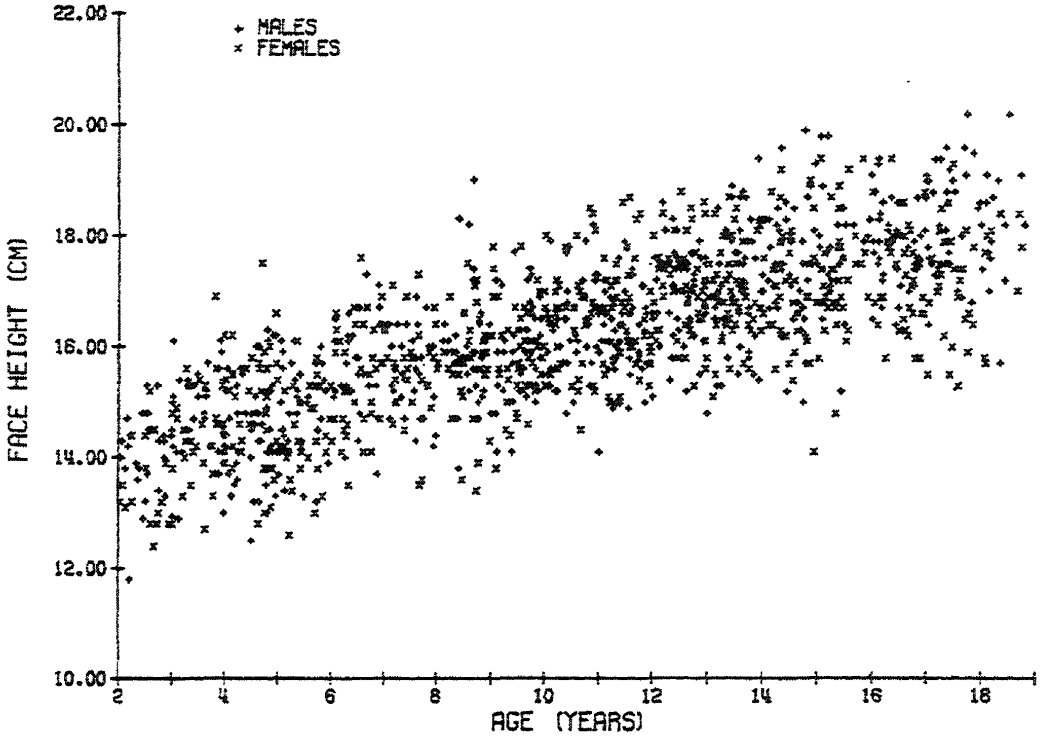
LOWER FACE HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	8.0	0.4	6.9	7.0	8.0	8.7	8.8
3.5-4.5	34	8.6	0.5	7.7	7.7	8.5	9.4	10.0
4.5-5.5	43	8.6	0.5	7.5	7.6	8.5	9.6	9.8
5.5-6.5	36	8.9	0.5	7.7	8.0	8.9	9.6	10.1
6.5-7.5	33	9.2	0.6	8.1	8.2	9.1	10.1	10.3
7.5-8.5	30	9.3	0.5	8.5	8.5	9.4	10.1	10.4
8.5-9.5	40	9.5	0.5	8.1	8.5	9.5	10.4	11.0
9.5-10.5	46	9.7	0.6	8.7	8.8	9.6	10.6	11.2
10.5-11.5	47	10.1	0.6	8.8	9.1	9.9	11.0	11.4
11.5-12.5	48	10.2	0.7	9.0	9.1	10.1	11.2	11.5
12.5-13.5	61	10.5	0.6	9.1	9.5	10.4	11.4	11.8
13.5-14.5	44	10.7	0.5	9.8	9.8	10.5	11.5	11.9
14.5-15.5	45	10.7	0.6	9.5	9.6	10.6	11.6	12.1
15.5-16.5	25	10.9	0.6	9.6	9.6	10.9	11.8	12.0
16.5-17.5	42	10.7	0.6	9.2	9.5	10.6	11.4	12.5
17.5-19.0	20	10.7	0.6	9.7	**	10.5	**	11.7

(24)

FACE HEIGHT

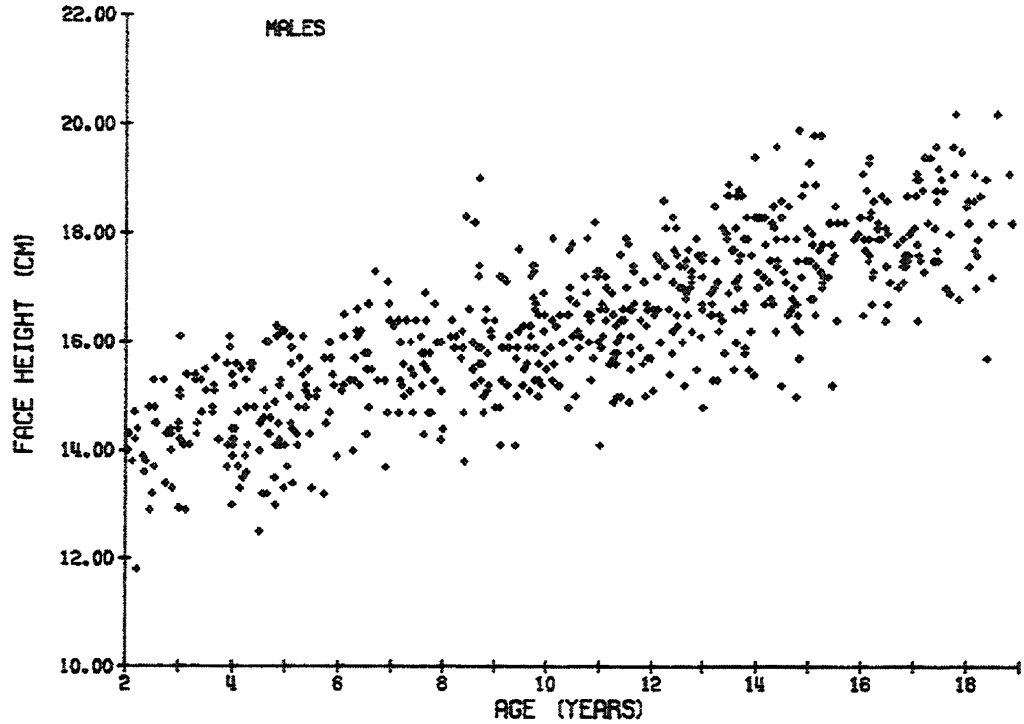
Subject sits erect with head oriented in the Frankfort Plane with jaws closed. With the pointed blades of an automated sliding caliper, measure the vertical distance of the face from menton to crinion.

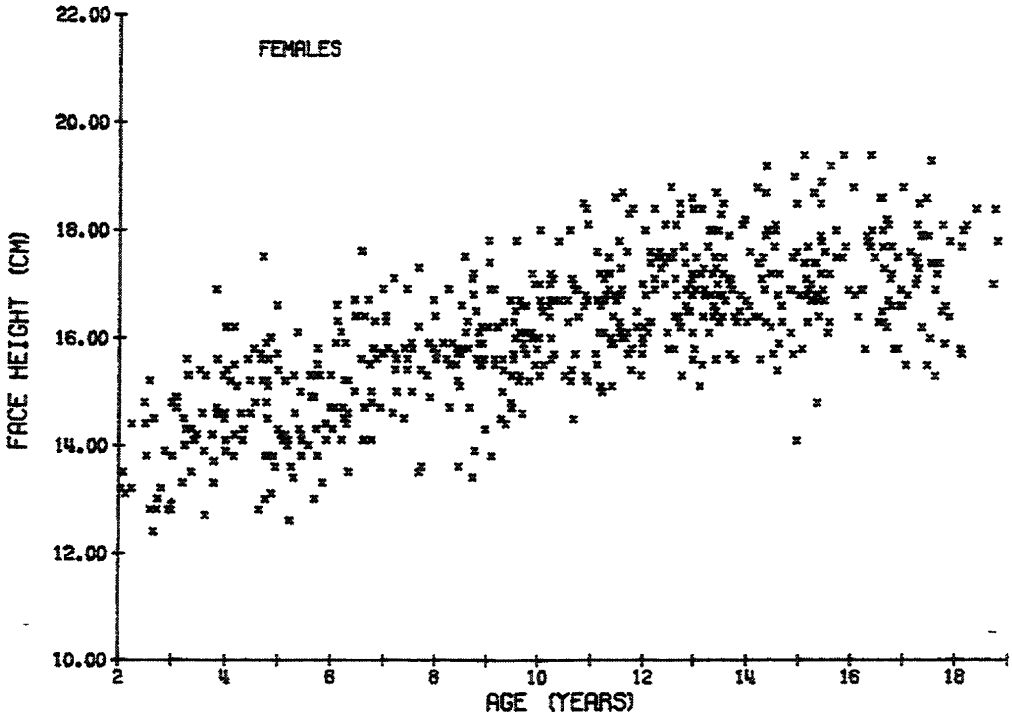


FACE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	75	14.2	0.8	11.8	12.6	14.2	15.4	16.1
3.5-4.5	71	14.7	0.9	12.5	13.1	14.6	16.0	16.9
4.5-5.5	93	14.7	1.0	12.6	13.1	14.5	16.1	17.5
5.5-6.5	61	15.1	0.9	13.0	13.3	15.1	16.5	16.7
6.5-7.5	63	15.6	0.9	13.7	14.0	15.5	17.0	17.6
7.5-8.5	60	15.6	0.9	13.5	13.6	15.7	16.8	18.3
8.5-9.5	79	15.9	1.1	13.4	14.0	15.8	17.5	19.0
9.5-10.5	93	16.2	0.8	14.6	15.1	16.1	17.7	18.0
10.5-11.5	99	16.5	0.9	14.1	14.9	16.5	18.0	18.6
11.5-12.5	94	16.7	0.9	14.9	15.3	16.6	18.3	18.8
12.5-13.5	107	17.0	0.9	14.8	15.3	16.9	18.4	18.9
13.5-14.5	96	17.3	1.0	15.2	15.5	17.2	18.7	19.6
14.5-15.5	94	17.3	1.1	14.1	15.3	17.2	19.1	19.9
15.5-16.5	56	17.7	0.9	15.8	16.2	17.8	19.3	19.4
16.5-17.5	80	17.6	1.0	15.5	15.8	17.5	19.2	19.6
17.5-19.0	47	17.8	1.2	15.3	15.6	17.8	19.6	20.2

(24)


MALES
FACE HEIGHT (CM)
22.00
20.00
18.00
16.00
14.00
12.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FACE HEIGHT (CM)
22.00
20.00
18.00
16.00
14.00
12.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FACE HEIGHT (cm)
(Males)

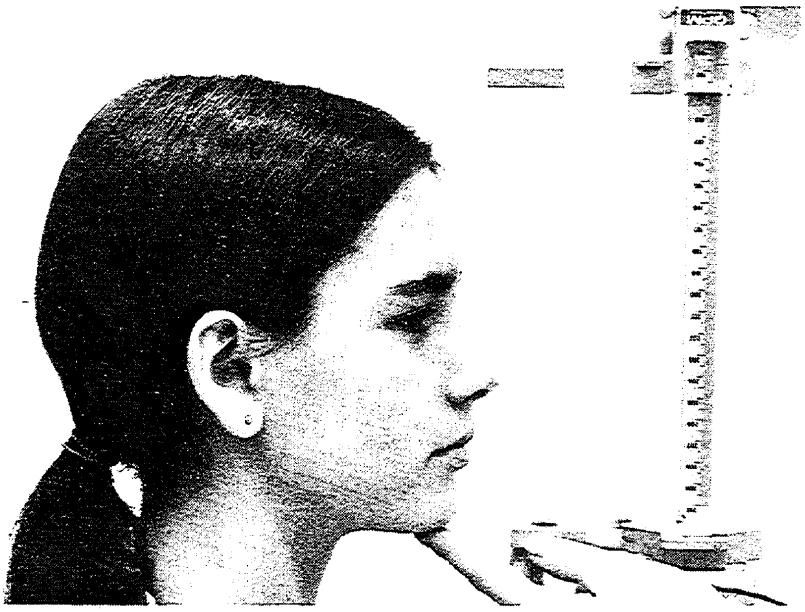
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	14.4	0.8	11.8	12.5	14.3	15.4	16.1
3.5-4.5	37	14.6	0.9	12.5	12.9	14.5	15.7	16.1
4.5-5.5	49	14.8	0.9	13.0	13.1	14.6	16.1	16.3
5.5-6.5	25	15.3	0.8	13.2	13.4	15.3	16.4	16.6
6.5-7.5	30	15.6	0.9	13.7	14.0	15.4	16.9	17.3
7.5-8.5	30	15.7	0.9	13.8	14.0	15.8	16.8	18.3
8.5-9.5	39	16.0	1.1	14.1	14.1	15.8	17.7	19.0
9.5-10.5	47	16.2	0.8	14.8	15.0	16.1	17.6	17.9
10.5-11.5	52	16.4	0.8	14.1	14.9	16.3	17.8	18.2
11.5-12.5	46	16.6	0.9	14.9	15.0	16.5	18.0	18.6
12.5-13.5	46	16.9	0.9	14.8	15.2	16.9	18.4	18.9
13.5-14.5	53	17.4	1.0	15.2	15.4	17.4	18.7	19.6
14.5-15.5	49	17.5	1.1	15.0	15.4	17.4	19.4	19.9
15.5-16.5	31	18.0	0.8	16.4	16.5	17.9	19.2	19.4
16.5-17.5	38	18.0	0.8	16.4	16.9	17.7	19.3	19.6
17.5-19.0	27	18.3	1.1	15.7	16.1	18.2	19.8	20.2

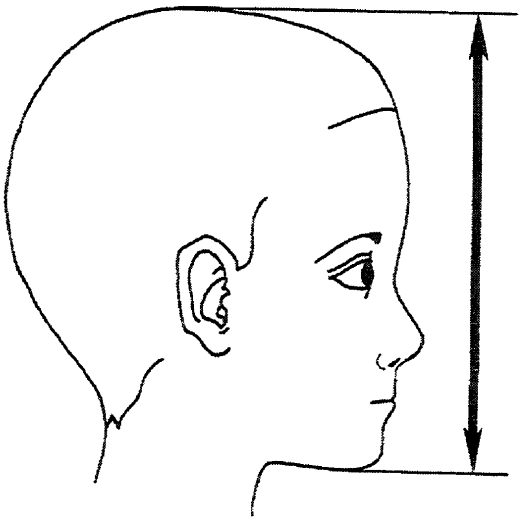
FACE HEIGHT (cm)
(Females)

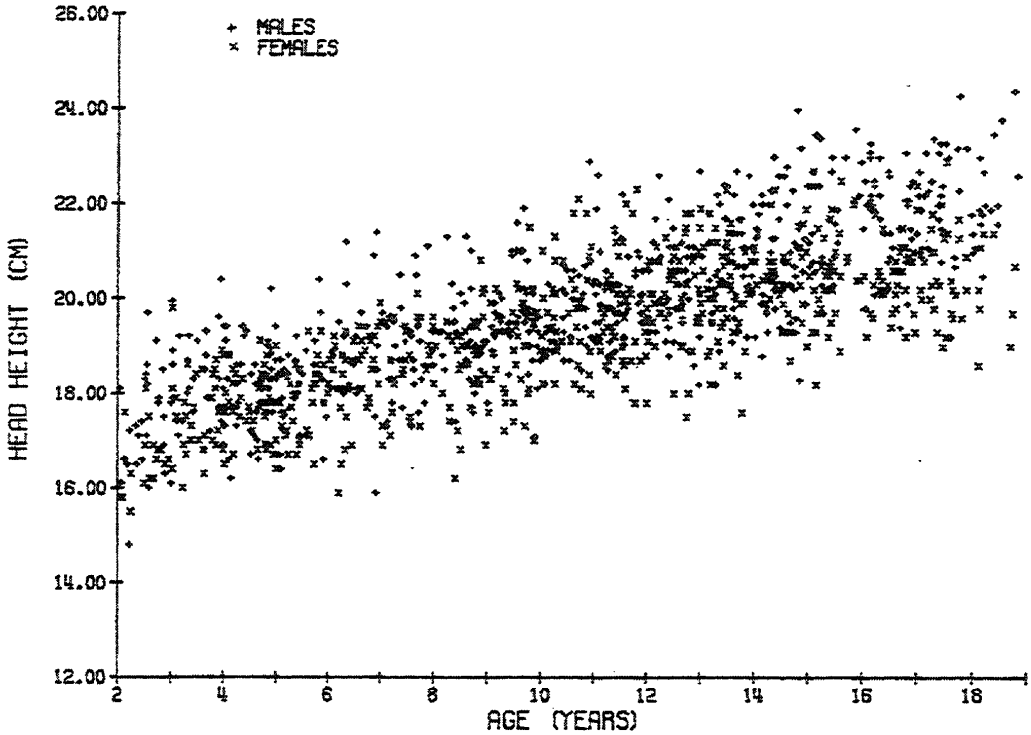
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	13.9	0.8	12.4	12.5	13.9	15.2	15.6
3.5-4.5	34	14.8	0.9	12.7	13.1	14.6	16.0	16.9
4.5-5.5	44	14.6	1.1	12.6	12.8	14.3	16.1	17.5
5.5-6.5	36	14.9	0.9	13.0	13.2	14.7	16.4	16.7
6.5-7.5	33	15.6	0.9	14.1	14.1	15.6	17.0	17.6
7.5-8.5	30	15.6	0.9	13.5	13.5	15.6	16.8	17.3
8.5-9.5	40	15.8	1.1	13.4	13.8	15.7	17.4	17.8
9.5-10.5	46	16.3	0.7	14.6	15.0	16.1	17.4	18.0
10.5-11.5	47	16.6	1.0	14.5	15.0	16.6	18.3	18.6
11.5-12.5	48	16.8	0.9	15.3	15.4	16.6	18.4	18.8
12.5-13.5	61	17.0	0.9	15.1	15.5	16.9	18.4	18.7
13.5-14.5	43	17.1	0.9	15.6	15.6	17.0	18.7	19.2
14.5-15.5	45	17.1	1.1	14.1	14.9	16.9	18.8	19.4
15.5-16.5	25	17.5	1.0	15.8	15.9	17.3	19.3	19.4
16.5-17.5	42	17.3	0.9	15.5	15.5	17.2	18.6	19.3
17.5-19.0	20	17.1	1.0	15.3	**	17.2	**	18.4

HEAD HEIGHT

Subject sits erect with head oriented in the Frankfort Plane with jaws closed. With the pointed blades of an automated anthropometer, measure the height of the head perpendicular to the Frankfort Plane from menton to vertex.



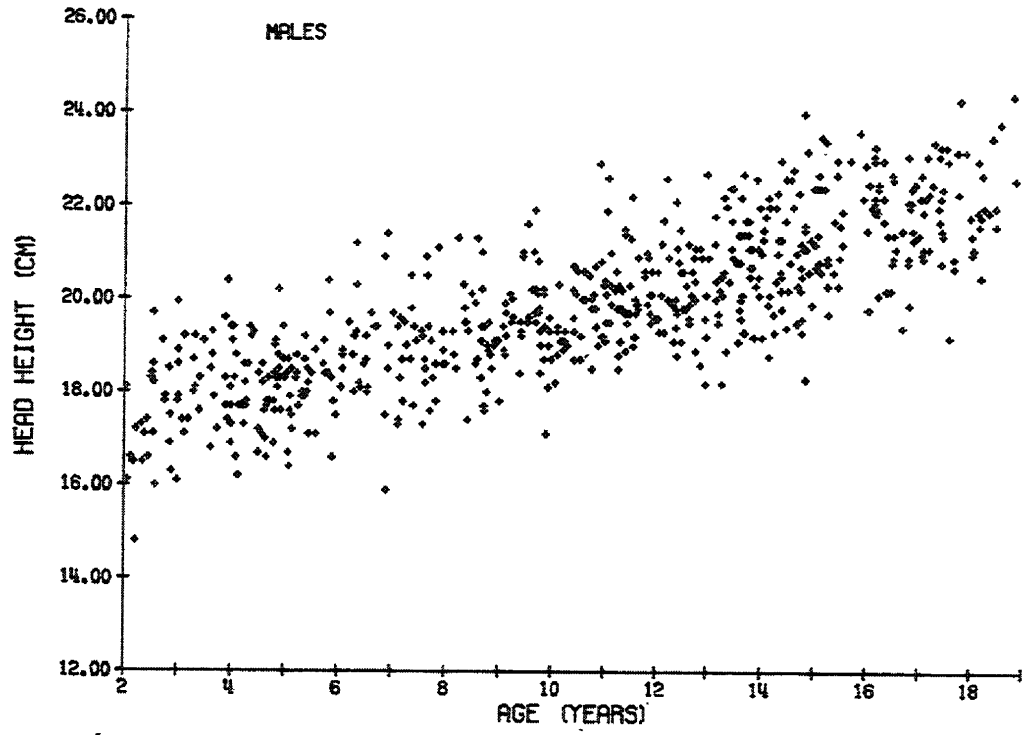


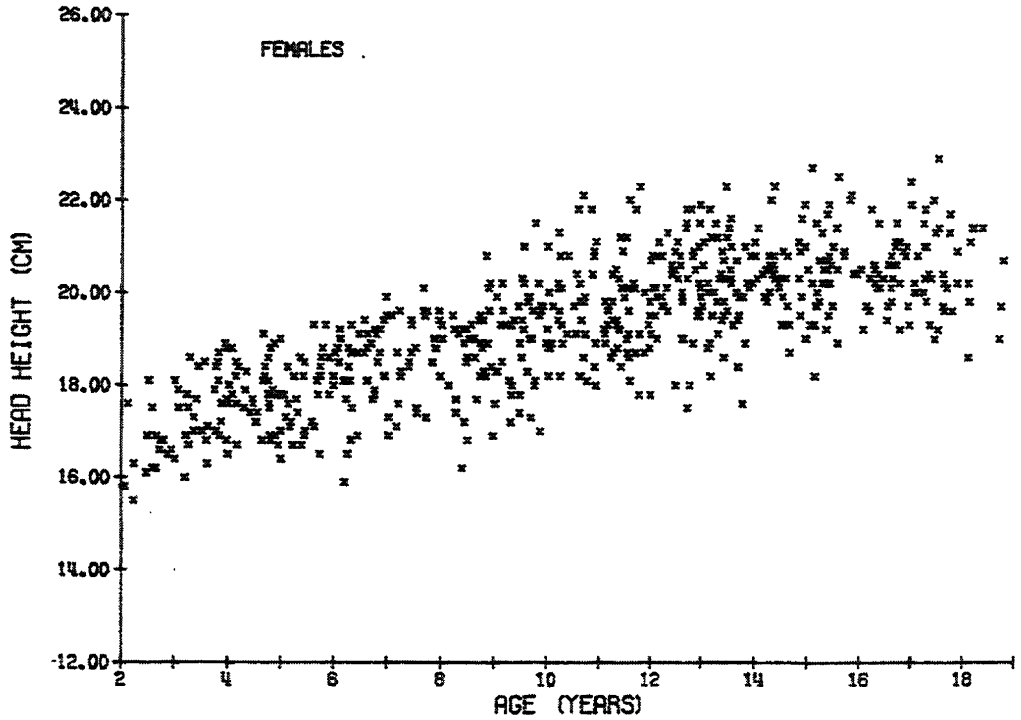


HEAD HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	73	17.3	1.0	14.8	15.7	17.3	19.0	19.7
3.5-4.5	70	17.9	0.9	16.2	16.5	17.7	19.3	20.4
4.5-5.5	93	17.9	0.8	16.4	16.6	17.8	19.0	20.2
5.5-6.5	62	18.4	1.0	15.9	16.5	18.4	19.7	21.2
6.5-7.5	63	18.7	1.0	15.9	17.1	18.7	19.9	21.4
7.5-8.5	60	18.8	1.0	16.2	17.2	18.9	20.5	21.3
8.5-9.5	79	19.0	0.9	16.9	17.5	19.0	20.8	21.3
9.5-10.5	91	19.5	0.9	17.0	18.0	19.5	21.0	21.9
10.5-11.5	98	19.9	1.0	18.0	18.4	19.8	21.8	22.9
11.5-12.5	93	20.0	1.0	17.8	18.4	19.9	21.7	22.6
12.5-13.5	107	20.3	1.0	17.5	18.3	20.2	22.0	22.7
13.5-14.5	99	20.6	1.0	17.6	19.1	20.4	22.3	23.0
14.5-15.5	95	20.8	1.2	18.2	19.1	20.7	22.8	24.0
15.5-16.5	56	21.3	1.2	18.9	19.4	21.2	23.0	23.6
16.5-17.5	80	21.2	1.1	19.0	19.2	21.0	23.0	23.4
17.5-19.0	45	21.4	1.4	18.6	19.0	21.3	23.7	24.4

(25)


MALES
HEAD HEIGHT (CM)
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HEAD HEIGHT (CM)
26.00
24.00
22.00
20.00
18.00
16.00
14.00
-12.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HEAD HEIGHT (cm)
(Males)

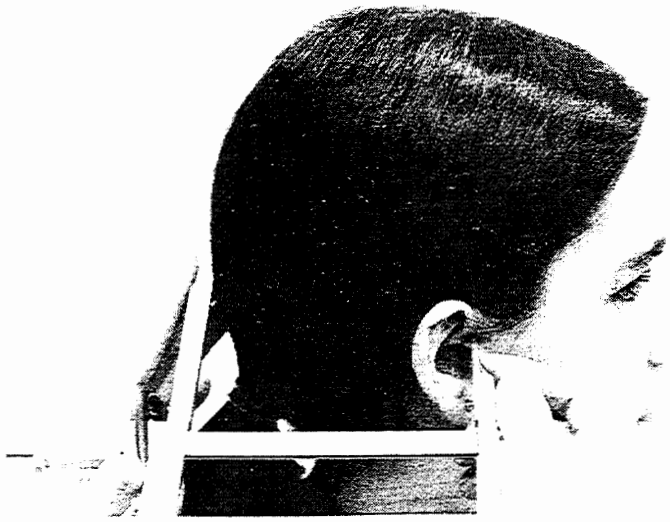
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	17.6	1.1	14.8	16.0	17.6	19.1	19.7
3.5-4.5	36	18.1	1.0	16.2	16.5	17.9	19.4	20.4
4.5-5.5	50	18.1	0.7	16.4	16.6	18.1	19.1	20.2
5.5-6.5	26	18.7	1.0	16.6	16.7	18.5	20.4	21.2
6.5-7.5	30	18.9	1.1	15.9	16.6	18.8	20.7	21.4
7.5-8.5	30	19.1	1.0	17.3	17.3	19.1	21.0	21.3
8.5-9.5	39	19.3	0.9	17.6	17.7	19.1	21.0	21.3
9.5-10.5	46	19.6	0.9	17.1	18.1	19.4	20.9	21.9
10.5-11.5	51	20.1	1.0	18.5	18.6	19.9	22.0	22.9
11.5-12.5	46	20.2	0.8	18.8	19.0	19.9	21.6	22.6
12.5-13.5	46	20.4	1.1	18.2	18.3	20.3	22.3	22.7
13.5-14.5	55	20.8	1.1	18.8	19.1	20.7	22.5	23.0
14.5-15.5	50	21.3	1.2	18.3	19.4	21.1	23.3	24.0
15.5-16.5	31	21.9	1.1	19.8	19.8	22.0	23.2	23.6
16.5-17.5	38	21.8	0.9	19.4	19.8	21.9	23.2	23.4
17.5-19.0	26	22.1	1.2	19.2	19.6	21.9	24.1	24.4

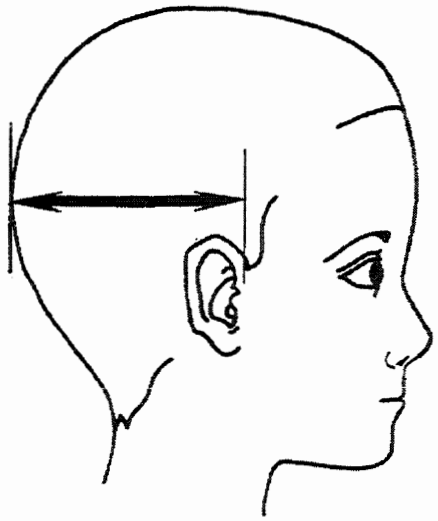
HEAD HEIGHT (cm)
(Females)

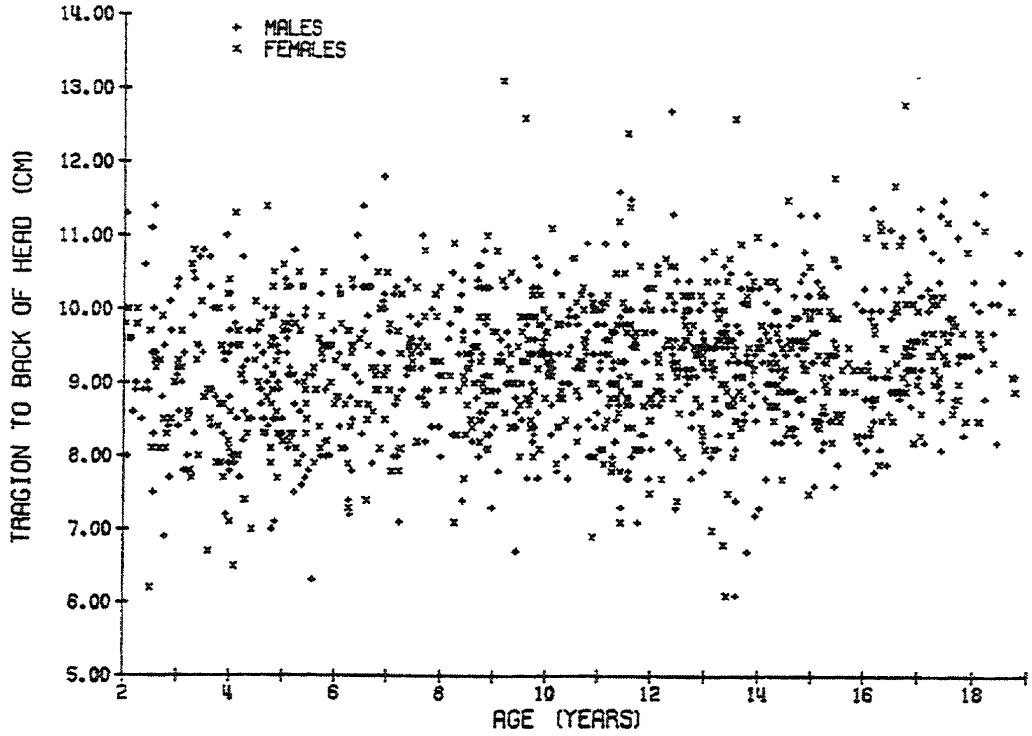
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	17.0	0.8	15.5	15.6	16.8	18.2	18.6
3.5-4.5	34	17.7	0.7	16.3	16.4	17.6	18.8	18.9
4.5-5.5	43	17.7	0.7	16.4	16.5	17.7	18.9	19.1
5.5-6.5	36	18.1	0.9	15.9	16.1	18.2	19.2	19.3
6.5-7.5	33	18.6	0.8	16.9	17.0	18.6	19.5	19.9
7.5-8.5	30	18.6	1.0	16.2	16.5	18.8	19.6	20.1
8.5-9.5	40	18.8	0.9	16.9	17.2	18.9	20.1	20.8
9.5-10.5	45	19.5	1.0	17.0	17.5	19.5	21.0	21.5
10.5-11.5	47	19.8	1.0	18.0	18.1	19.7	21.4	22.1
11.5-12.5	47	19.8	1.1	17.8	17.9	19.8	21.6	22.3
12.5-13.5	61	20.2	1.0	17.5	18.2	20.1	21.7	22.3
13.5-14.5	44	20.3	0.8	17.6	18.5	20.2	21.6	22.3
14.5-15.5	45	20.3	0.9	18.2	18.8	20.2	21.8	22.7
15.5-16.5	25	20.6	0.9	18.9	19.0	20.4	22.1	22.5
16.5-17.5	42	20.6	0.9	19.0	19.1	20.5	22.0	22.9
17.5-19.0	19	20.3	0.9	18.6	**	20.1	**	21.7

TRAGION TO BACK OF HEAD

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blades of an automated sliding caliper, measure the horizontal distance from tragion to opisthocranion (most posterior point from glabella on the back of head).



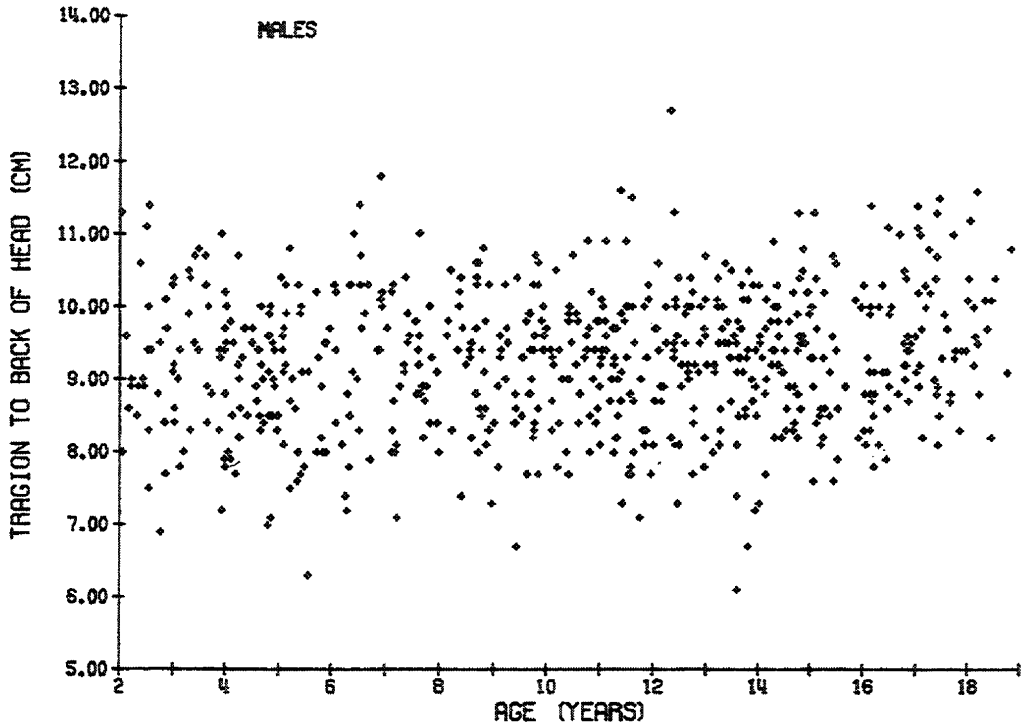


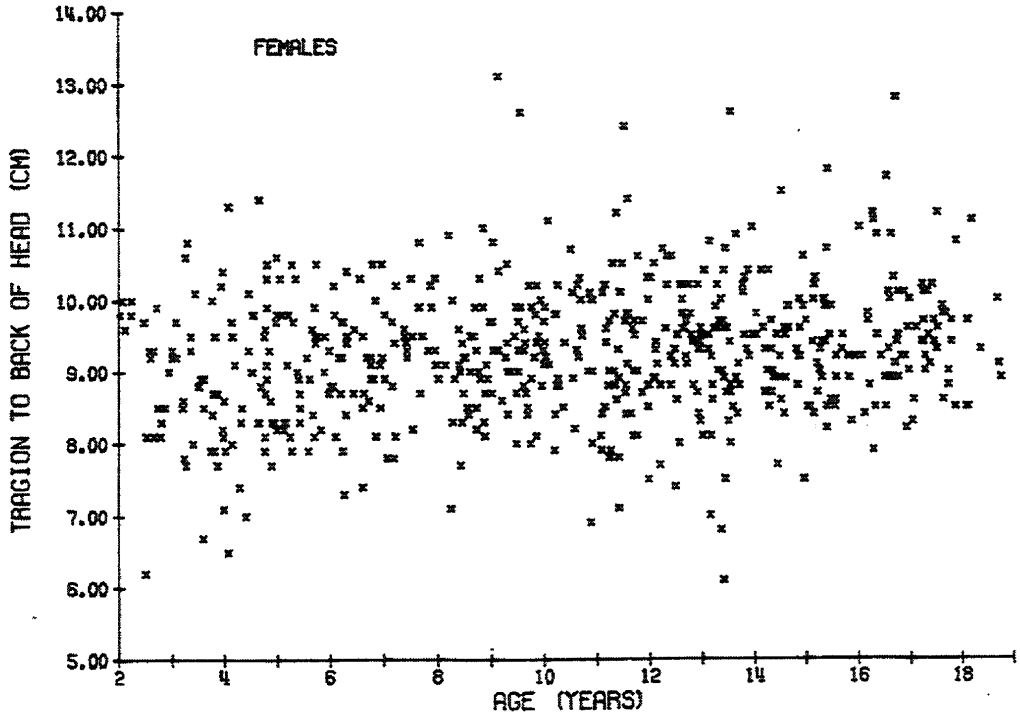


TRAGION TO BACK OF HEAD (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	76	9.2	1.0	6.2	7.6	9.2	10.8	11.4
3.5-4.5	71	8.9	1.0	6.5	7.1	8.8	10.5	11.3
4.5-5.5	93	9.0	0.9	7.0	7.6	8.9	10.4	11.4
5.5-6.5	62	9.0	0.9	6.3	7.3	9.0	10.3	11.0
6.5-7.5	63	9.3	0.9	7.1	7.6	9.3	10.5	11.8
7.5-8.5	59	9.3	0.8	7.1	7.7	9.2	10.5	11.0
8.5-9.5	79	9.2	0.9	6.7	7.9	9.2	10.6	13.1
9.5-10.5	92	9.3	0.8	7.7	7.9	9.3	10.6	12.6
10.5-11.5	97	9.3	0.9	6.9	7.8	9.3	10.7	12.4
11.5-12.5	93	9.2	1.0	7.1	7.5	9.1	10.6	12.7
12.5-13.5	107	9.3	0.8	6.1	7.7	9.4	10.4	10.8
13.5-14.5	98	9.2	0.9	6.1	7.4	9.2	10.4	12.6
14.5-15.5	94	9.3	0.9	7.5	8.0	9.3	10.7	11.8
15.5-16.5	56	9.3	0.9	7.8	7.9	9.0	11.1	11.4
16.5-17.5	80	9.7	0.9	8.1	8.3	9.4	11.3	12.8
17.5-19.0	46	9.6	0.8	8.2	8.3	9.5	11.1	11.6

(26)


MALES
TRAGION TO BACK OF HEAD (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
TRAGION TO BACK OF HEAD (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

TRAGION TO BACK OF HEAD (cm)
(Males)

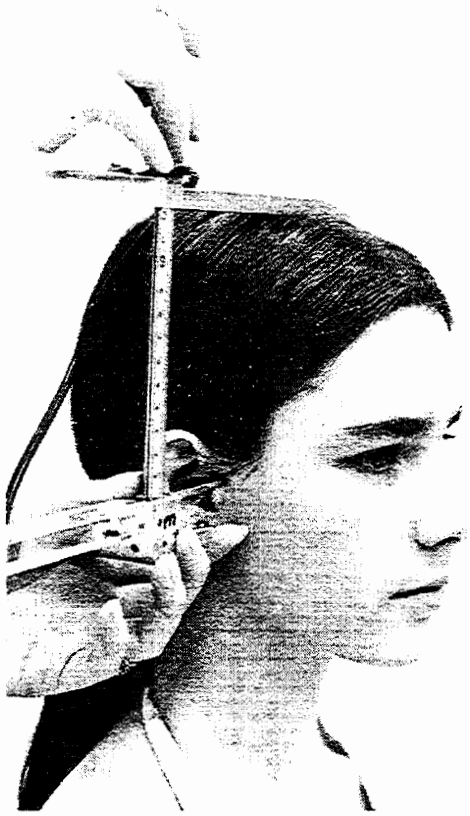
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	9.3	1.1	6.9	7.5	9.1	11.0	11.4
3.5-4.5	37	9.1	0.9	7.2	7.6	9.2	10.5	11.0
4.5-5.5	50	9.0	0.9	7.0	7.3	9.0	10.2	10.8
5.5-6.5	26	8.9	1.1	6.3	6.6	8.9	10.3	11.0
6.5-7.5	30	9.5	1.1	7.1	7.5	9.6	11.1	11.8
7.5-8.5	30	9.2	0.8	7.4	7.7	9.2	10.4	11.0
8.5-9.5	39	9.1	1.0	6.7	7.3	9.1	10.5	10.8
9.5-10.5	47	9.2	0.8	7.7	7.7	9.3	10.6	10.7
10.5-11.5	52	9.3	0.8	7.3	7.9	9.3	10.5	11.6
11.5-12.5	46	9.2	1.1	7.1	7.3	9.2	11.1	12.7
12.5-13.5	46	9.4	0.8	7.7	7.9	9.4	10.5	10.7
13.5-14.5	55	9.1	1.0	6.1	7.1	9.3	10.3	10.9
14.5-15.5	50	9.3	0.9	7.6	7.7	9.2	10.7	11.3
15.5-16.5	31	9.2	0.9	7.8	7.9	8.9	10.7	11.4
16.5-17.5	38	9.7	0.9	8.1	8.2	9.5	11.3	11.5
17.5-19.0	27	9.7	0.8	8.2	8.2	9.5	11.1	11.6

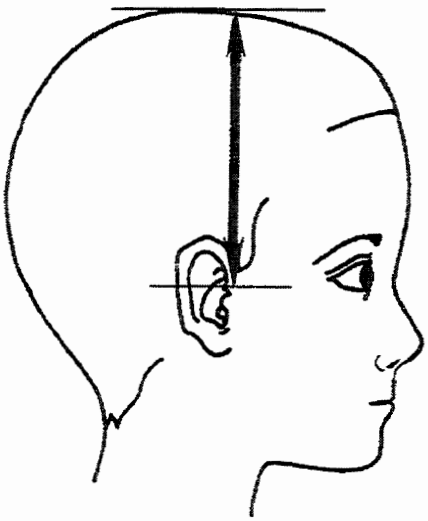
TRAGION TO BACK OF HEAD (cm)
(Females)

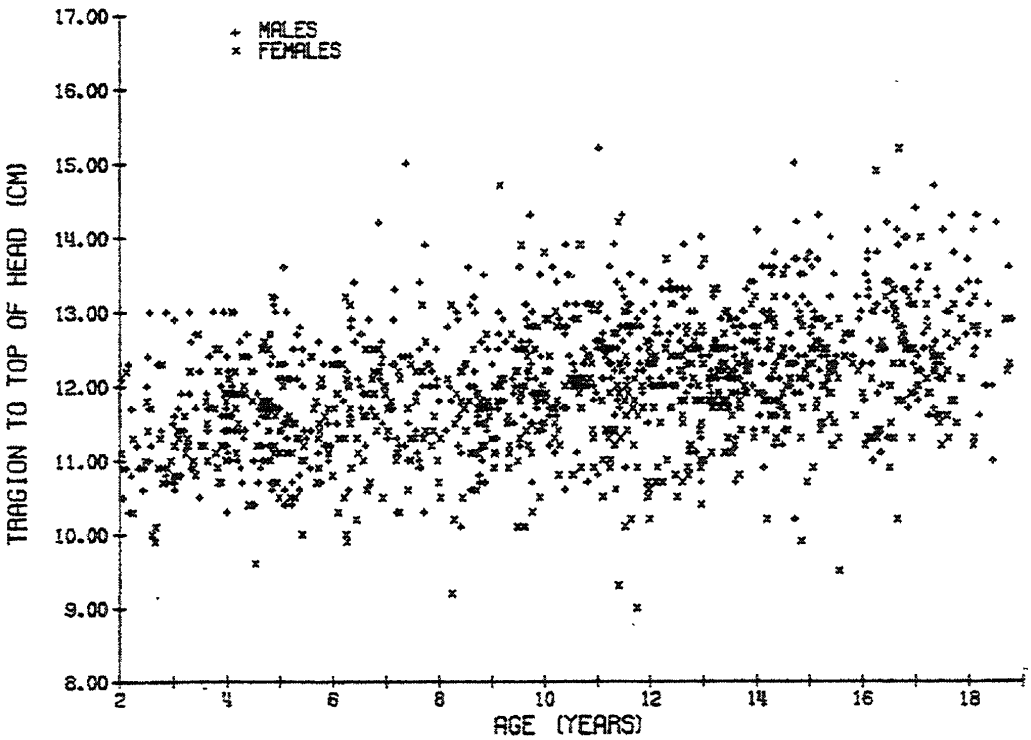
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	9.1	1.0	6.2	7.1	9.2	10.3	10.8
3.5-4.5	34	8.7	1.1	6.5	6.6	8.6	10.3	11.3
4.5-5.5	43	9.1	0.9	7.7	7.8	8.9	10.5	11.4
5.5-6.5	36	9.1	0.7	7.3	7.5	9.1	10.2	10.5
6.5-7.5	33	9.2	0.8	7.4	7.5	9.1	10.3	10.5
7.5-8.5	29	9.3	0.9	7.1	7.4	9.2	10.6	10.9
8.5-9.5	40	9.3	1.0	8.0	8.1	9.1	10.8	13.1
9.5-10.5	45	9.4	0.8	7.9	8.0	9.3	10.6	12.6
10.5-11.5	45	9.3	1.1	6.9	7.2	9.2	10.5	12.4
11.5-12.5	47	9.2	0.9	7.4	7.6	9.0	10.6	11.4
12.5-13.5	61	9.3	0.9	6.1	7.0	9.4	10.3	10.8
13.5-14.5	43	9.3	0.9	7.7	8.0	9.2	10.8	12.6
14.5-15.5	44	9.4	0.8	7.5	8.2	9.3	10.7	11.8
15.5-16.5	25	9.3	0.9	7.9	8.0	9.0	11.1	11.2
16.5-17.5	42	9.6	0.9	8.2	8.3	9.4	11.2	12.8
17.5-19.0	19	9.4	0.7	8.5	**	9.3	**	11.1

TRAGION TO TOP OF HEAD

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blades of an automated sliding caliper, measure the vertical distance from tragion to vertex.



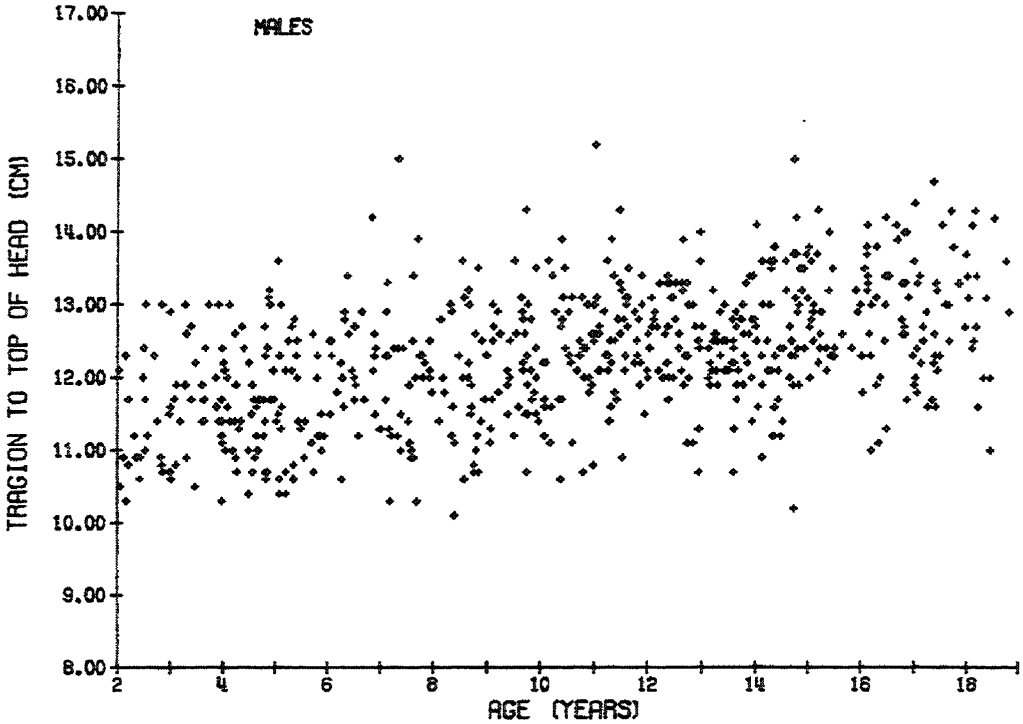


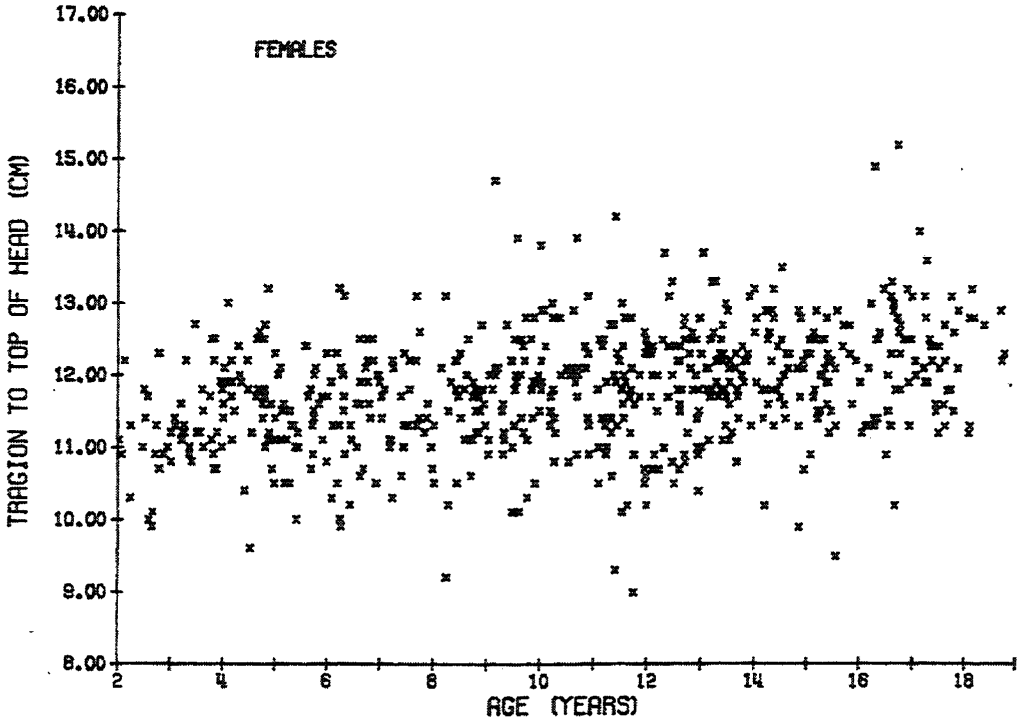


TRAGION TO TOP OF HEAD (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	75	11.4	0.7	9.9	10.2	11.1	12.8	13.0
3.5-4.5	70	11.7	0.6	10.3	10.5	11.6	12.7	13.0
4.5-5.5	93	11.6	0.8	9.6	10.4	11.5	12.9	13.6
5.5-6.5	62	11.6	0.8	9.9	10.2	11.6	12.9	13.4
6.5-7.5	63	11.9	0.8	10.3	10.5	11.8	12.9	15.0
7.5-8.5	59	11.7	0.9	9.2	10.2	11.7	13.1	13.9
8.5-9.5	76	11.9	0.8	10.1	10.6	11.7	13.1	14.7
9.5-10.5	91	12.1	0.8	10.1	10.7	12.0	13.6	14.3
10.5-11.5	97	12.2	0.9	9.3	10.7	12.2	13.6	15.2
11.5-12.5	94	12.1	0.9	9.0	10.3	12.2	13.3	13.7
12.5-13.5	107	12.2	0.7	10.4	10.9	12.2	13.3	14.0
13.5-14.5	99	12.3	0.7	10.2	11.1	12.2	13.5	14.1
14.5-15.5	95	12.5	0.8	9.9	11.1	12.3	13.7	15.0
15.5-16.5	56	12.5	1.0	9.5	11.0	12.5	13.9	14.9
16.5-17.5	80	12.6	0.9	10.2	11.3	12.4	14.0	15.2
17.5-19.0	47	12.7	0.9	11.0	11.2	12.7	14.2	14.3

(27)


MALES
TRAGION TO TOP OF HEAD (CM)
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
TRAGION TO TOP OF HEAD (CM)
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

TRAGION TO TOP OF HEAD (cm)
(Males)

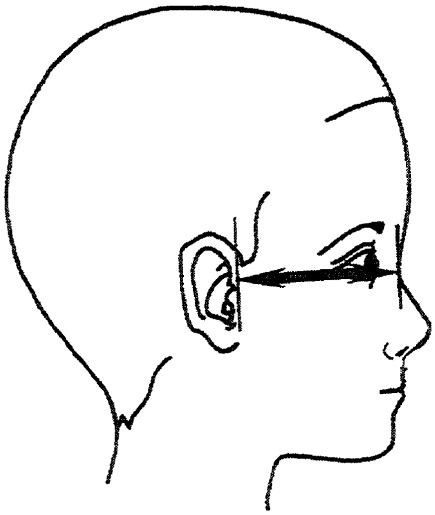
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	43	11.5	0.8	10.3	10.4	11.2	12.9	13.0
3.5-4.5	36	11.7	0.7	10.3	10.6	11.5	12.8	13.0
4.5-5.5	50	11.7	0.8	10.4	10.4	11.6	13.0	13.6
5.5-6.5	26	11.8	0.7	10.6	10.6	11.8	12.9	13.4
6.5-7.5	30	12.1	1.0	10.3	10.6	12.1	13.3	15.0
7.5-8.5	30	11.9	0.9	10.1	10.2	11.9	13.2	13.9
8.5-9.5	38	12.1	0.8	10.6	10.6	12.0	13.2	13.6
9.5-10.5	47	12.3	0.9	10.6	10.8	12.1	13.6	14.3
10.5-11.5	52	12.5	0.8	10.7	11.0	12.4	13.7	15.2
11.5-12.5	46	12.6	0.6	10.9	11.6	12.6	13.3	13.5
12.5-13.5	46	12.4	0.7	10.7	11.0	12.4	13.5	14.0
13.5-14.5	55	12.4	0.8	10.7	11.0	12.4	13.6	14.1
14.5-15.5	50	12.9	0.8	10.2	11.5	12.8	14.1	15.0
15.5-16.5	31	12.8	0.8	11.0	11.1	12.9	13.9	14.2
16.5-17.5	38	12.8	0.8	11.6	11.6	12.6	14.1	14.7
17.5-19.0	27	13.1	0.8	11.0	11.2	13.1	14.2	14.3

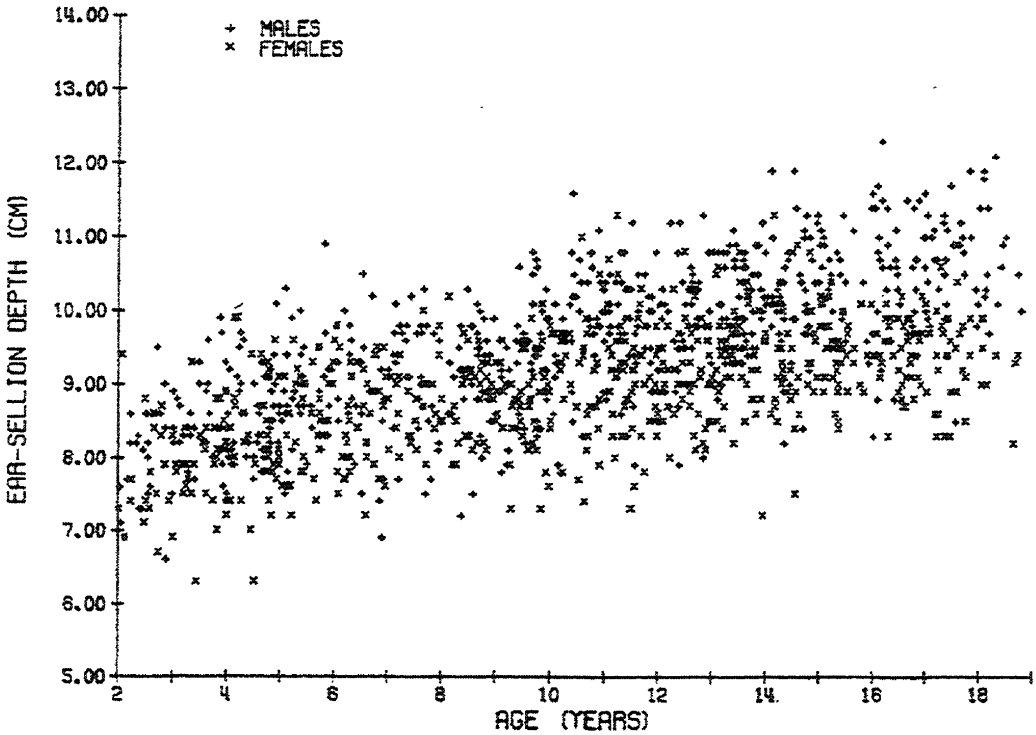
TRAGION TO TOP OF HEAD (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	11.2	0.6	9.9	10.0	11.1	12.2	12.7
3.5-4.5	34	11.6	0.6	10.4	10.5	11.7	12.5	13.0
4.5-5.5	43	11.5	0.7	9.6	10.0	11.4	12.6	13.2
5.5-6.5	36	11.5	0.8	9.9	10.0	11.5	12.5	13.2
6.5-7.5	33	11.6	0.6	10.3	10.4	11.6	12.4	12.5
7.5-8.5	29	11.6	0.8	9.2	9.6	11.5	12.7	13.1
8.5-9.5	38	11.7	0.8	10.1	10.5	11.6	12.6	14.7
9.5-10.5	44	12.0	0.8	10.1	10.3	11.9	13.0	13.9
10.5-11.5	45	11.8	0.9	9.3	10.5	11.9	13.1	14.2
11.5-12.5	48	11.7	0.9	9.0	10.1	11.7	13.0	13.7
12.5-13.5	61	12.0	0.7	10.4	10.8	11.9	13.0	13.7
13.5-14.5	44	12.1	0.7	10.2	10.9	12.0	13.1	13.2
14.5-15.5	45	12.0	0.6	9.9	10.7	12.1	12.8	13.5
15.5-16.5	25	12.0	1.0	9.5	9.8	12.0	13.1	14.9
16.5-17.5	42	12.4	0.8	10.2	11.2	12.3	13.6	15.2
17.5-19.0	20	12.2	0.6	11.2	**	12.2	**	13.2

EAR-SELLION DEPTH

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blades of an automated sliding caliper, measure parallel to the mid-sagittal plane the distance from sellion to the right ear at the superior attachment of the ear to the head.

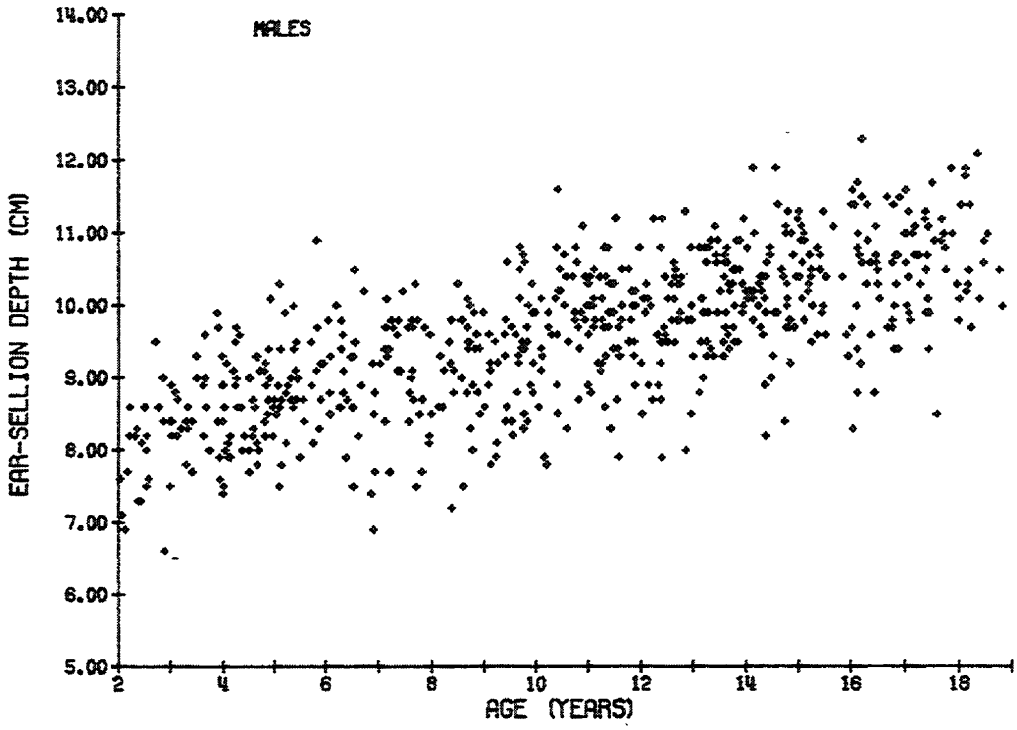


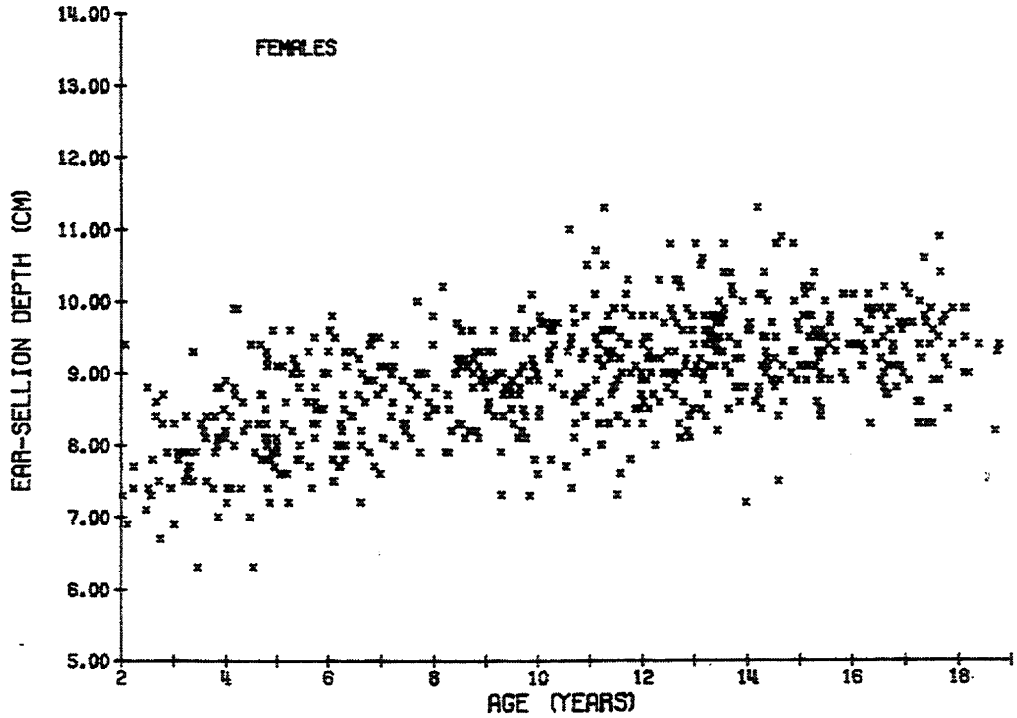


EAR-SELLION DEPTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	8.0	0.7	6.3	6.7	8.0	9.0	9.5
3.5-4.5	71	8.4	0.7	7.0	7.2	8.3	9.7	9.9
4.5-5.5	93	8.6	0.7	6.3	7.5	8.6	9.6	10.3
5.5-6.5	62	8.8	0.7	7.4	7.6	8.6	9.8	10.9
6.5-7.5	63	8.8	0.8	6.9	7.4	8.9	10.1	10.5
7.5-8.5	60	8.9	0.7	7.2	7.7	8.8	10.0	10.3
8.5-9.5	78	9.0	0.6	7.3	7.8	8.9	9.9	10.6
9.5-10.5	93	9.3	0.8	7.3	7.8	9.3	10.5	11.6
10.5-11.5	98	9.5	0.9	7.3	8.0	9.6	10.8	11.3
11.5-12.5	94	9.4	0.7	7.6	8.0	9.3	10.5	11.2
12.5-13.5	107	9.6	0.7	8.0	8.2	9.6	10.8	11.3
13.5-14.5	99	9.8	0.8	7.2	8.5	9.8	10.9	11.9
14.5-15.5	95	9.9	0.8	7.5	8.5	9.8	11.2	11.9
15.5-16.5	56	10.0	0.9	8.3	8.5	9.8	11.5	12.3
16.5-17.5	79	9.9	0.9	8.3	8.4	9.8	11.4	11.7
17.5-19.0	47	10.2	1.0	8.2	8.4	10.1	11.8	12.1

(28)


MALES
EAR-SELLION DEPTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
EAR-SELLION DEPTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

EAR-SELLION DEPTH (cm)
(Males)

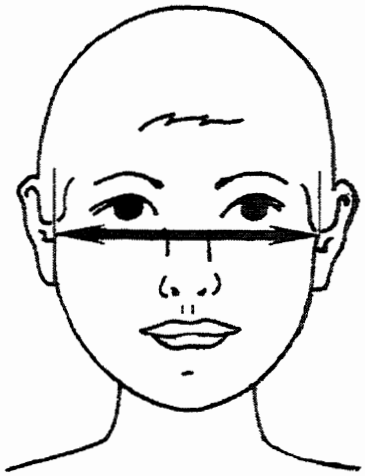
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	8.2	0.7	6.6	6.9	8.2	9.0	9.5
3.5-4.5	37	8.6	0.7	7.4	7.5	8.5	9.7	9.9
4.5-5.5	50	8.8	0.6	7.5	7.7	8.7	9.9	10.3
5.5-6.5	26	9.1	0.7	7.9	8.0	9.0	9.9	10.9
6.5-7.5	30	9.0	0.9	6.9	7.1	9.1	10.2	10.5
7.5-8.5	30	9.0	0.8	7.2	7.3	9.0	9.9	10.3
8.5-9.5	39	9.1	0.7	7.5	7.8	9.2	10.0	10.6
9.5-10.5	47	9.5	0.8	7.8	8.0	9.5	10.7	11.6
10.5-11.5	52	9.9	0.7	8.3	8.5	9.9	10.8	11.2
11.5-12.5	46	9.6	0.8	7.9	8.0	9.5	10.8	11.2
12.5-13.5	46	10.0	0.7	8.0	8.6	10.0	10.9	11.3
13.5-14.5	55	10.1	0.6	8.2	9.0	10.1	10.9	11.9
14.5-15.5	50	10.4	0.7	8.4	9.3	10.3	11.3	11.9
15.5-16.5	31	10.4	1.0	8.3	8.4	10.5	11.6	12.3
16.5-17.5	38	10.5	0.7	9.4	9.4	10.5	11.5	11.7
17.5-19.0	27	10.7	0.8	8.5	8.9	10.7	11.9	12.1

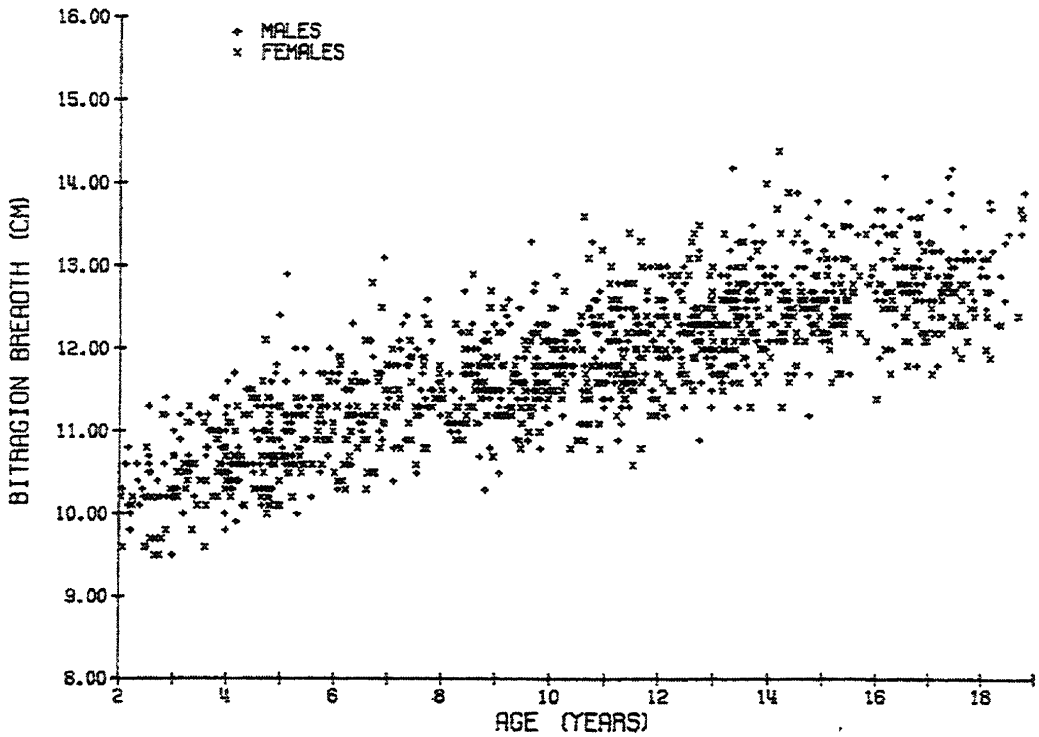
EAR-SELLION DEPTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	7.8	0.7	6.3	6.5	7.7	9.0	9.4
3.5-4.5	34	8.2	0.7	7.0	7.0	8.1	9.5	9.9
4.5-5.5	43	8.3	0.7	6.3	6.8	8.1	9.4	9.6
5.5-6.5	36	8.5	0.6	7.4	7.5	8.4	9.5	9.8
6.5-7.5	33	8.6	0.6	7.2	7.5	8.7	9.4	9.5
7.5-8.5	30	8.8	0.6	7.9	7.9	8.7	9.9	10.2
8.5-9.5	39	8.8	0.5	7.3	7.9	8.8	9.3	9.6
9.5-10.5	46	9.0	0.7	7.3	7.6	9.1	9.8	10.1
10.5-11.5	46	9.1	0.9	7.3	7.5	9.2	10.6	11.3
11.5-12.5	48	9.1	0.6	7.6	7.9	9.0	10.2	10.8
12.5-13.5	61	9.3	0.6	8.1	8.2	9.4	10.3	10.8
13.5-14.5	44	9.4	0.7	7.2	8.0	9.2	10.4	11.3
14.5-15.5	45	9.4	0.7	7.5	8.1	9.3	10.5	10.9
15.5-16.5	25	9.5	0.4	8.3	8.4	9.4	10.0	10.1
16.5-17.5	41	9.3	0.6	8.3	8.3	9.3	10.1	10.6
17.5-19.0	20	9.4	0.6	8.2	**	9.4	**	10.9

BITRAGION BREADTH

Subject sits erect with head oriented in the Frankfort Plane. With spreading calipers, measure the distance from right to left tragion. The measurement is typed into the computer.

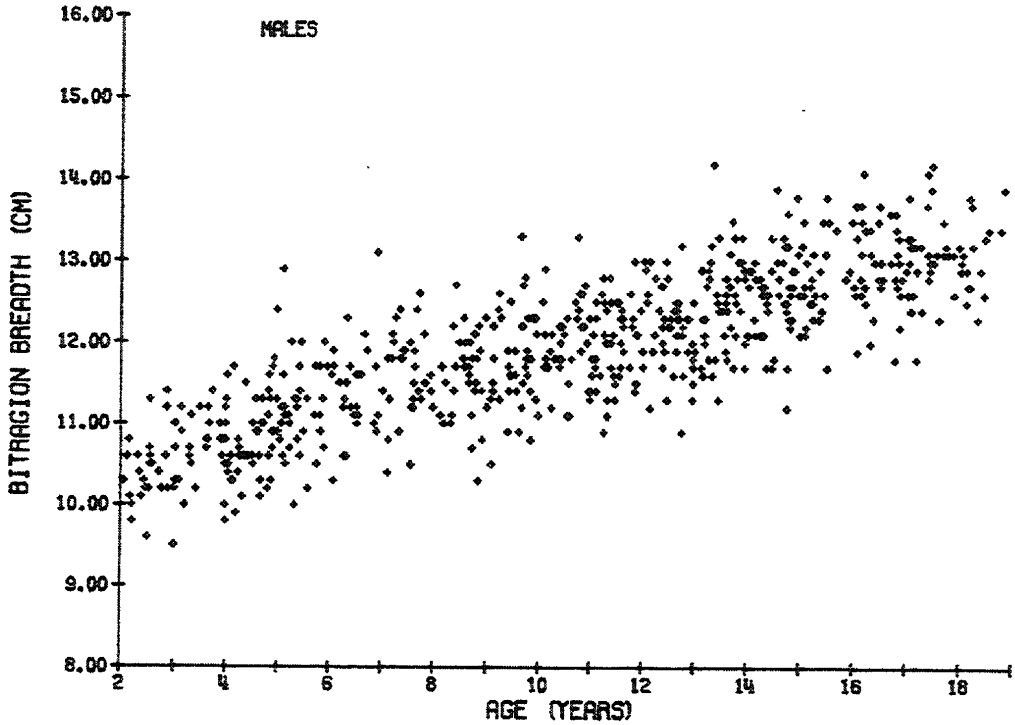


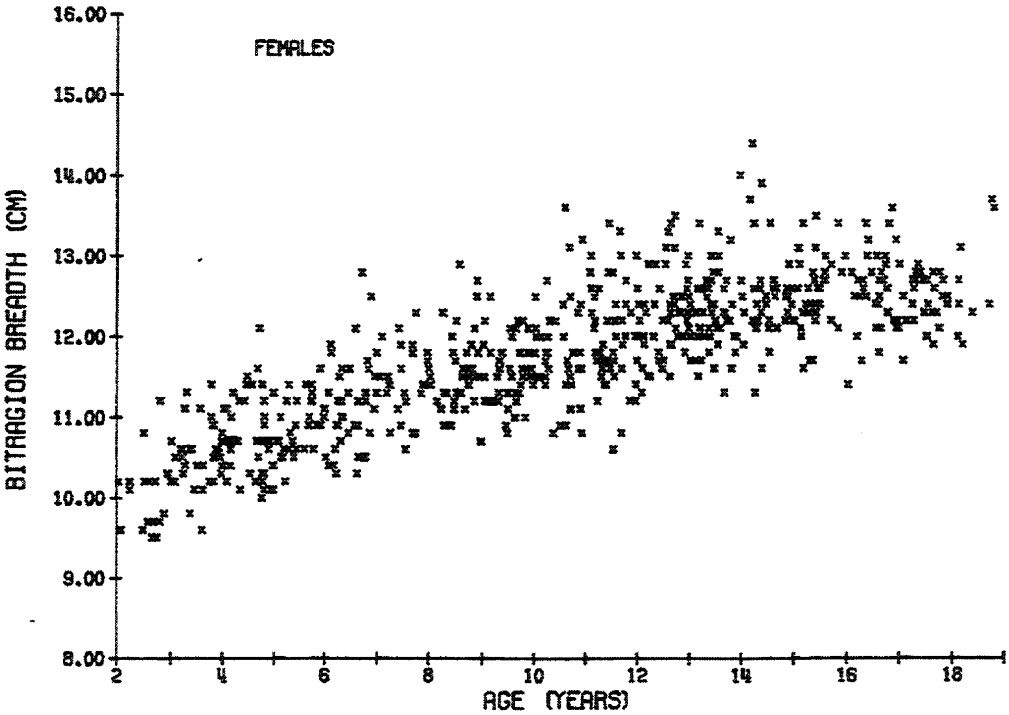


BITRAGION BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	71	10.4	0.5	9.5	9.5	10.3	11.2	11.4
3.5-4.5	71	10.7	0.4	9.6	10.0	10.6	11.4	11.7
4.5-5.5	94	10.9	0.5	10.0	10.1	10.8	11.8	12.9
5.5-6.5	61	11.1	0.5	10.2	10.3	11.1	11.8	12.3
6.5-7.5	63	11.5	0.6	10.3	10.4	11.4	12.4	13.1
7.5-8.5	60	11.5	0.5	10.5	10.7	11.4	12.3	12.7
8.5-9.5	79	11.6	0.5	10.3	10.7	11.5	12.5	12.9
9.5-10.5	93	11.8	0.5	10.8	10.9	11.7	12.5	13.3
10.5-11.5	99	12.0	0.6	10.8	11.0	11.9	13.0	13.6
11.5-12.5	92	12.1	0.5	10.6	11.1	12.1	12.9	13.3
12.5-13.5	107	12.3	0.5	10.9	11.5	12.3	13.2	14.2
13.5-14.5	99	12.5	0.6	11.3	11.6	12.5	13.4	14.4
14.5-15.5	95	12.6	0.5	11.2	11.7	12.5	13.5	13.9
15.5-16.5	56	12.8	0.5	11.4	11.9	12.7	13.6	14.1
16.5-17.5	80	12.8	0.5	11.7	11.8	12.7	13.7	14.2
17.5-19.0	47	12.8	0.5	11.9	11.9	12.8	13.7	13.9

(29)


MALES
BITRAGION BREADTH (CM)
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
BITRAGION BREADTH (CM)
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

BITRAGION BREADTH (cm)
(Males)

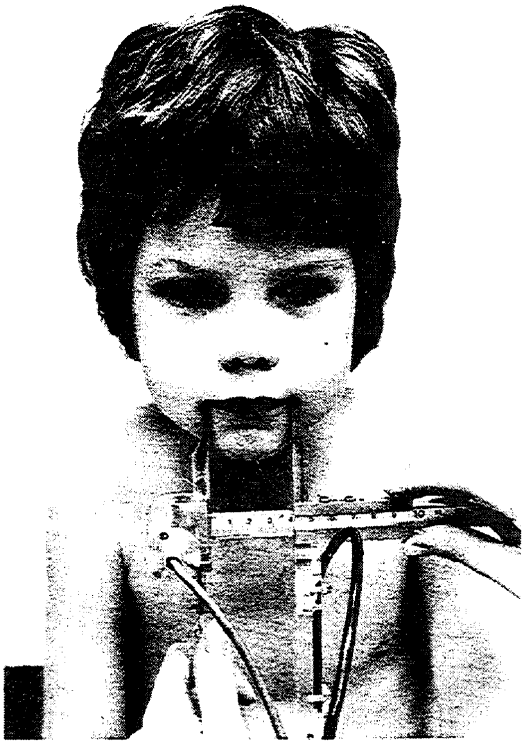
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	40	10.5	0.4	9.5	9.6	10.4	11.2	11.4
3.5-4.5	37	10.7	0.4	9.8	9.9	10.7	11.5	11.7
4.5-5.5	50	11.1	0.6	10.0	10.1	11.0	11.9	12.9
5.5-6.5	26	11.3	0.5	10.2	10.2	11.2	12.0	12.3
6.5-7.5	30	11.6	0.6	10.4	10.6	11.5	12.3	13.1
7.5-8.5	30	11.6	0.5	10.5	10.6	11.4	12.5	12.7
8.5-9.5	39	11.6	0.5	10.3	10.5	11.6	12.4	12.6
9.5-10.5	47	11.9	0.5	10.8	11.0	11.8	12.8	13.3
10.5-11.5	52	12.0	0.5	10.9	11.0	12.0	12.7	13.3
11.5-12.5	45	12.2	0.5	11.2	11.3	12.2	12.9	13.0
12.5-13.5	46	12.2	0.6	10.9	11.2	12.2	13.2	14.2
13.5-14.5	55	12.5	0.5	11.7	11.7	12.6	13.2	13.5
14.5-15.5	50	12.8	0.6	11.2	11.6	12.6	13.6	13.9
15.5-16.5	31	13.0	0.5	11.9	12.0	12.9	13.7	14.1
16.5-17.5	38	13.0	0.5	11.8	11.8	13.0	13.9	14.2
17.5-19.0	27	13.1	0.4	12.3	12.3	13.0	13.8	13.9

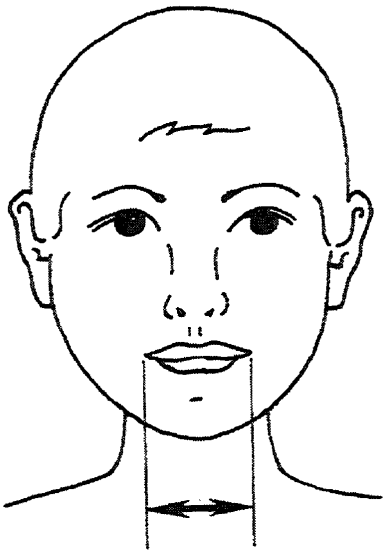
BITRAGION BREADTH (cm)
(Females)

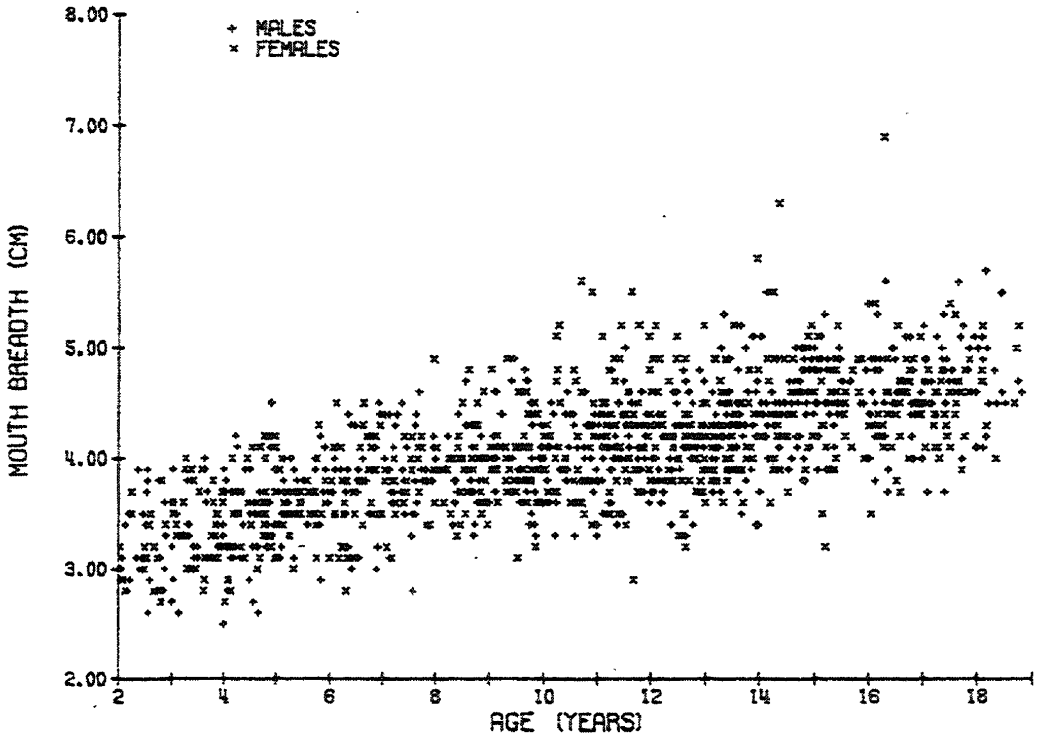
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	10.2	0.5	9.5	9.5	10.2	11.1	11.3
3.5-4.5	34	10.7	0.4	9.6	9.8	10.6	11.4	11.5
4.5-5.5	44	10.7	0.5	10.0	10.0	10.6	11.4	12.1
5.5-6.5	35	11.1	0.4	10.3	10.3	11.0	11.6	11.9
6.5-7.5	33	11.4	0.6	10.3	10.3	11.3	12.2	12.8
7.5-8.5	30	11.4	0.5	10.6	10.6	11.3	12.2	12.3
8.5-9.5	40	11.6	0.5	10.7	10.8	11.5	12.5	12.9
9.5-10.5	46	11.7	0.4	10.8	10.9	11.6	12.2	12.7
10.5-11.5	47	12.0	0.7	10.8	10.9	11.7	13.2	13.6
11.5-12.5	47	12.0	0.6	10.6	10.9	11.9	12.9	13.3
12.5-13.5	61	12.4	0.5	11.5	11.6	12.3	13.3	13.5
13.5-14.5	44	12.5	0.7	11.3	11.3	12.3	13.9	14.4
14.5-15.5	45	12.5	0.4	11.6	11.7	12.4	13.2	13.5
15.5-16.5	25	12.6	0.5	11.4	11.5	12.7	13.3	13.4
16.5-17.5	42	12.6	0.4	11.7	11.8	12.6	13.2	13.6
17.5-19.0	20	12.5	0.5	11.9	**	12.4	**	13.7

MOUTH BREADTH

Subject sits erect with head oriented in the Frankfort Plane, mouth closed naturally. With the pointed blades of an automated sliding caliper, measure the horizontal distance between the angles of the mouth at the points where the mucous membrane joins the skin.



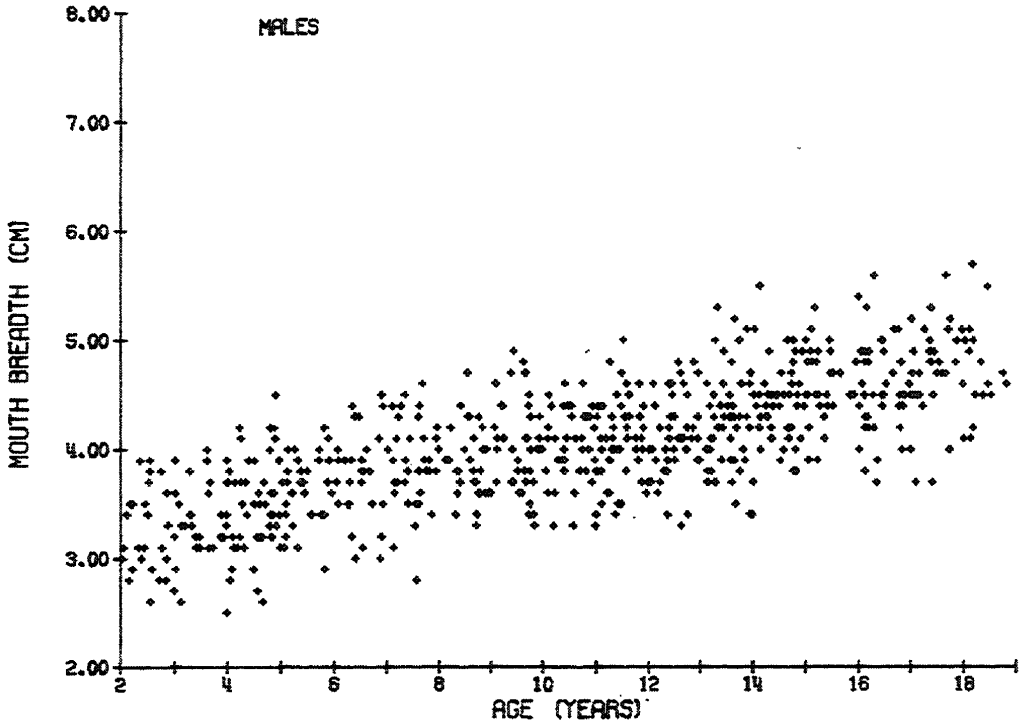


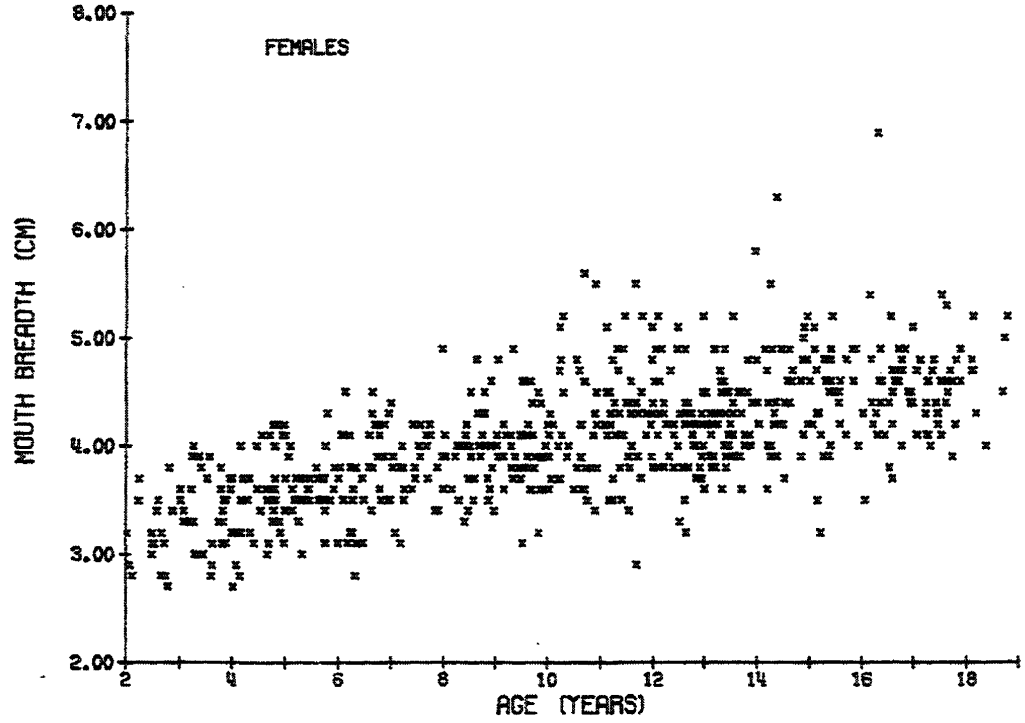


MOUTH BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	75	3.3	0.4	2.6	2.7	3.2	3.8	4.0
3.5-4.5	71	3.4	0.4	2.5	2.8	3.4	3.9	4.2
4.5-5.5	94	3.6	0.4	2.6	3.0	3.5	4.1	4.5
5.5-6.5	62	3.7	0.4	2.8	3.0	3.6	4.3	4.5
6.5-7.5	63	3.8	0.4	3.0	3.1	3.8	4.4	4.5
7.5-8.5	60	3.9	0.4	2.8	3.3	3.9	4.4	4.9
8.5-9.5	79	4.0	0.4	3.3	3.4	3.9	4.7	4.9
9.5-10.5	93	4.0	0.4	3.1	3.3	3.9	4.7	5.2
10.5-11.5	99	4.1	0.5	3.3	3.4	4.1	4.9	5.6
11.5-12.5	94	4.2	0.4	2.9	3.6	4.1	4.9	5.5
12.5-13.5	107	4.2	0.4	3.2	3.5	4.1	4.9	5.3
13.5-14.5	99	4.4	0.5	3.4	3.6	4.3	5.2	6.3
14.5-15.5	95	4.5	0.4	3.2	3.8	4.5	5.0	5.3
15.5-16.5	56	4.6	0.5	3.5	3.8	4.5	5.4	6.9
16.5-17.5	80	4.6	0.4	3.7	3.8	4.5	5.1	5.4
17.5-19.0	47	4.7	0.4	3.9	4.0	4.7	5.4	5.7

(30)


MALES
MOUTH BREADTH (CM)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MOUTH BREADTH (CM)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MOUTH BREADTH (cm)
(Males)

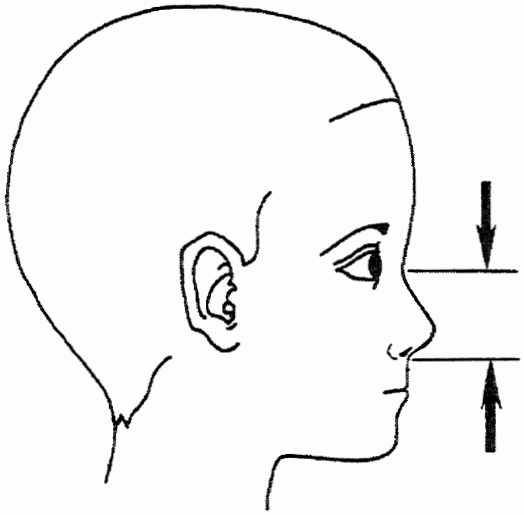
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	43	3.3	0.4	2.6	2.6	3.2	3.8	3.9
3.5-4.5	37	3.4	0.4	2.5	2.8	3.4	4.0	4.2
4.5-5.5	50	3.5	0.4	2.6	2.7	3.5	4.1	4.5
5.5-6.5	26	3.7	0.4	2.9	2.9	3.7	4.3	4.4
6.5-7.5	30	3.8	0.4	3.0	3.0	3.8	4.4	4.5
7.5-8.5	30	3.8	0.4	2.8	3.0	3.8	4.4	4.6
8.5-9.5	39	4.0	0.4	3.3	3.4	4.0	4.7	4.9
9.5-10.5	47	4.0	0.4	3.3	3.3	3.9	4.6	4.8
10.5-11.5	52	4.0	0.4	3.3	3.3	4.0	4.6	5.0
11.5-12.5	46	4.1	0.3	3.4	3.5	4.0	4.6	4.6
12.5-13.5	46	4.2	0.4	3.3	3.4	4.1	4.9	5.3
13.5-14.5	55	4.3	0.4	3.4	3.5	4.3	5.1	5.5
14.5-15.5	50	4.5	0.4	3.8	3.8	4.5	5.0	5.3
15.5-16.5	31	4.6	0.4	3.7	3.8	4.5	5.3	5.6
16.5-17.5	38	4.6	0.4	3.7	3.7	4.6	5.1	5.3
17.5-19.0	27	4.8	0.4	4.0	4.0	4.7	5.6	5.7

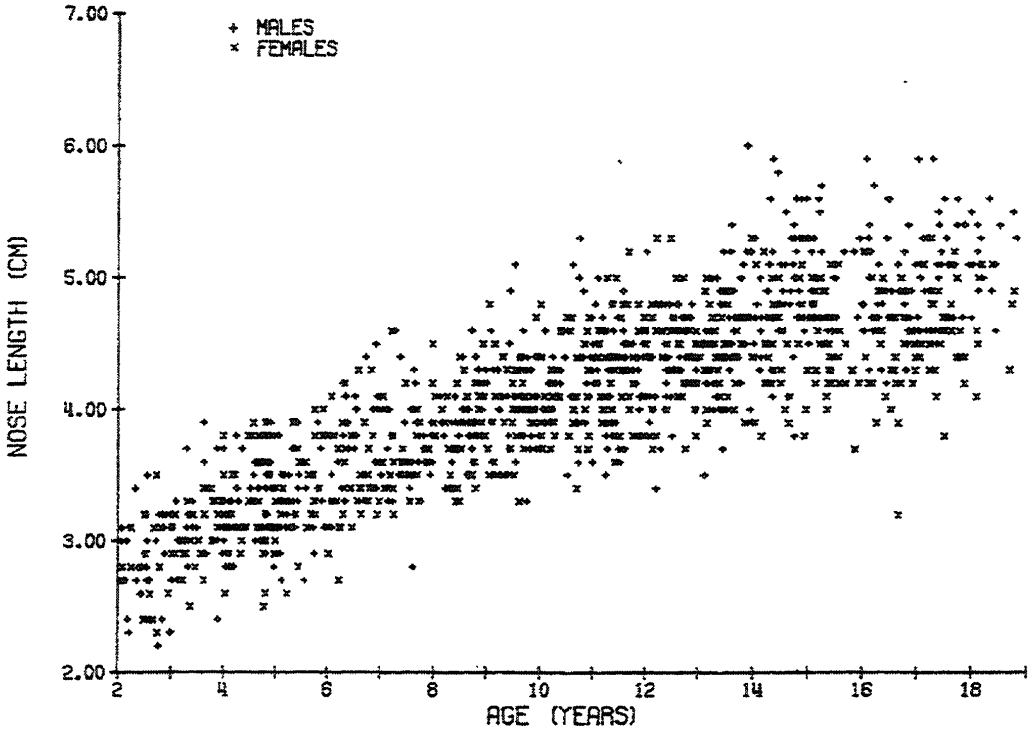
MOUTH BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	3.3	0.4	2.7	2.7	3.2	3.9	4.0
3.5-4.5	34	3.4	0.4	2.7	2.7	3.4	3.9	4.0
4.5-5.5	44	3.6	0.3	3.0	3.0	3.5	4.1	4.2
5.5-6.5	36	3.6	0.4	2.8	2.8	3.6	4.1	4.5
6.5-7.5	33	3.8	0.3	3.1	3.2	3.8	4.3	4.5
7.5-8.5	30	3.9	0.3	3.3	3.3	3.9	4.3	4.9
8.5-9.5	40	4.0	0.4	3.4	3.4	3.9	4.7	4.9
9.5-10.5	46	4.1	0.4	3.1	3.2	3.9	4.8	5.2
10.5-11.5	47	4.2	0.5	3.4	3.4	4.1	5.2	5.6
11.5-12.5	48	4.3	0.5	2.9	3.5	4.2	5.1	5.5
12.5-13.5	61	4.2	0.4	3.2	3.5	4.1	4.8	5.2
13.5-14.5	44	4.4	0.5	3.6	3.6	4.2	5.4	6.3
14.5-15.5	45	4.5	0.4	3.2	3.5	4.5	5.1	5.2
15.5-16.5	25	4.6	0.6	3.5	3.6	4.4	5.3	6.9
16.5-17.5	42	4.5	0.4	3.7	3.8	4.5	5.1	5.4
17.5-19.0	20	4.6	0.4	3.9	**	4.6	**	5.3

NOSE LENGTH

Subject sits erect with head oriented in the Frankfort Plane. With the pointed blades of an automated sliding caliper, measure the vertical distance from subnasale to sellion.

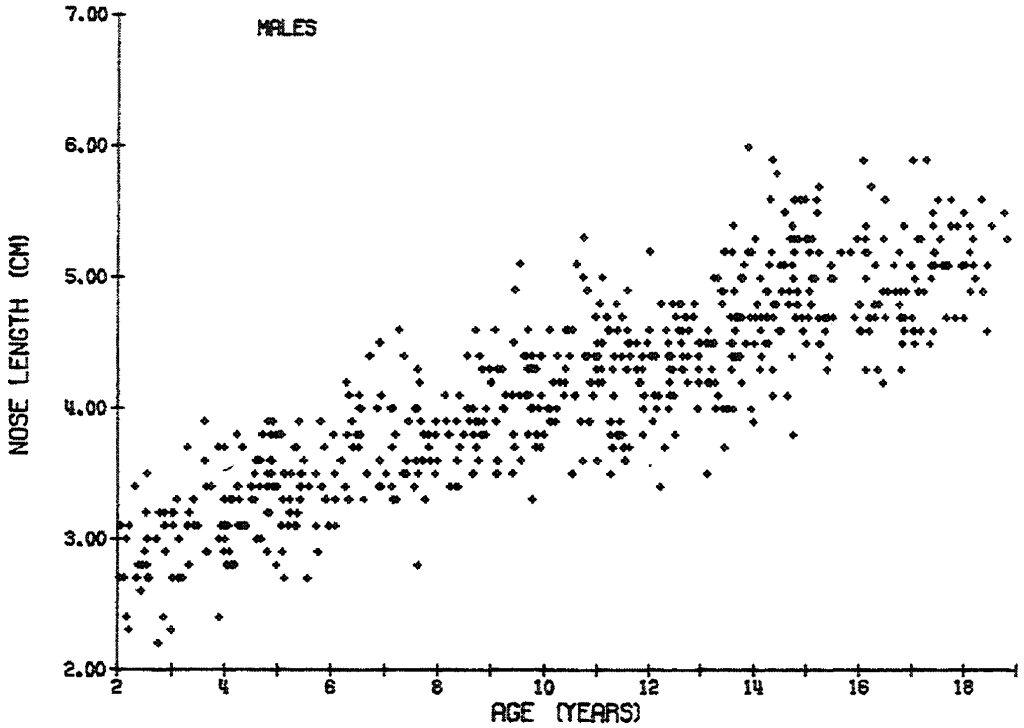


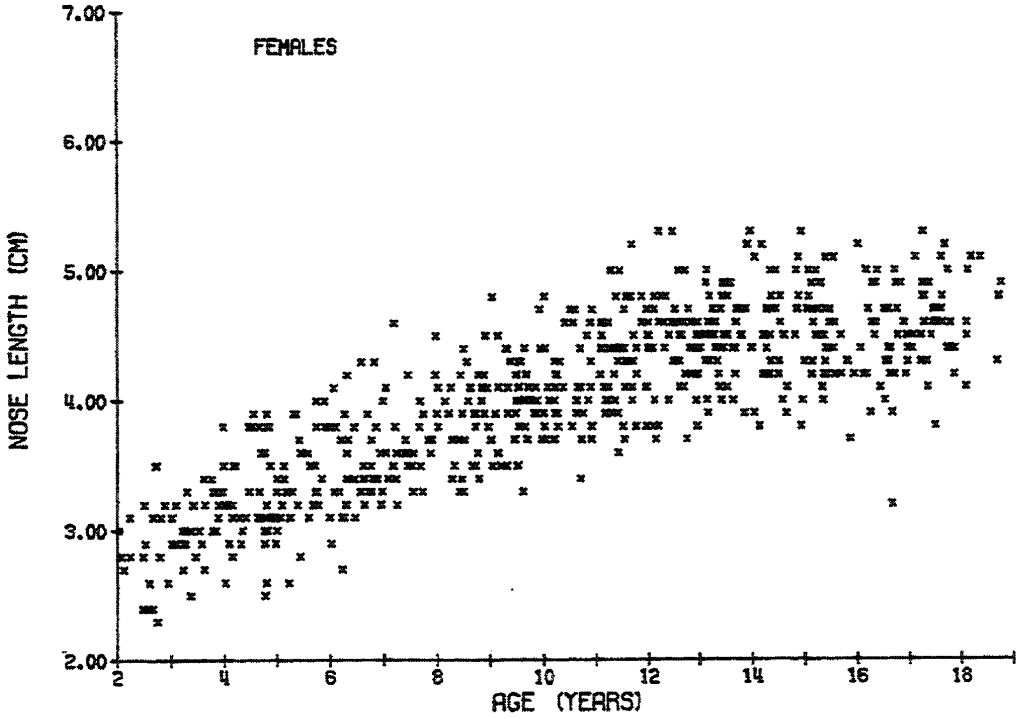


NOSE LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	2.9	0.3	2.2	2.3	2.9	3.3	3.7
3.5-4.5	71	3.2	0.3	2.4	2.7	3.1	3.7	3.9
4.5-5.5	94	3.4	0.3	2.5	2.7	3.3	3.8	3.9
5.5-6.5	61	3.5	0.4	2.7	2.8	3.4	4.0	4.2
6.5-7.5	63	3.7	0.4	3.2	3.2	3.5	4.4	4.6
7.5-8.5	60	3.7	0.3	2.8	3.0	3.7	4.2	4.5
8.5-9.5	79	4.0	0.3	3.4	3.4	3.9	4.5	4.9
9.5-10.5	93	4.1	0.3	3.3	3.6	4.0	4.6	5.1
10.5-11.5	98	4.2	0.4	3.4	3.6	4.2	4.9	5.3
11.5-12.5	94	4.3	0.4	3.4	3.7	4.3	4.8	5.3
12.5-13.5	106	4.4	0.3	3.5	3.9	4.4	4.9	5.2
13.5-14.5	98	4.7	0.4	3.8	3.9	4.6	5.3	6.0
14.5-15.5	95	4.8	0.4	3.8	3.9	4.7	5.5	5.7
15.5-16.5	56	4.8	0.5	3.7	4.1	4.7	5.5	5.9
16.5-17.5	80	4.7	0.4	3.2	4.0	4.6	5.4	5.9
17.5-19.0	46	5.0	0.4	4.1	4.2	5.0	5.5	5.6

(31)


MALES
NOSE LENGTH (CM)
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
NOSE LENGTH (CM)
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

NOSE LENGTH (cm)
(Males)

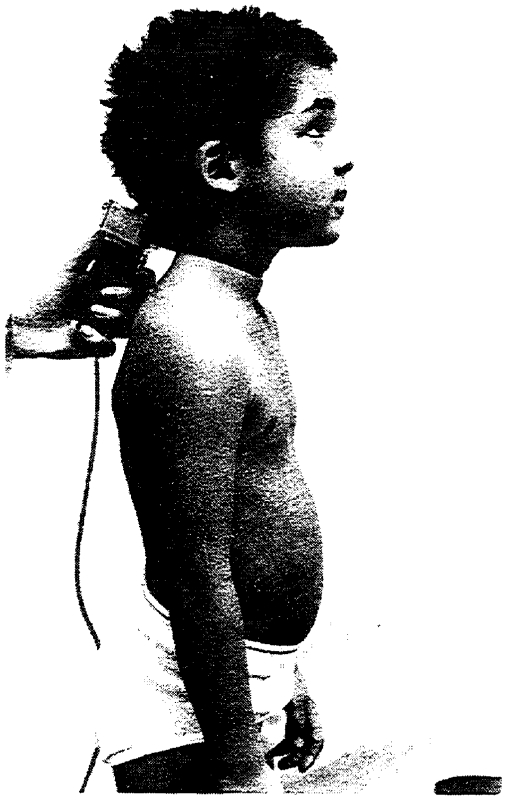
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	2.9	0.3	2.2	2.3	2.9	3.4	3.7
3.5-4.5	37	3.2	0.3	2.4	2.5	3.1	3.7	3.9
4.5-5.5	50	3.4	0.3	2.7	2.8	3.4	3.8	3.9
5.5-6.5	25	3.5	0.4	2.7	2.7	3.4	4.0	4.2
6.5-7.5	30	3.8	0.4	3.3	3.3	3.7	4.4	4.6
7.5-8.5	30	3.7	0.3	2.8	3.0	3.7	4.1	4.3
8.5-9.5	39	4.0	0.3	3.5	3.5	3.9	4.6	4.9
9.5-10.5	47	4.2	0.3	3.3	3.6	4.1	4.6	5.1
10.5-11.5	52	4.3	0.4	3.5	3.5	4.3	5.0	5.3
11.5-12.5	46	4.3	0.4	3.4	3.6	4.3	4.8	5.2
12.5-13.5	46	4.4	0.3	3.5	3.7	4.4	4.9	5.2
13.5-14.5	54	4.8	0.5	3.9	4.0	4.6	5.7	6.0
14.5-15.5	50	5.0	0.4	3.8	4.2	4.9	5.6	5.7
15.5-16.5	31	5.0	0.4	4.2	4.2	4.8	5.6	5.9
16.5-17.5	38	5.0	0.4	4.3	4.4	4.9	5.6	5.9
17.5-19.0	26	5.2	0.3	4.6	4.6	5.1	5.5	5.6

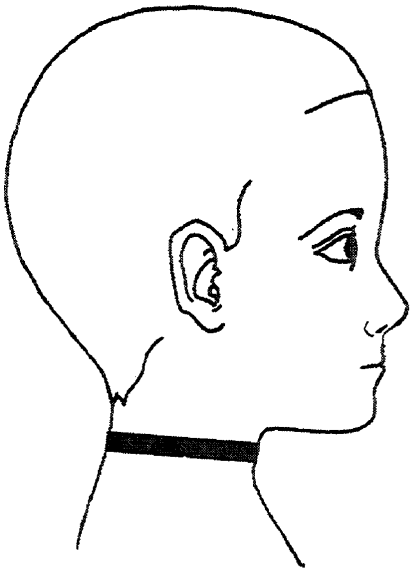
NOSE LENGTH (cm)
(Females)

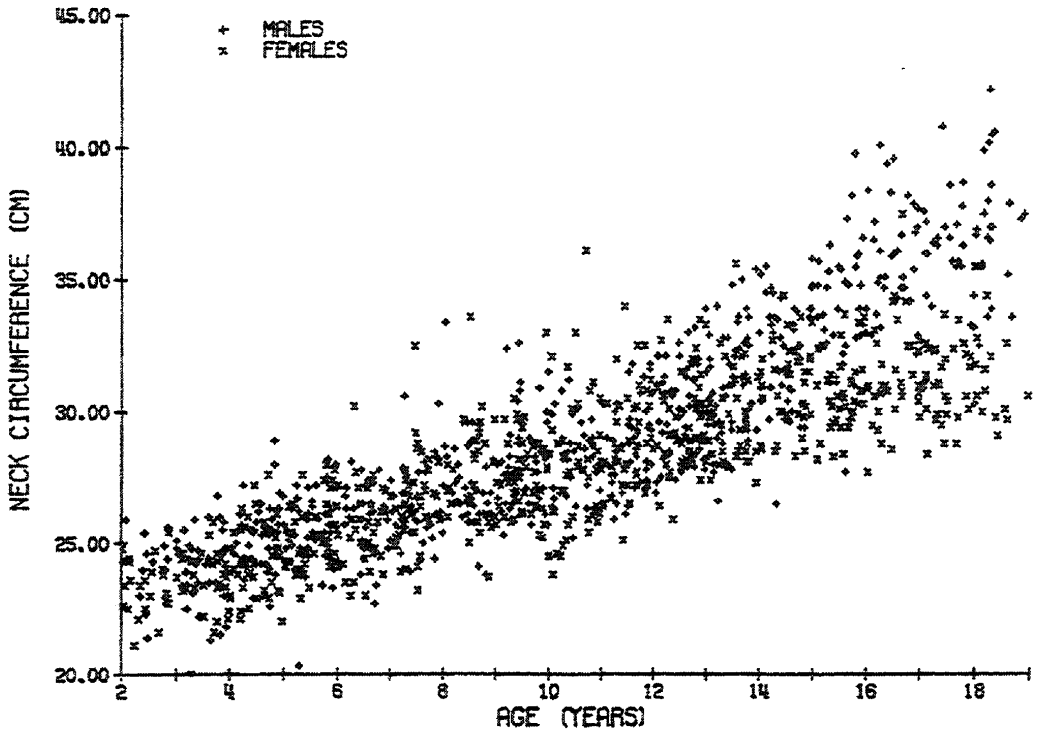
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	2.9	0.3	2.3	2.3	2.8	3.2	3.5
3.5-4.5	34	3.2	0.3	2.6	2.7	3.1	3.5	3.8
4.5-5.5	44	3.3	0.4	2.5	2.6	3.2	3.8	3.9
5.5-6.5	36	3.5	0.4	2.7	2.9	3.4	4.0	4.2
6.5-7.5	33	3.6	0.4	3.2	3.2	3.5	4.3	4.6
7.5-8.5	30	3.8	0.3	3.3	3.3	3.7	4.3	4.5
8.5-9.5	40	4.0	0.3	3.4	3.4	3.9	4.4	4.8
9.5-10.5	46	4.1	0.3	3.3	3.5	4.0	4.6	4.8
10.5-11.5	46	4.2	0.4	3.4	3.6	4.1	4.8	5.0
11.5-12.5	48	4.4	0.4	3.7	3.7	4.4	5.0	5.3
12.5-13.5	60	4.4	0.3	3.7	3.9	4.4	4.9	5.0
13.5-14.5	44	4.5	0.4	3.8	3.9	4.5	5.1	5.3
14.5-15.5	45	4.5	0.4	3.8	3.9	4.5	5.0	5.3
15.5-16.5	25	4.5	0.4	3.7	3.7	4.4	5.1	5.2
16.5-17.5	42	4.5	0.4	3.2	3.8	4.5	5.0	5.3
17.5-19.0	20	4.7	0.3	4.1	**	4.6	**	5.2

NECK CIRCUMFERENCE

Subject stands erect with head oriented in the Frankfort Plane. With an automated tape device, measure the circumference of the neck perpendicular to the long axis of the neck at the mid-point.



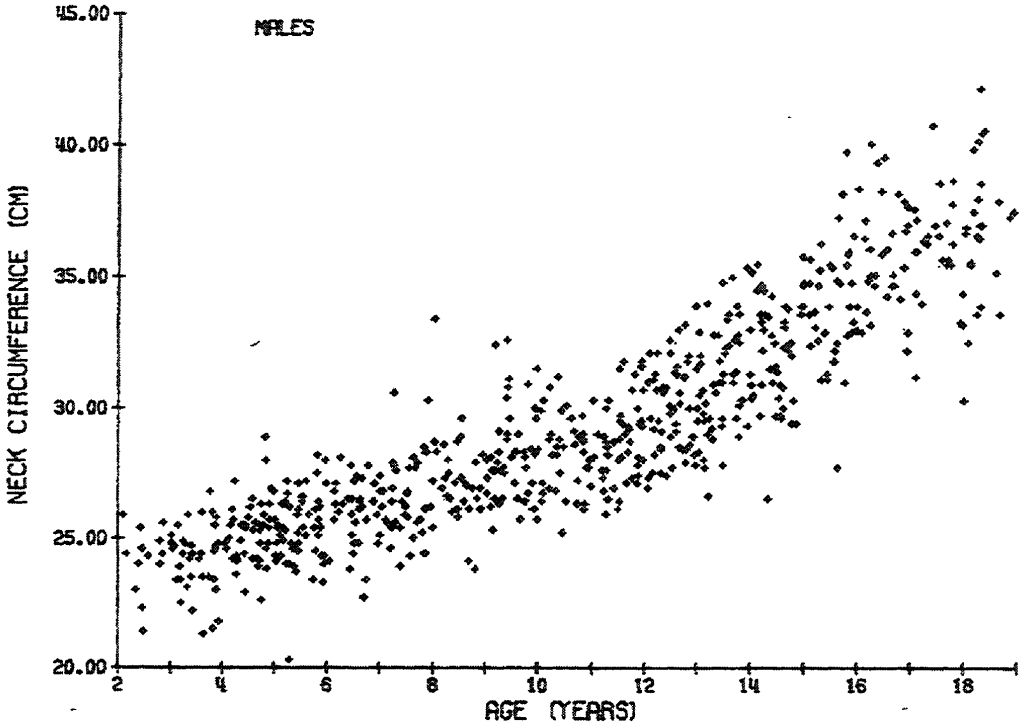


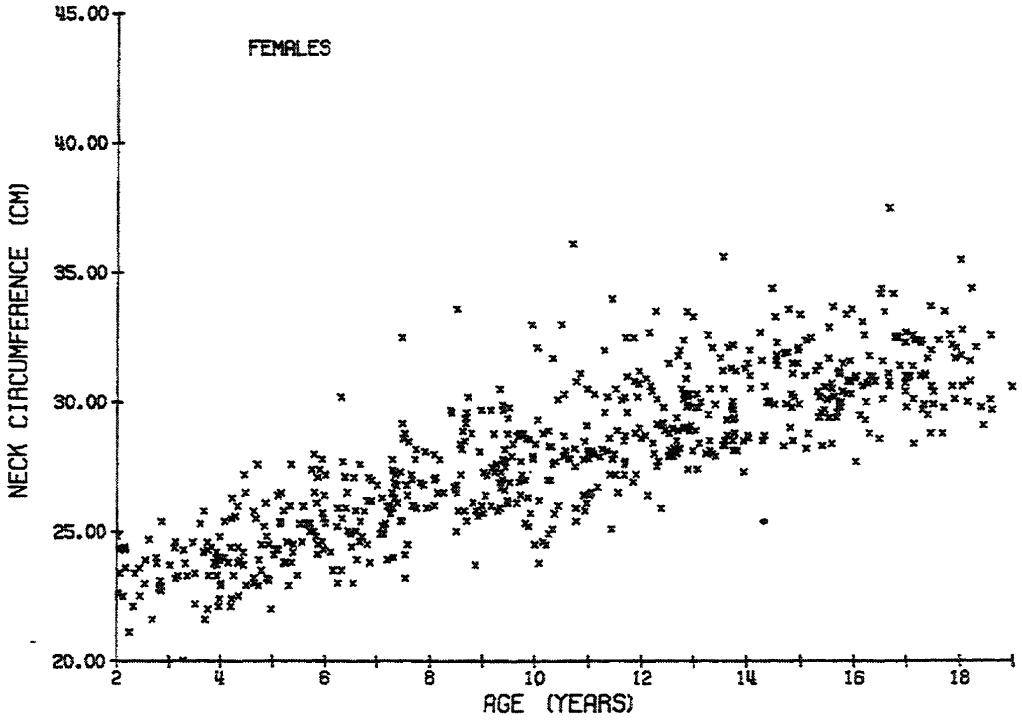


NECK CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	23.8	1.2	20.0	21.5	23.9	25.5	25.9
3.5-4.5	78	24.3	1.4	21.3	21.8	24.2	26.3	27.2
4.5-5.5	93	25.0	1.4	20.3	22.8	24.8	27.1	28.9
5.5-6.5	80	25.7	1.4	23.0	23.4	25.6	27.9	30.2
6.5-7.5	84	26.1	1.5	22.7	23.8	26.0	27.9	32.5
7.5-8.5	68	27.1	1.8	23.2	24.3	26.8	29.7	33.6
8.5-9.5	91	27.7	1.7	23.7	25.4	27.5	30.4	32.6
9.5-10.5	85	27.9	1.9	23.8	24.7	27.8	31.4	33.0
10.5-11.5	83	28.3	1.8	25.1	25.9	28.0	30.8	36.1
11.5-12.5	97	29.4	1.7	25.9	26.9	29.2	32.1	33.5
12.5-13.5	108	30.0	1.7	26.6	27.7	29.7	33.1	34.8
13.5-14.5	90	31.3	2.1	26.5	28.1	31.2	34.8	35.6
14.5-15.5	81	31.8	2.0	28.2	28.5	31.7	35.4	36.3
15.5-16.5	79	32.9	3.0	27.7	28.6	32.5	38.5	40.1
16.5-17.5	67	33.2	2.8	28.4	29.6	32.4	37.7	40.8
17.5-19.0	63	34.5	3.3	28.8	29.7	34.3	40.2	42.2

(32)


MALES
NECK CIRCUMFERENCE (CM)
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
NECK CIRCUMFERENCE (CM)
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

NECK CIRCUMFERENCE (cm)
(Males)

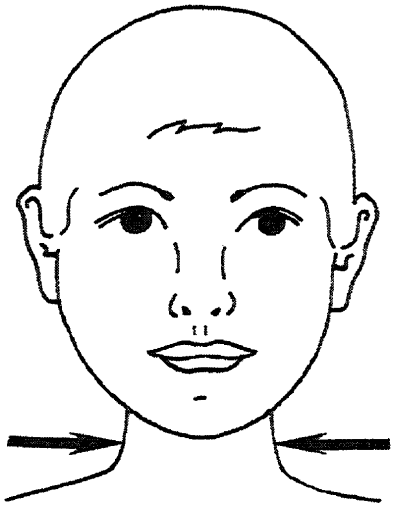
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	24.2	1.1	21.4	21.9	24.3	25.7	25.9
3.5-4.5	37	24.6	1.3	21.3	21.5	24.6	26.2	27.2
4.5-5.5	58	25.3	1.3	20.3	23.6	25.3	27.1	28.9
5.5-6.5	39	25.8	1.3	23.3	23.4	25.8	28.0	28.2
6.5-7.5	40	26.2	1.4	22.7	23.4	26.1	27.8	30.6
7.5-8.5	36	27.1	1.7	24.3	24.4	26.8	29.0	33.4
8.5-9.5	42	27.8	1.9	23.8	24.2	27.6	31.1	32.6
9.5-10.5	40	28.1	1.6	25.2	25.4	28.2	30.9	31.5
10.5-11.5	40	28.1	1.2	25.9	26.0	28.1	30.1	30.3
11.5-12.5	55	29.5	1.6	26.9	27.1	29.4	31.9	32.6
12.5-13.5	58	30.3	1.8	26.6	27.6	30.0	33.3	34.8
13.5-14.5	49	32.2	1.9	26.5	29.1	32.3	35.1	35.5
14.5-15.5	42	32.8	1.9	29.4	29.4	32.9	35.7	36.3
15.5-16.5	38	35.2	2.7	27.7	30.7	34.9	39.6	40.1
16.5-17.5	28	35.8	2.0	31.2	31.6	36.0	38.1	40.8
17.5-19.0	38	36.6	2.5	30.3	32.3	36.6	40.5	42.2

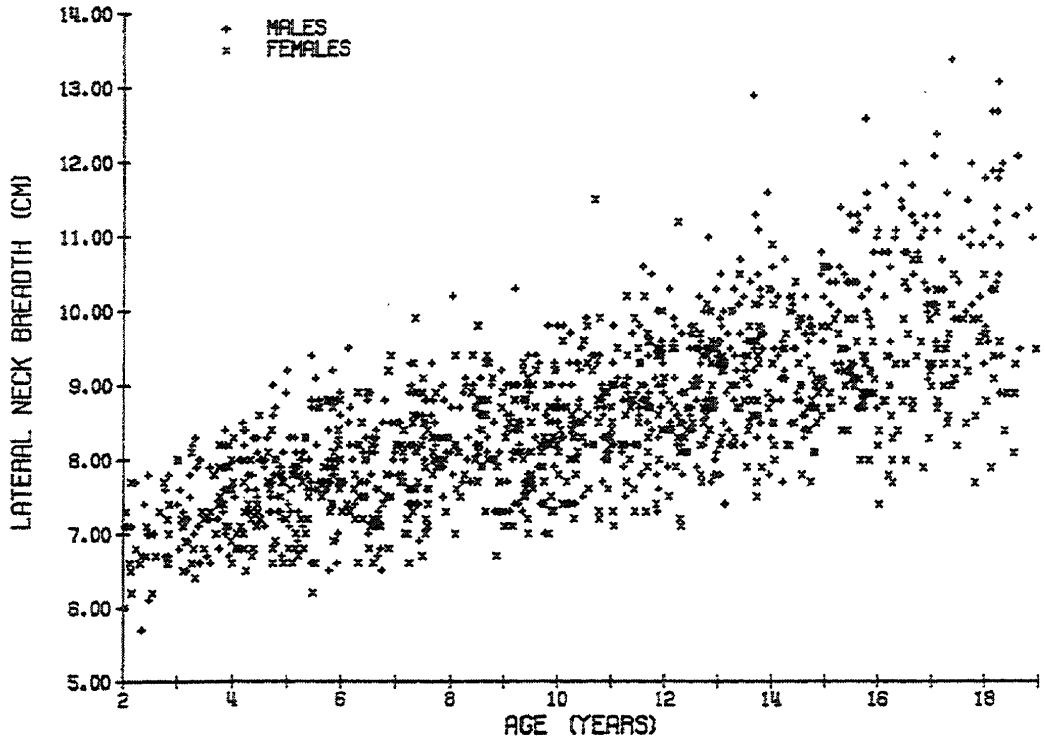
NECK CIRCUMFERENCE (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	23.4	1.1	20.0	20.8	23.4	24.7	25.4
3.5-4.5	41	24.0	1.3	21.6	22.0	23.9	26.3	27.2
4.5-5.5	35	24.5	1.4	22.0	22.2	24.3	26.6	27.6
5.5-6.5	41	25.7	1.5	23.0	23.2	25.3	27.8	30.2
6.5-7.5	44	26.0	1.7	23.0	23.8	25.9	28.4	32.5
7.5-8.5	32	27.0	1.9	23.2	23.7	26.7	29.6	33.6
8.5-9.5	49	27.5	1.6	23.7	25.5	27.3	29.8	30.5
9.5-10.5	45	27.6	2.2	23.8	24.2	27.6	32.0	33.0
10.5-11.5	43	28.5	2.2	25.1	25.5	28.0	31.9	36.1
11.5-12.5	42	29.3	1.8	25.9	26.4	29.0	32.4	33.5
12.5-13.5	50	29.7	1.6	27.4	27.5	29.4	32.5	33.5
13.5-14.5	41	30.2	1.8	27.3	27.7	29.8	33.3	35.6
14.5-15.5	39	30.8	1.4	28.2	28.2	30.8	32.9	33.6
15.5-16.5	41	30.8	1.5	27.7	28.4	30.7	33.7	34.4
16.5-17.5	39	31.4	1.6	28.4	28.8	31.0	33.7	37.5
17.5-19.0	25	31.4	1.7	28.8	28.9	31.2	34.2	35.5

LATERAL NECK BREADTH

Subject stands erect with head oriented in the Frankfort Plane. With the paddle blades of an automated sliding caliper, measure the breadth at the midpoint of the neck perpendicular to the long axis of the neck at a fixed pressure value.

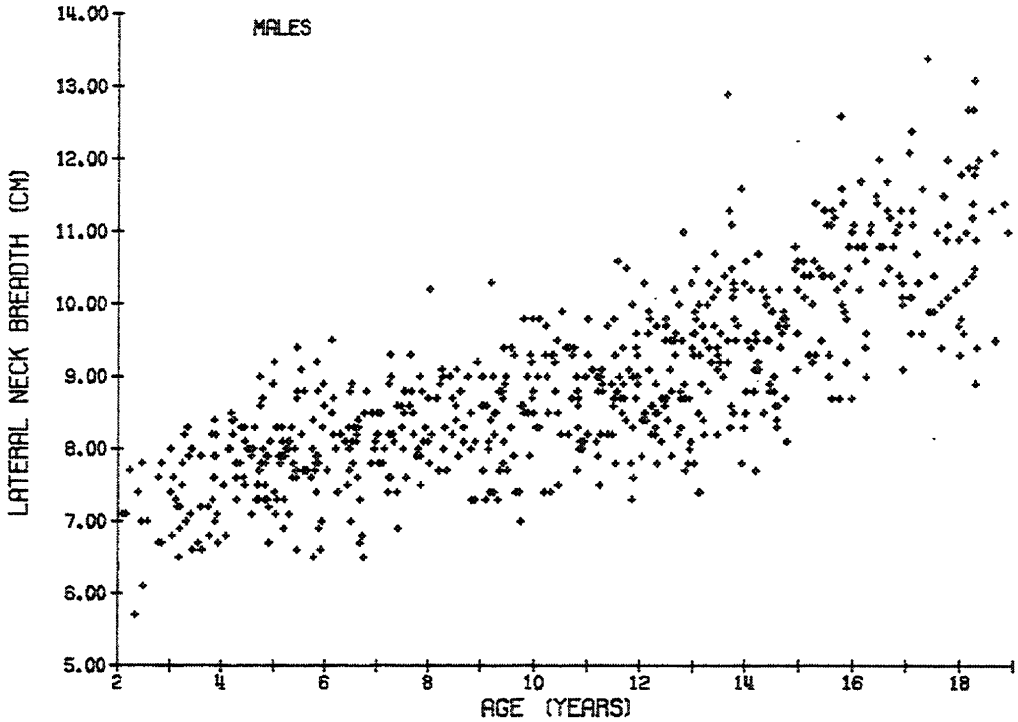


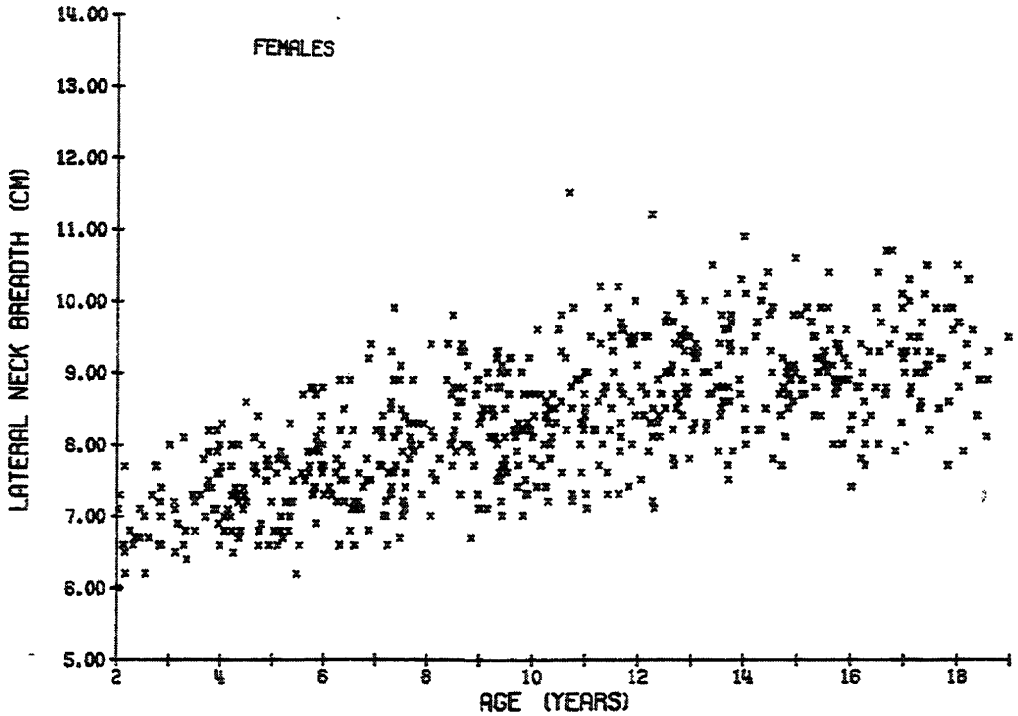


LATERAL NECK BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	7.1	0.6	5.7	6.1	7.0	8.0	8.3
3.5-4.5	76	7.5	0.5	6.5	6.6	7.5	8.3	8.6
4.5-5.5	91	7.7	0.6	6.2	6.6	7.7	8.8	9.4
5.5-6.5	79	7.9	0.7	6.5	6.6	7.8	8.9	9.5
6.5-7.5	86	7.9	0.7	6.5	6.7	8.0	9.2	9.9
7.5-8.5	68	8.3	0.6	7.0	7.1	8.1	9.3	10.2
8.5-9.5	91	8.3	0.7	6.7	7.2	8.3	9.2	10.3
9.5-10.5	84	8.4	0.7	7.0	7.3	8.4	9.6	9.8
10.5-11.5	85	8.7	0.8	7.1	7.3	8.6	9.8	11.5
11.5-12.5	97	8.8	0.8	7.1	7.4	8.7	10.0	11.2
12.5-13.5	104	9.1	0.8	7.4	7.7	9.1	10.2	11.0
13.5-14.5	88	9.4	0.9	7.5	7.8	9.3	10.8	12.9
14.5-15.5	80	9.4	0.8	7.7	8.1	9.2	10.6	11.4
15.5-16.5	77	9.7	1.2	7.4	7.9	9.3	11.5	12.6
16.5-17.5	67	9.9	1.1	7.9	8.2	9.7	11.7	13.4
17.5-19.0	62	10.2	1.2	7.7	8.1	9.9	12.1	13.1

(33)


MALES
LATERAL NECK BREADTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
LATERAL NECK BREADTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

LATERAL NECK BREADTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	7.3	0.6	5.7	5.9	7.2	8.1	8.3
3.5-4.5	36	7.7	0.6	6.6	6.6	7.7	8.4	8.5
4.5-5.5	57	7.9	0.6	6.6	6.9	7.8	8.9	9.4
5.5-6.5	39	8.0	0.7	6.5	6.6	7.9	9.1	9.5
6.5-7.5	41	8.0	0.6	6.5	6.7	8.1	8.9	9.3
7.5-8.5	36	8.4	0.6	7.5	7.6	8.3	9.1	10.2
8.5-9.5	42	8.4	0.7	7.3	7.3	8.4	9.2	10.3
9.5-10.5	39	8.7	0.8	7.0	7.1	8.6	9.7	9.8
10.5-11.5	41	8.7	0.6	7.5	7.7	8.8	9.7	9.9
11.5-12.5	55	8.9	0.7	7.3	7.6	8.7	10.1	10.6
12.5-13.5	57	9.2	0.9	7.4	7.7	9.3	10.3	11.0
13.5-14.5	47	9.6	1.0	7.7	7.9	9.5	11.2	12.9
14.5-15.5	41	9.8	0.8	8.1	8.3	9.7	11.1	11.4
15.5-16.5	37	10.5	1.0	8.7	8.7	10.6	11.7	12.6
16.5-17.5	28	10.8	0.9	9.1	9.2	10.7	12.3	13.4
17.5-19.0	38	10.9	1.1	8.9	9.3	10.9	12.4	13.1

LATERAL NECK BREADTH (cm)
(Females)

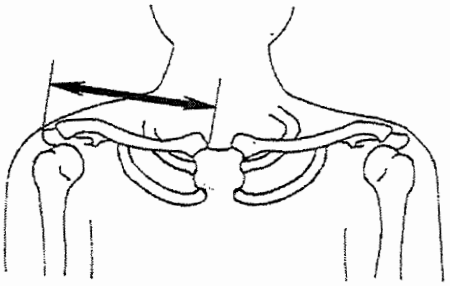
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	7.0	0.5	6.0	6.1	6.9	7.8	8.1
3.5-4.5	40	7.4	0.5	6.5	6.6	7.3	8.2	8.6
4.5-5.5	34	7.3	0.5	6.2	6.3	7.2	8.2	8.4
5.5-6.5	40	7.8	0.6	6.6	6.6	7.7	8.8	8.9
6.5-7.5	45	7.8	0.8	6.6	6.6	7.6	9.3	9.9
7.5-8.5	32	8.1	0.7	7.0	7.0	8.0	9.2	9.8
8.5-9.5	49	8.3	0.7	6.7	7.0	8.3	9.3	9.4
9.5-10.5	45	8.2	0.6	7.0	7.2	8.2	9.2	9.6
10.5-11.5	44	8.6	0.9	7.1	7.2	8.5	9.9	11.5
11.5-12.5	42	8.7	0.9	7.1	7.2	8.6	10.0	11.2
12.5-13.5	47	9.0	0.6	7.7	7.8	8.9	10.0	10.5
13.5-14.5	41	9.1	0.8	7.5	7.7	9.1	10.3	10.9
14.5-15.5	39	9.0	0.6	7.7	7.8	9.0	9.9	10.6
15.5-16.5	40	8.9	0.7	7.4	7.7	8.8	9.9	10.4
16.5-17.5	39	9.3	0.7	7.9	8.0	9.2	10.5	10.7
17.5-19.0	24	9.2	0.7	7.7	7.7	9.2	10.2	10.5

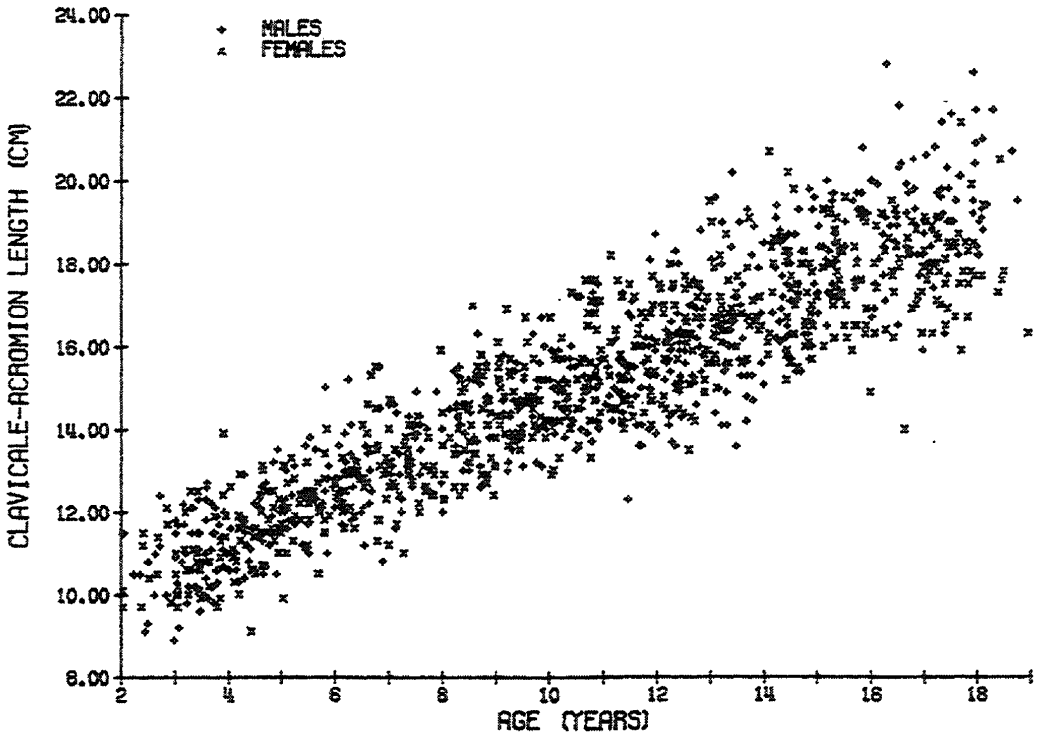
SHOULDER, ARM, AND HAND MEASUREMENTS

(34)

CLAVICALE-ACROMION LENGTH

Subject stands erect, arms hanging at sides. With the pointed blades of an automated anthropometer, measure the distance between right clavicale and right acromion.

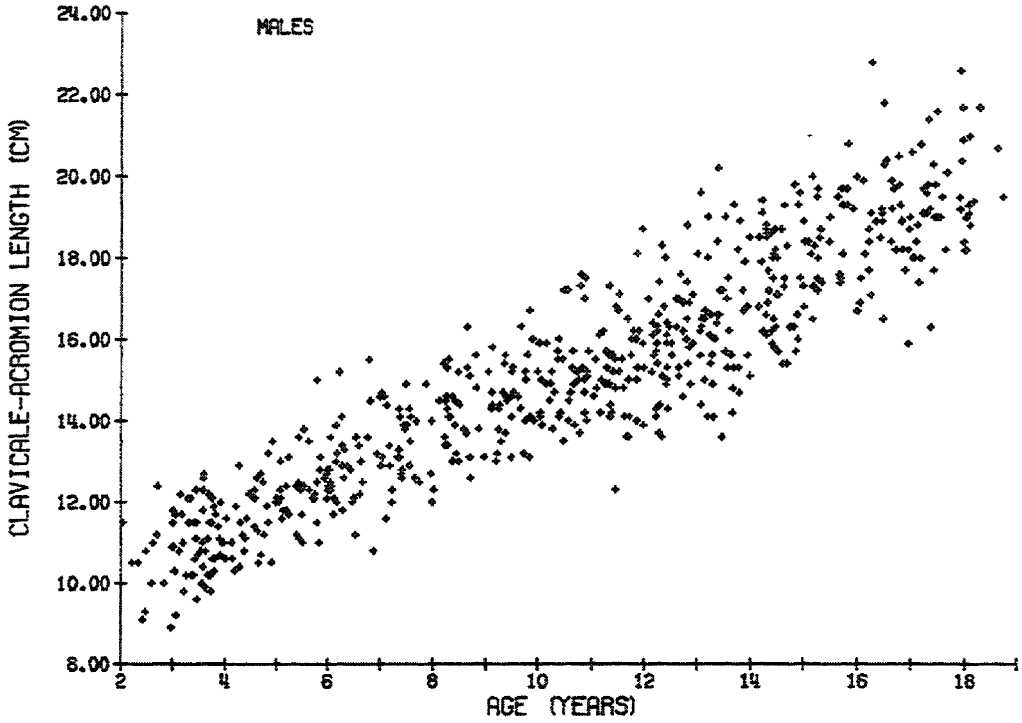


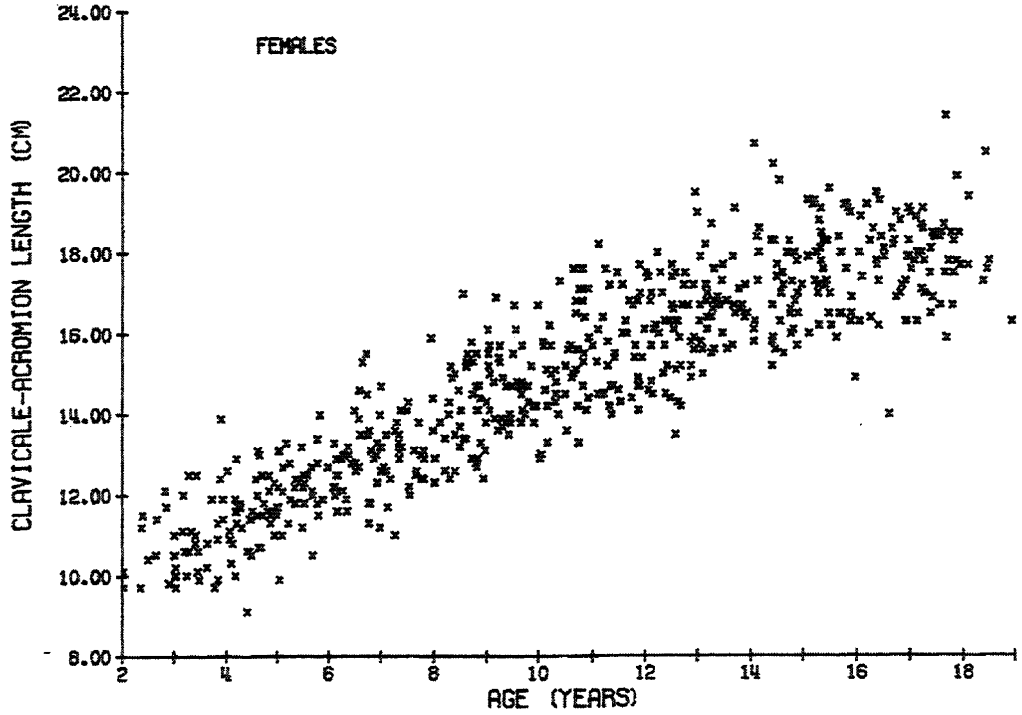


CLAVICALE-ACROMION LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	10.8	0.9	8.9	9.2	10.7	12.3	12.5
3.5-4.5	77	11.2	0.9	9.1	9.8	11.1	12.6	13.9
4.5-5.5	76	12.0	0.8	9.9	10.6	12.0	13.2	13.6
5.5-6.5	76	12.6	0.8	10.5	11.2	12.4	14.0	15.2
6.5-7.5	76	13.2	1.0	10.8	11.2	13.1	14.7	15.5
7.5-8.5	64	13.7	1.0	12.0	12.2	13.6	15.4	15.9
8.5-9.5	81	14.4	1.0	12.4	12.8	14.3	15.8	17.0
9.5-10.5	75	14.9	1.0	12.9	13.2	14.7	16.5	17.3
10.5-11.5	96	15.5	1.2	12.3	13.9	15.2	17.5	18.2
11.5-12.5	96	15.8	1.2	13.6	13.9	15.8	17.7	18.7
12.5-13.5	100	16.5	1.3	13.5	14.2	16.4	18.9	20.2
13.5-14.5	82	17.1	1.3	14.2	15.1	16.8	19.1	20.7
14.5-15.5	86	17.7	1.2	15.4	15.6	17.5	19.6	20.0
15.5-16.5	63	18.2	1.5	14.9	16.1	18.2	20.3	22.8
16.5-17.5	74	18.4	1.3	14.0	16.1	18.3	20.5	21.6
17.5-19.0	46	18.9	1.5	15.9	16.4	18.7	21.5	22.6

(34)


MALES
CLAVICALE-ACROMION LENGTH (CM)
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CLAVICALE-ACROMION LENGTH (CM)
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

CLAVICALE-ACROMION LENGTH (cm)
(Males)

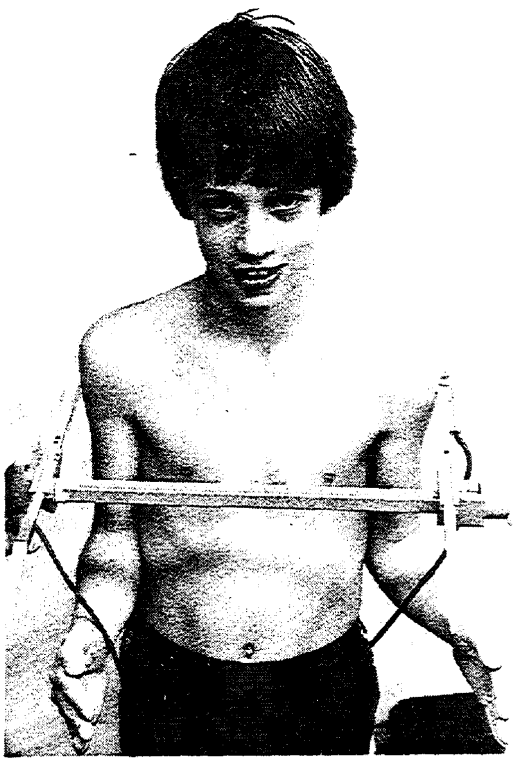
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	10.8	0.9	8.9	9.1	10.8	12.2	12.4
3.5-4.5	42	11.2	0.8	9.8	9.9	11.0	12.6	12.9
4.5-5.5	35	12.0	0.8	10.5	10.5	12.0	13.3	13.6
5.5-6.5	43	12.7	0.9	11.0	11.1	12.5	14.1	15.2
6.5-7.5	34	13.3	1.1	10.8	11.1	13.2	14.8	15.5
7.5-8.5	32	13.9	0.9	12.0	12.2	14.0	15.3	15.5
8.5-9.5	33	14.3	0.9	12.6	12.9	14.3	15.7	16.3
9.5-10.5	37	14.9	1.0	13.1	13.2	14.7	16.4	17.2
10.5-11.5	49	15.3	1.1	12.3	13.8	15.1	17.3	17.6
11.5-12.5	53	15.6	1.2	13.6	13.6	15.6	18.0	18.7
12.5-13.5	50	16.4	1.4	13.6	14.0	16.3	18.9	20.2
13.5-14.5	51	17.1	1.4	14.2	14.8	16.9	19.0	19.4
14.5-15.5	38	17.9	1.3	15.4	15.4	18.0	19.7	20.0
15.5-16.5	31	18.8	1.4	16.5	16.6	18.8	21.3	22.8
16.5-17.5	38	19.0	1.2	15.9	16.3	19.0	20.9	21.6
17.5-19.0	23	19.8	1.2	18.2	18.2	19.4	21.6	22.6

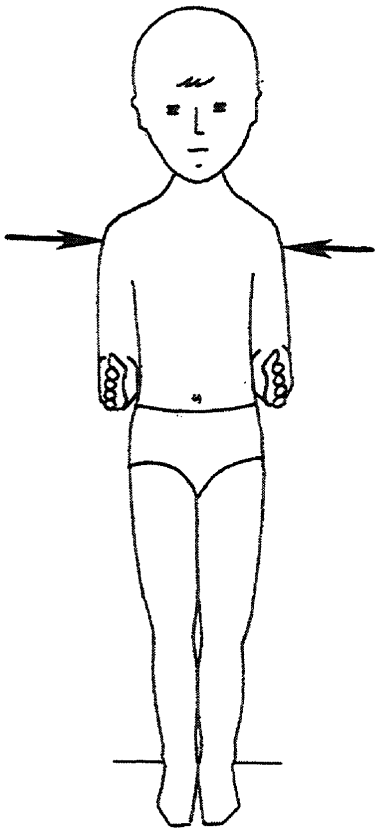
CLAVICALE-ACROMION LENGTH (cm)
(Females)

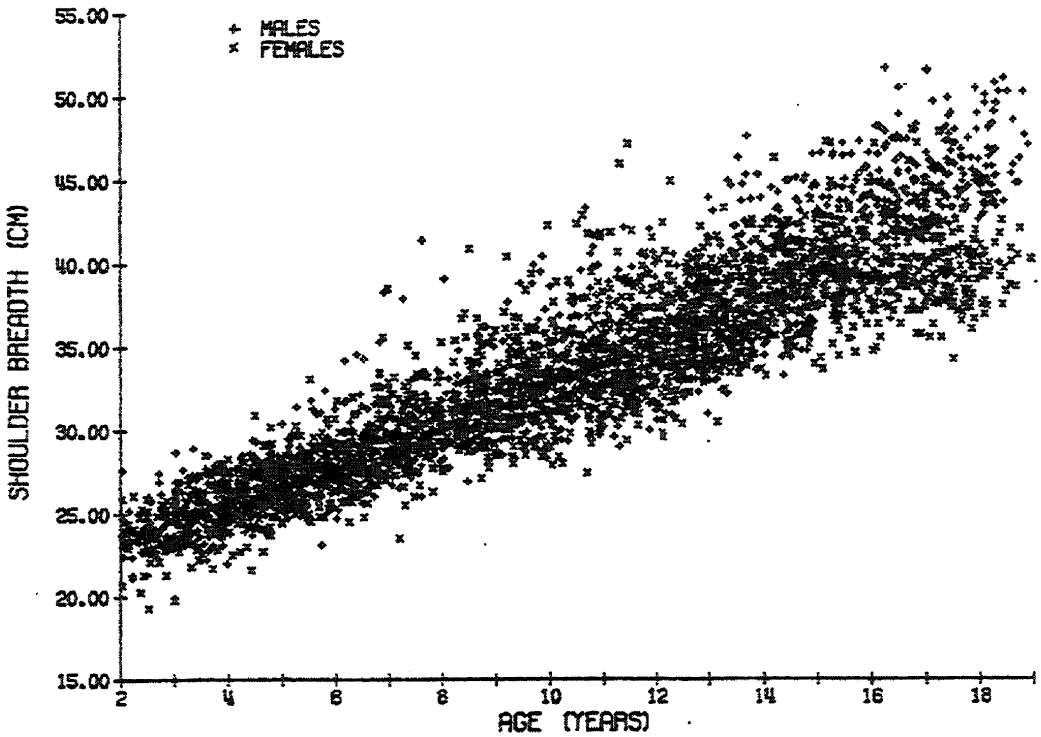
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	10.7	0.8	9.7	9.7	10.5	12.2	12.5
3.5-4.5	35	11.2	0.9	9.1	9.5	11.3	12.7	13.9
4.5-5.5	41	12.0	0.8	9.9	10.3	11.8	13.1	13.3
5.5-6.5	33	12.5	0.7	10.5	11.1	12.4	13.6	14.1
6.5-7.5	42	13.2	1.0	11.0	11.2	13.1	14.7	15.5
7.5-8.5	32	13.5	1.1	12.0	12.1	13.2	15.3	15.9
8.5-9.5	48	14.4	1.1	12.4	12.7	14.3	16.0	17.0
9.5-10.5	38	14.8	1.0	12.9	13.0	14.7	16.5	17.3
10.5-11.5	47	15.6	1.2	13.3	13.7	15.5	17.6	18.2
11.5-12.5	43	16.0	1.1	14.1	14.3	16.0	17.6	18.0
12.5-13.5	50	16.5	1.2	13.5	14.2	16.5	18.4	19.5
13.5-14.5	31	17.1	1.3	15.2	15.3	16.7	19.6	20.7
14.5-15.5	48	17.6	1.1	15.5	15.8	17.4	19.3	19.8
15.5-16.5	32	17.7	1.2	14.9	15.5	17.8	19.2	19.5
16.5-17.5	36	17.8	1.0	14.0	14.9	17.9	19.0	19.1
17.5-19.0	23	18.1	1.3	15.9	16.0	17.7	20.4	21.4

SHOULDER BREADTH

Subject stands erect, upper arms at sides, and elbows flexed 90°. With the paddle blades of an automated anthropometer, measure the horizontal breadth across the shoulders at a fixed pressure value.



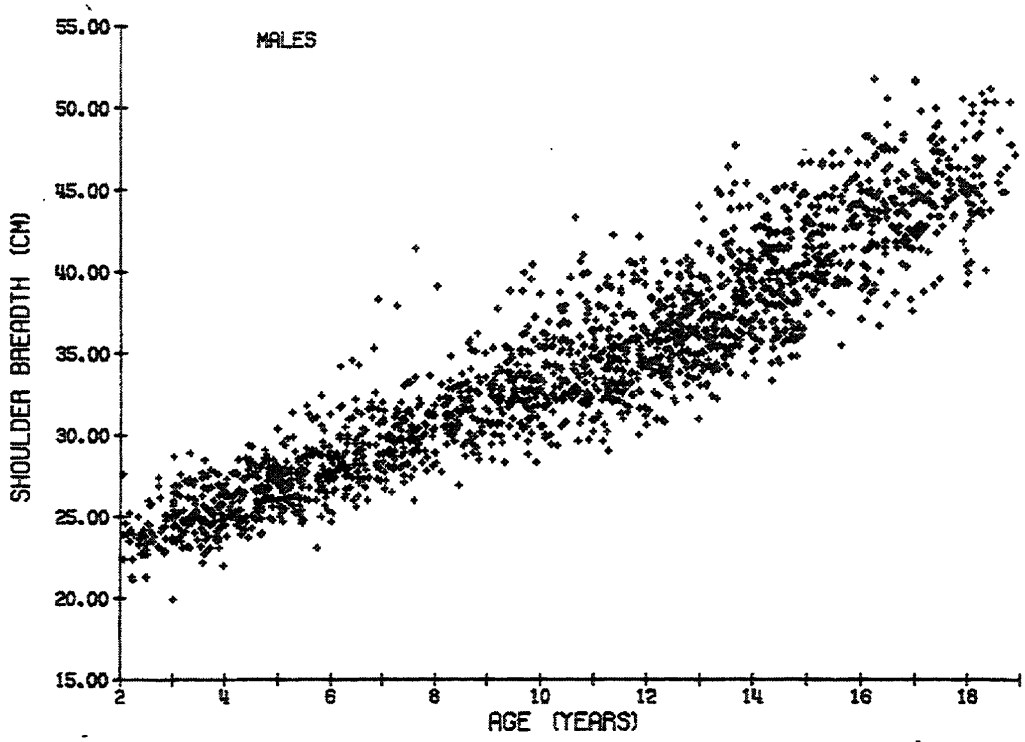


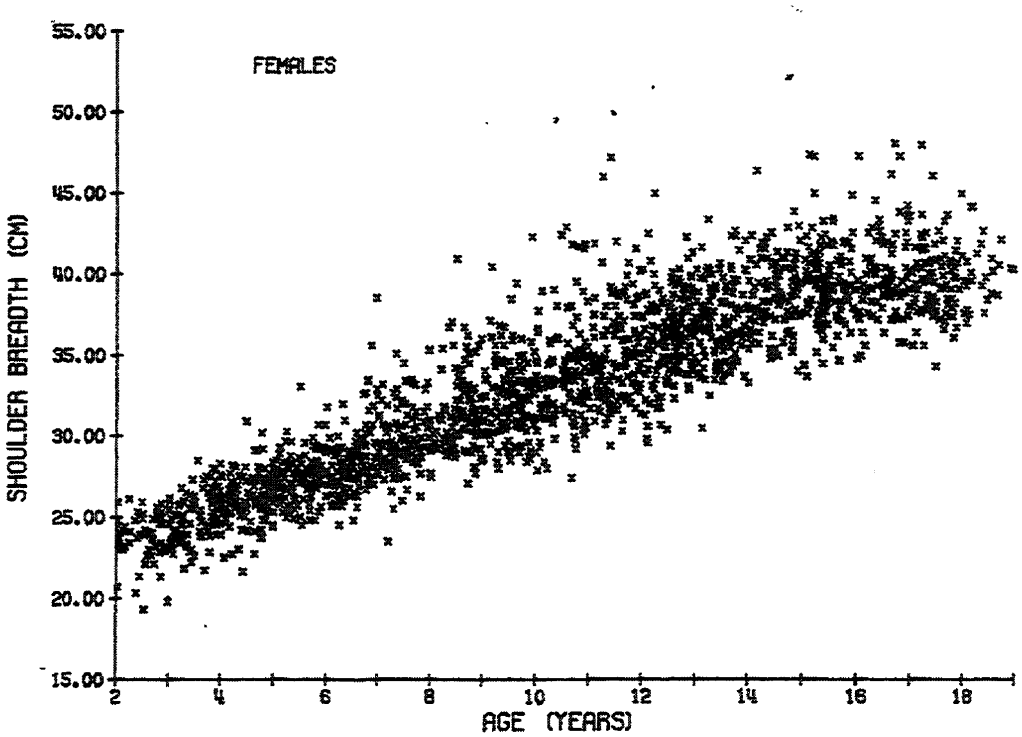


SHOULDER BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	211	24.4	1.5	19.3	22.0	24.3	26.9	28.9
3.5-4.5	228	25.7	1.6	21.6	23.0	25.6	28.2	30.9
4.5-5.5	262	26.8	1.4	22.7	24.7	26.8	29.1	31.4
5.5-6.5	216	28.1	1.8	23.1	25.4	27.8	31.3	34.6
6.5-7.5	225	29.5	2.2	23.5	26.5	29.1	33.1	33.5
7.5-8.5	192	30.7	2.2	26.0	27.7	30.4	34.1	41.4
8.5-9.5	251	32.1	2.2	27.1	28.7	31.9	35.7	40.4
9.5-10.5	253	33.1	2.6	27.9	29.0	32.9	37.9	42.4
10.5-11.5	282	34.4	3.0	27.4	30.5	33.9	39.9	47.2
11.5-12.5	287	35.3	2.6	29.6	31.2	35.1	39.9	45.0
12.5-13.5	312	36.9	2.5	30.5	33.1	36.6	41.2	46.4
13.5-14.5	270	38.6	2.8	33.3	34.4	38.3	43.3	47.7
14.5-15.5	262	39.9	2.7	33.7	35.7	39.7	44.8	47.4
15.5-16.5	198	41.4	3.3	34.7	36.4	41.0	47.3	51.8
16.5-17.5	221	42.0	3.4	34.3	37.3	41.8	48.0	51.7
17.5-19.0	154	43.2	3.7	36.1	37.5	43.4	49.5	51.2

(35)


MALES
SHOULDER BREADTH (CM)
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SHOULDER BREADTH (CM)
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SHOULDER BREADTH (cm)
(Males)

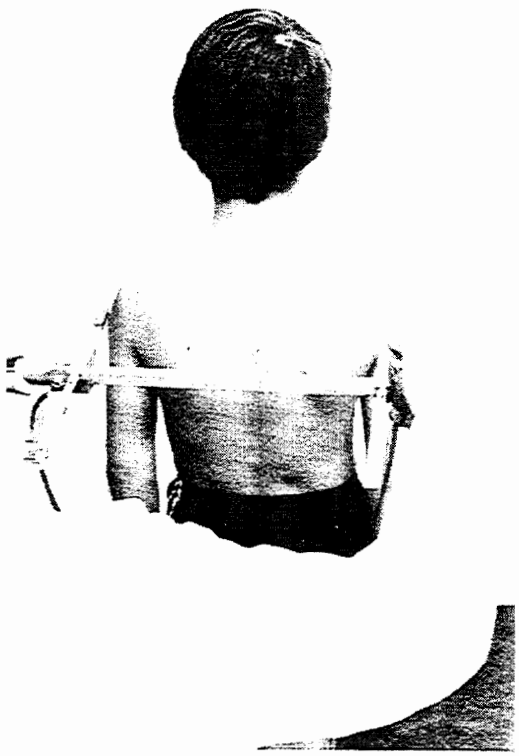
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	24.7	1.5	21.1	22.5	24.5	27.2	28.9
3.5-4.5	118	25.7	1.6	22.0	23.1	25.4	28.4	29.4
4.5-5.5	143	26.9	1.3	23.9	24.8	26.8	29.1	31.4
5.5-6.5	108	28.3	1.9	23.1	25.5	28.0	31.7	34.6
6.5-7.5	105	29.7	2.1	26.0	26.8	29.3	32.9	38.3
7.5-8.5	98	30.8	2.1	26.0	27.8	30.5	33.5	41.4
8.5-9.5	114	32.2	2.0	28.3	28.9	32.1	35.3	38.8
9.5-10.5	124	33.5	2.5	28.3	29.8	32.8	37.9	40.4
10.5-11.5	142	34.4	2.7	29.0	30.6	34.0	39.4	43.3
11.5-12.5	154	35.3	2.4	30.0	31.3	35.1	39.7	42.1
12.5-13.5	153	36.9	2.7	31.0	33.0	36.4	41.8	46.4
13.5-14.5	155	39.1	2.8	33.3	34.8	38.8	44.1	47.7
14.5-15.5	131	40.7	2.9	34.8	35.8	40.4	45.2	47.3
15.5-16.5	100	43.2	3.1	35.5	38.2	43.5	48.0	51.8
16.5-17.5	104	44.3	2.7	37.6	39.3	44.2	48.8	51.7
17.5-19.0	88	45.6	2.6	39.3	40.5	45.2	50.3	51.2

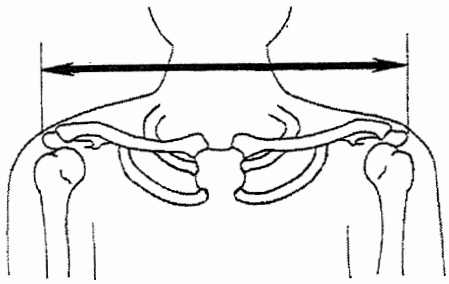
SHOULDER BREADTH (cm)
(Females)

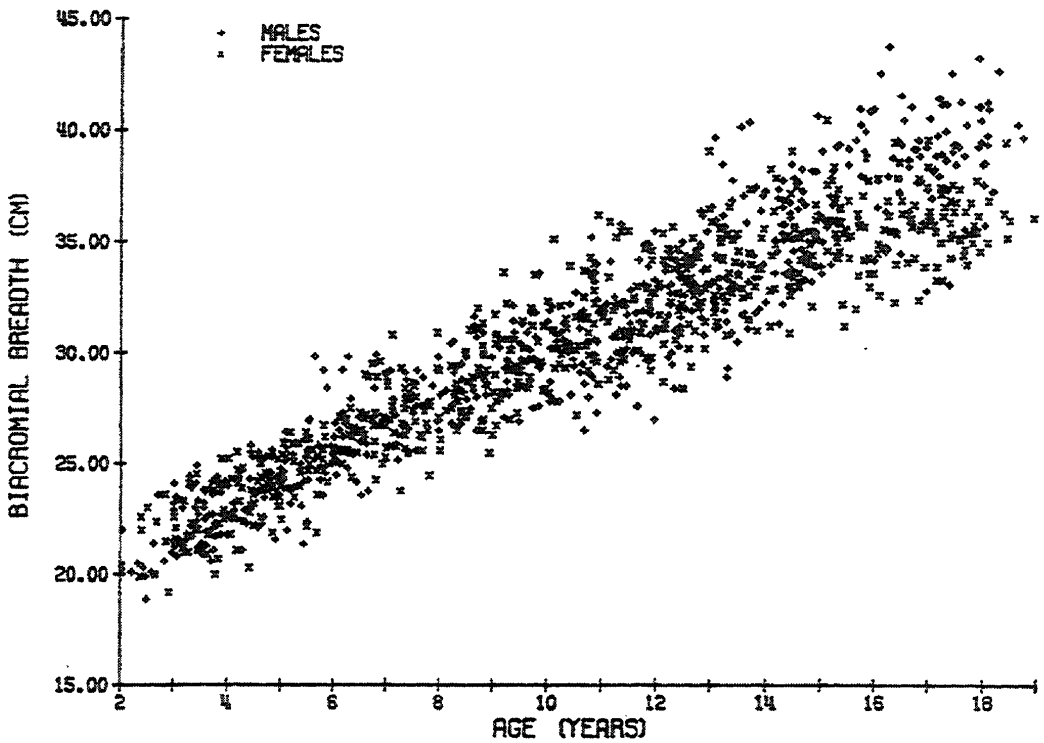
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	24.1	1.5	19.3	21.3	24.0	26.1	27.3
3.5-4.5	110	25.8	1.5	21.6	22.7	25.8	28.0	30.9
4.5-5.5	119	26.8	1.4	22.7	24.4	26.8	29.1	30.3
5.5-6.5	108	27.8	1.6	24.5	25.3	27.7	30.2	33.1
6.5-7.5	120	29.4	2.3	23.5	26.3	29.0	33.2	38.5
7.5-8.5	94	30.6	2.3	26.3	27.6	30.0	35.3	40.9
8.5-9.5	137	32.0	2.3	27.1	28.5	31.5	36.1	40.4
9.5-10.5	129	32.8	2.7	27.9	28.6	32.9	37.9	42.4
10.5-11.5	140	34.5	3.3	27.4	30.4	33.9	41.7	47.2
11.5-12.5	133	35.3	2.9	29.6	30.9	35.1	40.1	45.0
12.5-13.5	159	36.9	2.3	30.5	33.1	36.8	40.3	43.4
13.5-14.5	115	38.0	2.6	33.3	34.0	37.5	42.3	46.4
14.5-15.5	131	39.2	2.3	33.7	35.2	39.2	42.8	47.4
15.5-16.5	98	39.6	2.3	34.7	35.4	39.2	43.3	47.3
16.5-17.5	117	40.0	2.5	34.3	36.1	39.6	44.0	48.1
17.5-19.0	66	39.9	2.0	36.1	36.8	39.8	43.6	45.0

BIACROMIAL BREADTH

Subject stands erect, arms hanging at sides. With the pointed blades of an automated anthropometer, measure the horizontal distance between the most lateral edges of the right and left acromion landmarks.



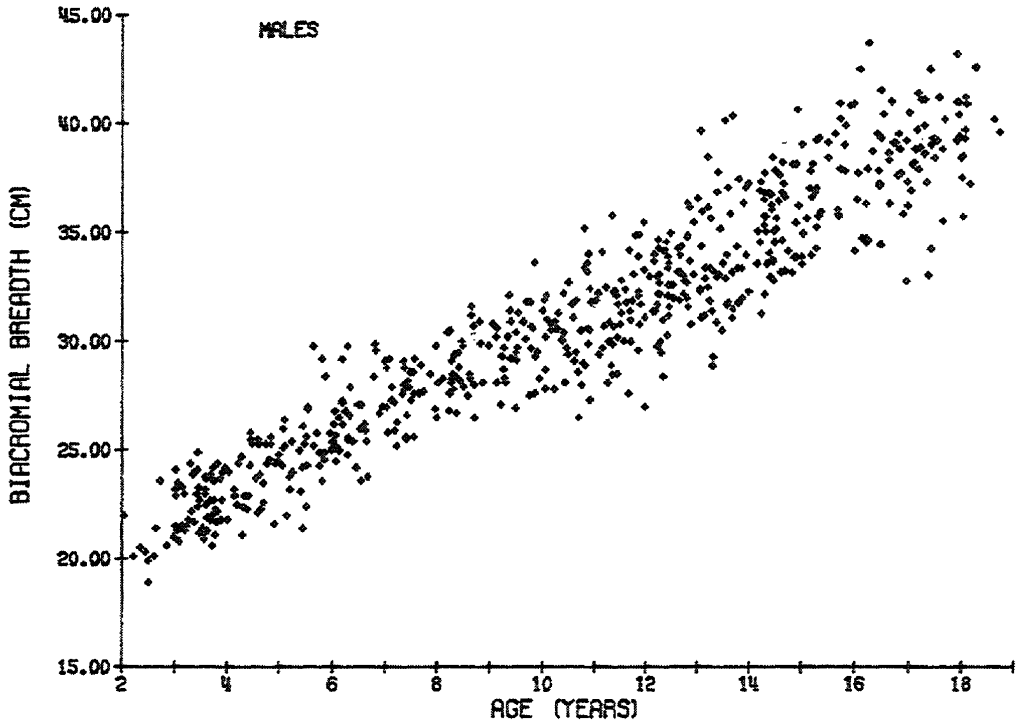


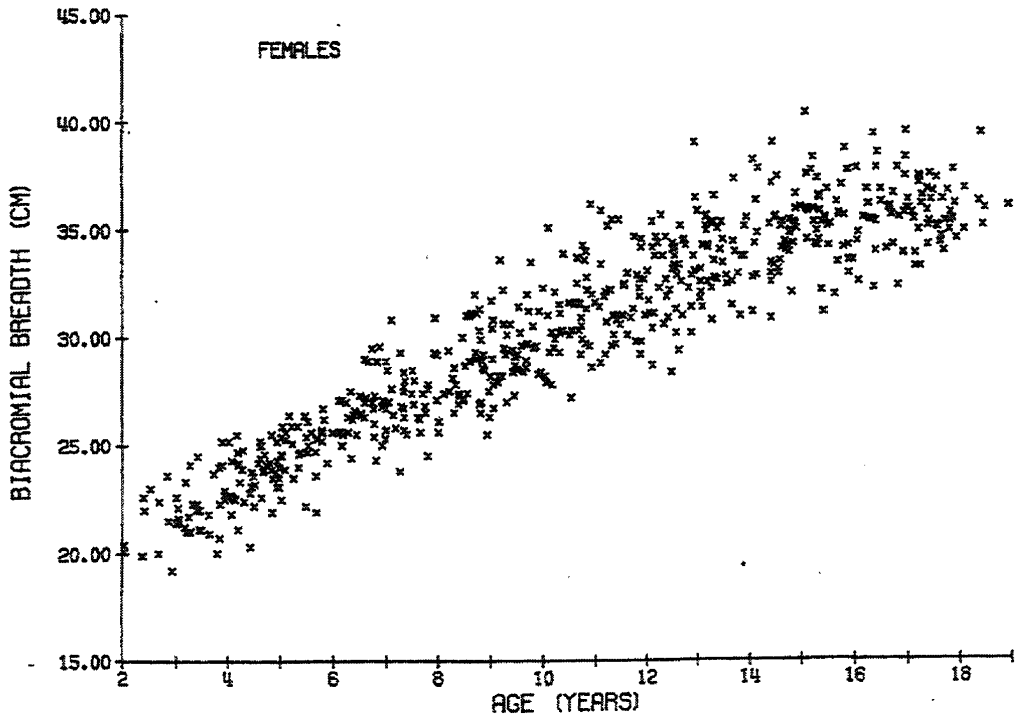


BIACROMIAL BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	21.9	1.4	18.9	19.7	21.7	24.1	24.9
3.5-4.5	79	23.0	1.3	20.0	20.7	22.8	25.2	25.8
4.5-5.5	76	24.4	1.2	21.4	22.0	24.4	26.0	26.4
5.5-6.5	76	25.8	1.4	21.9	23.5	25.6	28.5	29.8
6.5-7.5	76	27.1	1.5	23.6	24.2	27.0	29.5	30.8
7.5-8.5	64	27.9	1.3	24.5	25.3	27.8	30.0	30.9
8.5-9.5	81	29.2	1.6	25.5	26.5	29.1	31.7	33.6
9.5-10.5	75	30.3	1.6	27.5	27.7	30.1	32.9	35.1
10.5-11.5	97	31.3	2.0	26.5	28.1	31.1	35.2	36.2
11.5-12.5	96	32.3	1.9	27.0	28.6	32.3	34.8	35.7
12.5-13.5	100	33.6	2.2	28.9	30.2	33.2	36.9	40.2
13.5-14.5	82	34.7	2.2	30.9	31.2	34.4	37.9	40.4
14.5-15.5	87	35.8	1.9	31.2	33.0	35.4	39.2	40.7
15.5-16.5	63	36.8	2.6	32.0	32.7	36.3	41.0	43.8
16.5-17.5	74	37.3	2.3	32.4	33.2	37.3	41.1	42.6
17.5-19.0	46	37.8	2.5	34.0	34.5	37.3	41.3	43.3

(36)


MALES
BIACROMIAL BREADTH (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
BIACROMIAL BREADTH (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

BIACROMIAL BREADTH (cm)
(Males)

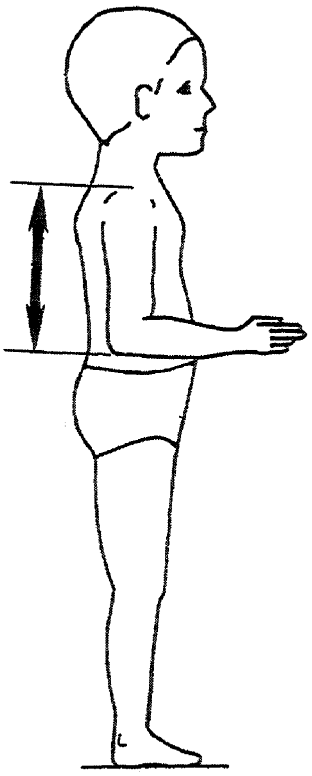
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	36	22.1	1.5	18.9	19.7	21.8	24.2	24.9
3.5-4.5	44	22.9	1.3	20.6	20.9	22.7	25.2	25.8
4.5-5.5	35	24.3	1.3	21.4	21.5	24.4	26.0	26.4
5.5-6.5	43	26.0	1.6	22.4	23.7	25.5	29.1	29.8
6.5-7.5	34	27.2	1.6	23.6	23.7	27.2	29.3	29.9
7.5-8.5	32	28.3	1.2	25.6	26.1	28.2	30.2	30.5
8.5-9.5	33	29.4	1.4	26.5	26.8	29.4	31.5	32.1
9.5-10.5	37	30.3	1.5	27.5	27.6	30.4	32.3	33.6
10.5-11.5	49	30.9	2.0	26.5	27.6	30.7	34.1	35.8
11.5-12.5	53	32.2	1.9	27.0	28.1	32.2	34.8	35.5
12.5-13.5	50	33.7	2.4	28.9	29.9	33.1	38.1	40.2
13.5-14.5	51	34.9	2.2	31.1	31.4	34.7	37.8	40.4
14.5-15.5	39	36.3	2.0	33.2	33.2	36.4	39.3	40.7
15.5-16.5	31	38.1	2.6	34.2	34.4	37.9	42.0	43.8
16.5-17.5	38	38.5	2.1	32.8	33.1	38.7	41.2	42.6
17.5-19.0	23	39.7	1.9	35.6	35.6	39.6	42.5	43.3

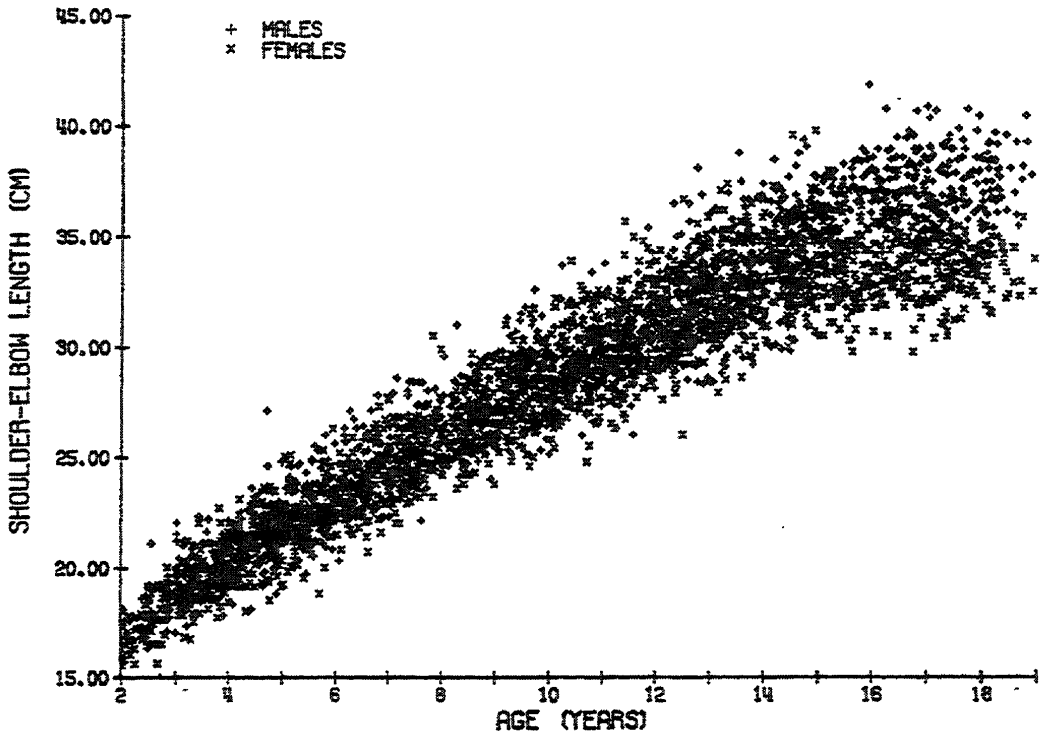
BIACROMIAL BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	21.8	1.2	19.2	19.5	21.6	23.8	24.5
3.5-4.5	35	23.1	1.4	20.0	20.2	23.0	25.0	25.5
4.5-5.5	41	24.4	1.1	21.9	22.2	24.3	25.9	26.4
5.5-6.5	33	25.6	1.1	21.9	23.0	25.6	27.2	27.5
6.5-7.5	42	27.1	1.5	23.8	24.4	26.8	29.5	30.8
7.5-8.5	32	27.5	1.3	24.5	24.8	27.3	29.6	30.9
8.5-9.5	48	29.1	1.7	25.5	26.4	28.9	31.9	33.6
9.5-10.5	38	30.3	1.7	27.8	27.9	30.1	33.5	35.1
10.5-11.5	48	31.7	2.0	27.2	28.7	31.5	35.4	36.2
11.5-12.5	43	32.3	1.9	28.4	28.8	32.3	34.7	35.7
12.5-13.5	50	33.6	1.9	29.4	30.0	33.5	36.2	39.1
13.5-14.5	31	34.3	2.2	30.9	31.0	33.7	38.1	39.1
14.5-15.5	48	35.3	1.7	31.2	32.1	35.2	37.7	40.5
15.5-16.5	32	35.5	1.9	32.0	32.2	35.5	38.7	39.5
16.5-17.5	36	35.9	1.5	32.4	32.8	35.9	38.0	39.6
17.5-19.0	23	35.9	1.2	34.0	34.1	35.4	37.7	39.5

SHOULDER-ELBOW LENGTH

Subject stands erect, upper arms hanging at sides and elbows flexed 90°. With the paddle blades of an automated anthropometer, measure the distance from the superior surface of the right shoulder to the inferior surface of the forearm just below the elbow parallel to the long axis of the upper arm.

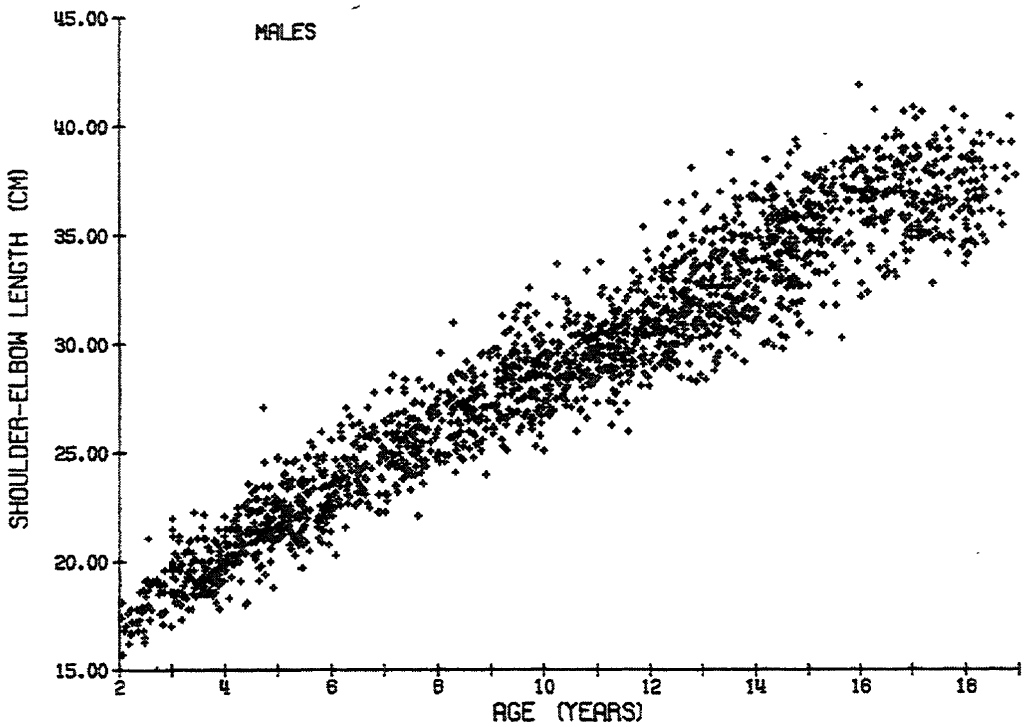


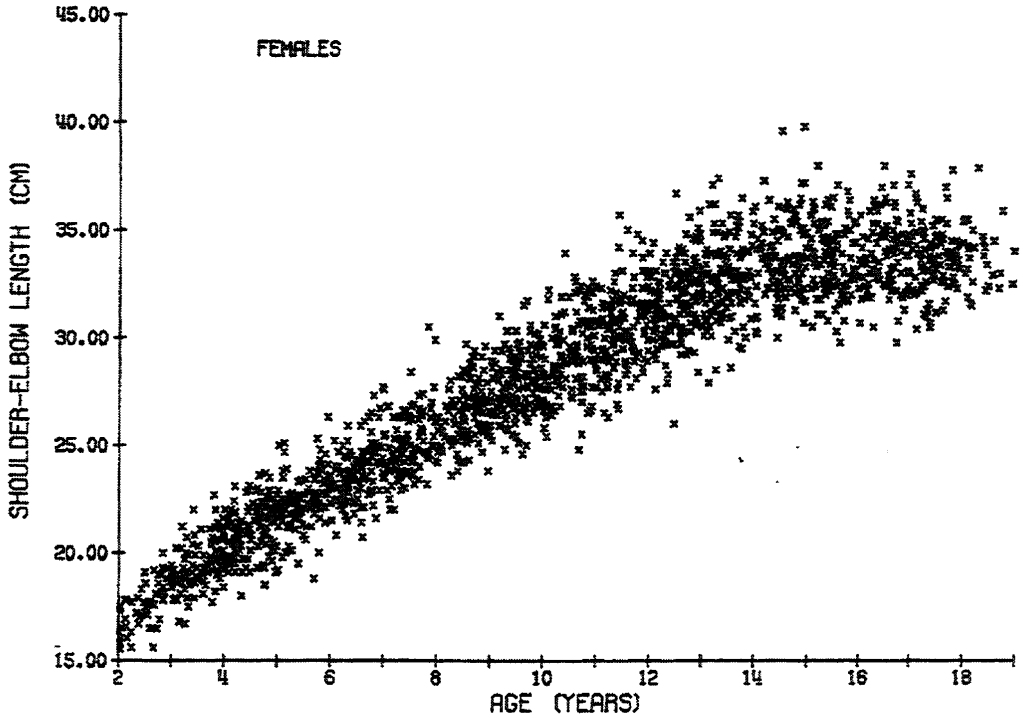


SHOULDER-ELBOW LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	211	18.5	1.4	15.0	16.3	18.5	20.9	22.3
3.5-4.5	228	20.3	1.2	17.7	18.4	20.1	22.3	23.6
4.5-5.5	263	21.9	1.3	18.5	19.7	21.8	23.9	27.1
5.5-6.5	217	23.3	1.3	18.8	21.1	23.2	25.5	27.1
6.5-7.5	226	24.7	1.4	20.7	22.3	24.5	26.9	28.6
7.5-8.5	192	26.0	1.4	22.1	23.8	25.9	28.4	31.0
8.5-9.5	250	27.5	1.5	23.8	25.2	27.2	29.7	31.5
9.5-10.5	252	28.6	1.6	24.6	26.2	28.5	31.6	33.9
10.5-11.5	280	29.8	1.6	24.8	26.9	29.7	32.3	35.7
11.5-12.5	287	31.0	1.8	26.0	28.5	30.9	33.8	36.7
12.5-13.5	314	32.4	1.8	27.9	29.3	32.2	35.5	38.8
13.5-14.5	271	33.5	2.0	28.6	30.2	33.5	36.7	38.5
14.5-15.5	262	34.5	1.9	30.3	31.6	34.5	37.6	39.8
15.5-16.5	197	35.1	2.3	29.8	31.7	35.2	38.5	41.9
16.5-17.5	221	35.2	2.4	29.8	31.6	35.0	39.0	40.9
17.5-19.0	156	35.8	2.6	31.3	32.3	35.5	39.6	48.4

(37)


MALES
SHOULDER-ELBOW LENGTH (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SHOULDER-ELBOW LENGTH (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SHOULDER-ELBOW LENGTH (cm)
(Males)

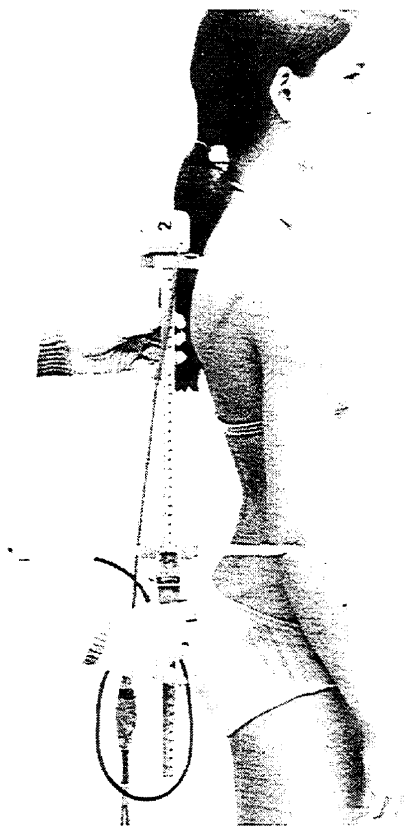
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	18.8	1.4	15.0	16.6	18.7	21.1	22.3
3.5-4.5	118	20.2	1.2	17.8	18.4	20.0	22.2	23.6
4.5-5.5	143	22.0	1.3	18.8	20.0	21.7	24.3	27.1
5.5-6.5	108	23.5	1.4	20.3	21.0	23.4	25.8	27.1
6.5-7.5	105	25.0	1.4	22.3	22.7	24.9	27.4	28.6
7.5-8.5	98	26.3	1.4	22.1	24.1	26.2	28.5	31.0
8.5-9.5	114	27.8	1.5	24.0	25.3	27.6	30.1	31.5
9.5-10.5	124	28.7	1.6	25.1	26.2	28.5	31.6	33.7
10.5-11.5	140	29.7	1.4	26.0	27.1	29.6	31.8	33.8
11.5-12.5	154	31.0	1.7	26.0	28.6	30.7	33.8	36.5
12.5-13.5	153	32.4	2.0	28.3	29.0	32.1	35.8	38.8
13.5-14.5	155	33.9	2.1	29.2	30.4	33.8	36.9	38.5
14.5-15.5	130	35.1	2.0	30.3	31.6	35.1	37.8	39.4
15.5-16.5	99	36.6	1.8	30.3	33.1	36.9	38.9	41.9
16.5-17.5	104	36.9	1.8	32.8	33.9	36.8	39.6	40.9
17.5-19.0	88	37.4	2.2	33.7	34.3	37.1	40.1	48.4

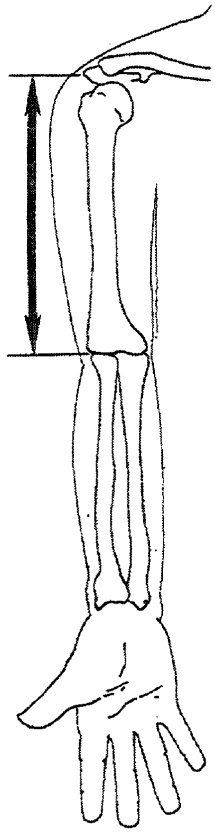
SHOULDER-ELBOW LENGTH (cm)
(Females)

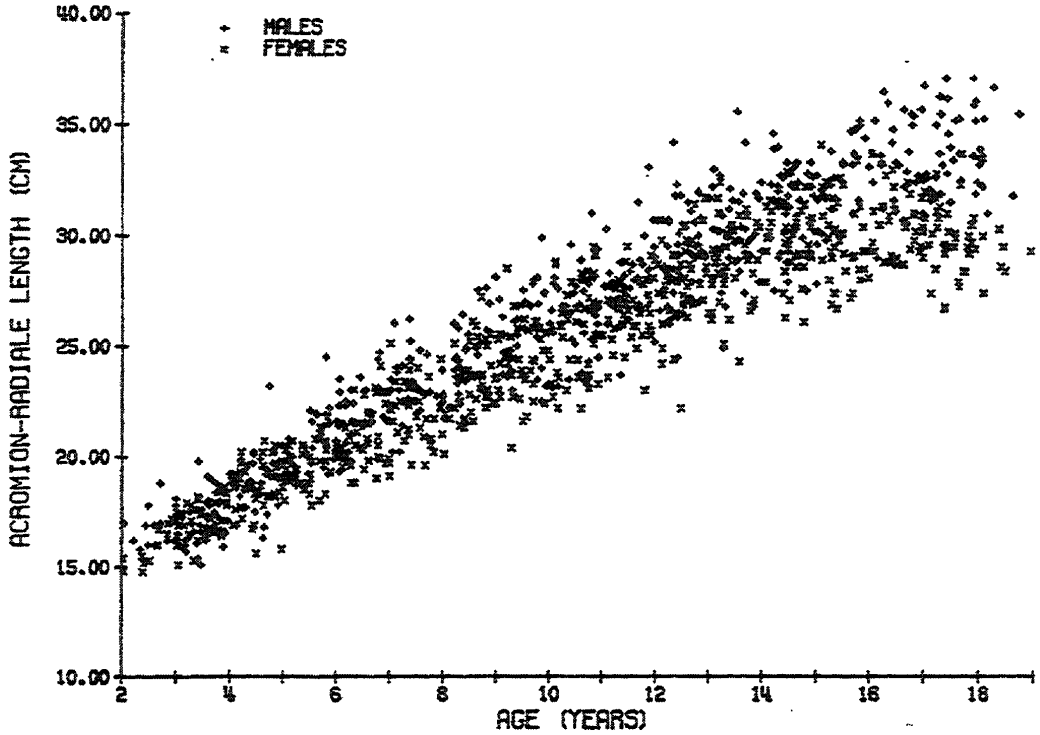
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	18.2	1.3	15.5	15.9	18.1	20.2	22.0
3.5-4.5	110	20.3	1.2	17.7	18.4	20.1	22.3	23.1
4.5-5.5	120	21.7	1.2	18.5	19.4	21.8	23.6	25.1
5.5-6.5	109	23.1	1.2	18.8	21.1	23.0	24.9	26.3
6.5-7.5	121	24.4	1.4	20.7	22.1	24.3	26.7	28.4
7.5-8.5	94	25.7	1.4	23.2	23.5	25.7	28.0	30.5
8.5-9.5	136	27.2	1.4	23.8	25.1	27.0	29.4	31.0
9.5-10.5	128	28.5	1.6	24.6	26.1	28.3	31.4	33.9
10.5-11.5	140	29.9	1.9	24.8	26.7	29.9	32.5	35.7
11.5-12.5	133	31.1	1.8	26.0	28.3	31.0	33.8	36.7
12.5-13.5	161	32.4	1.7	27.9	29.7	32.3	35.1	37.4
13.5-14.5	116	33.1	1.7	28.6	30.0	33.0	35.7	37.3
14.5-15.5	132	33.9	1.7	30.5	31.4	33.6	36.4	39.8
15.5-16.5	98	33.6	1.7	29.8	30.8	33.2	36.4	38.0
16.5-17.5	117	33.7	1.6	29.8	31.0	33.7	36.2	37.6
17.5-19.0	68	33.8	1.4	31.3	31.6	33.7	36.3	37.9

ACROMION-RADIALE LENGTH

Subject stands erect, arms hanging at sides. With the pointed blades of an automated anthropometer, measure the distance parallel to the long axis of the right upper arm from acromion to radiale.



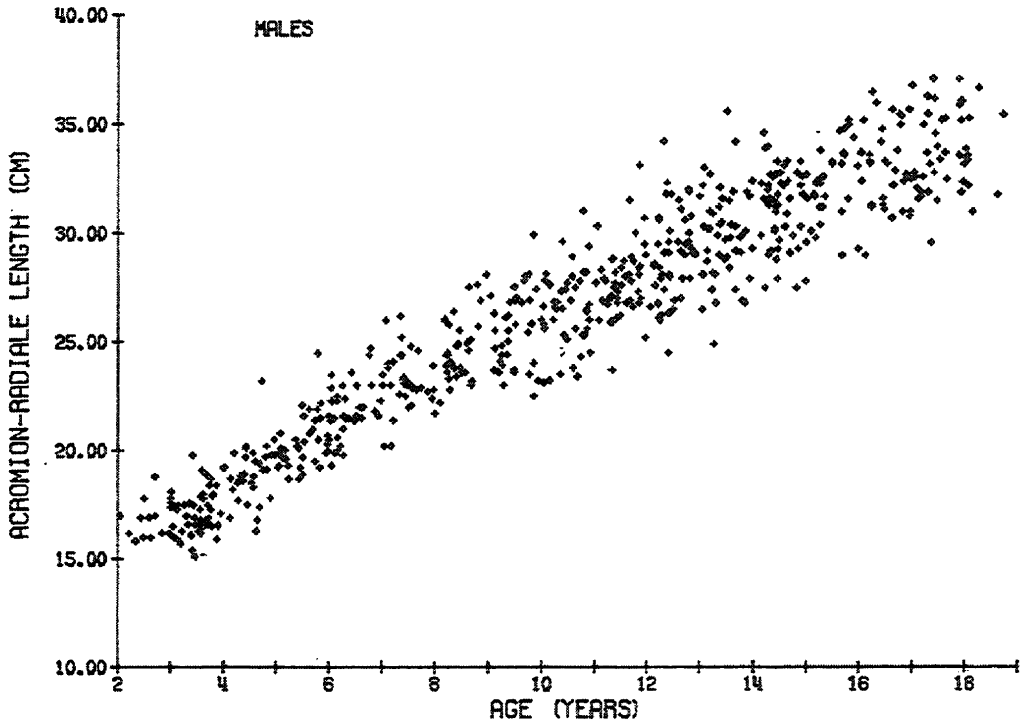


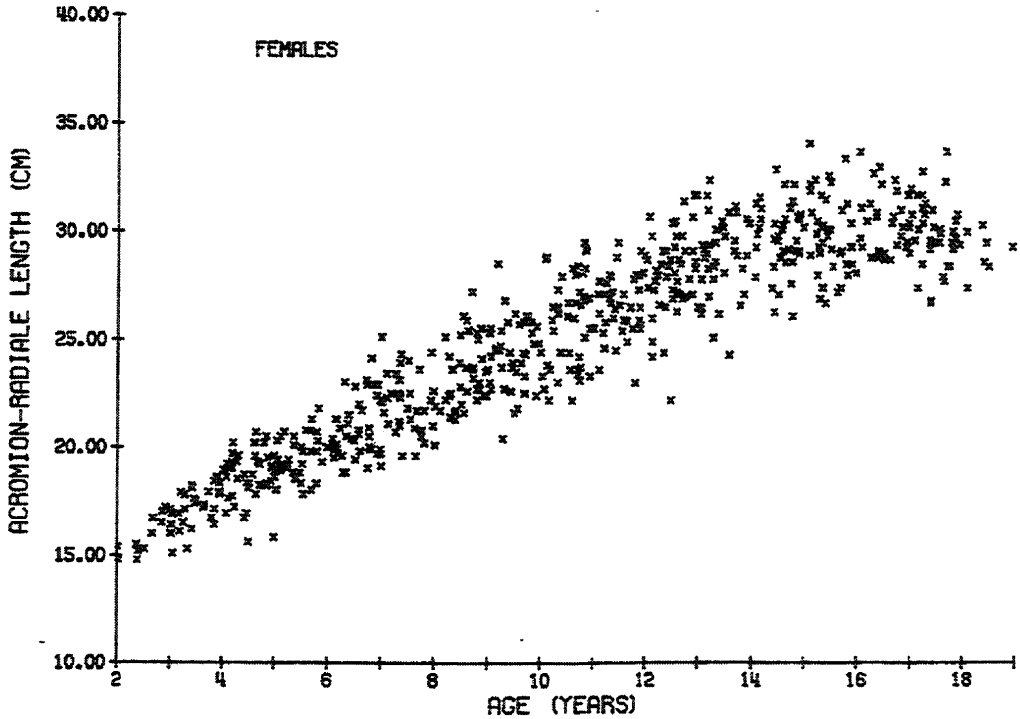


ACROMION-RADIALE LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	16.7	1.0	14.8	15.0	16.7	18.1	19.8
3.5-4.5	78	17.9	1.1	15.6	16.3	17.9	19.7	20.2
4.5-5.5	76	19.3	1.1	15.8	17.3	19.2	20.6	23.2
5.5-6.5	77	20.7	1.3	17.8	18.5	20.5	23.0	24.5
6.5-7.5	76	22.3	1.6	19.0	19.6	22.3	24.8	26.2
7.5-8.5	64	23.0	1.5	19.6	20.3	22.8	25.4	26.4
8.5-9.5	81	24.5	1.7	20.4	22.0	24.3	27.3	28.5
9.5-10.5	75	25.6	1.9	21.8	22.4	25.8	28.3	29.9
10.5-11.5	97	26.6	1.8	22.2	23.4	26.8	29.2	31.0
11.5-12.5	96	27.8	2.0	22.2	24.5	27.9	31.5	34.2
12.5-13.5	100	29.2	1.9	24.9	26.2	29.1	32.1	35.6
13.5-14.5	82	30.2	2.0	24.3	26.8	30.1	33.3	34.6
14.5-15.5	87	30.6	1.8	26.1	27.2	30.6	33.2	34.1
15.5-16.5	63	31.4	2.4	27.2	28.0	31.1	35.1	36.5
16.5-17.5	74	31.8	2.3	26.7	28.2	31.6	35.8	37.1
17.5-19.0	46	31.8	2.7	27.4	27.8	31.8	36.0	37.1

(38)


MALES
ACROMION-RADIALE LENGTH (CM)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ACROMION-RADIALE LENGTH (CM)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ACROMION-RADIALE LENGTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	16.9	1.0	15.1	15.4	16.8	18.2	19.8
3.5-4.5	44	17.8	1.2	15.9	16.2	17.8	19.9	20.2
4.5-5.5	35	19.5	1.3	16.3	16.7	19.5	21.1	23.2
5.5-6.5	43	21.2	1.3	18.9	19.2	21.1	23.4	24.5
6.5-7.5	34	23.0	1.4	20.2	20.2	22.8	25.4	26.2
7.5-8.5	32	23.8	1.2	21.7	21.9	23.7	25.9	26.4
8.5-9.5	33	25.2	1.5	23.0	23.0	24.9	27.5	28.1
9.5-10.5	37	26.2	1.8	22.5	23.0	26.5	28.3	29.9
10.5-11.5	49	26.9	1.7	23.4	23.5	26.9	29.2	31.0
11.5-12.5	53	28.5	2.0	24.5	25.7	28.1	32.0	34.2
12.5-13.5	50	29.8	1.9	24.9	26.6	29.6	32.4	35.6
13.5-14.5	51	30.7	1.9	26.8	27.2	30.7	33.9	34.6
14.5-15.5	39	31.5	1.5	27.5	27.8	31.7	33.3	33.8
15.5-16.5	31	32.9	2.0	29.0	29.0	33.2	35.6	36.5
16.5-17.5	38	33.3	1.9	29.6	30.6	32.7	36.3	37.1
17.5-19.0	23	34.0	1.7	31.0	31.1	33.6	36.6	37.1

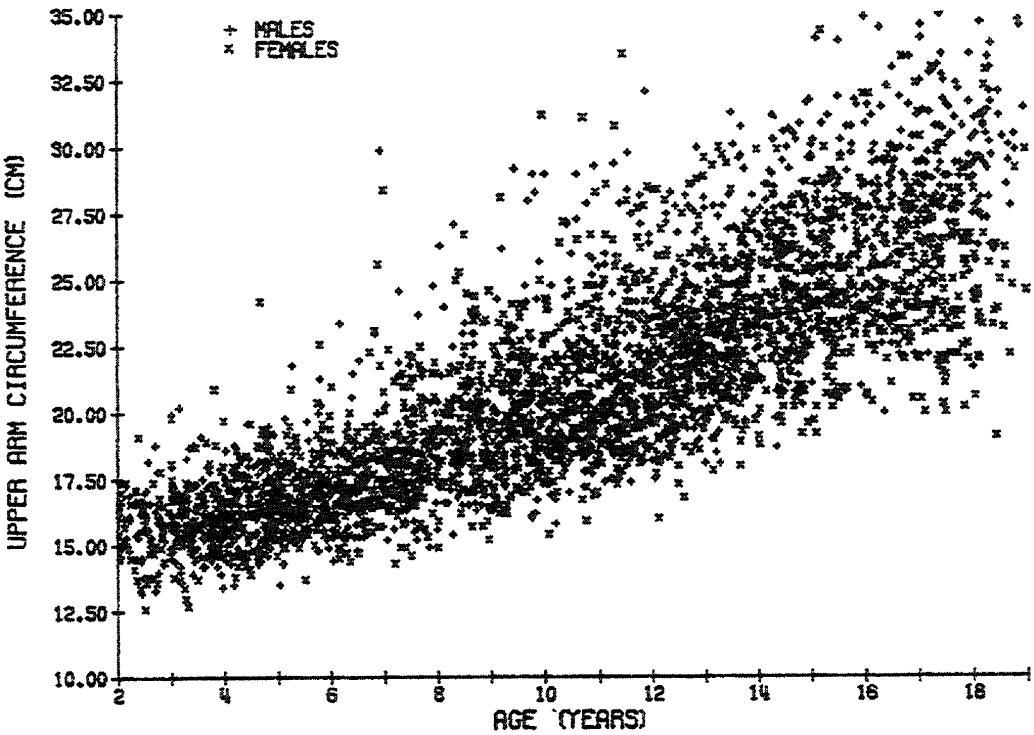
ACROMION-RADIALE LENGTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	16.5	1.0	14.8	14.8	16.5	18.0	18.2
3.5-4.5	34	18.1	1.1	15.6	16.2	18.2	19.6	20.2
4.5-5.5	41	19.2	1.0	15.8	17.8	19.0	20.5	20.7
5.5-6.5	34	20.1	1.1	17.8	17.9	19.9	21.6	23.0
6.5-7.5	42	21.7	1.6	19.0	19.1	21.8	24.1	25.1
7.5-8.5	32	22.2	1.4	19.6	19.9	21.7	24.7	25.2
8.5-9.5	48	24.0	1.6	20.4	21.2	23.7	26.5	28.5
9.5-10.5	38	25.0	1.8	21.8	22.2	24.8	28.0	28.8
10.5-11.5	48	26.3	1.9	22.2	23.2	26.6	29.2	29.5
11.5-12.5	43	27.1	1.9	22.2	23.2	27.2	29.7	30.7
12.5-13.5	50	28.7	1.7	25.1	25.6	28.6	31.5	32.4
13.5-14.5	31	29.3	1.8	24.3	25.4	29.5	31.4	32.9
14.5-15.5	48	30.0	1.7	26.1	26.8	30.0	32.4	34.1
15.5-16.5	32	29.9	1.7	27.2	27.3	29.2	33.2	33.7
16.5-17.5	36	30.1	1.4	26.7	26.8	30.2	32.1	32.8
17.5-19.0	23	29.6	1.4	27.4	27.4	29.4	32.1	33.7

(39)

UPPER ARM CIRCUMFERENCE

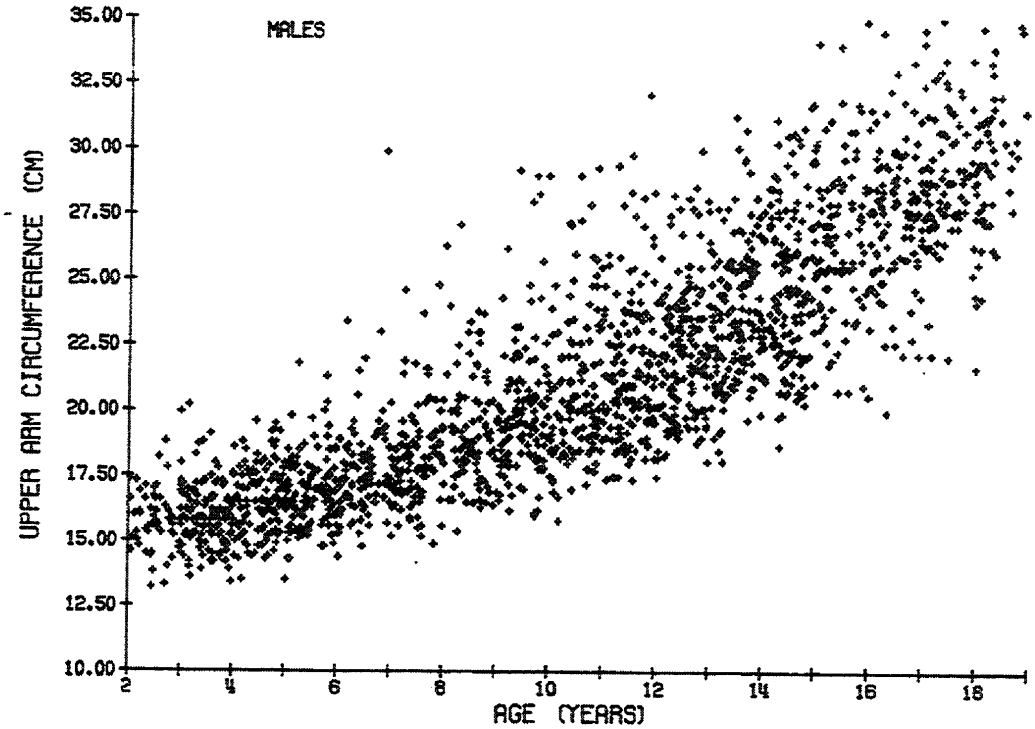
Subject stands erect, arms hanging at sides. With an automated tape device, measure the circumference of the right arm perpendicular to the long axis of the limb midway between the shoulder and elbow.

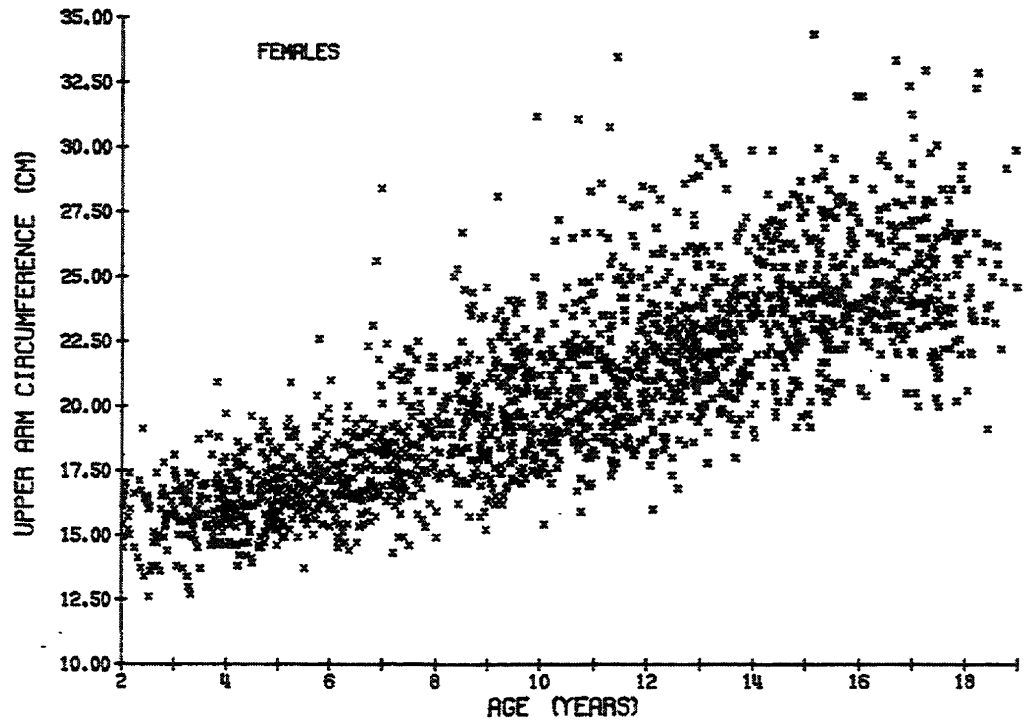


UPPER ARM CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	15.8	1.3	12.6	13.6	15.8	17.8	20.2
3.5-4.5	227	16.2	1.3	13.4	14.2	16.0	18.4	20.9
4.5-5.5	263	16.7	1.4	13.5	14.8	16.5	19.0	24.2
5.5-6.5	219	17.2	1.5	13.7	14.9	17.0	19.7	23.4
6.5-7.5	224	18.1	2.0	14.3	15.6	17.7	21.8	29.9
7.5-8.5	189	18.9	2.2	14.6	15.6	18.5	22.8	27.1
8.5-9.5	251	19.6	2.2	15.2	16.4	19.4	23.5	29.2
9.5-10.5	253	20.4	2.6	15.4	17.1	19.9	24.8	31.2
10.5-11.5	281	21.3	2.9	15.9	17.7	20.6	26.6	33.5
11.5-12.5	287	21.9	2.6	16.0	18.2	21.5	27.0	32.1
12.5-13.5	312	23.0	2.7	16.8	19.3	22.6	28.1	36.9
13.5-14.5	271	24.1	2.6	18.0	19.8	23.7	28.6	31.2
14.5-15.5	264	25.1	2.9	19.2	20.6	24.6	30.2	34.4
15.5-16.5	198	26.2	3.0	20.0	21.1	25.7	31.6	36.8
16.5-17.5	221	26.6	3.3	20.0	21.9	26.4	32.7	38.9
17.5-19.0	156	27.5	3.4	19.1	22.1	27.7	32.9	36.6

(39)


MALES
UPPER ARM CIRCUMFERENCE (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
UPPER ARM CIRCUMFERENCE (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

UPPER ARM CIRCUMFERENCE (cm)
(Males)

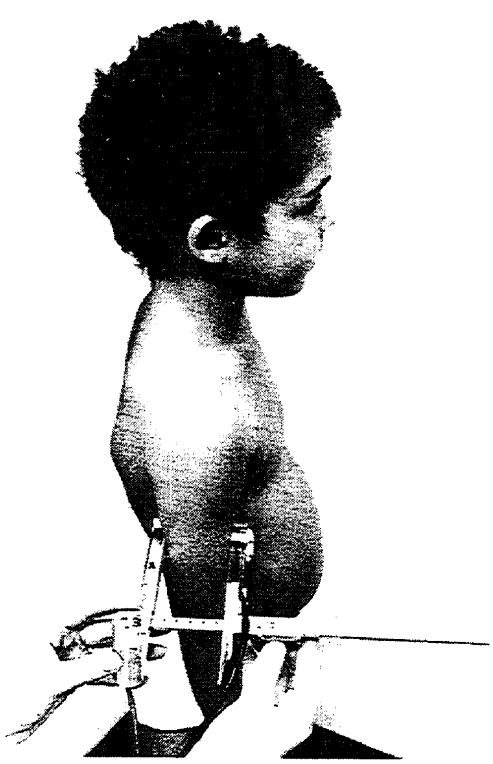
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	15.9	1.2	13.2	13.9	15.8	18.1	20.2
3.5-4.5	118	16.1	1.3	13.4	14.2	16.0	18.0	19.6
4.5-5.5	143	16.6	1.3	13.5	14.6	16.4	18.7	21.8
5.5-6.5	108	17.2	1.5	14.4	15.0	16.9	19.9	23.4
6.5-7.5	104	18.0	2.0	15.2	15.7	17.6	21.7	29.9
7.5-8.5	95	18.9	2.3	14.9	15.5	18.5	23.5	27.1
8.5-9.5	114	19.5	2.2	16.2	16.5	19.2	23.1	29.2
9.5-10.5	124	20.4	2.8	15.8	16.7	19.9	25.9	29.0
10.5-11.5	141	21.4	2.7	17.2	17.8	20.6	26.0	29.4
11.5-12.5	154	22.0	2.7	17.4	18.4	21.4	27.2	32.1
12.5-13.5	154	23.1	2.8	18.1	19.3	22.8	27.9	36.9
13.5-14.5	155	24.6	2.6	18.7	20.7	24.2	29.3	31.2
14.5-15.5	131	25.9	3.1	20.3	20.8	25.6	30.8	34.1
15.5-16.5	100	27.4	3.1	20.0	21.8	27.7	32.3	36.8
16.5-17.5	104	28.5	2.9	22.1	22.9	28.2	33.3	38.9
17.5-19.0	88	29.5	2.5	21.7	24.8	29.4	33.7	36.6

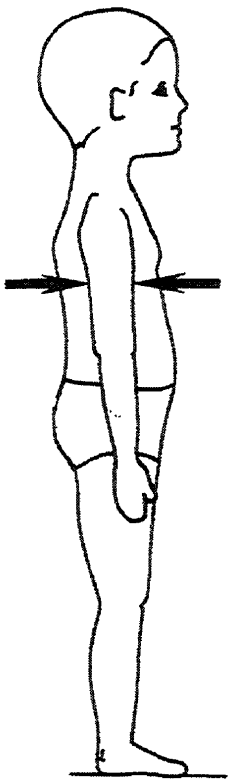
UPPER ARM CIRCUMFERENCE (cm)
(Females)

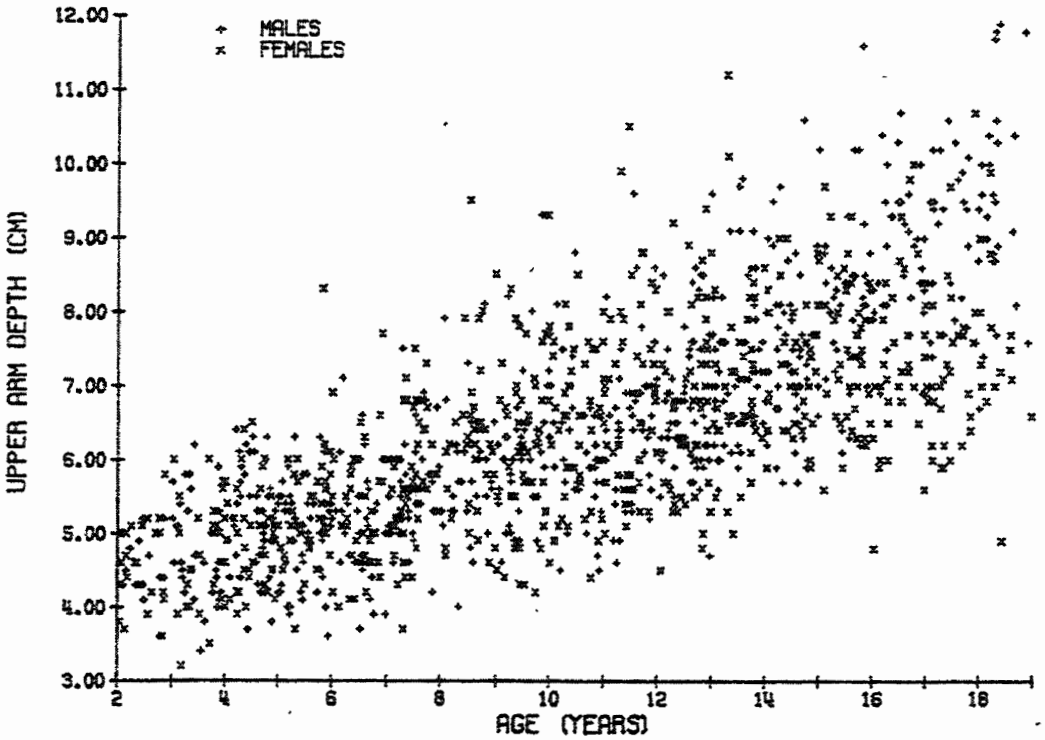
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	15.7	1.3	12.6	13.4	15.7	17.4	19.1
3.5-4.5	109	16.2	1.3	13.7	14.2	16.0	18.5	20.9
4.5-5.5	120	16.9	1.5	14.5	14.7	16.7	19.1	24.2
5.5-6.5	111	17.1	1.5	13.7	14.9	17.0	19.5	22.6
6.5-7.5	120	18.1	2.1	14.3	15.4	17.9	21.8	28.4
7.5-8.5	94	19.0	2.2	14.6	15.7	18.5	22.2	26.7
8.5-9.5	137	19.7	2.3	15.2	16.3	19.5	23.7	28.1
9.5-10.5	129	20.3	2.4	15.4	17.3	19.9	24.2	31.2
10.5-11.5	140	21.2	3.0	15.9	17.3	20.6	26.6	33.5
11.5-12.5	133	21.9	2.6	16.0	18.2	21.6	26.3	28.5
12.5-13.5	158	22.8	2.5	16.8	19.6	22.5	28.4	30.0
13.5-14.5	116	23.4	2.5	18.0	19.4	23.4	27.0	29.9
14.5-15.5	133	24.3	2.6	19.2	20.1	24.1	28.5	34.4
15.5-16.5	98	24.9	2.3	20.4	20.9	24.2	28.9	32.0
16.5-17.5	117	24.9	2.6	20.0	21.0	24.4	29.8	33.4
17.5-19.0	68	25.0	2.6	19.1	20.9	24.6	29.3	32.9

UPPER ARM DEPTH

Subject stands erect, arms hanging at sides with palms in. With the paddle blades of an automated sliding caliper, measure the horizontal depth (anterior-posterior) of the right arm midway between the shoulder and elbow at a fixed pressure value.



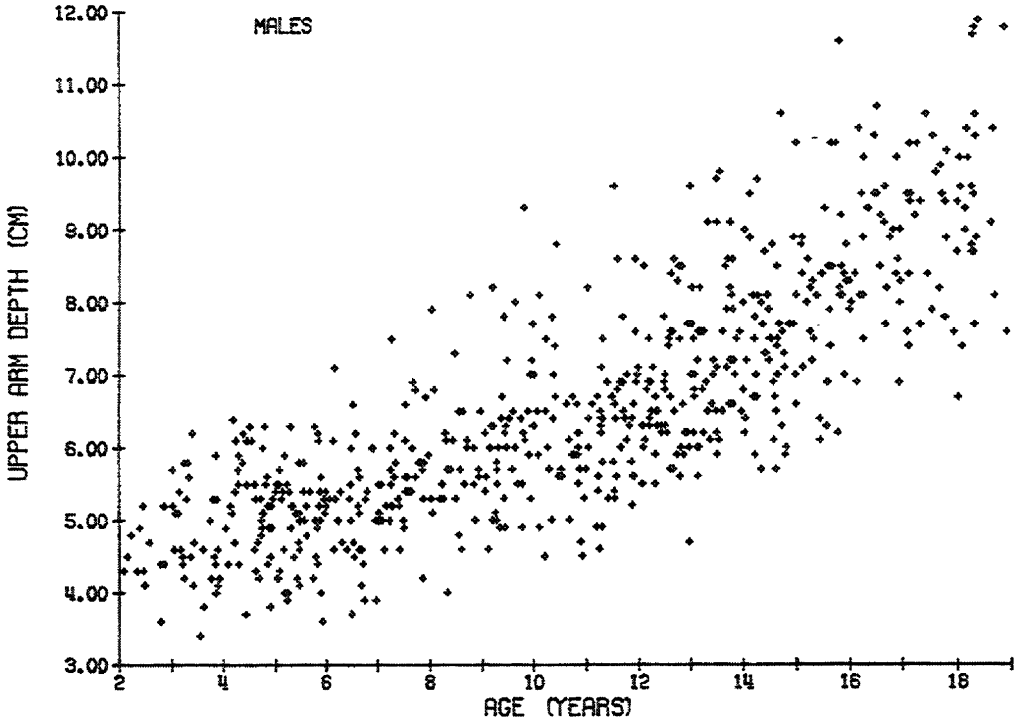


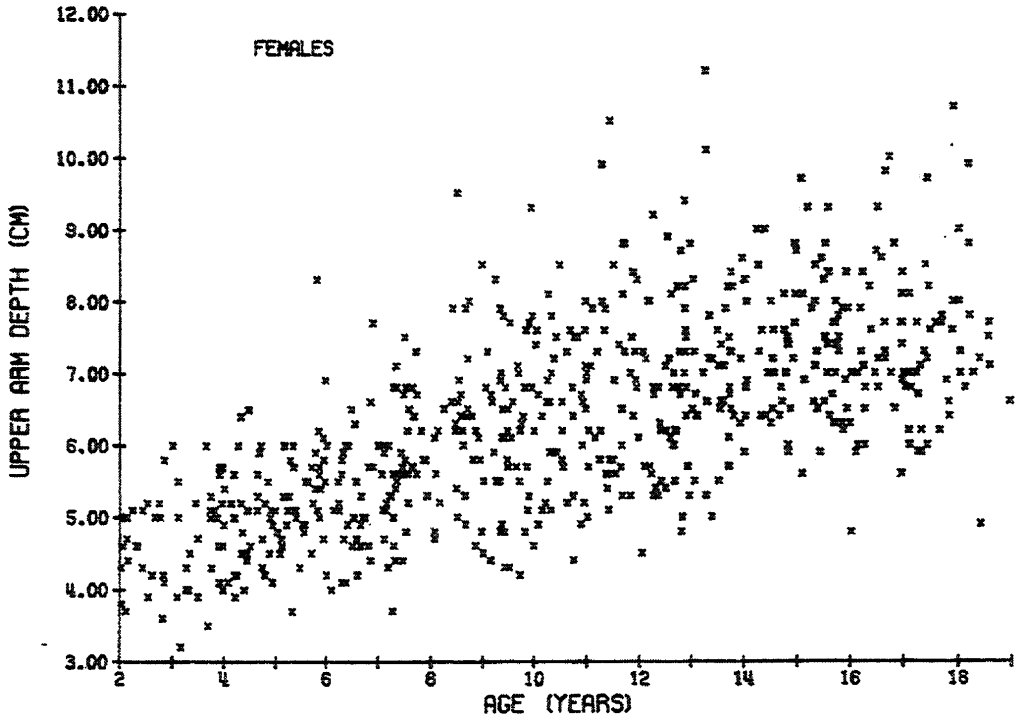


UPPER ARM DEPTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	65	4.7	0.6	3.2	3.6	4.6	5.8	6.2
3.5-4.5	73	5.0	0.8	3.4	3.8	4.9	6.2	6.5
4.5-5.5	91	5.0	0.6	3.7	4.0	5.0	6.0	6.3
5.5-6.5	78	5.3	0.8	3.6	4.0	5.2	6.3	8.3
6.5-7.5	87	5.4	0.8	3.7	4.1	5.2	6.8	7.7
7.5-8.5	67	5.9	0.9	4.0	4.7	5.7	7.2	9.5
8.5-9.5	91	6.1	1.0	4.3	4.6	6.0	7.9	8.5
9.5-10.5	84	6.4	1.1	4.2	4.6	6.3	8.1	9.3
10.5-11.5	86	6.3	1.1	4.4	4.7	6.1	8.0	10.5
11.5-12.5	97	6.7	1.0	4.5	5.3	6.5	8.6	9.6
12.5-13.5	107	7.0	1.2	4.7	5.2	6.8	9.1	11.2
13.5-14.5	89	7.4	1.0	5.5	5.7	7.2	9.0	9.8
14.5-15.5	81	7.5	1.1	5.6	5.8	7.4	9.1	10.6
15.5-16.5	78	7.9	1.3	4.8	6.0	7.8	10.2	11.6
16.5-17.5	66	8.0	1.2	5.6	5.9	7.7	10.0	10.6
17.5-19.0	63	8.6	1.5	4.9	6.4	8.4	11.5	11.9

(40)


MALES
UPPER ARM DEPTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
UPPER ARM DEPTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

UPPER ARM DEPTH (cm)
(Males)

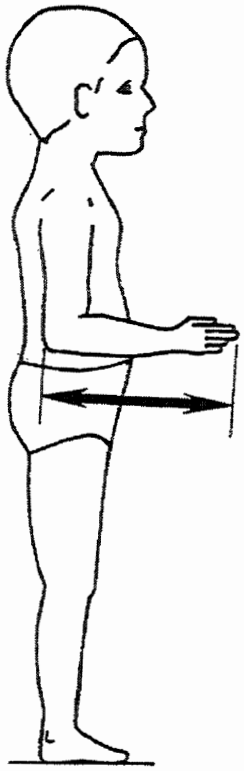
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	4.8	0.6	3.6	3.7	4.6	5.8	6.2
3.5-4.5	35	5.0	0.8	3.4	3.6	4.9	6.2	6.4
4.5-5.5	57	5.0	0.6	3.8	3.9	5.0	6.0	6.3
5.5-6.5	39	5.2	0.7	3.6	3.7	5.2	6.2	7.1
6.5-7.5	41	5.3	0.7	3.9	3.9	5.1	6.2	7.5
7.5-8.5	35	5.8	0.8	4.0	4.1	5.6	7.0	7.9
8.5-9.5	42	5.9	0.8	4.6	4.6	5.8	7.7	8.2
9.5-10.5	39	6.4	1.1	4.5	4.7	6.3	8.1	9.3
10.5-11.5	41	6.0	0.8	4.5	4.6	5.9	7.1	8.2
11.5-12.5	55	6.7	0.9	5.2	5.4	6.5	8.5	9.6
12.5-13.5	58	7.0	1.1	4.7	5.6	6.8	8.9	9.7
13.5-14.5	48	7.6	1.0	5.7	6.0	7.5	9.3	9.8
14.5-15.5	42	7.6	1.1	5.7	5.9	7.5	9.3	10.6
15.5-16.5	37	8.6	1.2	6.2	6.3	8.4	10.4	11.6
16.5-17.5	28	8.8	0.9	6.9	7.1	8.9	10.2	10.6
17.5-19.0	38	9.3	1.3	6.7	7.3	9.3	11.8	11.9

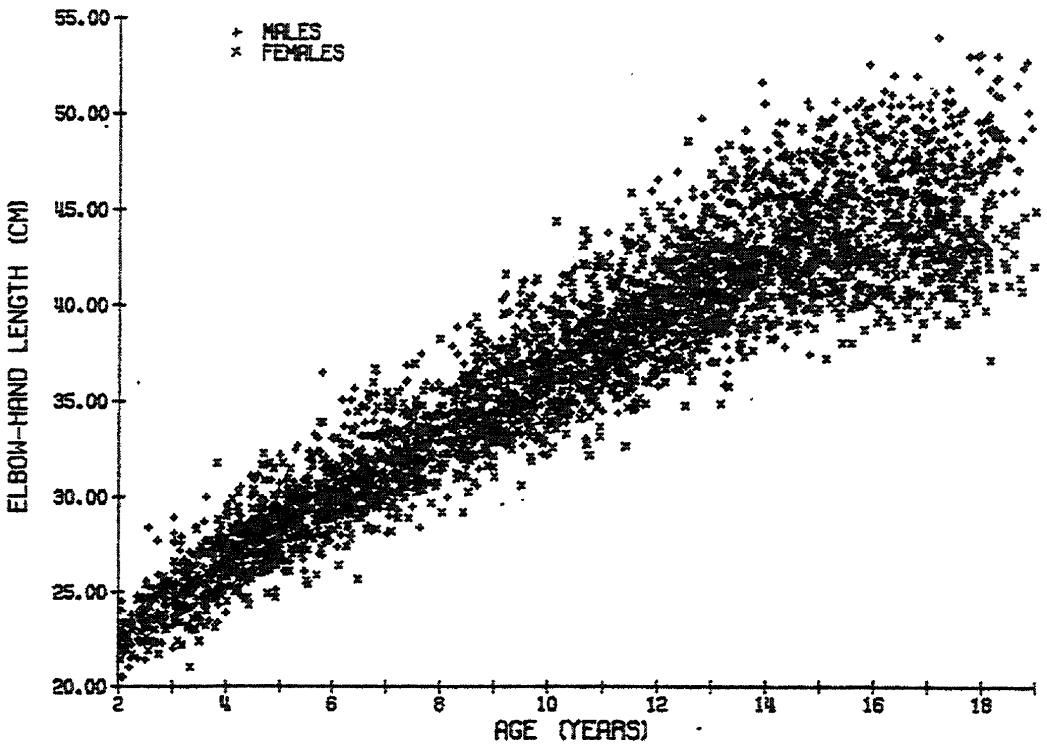
UPPER ARM DEPTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	4.6	0.6	3.2	3.5	4.5	5.6	6.0
3.5-4.5	38	4.9	0.7	3.5	3.7	4.9	6.0	6.5
4.5-5.5	34	5.0	0.6	3.7	4.0	5.0	5.9	6.0
5.5-6.5	39	5.4	0.8	4.0	4.0	5.4	6.5	8.3
6.5-7.5	46	5.4	0.9	3.7	4.2	5.3	7.0	7.7
7.5-8.5	32	6.1	1.0	4.7	4.7	6.1	7.5	9.5
8.5-9.5	49	6.2	1.0	4.3	4.4	6.1	8.0	8.5
9.5-10.5	45	6.4	1.2	4.2	4.4	6.4	8.0	9.3
10.5-11.5	45	6.6	1.3	4.4	4.9	6.4	8.4	10.5
11.5-12.5	42	6.7	1.1	4.5	4.7	6.7	8.6	9.2
12.5-13.5	49	7.0	1.3	4.8	4.9	6.8	9.2	11.2
13.5-14.5	41	7.1	0.9	5.5	5.6	6.9	8.6	9.0
14.5-15.5	39	7.4	1.0	5.6	5.7	7.3	8.8	9.7
15.5-16.5	41	7.2	0.9	4.8	5.9	7.1	8.7	9.3
16.5-17.5	38	7.4	1.1	5.6	5.7	7.1	9.7	10.0
17.5-19.0	25	7.5	1.2	4.9	5.2	7.4	9.7	10.7

ELBOW-HAND LENGTH (LOWER ARM LENGTH)

Subject stands erect, upper arms hanging at sides and elbows flexed 90° with hands and fingers extended. With the paddle blades of an automated anthropometer, measure the distance from the posterior surface of the right upper arm just above the elbow to the tip of the middle finger parallel to the long axis of the forearm.

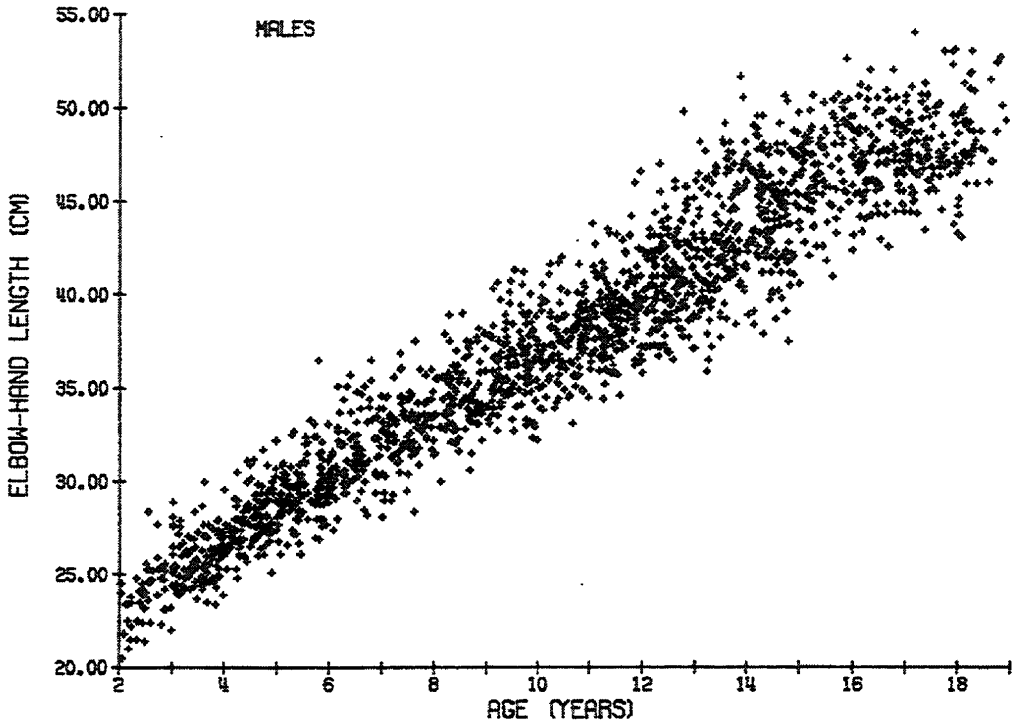


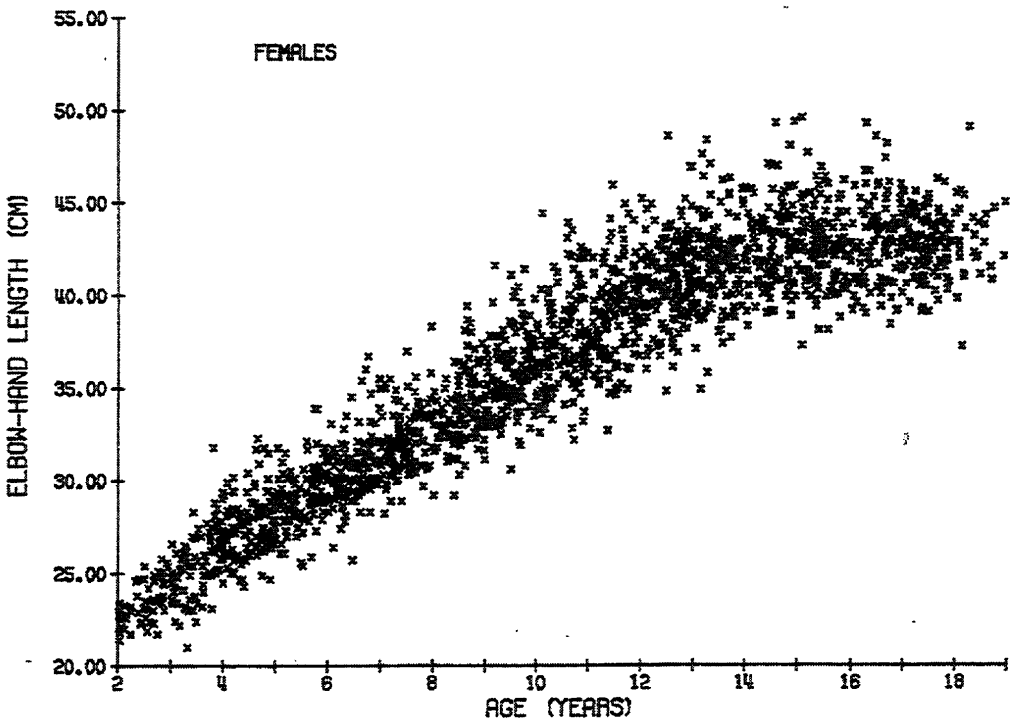


ELBOW-HAND LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	210	24.4	1.6	20.5	21.8	24.4	27.3	28.9
3.5-4.5	228	26.7	1.6	23.1	24.4	26.5	29.5	31.8
4.5-5.5	263	28.5	1.5	24.7	26.2	28.4	31.0	32.7
5.5-6.5	217	30.2	1.8	25.4	27.6	30.0	33.3	36.5
6.5-7.5	225	31.9	1.9	28.1	29.0	31.7	35.3	37.0
7.5-8.5	192	33.4	1.8	28.4	30.7	33.3	36.0	38.9
8.5-9.5	251	35.2	2.0	30.6	32.2	34.8	38.6	41.6
9.5-10.5	252	36.7	2.1	31.9	33.2	36.5	40.4	44.4
10.5-11.5	280	38.2	2.3	32.2	34.7	38.0	42.3	45.9
11.5-12.5	287	40.0	2.4	34.6	36.2	39.7	44.0	48.6
12.5-13.5	313	41.5	2.5	34.9	37.7	41.4	46.2	49.8
13.5-14.5	270	43.3	2.7	37.4	39.0	42.7	47.9	51.7
14.5-15.5	262	44.2	2.8	37.3	39.9	44.1	48.7	50.7
15.5-16.5	198	45.0	3.2	38.1	40.0	45.0	50.3	52.7
16.5-17.5	221	45.1	3.2	38.4	40.1	44.8	50.4	54.1
17.5-19.0	156	45.9	3.4	37.2	40.9	46.1	51.9	53.2

(41)


MALES
ELBOW-HAND LENGTH (CM)
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ELBOW-HAND LENGTH (CM)
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ELBOW-HAND LENGTH (cm)
(Males)

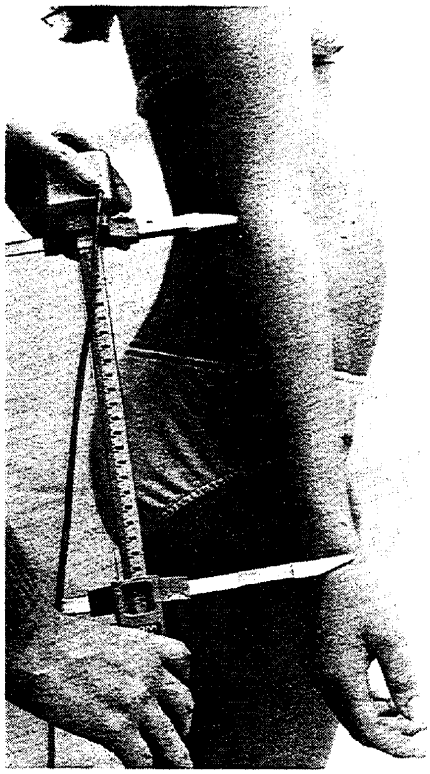
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	24.8	1.7	20.5	21.7	24.8	27.7	28.9
3.5-4.5	118	26.6	1.5	23.4	24.4	26.4	29.6	31.1
4.5-5.5	143	28.7	1.4	25.1	26.4	28.7	31.0	32.7
5.5-6.5	108	30.6	1.8	26.9	27.7	30.4	33.6	36.5
6.5-7.5	105	32.2	1.9	28.1	28.9	32.1	35.3	36.9
7.5-8.5	98	33.8	1.7	28.4	31.4	33.5	36.3	38.9
8.5-9.5	114	35.6	2.0	30.6	32.9	35.2	39.2	40.7
9.5-10.5	124	36.8	2.1	32.2	33.1	36.7	40.5	42.0
10.5-11.5	140	38.2	2.0	33.1	34.9	38.1	41.5	43.8
11.5-12.5	154	40.0	2.3	34.6	36.6	39.6	44.0	47.0
12.5-13.5	152	41.7	2.7	35.9	37.5	41.3	46.4	49.8
13.5-14.5	154	44.2	2.8	37.9	39.6	43.9	48.5	51.7
14.5-15.5	130	45.5	2.7	37.5	40.5	45.5	49.1	50.7
15.5-16.5	100	47.3	2.3	41.0	43.4	47.2	50.7	52.7
16.5-17.5	104	47.7	2.1	42.6	44.4	47.6	50.8	54.1
17.5-19.0	88	48.3	2.3	43.1	44.4	47.8	52.7	53.2

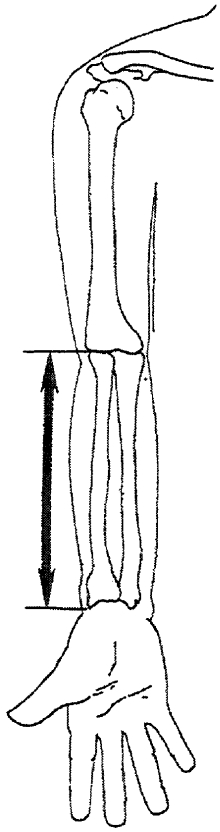
ELBOW-HAND LENGTH (cm)
(Females)

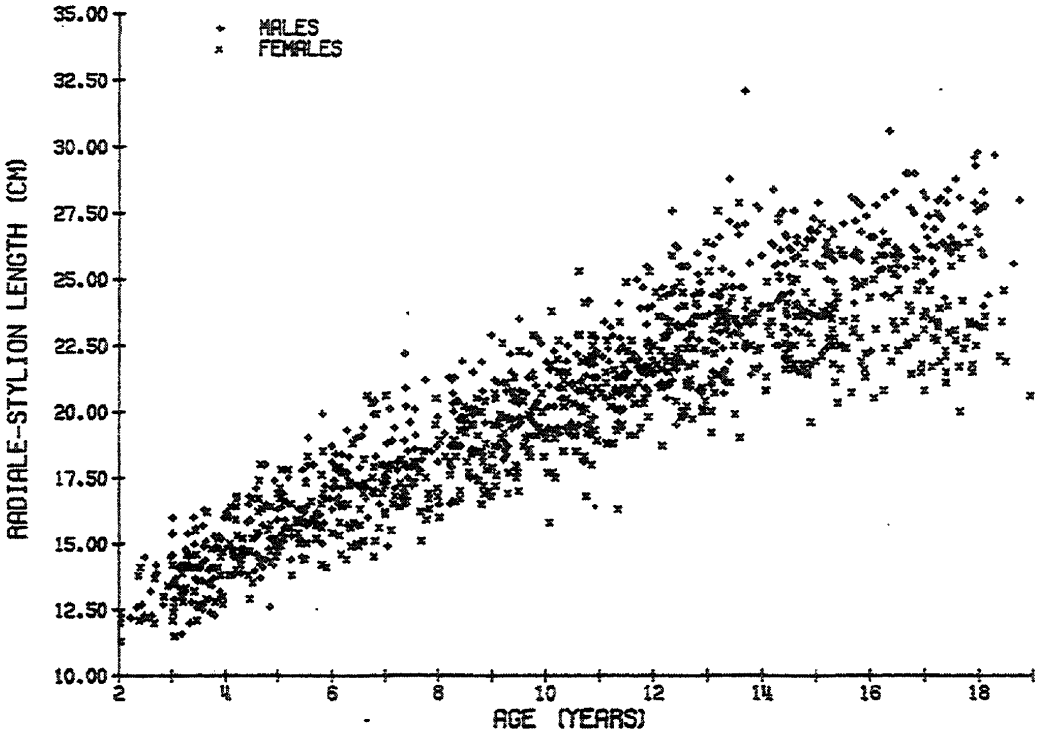
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	96	24.0	1.5	21.0	21.8	23.6	26.4	28.3
3.5-4.5	110	26.8	1.6	23.1	24.3	26.6	29.4	31.8
4.5-5.5	120	28.3	1.5	24.7	26.1	28.2	31.0	32.3
5.5-6.5	109	29.9	1.6	25.4	27.2	29.8	32.5	34.5
6.5-7.5	120	31.5	1.8	28.2	28.9	31.2	35.2	37.0
7.5-8.5	94	32.9	1.7	29.2	30.2	32.9	35.6	38.3
8.5-9.5	137	34.9	2.0	30.6	32.0	34.6	38.2	41.6
9.5-10.5	128	36.6	2.2	31.9	33.4	36.3	40.3	44.4
10.5-11.5	140	38.2	2.6	32.2	34.2	37.9	42.6	45.9
11.5-12.5	133	39.9	2.5	34.6	35.5	39.9	43.9	48.6
12.5-13.5	161	41.4	2.3	34.9	37.6	41.4	44.8	48.4
13.5-14.5	116	42.0	2.0	37.4	38.7	41.9	45.5	47.1
14.5-15.5	132	43.0	2.3	37.3	39.6	42.9	46.9	49.6
15.5-16.5	98	42.7	2.2	38.1	39.3	42.5	46.0	49.3
16.5-17.5	117	42.7	1.9	38.4	39.3	42.7	45.6	48.2
17.5-19.0	68	42.9	1.8	37.2	40.0	42.8	45.6	49.1

RADIALE-STYLION LENGTH

Subject stands erect, arms hanging at sides with palms forward. With the pointed blades of an automated anthropometer, measure the distance from radiale to stylion, parallel to the long axis of the right forearm.



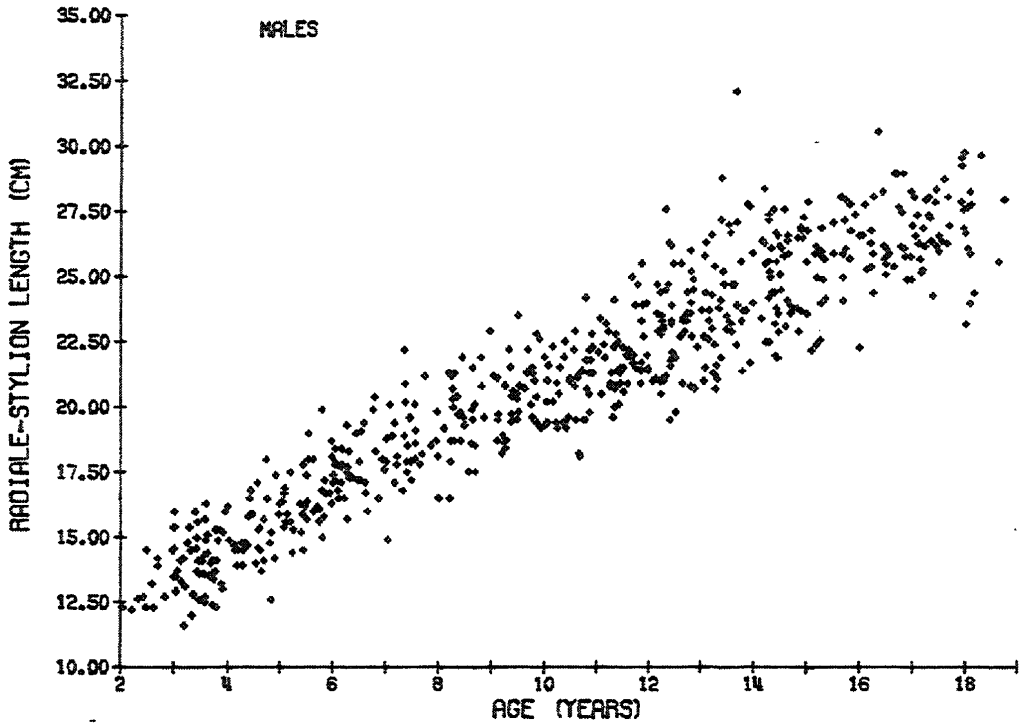


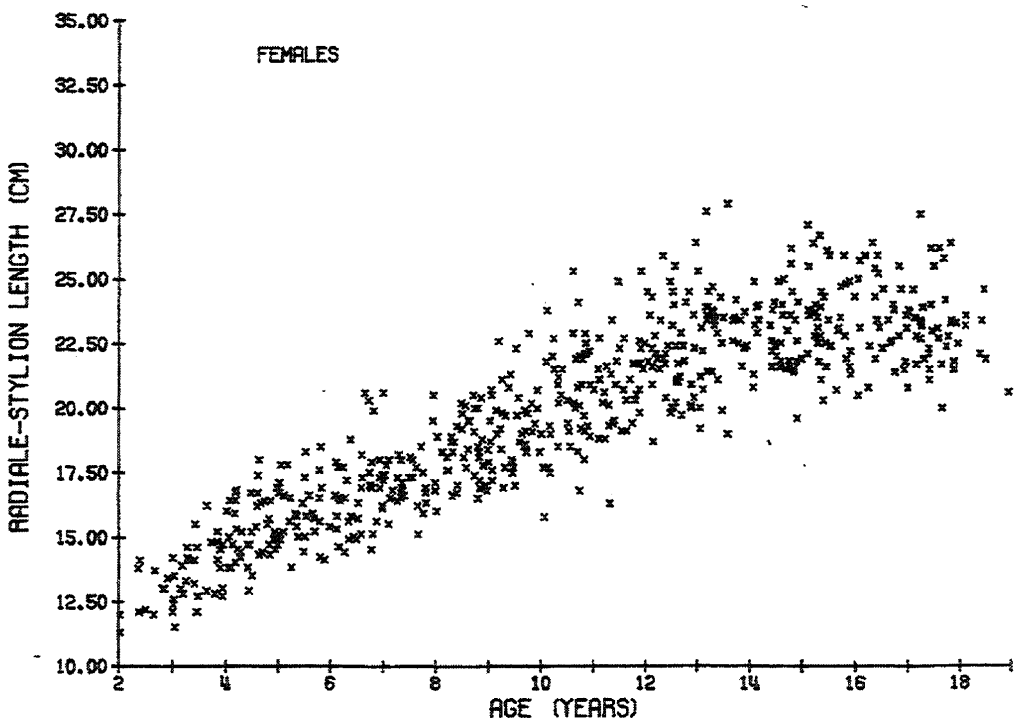


RADIALE-STYLION LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	13.5	1.1	11.3	11.6	13.4	15.5	16.0
3.5-4.5	79	14.6	1.2	12.3	12.6	14.5	16.5	16.8
4.5-5.5	76	15.7	1.2	12.6	14.0	15.6	17.6	18.0
5.5-6.5	77	16.8	1.3	14.1	14.6	16.7	18.8	19.9
6.5-7.5	76	17.7	1.5	14.5	15.1	17.3	20.4	22.2
7.5-8.5	64	18.6	1.5	15.1	16.0	18.6	21.1	21.9
8.5-9.5	81	19.3	1.5	16.5	16.9	19.3	21.9	23.5
9.5-10.5	75	20.3	1.5	15.8	17.7	20.2	22.6	23.8
10.5-11.5	97	21.0	1.7	16.3	18.2	21.0	23.5	25.3
11.5-12.5	96	22.4	1.8	18.7	19.5	22.0	25.4	27.6
12.5-13.5	100	23.0	2.0	19.2	19.9	23.1	26.4	28.8
13.5-14.5	82	24.1	2.1	19.0	21.4	23.6	27.7	32.1
14.5-15.5	87	24.2	1.9	19.6	21.4	23.9	27.0	27.9
15.5-16.5	63	24.9	2.2	20.5	20.9	25.2	28.0	30.6
16.5-17.5	74	25.0	2.2	20.8	21.4	25.3	28.3	29.0
17.5-19.0	46	25.1	2.7	20.0	20.9	24.6	29.5	29.8

(42)


MALES
RADIALE-STYLION LENGTH (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
RADIALE-STYLION LENGTH (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

RADIALE-STYLION LENGTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	13.7	1.2	11.6	11.9	13.6	15.6	16.0
3.5-4.5	44	14.5	1.1	12.3	12.4	14.4	16.3	16.8
4.5-5.5	35	15.7	1.3	12.6	13.4	15.5	17.6	18.0
5.5-6.5	43	17.3	1.1	15.0	15.6	17.2	19.0	19.9
6.5-7.5	34	18.4	1.5	14.9	15.7	18.1	20.5	22.2
7.5-8.5	32	19.4	1.3	16.5	16.5	19.2	21.3	21.9
8.5-9.5	33	20.0	1.5	17.5	17.5	19.7	22.4	23.5
9.5-10.5	37	20.7	1.1	19.2	19.2	20.7	22.5	22.8
10.5-11.5	49	21.4	1.3	18.1	18.4	21.3	23.3	24.2
11.5-12.5	53	22.8	1.7	19.5	20.6	22.4	25.7	27.6
12.5-13.5	50	23.5	1.9	19.8	20.5	23.4	26.8	28.8
13.5-14.5	51	24.8	2.1	21.4	21.8	24.4	27.7	32.1
14.5-15.5	39	25.3	1.6	22.2	22.4	25.8	27.3	27.9
15.5-16.5	31	26.4	1.5	22.3	23.3	26.2	28.2	30.6
16.5-17.5	38	26.7	1.2	24.3	24.6	26.3	28.6	29.0
17.5-19.0	23	27.2	1.8	23.2	23.3	27.3	29.7	29.8

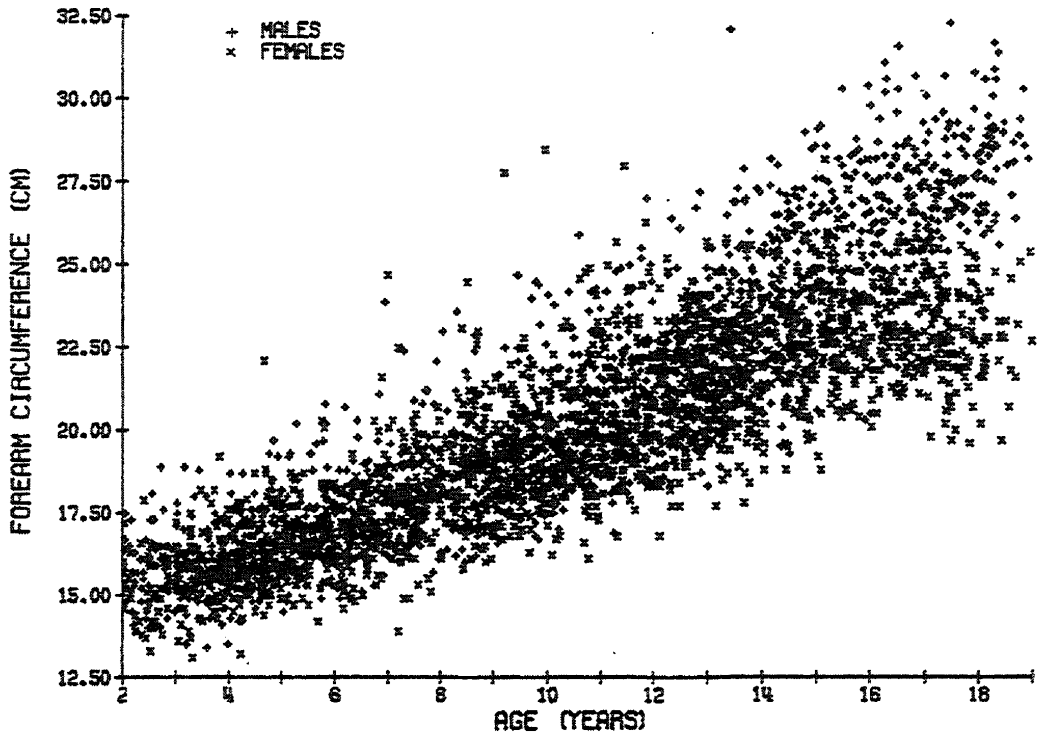
RADIALE-STYLION LENGTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	13.2	1.0	11.3	11.4	13.0	14.5	15.5
3.5-4.5	35	14.7	1.2	12.7	12.8	14.6	16.6	16.8
4.5-5.5	41	15.8	1.1	13.8	14.1	15.5	17.6	18.0
5.5-6.5	34	16.1	1.3	14.1	14.2	15.8	18.4	18.8
6.5-7.5	42	17.2	1.4	14.5	14.8	16.9	20.3	20.6
7.5-8.5	32	17.8	1.3	15.1	15.6	17.7	20.0	20.5
8.5-9.5	48	18.8	1.4	16.5	16.8	18.4	21.0	22.6
9.5-10.5	38	19.9	1.7	15.8	17.3	19.7	22.7	23.8
10.5-11.5	48	20.7	1.9	16.3	17.3	20.7	23.8	25.3
11.5-12.5	43	21.8	1.7	18.7	18.9	21.7	24.8	25.9
12.5-13.5	50	22.5	1.9	19.2	19.8	22.4	25.4	27.6
13.5-14.5	31	22.9	1.5	19.0	20.0	22.7	24.5	27.9
14.5-15.5	48	23.4	1.7	19.6	20.6	23.2	26.3	27.1
15.5-16.5	32	23.5	1.7	20.5	20.6	23.1	25.9	26.4
16.5-17.5	36	23.2	1.5	20.8	21.0	23.1	25.6	27.5
17.5-19.0	23	23.1	1.6	20.0	20.1	22.9	26.1	26.4

(43)

FOREARM CIRCUMFERENCE

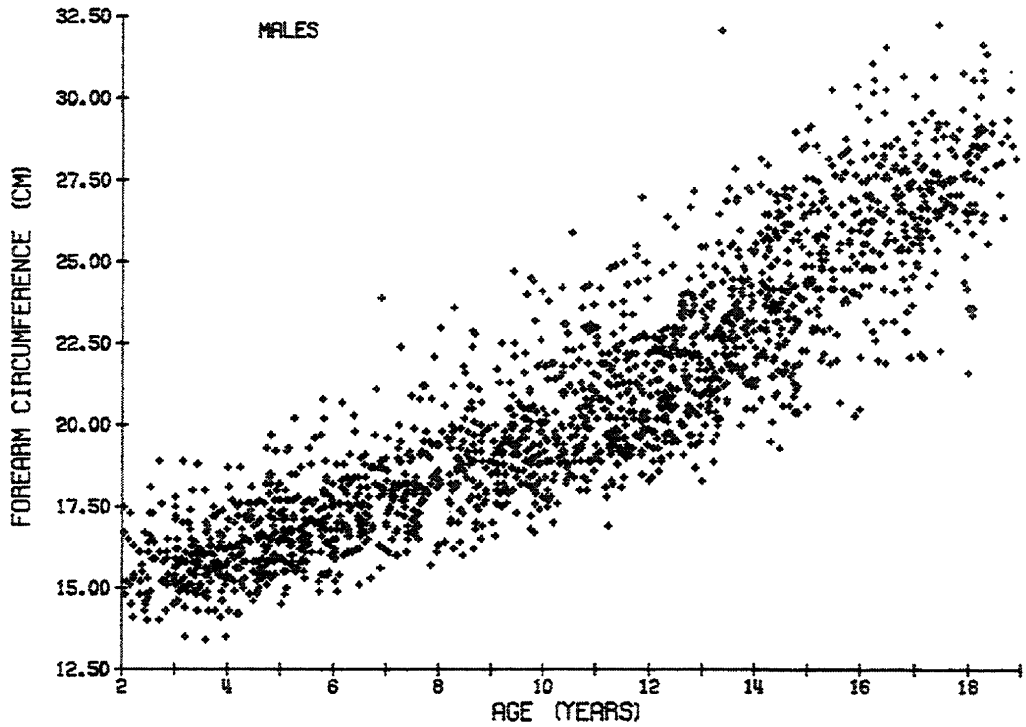
Subject stands erect, arms hanging at sides. With an automated tape device, measure the maximum circumference of the right forearm perpendicular to the long axis of the limb.

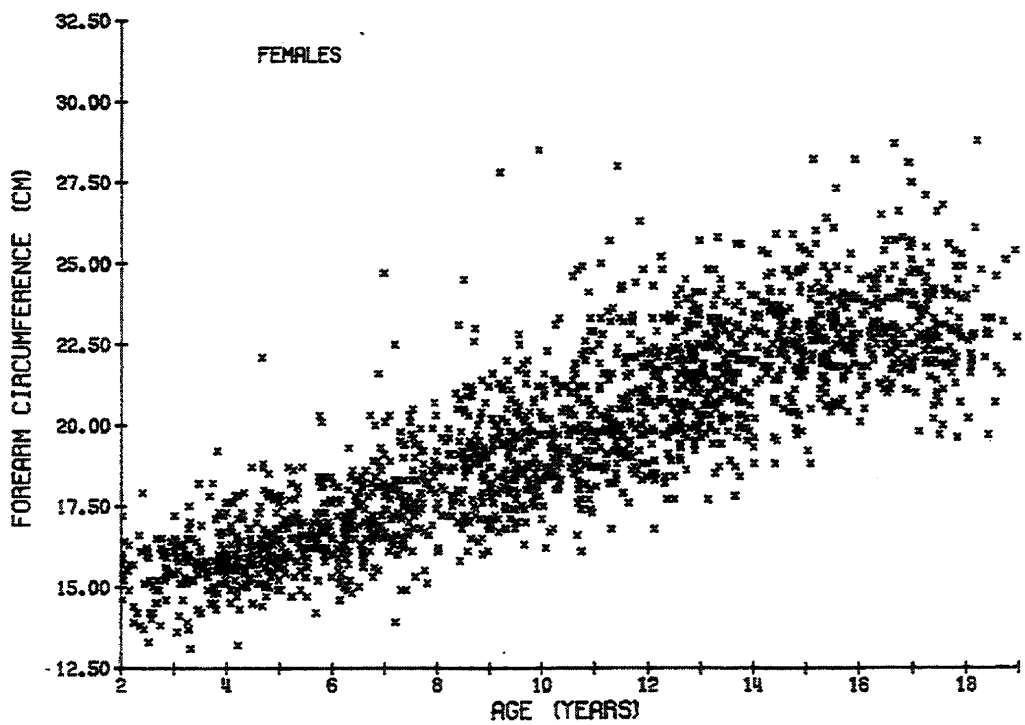


FOREARM CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	15.7	1.0	13.1	13.9	15.7	17.4	18.9
3.5-4.5	227	16.0	1.0	13.2	14.3	15.8	17.7	19.2
4.5-5.5	263	16.6	1.1	14.4	15.0	16.4	18.5	22.1
5.5-6.5	219	17.0	1.2	14.2	15.1	16.9	19.1	20.8
6.5-7.5	225	17.7	1.4	13.9	15.8	17.6	20.0	24.7
7.5-8.5	189	18.5	1.5	15.1	16.1	18.2	21.0	24.5
8.5-9.5	250	19.1	1.6	16.0	16.7	19.0	21.5	27.8
9.5-10.5	253	19.6	1.7	16.2	17.4	19.4	22.7	28.5
10.5-11.5	281	20.5	1.9	16.1	17.9	20.0	24.1	28.0
11.5-12.5	286	21.0	1.8	16.8	18.4	20.8	24.4	27.0
12.5-13.5	313	21.9	1.8	17.7	19.3	21.7	24.8	32.1
13.5-14.5	271	22.9	2.0	17.8	19.6	22.8	26.4	28.2
14.5-15.5	264	23.7	2.1	18.8	20.5	23.4	27.5	30.3
15.5-16.5	198	24.6	2.5	20.1	20.9	24.1	28.7	31.6
16.5-17.5	220	24.8	2.5	19.7	21.0	24.6	28.8	32.3
17.5-19.0	155	25.7	2.9	19.6	21.2	26.2	29.8	31.7

(43)


MALES
FOREARM CIRCUMFERENCE (CM)
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FOREARM CIRCUMFERENCE (CM)
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FOREARM CIRCUMFERENCE (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	15.8	1.1	13.5	14.2	15.7	17.7	18.9
3.5-4.5	118	16.1	1.1	13.4	14.2	16.0	17.6	18.7
4.5-5.5	143	16.6	1.1	14.5	15.1	16.5	18.5	20.2
5.5-6.5	108	17.2	1.2	14.9	15.2	17.0	19.7	20.8
6.5-7.5	104	17.9	1.3	15.3	16.1	17.8	19.7	23.9
7.5-8.5	95	18.6	1.6	15.7	16.3	18.4	21.3	23.6
8.5-9.5	113	19.2	1.5	16.2	16.9	19.1	22.2	24.7
9.5-10.5	124	19.8	1.7	16.7	17.5	19.4	23.2	24.5
10.5-11.5	141	20.7	1.7	16.9	18.2	20.4	23.7	25.9
11.5-12.5	153	21.2	1.7	18.3	18.9	20.9	24.8	27.0
12.5-13.5	154	22.3	2.0	18.3	19.5	22.1	25.5	32.1
13.5-14.5	155	23.7	1.8	19.3	20.7	23.5	27.0	28.2
14.5-15.5	131	24.7	2.1	20.4	21.0	24.5	28.3	30.3
15.5-16.5	100	26.1	2.3	20.3	21.9	26.2	30.2	31.6
16.5-17.5	104	26.7	1.9	22.1	23.0	26.6	29.4	32.3
17.5-19.0	88	27.7	1.8	21.6	23.6	27.9	30.5	31.7

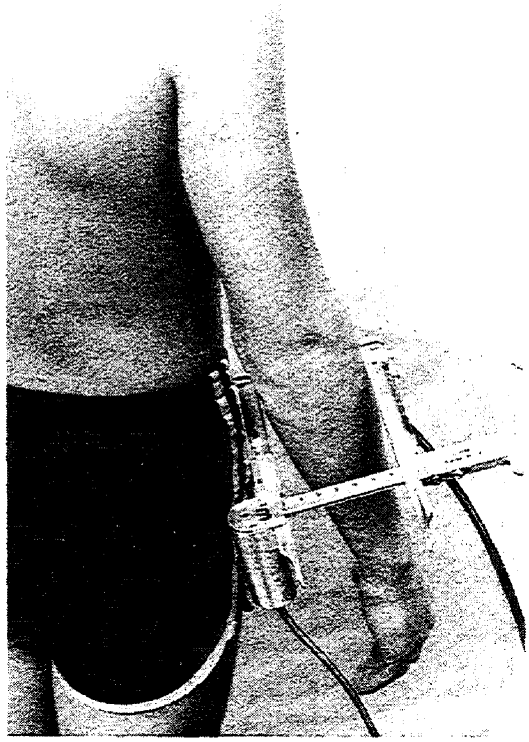
FOREARM CIRCUMFERENCE (cm)
(Females)

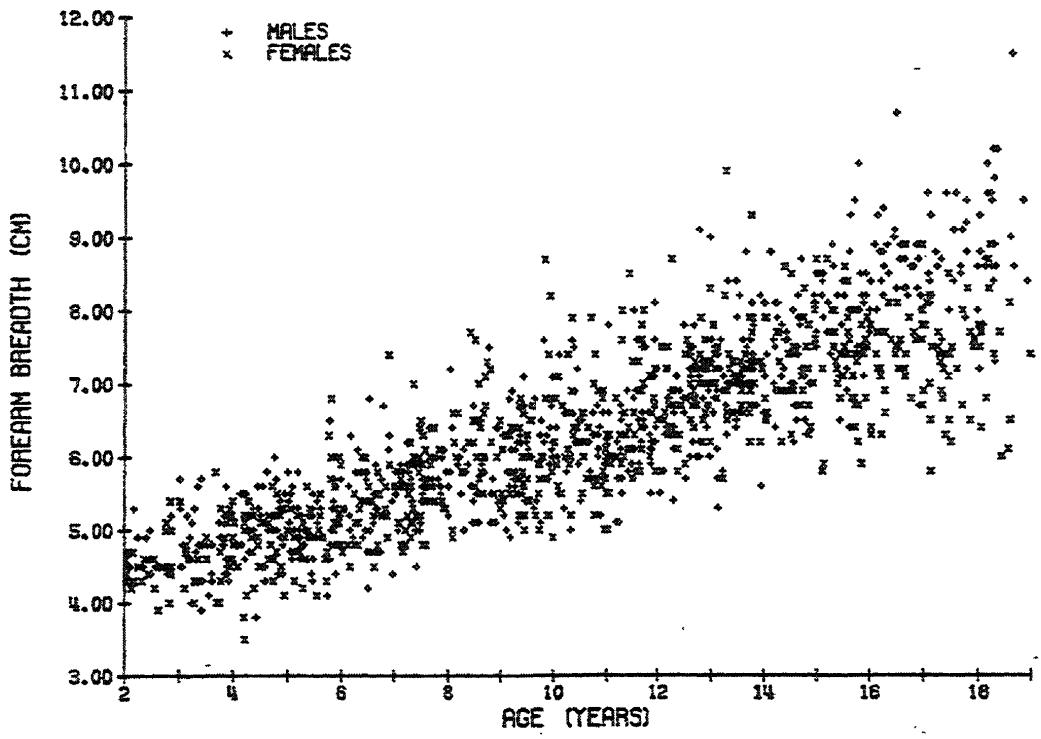
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	15.5	1.0	13.1	13.7	15.6	17.0	18.2
3.5-4.5	109	16.0	1.0	13.2	14.4	15.7	17.7	19.2
4.5-5.5	120	16.5	1.1	14.4	14.9	16.3	18.5	22.1
5.5-6.5	111	16.8	1.1	14.2	15.0	16.7	18.4	20.3
6.5-7.5	121	17.6	1.5	13.9	15.5	17.4	20.1	24.7
7.5-8.5	94	18.3	1.5	15.1	15.9	18.1	20.6	24.5
8.5-9.5	137	19.0	1.6	16.0	16.7	18.8	21.3	27.8
9.5-10.5	129	19.5	1.6	16.2	17.0	19.3	22.0	28.5
10.5-11.5	140	20.3	2.0	16.1	17.4	19.8	24.2	28.0
11.5-12.5	133	20.8	1.8	16.8	18.1	20.7	23.6	26.3
12.5-13.5	159	21.6	1.6	17.7	19.2	21.5	24.1	25.8
13.5-14.5	116	21.9	1.7	17.8	18.9	21.9	24.6	25.9
14.5-15.5	133	22.8	1.6	18.8	20.3	22.6	25.4	28.2
15.5-16.5	98	23.0	1.4	20.1	20.7	22.9	25.3	28.2
16.5-17.5	116	23.1	1.7	19.7	20.9	22.8	25.9	28.7
17.5-19.0	67	23.0	1.7	19.6	20.1	22.8	25.5	28.8

(44)

FOREARM BREADTH

Subject stands erect, arms hanging at sides with palms in. With the paddle blades of an automated sliding caliper, measure the maximum breadth of the right forearm at the level of the maximum circumference at a fixed pressure value.

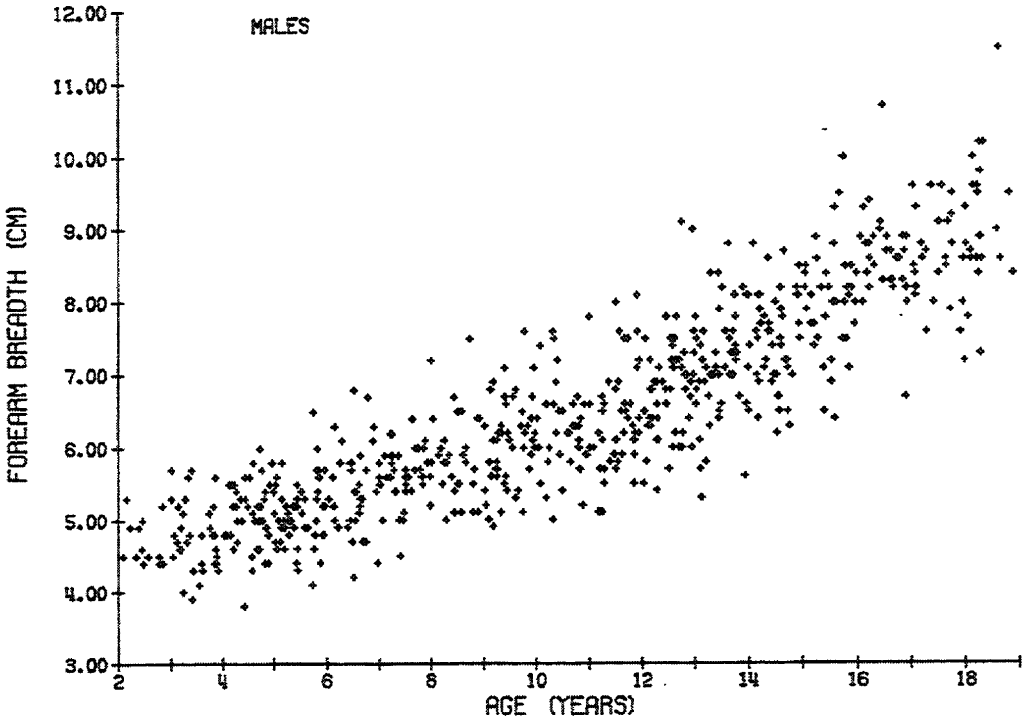


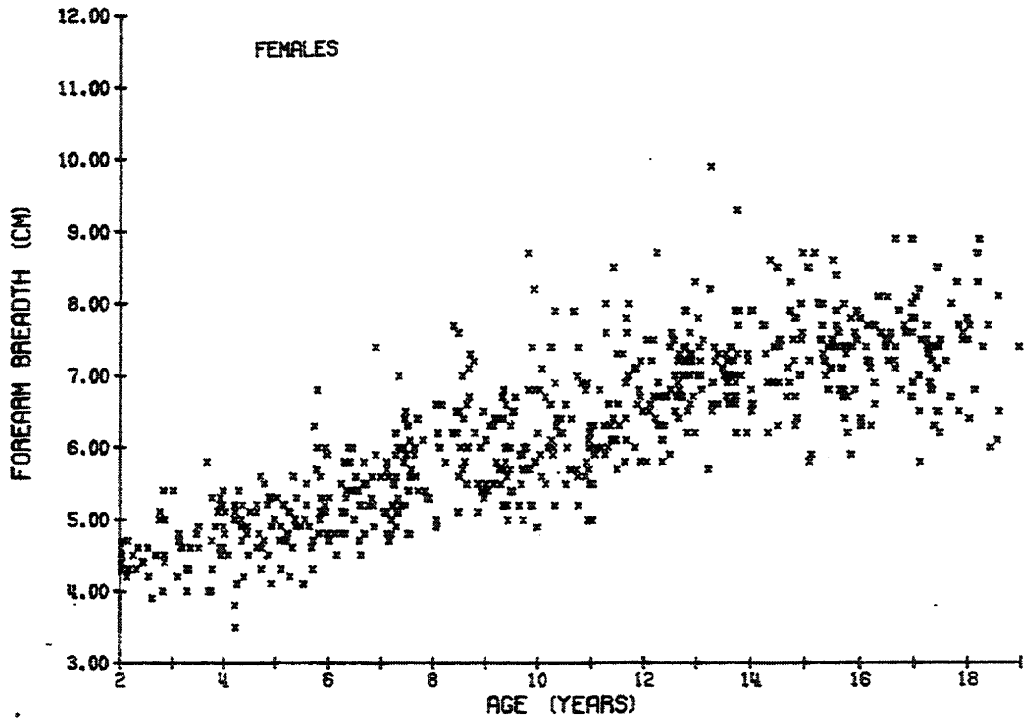


FOREARM BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	4.7	0.4	3.9	3.9	4.5	5.4	5.7
3.5-4.5	72	4.8	0.5	3.5	3.9	4.8	5.5	5.8
4.5-5.5	91	5.0	0.4	4.1	4.3	4.9	5.7	6.0
5.5-6.5	79	5.3	0.6	4.1	4.3	5.2	6.1	6.8
6.5-7.5	87	5.5	0.6	4.4	4.6	5.4	6.5	7.4
7.5-8.5	68	5.8	0.6	4.8	4.9	5.7	6.7	7.7
8.5-9.5	91	6.0	0.6	4.9	5.0	5.9	7.0	7.5
9.5-10.5	84	6.3	0.8	4.9	5.1	6.1	7.5	8.7
10.5-11.5	86	6.2	0.7	5.0	5.1	6.1	7.5	8.5
11.5-12.5	97	6.7	0.6	5.4	5.7	6.6	7.7	8.7
12.5-13.5	108	7.0	0.7	5.3	5.8	7.0	8.3	9.9
13.5-14.5	89	7.3	0.7	5.6	6.2	7.2	8.6	9.3
14.5-15.5	81	7.5	0.7	5.8	6.3	7.4	8.6	8.9
15.5-16.5	78	7.8	0.9	5.9	6.3	7.7	9.3	10.7
16.5-17.5	67	7.8	0.8	5.8	6.3	7.8	8.9	9.6
17.5-19.0	61	8.4	1.1	6.0	6.4	8.4	10.0	11.5

(44)


MALES
FOREARM BREADTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FOREARM BREADTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FOREARM BREADTH (cm)
(Males)

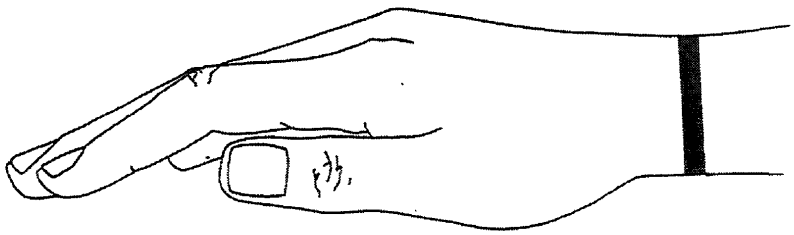
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	4.8	0.5	3.9	4.0	4.7	5.6	5.7
3.5-4.5	35	4.9	0.5	3.8	4.0	4.8	5.5	5.6
4.5-5.5	57	5.1	0.4	4.3	4.3	5.0	5.8	6.0
5.5-6.5	39	5.3	0.5	4.1	4.2	5.2	6.1	6.5
6.5-7.5	41	5.5	0.5	4.4	4.5	5.4	6.3	6.8
7.5-8.5	36	5.8	0.4	5.0	5.1	5.7	6.5	7.2
8.5-9.5	42	5.9	0.6	4.9	5.0	5.8	6.9	7.5
9.5-10.5	39	6.3	0.7	5.0	5.1	6.2	7.5	7.6
10.5-11.5	41	6.2	0.5	5.1	5.1	6.1	6.7	7.8
11.5-12.5	55	6.6	0.6	5.4	5.5	6.5	7.7	8.1
12.5-13.5	58	7.0	0.8	5.3	5.7	6.9	8.2	9.1
13.5-14.5	48	7.5	0.7	5.6	6.4	7.4	8.6	8.8
14.5-15.5	42	7.6	0.7	6.2	6.3	7.6	8.6	8.9
15.5-16.5	37	8.4	0.9	6.4	6.8	8.3	9.6	10.7
16.5-17.5	28	8.5	0.6	6.7	7.1	8.5	9.4	9.6
17.5-19.0	38	8.9	0.9	7.2	7.3	8.8	10.1	11.5

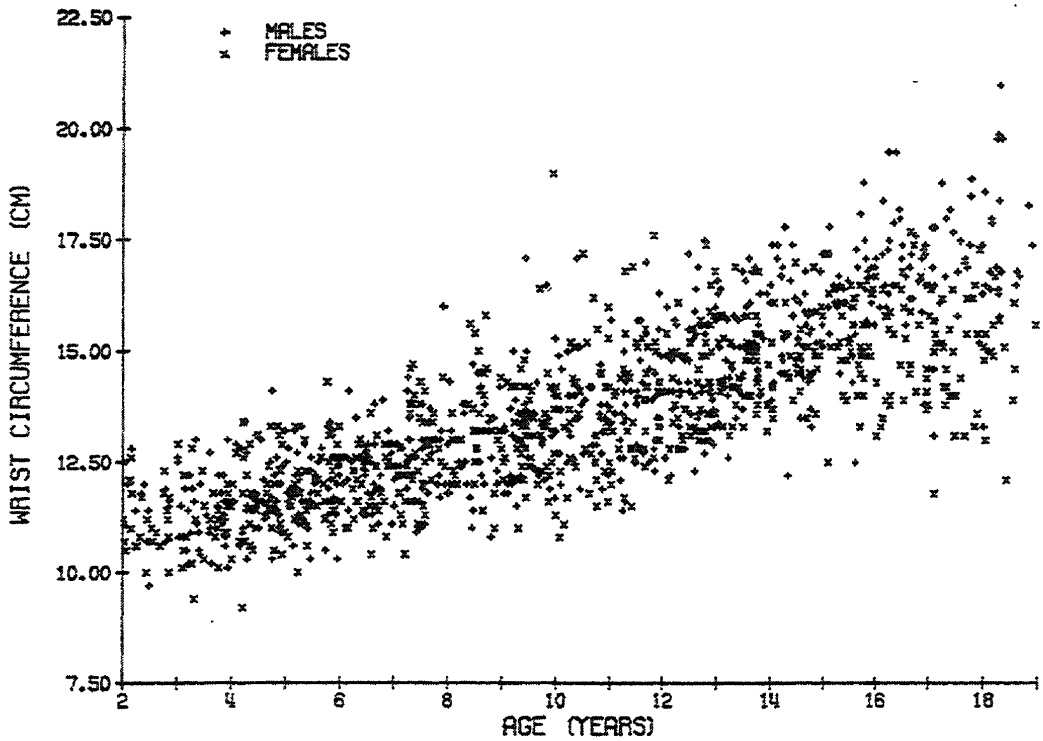
FOREARM BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	4.5	0.4	3.9	3.9	4.4	5.1	5.4
3.5-4.5	37	4.8	0.5	3.5	3.8	4.8	5.4	5.8
4.5-5.5	34	4.9	0.4	4.1	4.2	4.9	5.5	5.6
5.5-6.5	40	5.3	0.6	4.1	4.3	5.1	6.0	6.8
6.5-7.5	46	5.5	0.6	4.5	4.6	5.4	6.5	7.4
7.5-8.5	32	5.9	0.7	4.8	4.8	5.9	7.0	7.7
8.5-9.5	49	6.0	0.6	5.0	5.1	5.9	7.1	7.3
9.5-10.5	45	6.3	0.8	4.9	5.0	6.0	7.8	8.7
10.5-11.5	45	6.3	0.8	5.0	5.0	6.1	7.8	8.5
11.5-12.5	42	6.8	0.6	5.8	5.8	6.6	7.8	8.7
12.5-13.5	50	7.1	0.6	5.7	6.1	7.1	8.1	9.9
13.5-14.5	41	7.2	0.7	6.2	6.2	7.0	8.5	9.3
14.5-15.5	39	7.4	0.7	5.8	5.9	7.4	8.6	8.7
15.5-16.5	41	7.3	0.6	5.9	6.2	7.3	8.0	8.4
16.5-17.5	39	7.4	0.7	5.8	6.2	7.4	8.5	8.9
17.5-19.0	23	7.4	0.8	6.0	6.0	7.5	8.6	8.9

WRIST CIRCUMFERENCE

Subject stands erect, arms hanging at sides. With an automated tape device, measure the minimum circumference of the right wrist above the distal (ulna) styloid process.

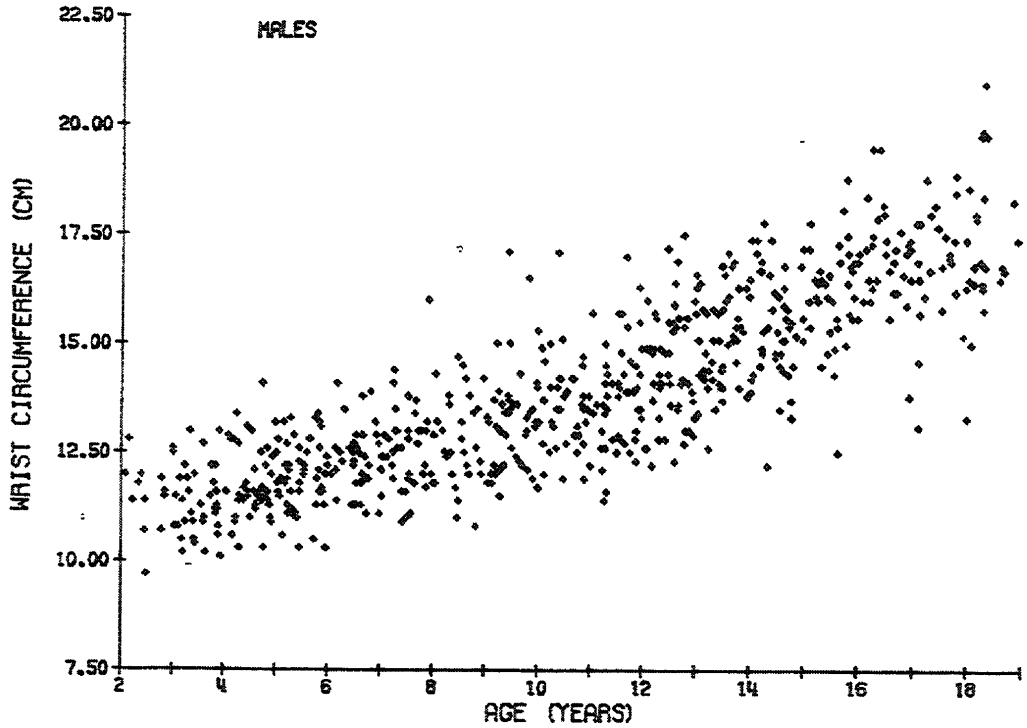


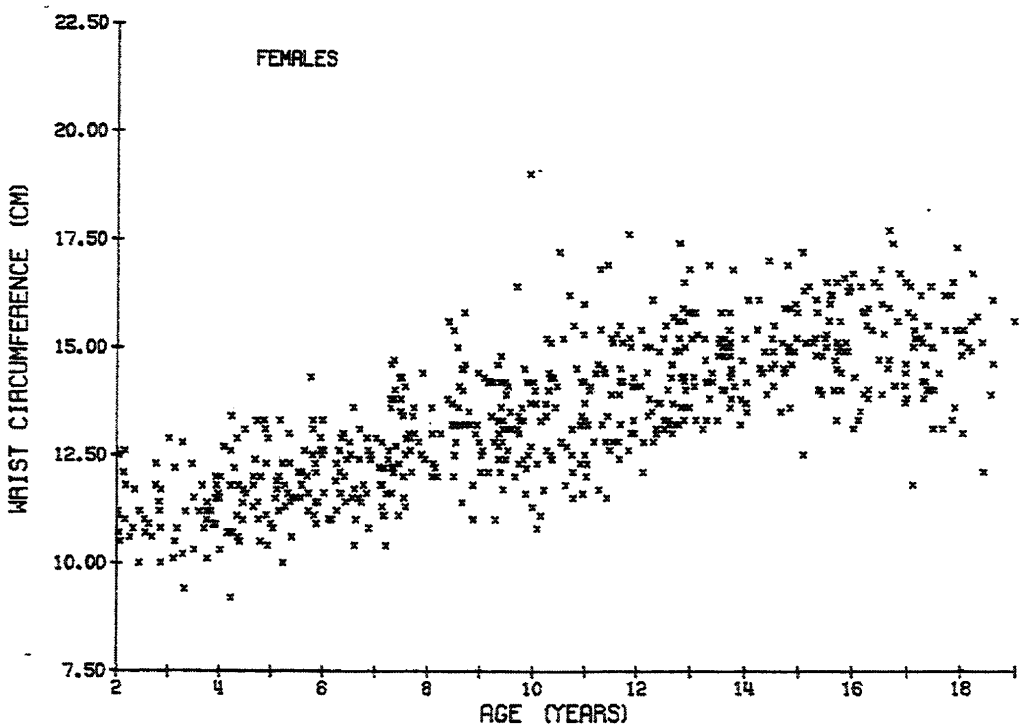


WRIST CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	11.3	0.8	9.4	9.9	11.2	12.7	13.0
3.5-4.5	77	11.5	0.9	9.2	10.2	11.4	13.0	13.4
4.5-5.5	93	11.8	0.8	10.0	10.5	11.6	13.2	14.1
5.5-6.5	80	12.2	0.8	10.3	10.9	12.1	13.3	14.3
6.5-7.5	86	12.4	1.0	10.4	10.9	12.3	14.2	14.7
7.5-8.5	68	12.8	1.0	11.0	11.3	12.7	14.6	16.0
8.5-9.5	91	13.2	1.1	10.8	11.5	13.1	14.8	17.1
9.5-10.5	85	13.5	1.4	10.8	11.6	13.3	16.1	19.0
10.5-11.5	85	13.5	1.2	11.4	11.6	13.3	15.6	16.9
11.5-12.5	97	14.2	1.2	12.1	12.5	14.1	16.1	17.6
12.5-13.5	107	14.6	1.2	12.3	12.9	14.3	16.7	17.5
13.5-14.5	90	15.3	1.2	12.2	13.6	15.1	17.1	17.8
14.5-15.5	80	15.4	1.1	12.5	13.5	15.2	17.0	17.8
15.5-16.5	79	16.0	1.4	12.5	13.3	16.0	18.2	19.5
16.5-17.5	67	15.7	1.5	11.8	13.3	15.7	17.8	18.8
17.5-19.0	63	16.3	1.8	12.1	13.1	16.4	19.3	21.0

(45)


MALES
WRIST CIRCUMFERENCE (CM)
22.50
20.00
17.50
15.00
12.50
10.00
7.50
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WRIST CIRCUMFERENCE (CM)
22.50
20.00
17.50
15.00
12.50
10.00
7.50
2
4
6
8
10
12
14
16
18
AGE (YEARS)

WRIST CIRCUMFERENCE (cm)
(Males)

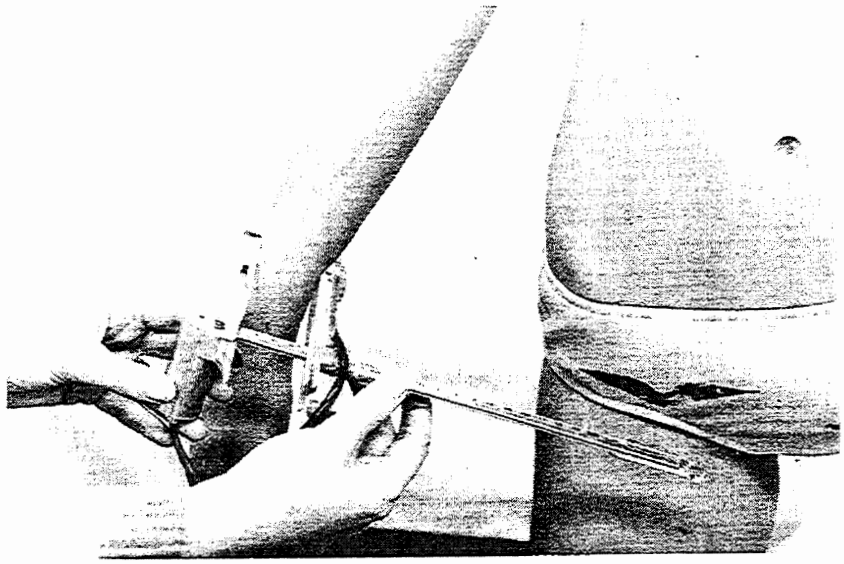
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	11.4	0.8	9.7	10.0	11.4	12.7	13.0
3.5-4.5	37	11.6	0.9	10.1	10.2	11.4	13.0	13.4
4.5-5.5	58	11.8	0.8	10.3	10.6	11.6	13.1	14.1
5.5-6.5	39	12.2	0.8	10.3	10.5	12.1	13.4	14.1
6.5-7.5	40	12.4	0.8	10.9	11.0	12.3	13.9	14.4
7.5-8.5	36	12.7	1.0	11.0	11.1	12.5	14.4	16.0
8.5-9.5	42	13.1	1.1	10.8	11.5	13.1	14.7	17.1
9.5-10.5	40	13.5	1.2	11.7	11.8	13.3	15.3	17.1
10.5-11.5	40	13.4	0.9	11.4	11.6	13.4	14.7	15.7
11.5-12.5	55	14.3	1.2	12.2	12.4	14.1	16.1	17.2
12.5-13.5	57	14.7	1.2	12.3	12.7	14.4	16.6	17.5
13.5-14.5	49	15.7	1.2	12.2	13.8	15.5	17.4	17.8
14.5-15.5	42	15.7	1.1	13.3	13.5	15.8	17.1	17.8
15.5-16.5	38	16.7	1.4	12.5	14.1	16.8	18.8	19.5
16.5-17.5	28	16.6	1.3	13.1	13.4	16.7	18.1	18.8
17.5-19.0	38	17.2	1.5	13.3	14.8	16.8	19.8	21.0

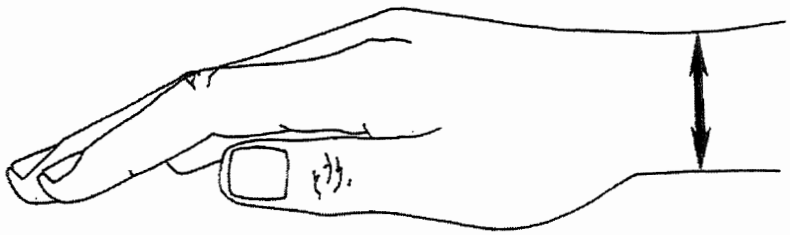
WRIST CIRCUMFERENCE (cm)
(Females)

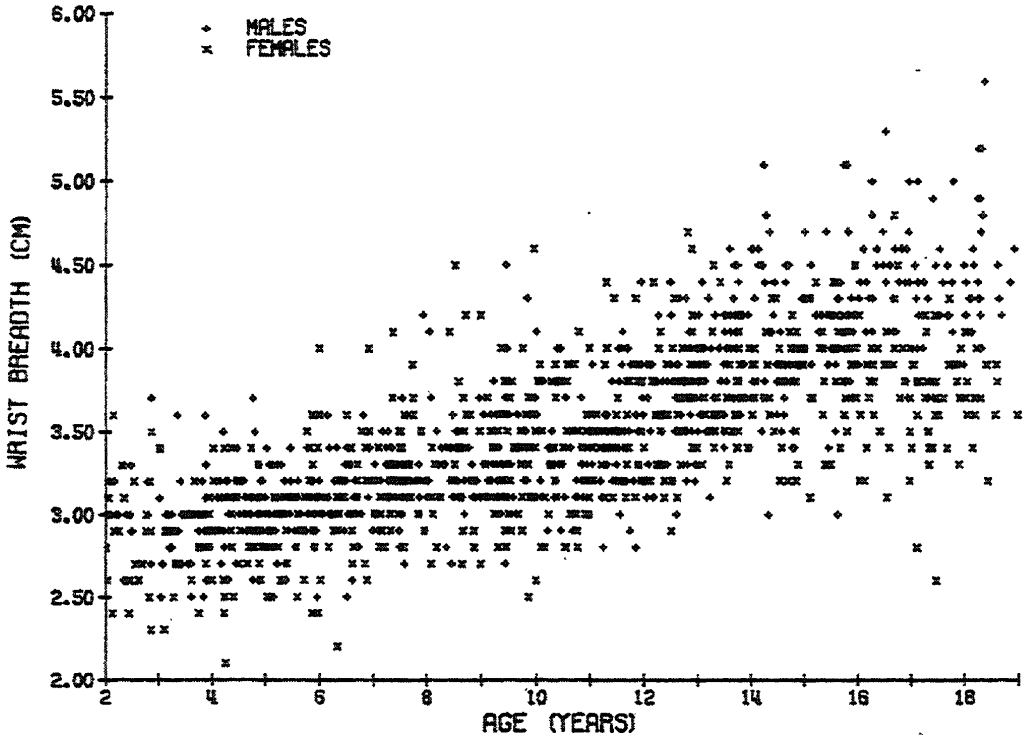
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	11.2	0.9	9.4	9.6	11.0	12.6	12.9
3.5-4.5	40	11.4	0.9	9.2	10.1	11.4	12.9	13.4
4.5-5.5	35	11.7	0.9	10.0	10.3	11.6	13.2	13.3
5.5-6.5	41	12.2	0.8	10.9	11.0	12.1	13.2	14.3
6.5-7.5	46	12.4	1.1	10.4	10.5	12.3	14.3	14.7
7.5-8.5	32	13.0	1.0	11.3	11.4	12.8	14.8	15.6
8.5-9.5	49	13.3	1.1	11.0	11.2	13.2	14.7	15.8
9.5-10.5	45	13.5	1.5	10.8	11.1	13.3	16.1	19.0
10.5-11.5	45	13.6	1.4	11.5	11.5	13.2	16.1	16.9
11.5-12.5	42	14.1	1.2	12.1	12.4	14.0	15.8	17.6
12.5-13.5	50	14.5	1.1	13.0	13.1	14.2	16.6	17.4
13.5-14.5	41	14.8	0.9	13.2	13.5	14.7	16.1	17.0
14.5-15.5	38	15.1	1.0	12.5	13.4	15.0	16.5	17.2
15.5-16.5	41	15.2	1.1	13.1	13.2	15.2	16.6	16.8
16.5-17.5	39	15.0	1.2	11.8	13.0	14.8	16.7	17.7
17.5-19.0	25	15.0	1.3	12.1	12.3	15.1	16.6	17.3

WRIST BREADTH

Subject stands erect, arms hanging at sides with palms in. With the paddle blades of an automated sliding caliper, measure the minimum horizontal breadth (medio-lateral) of the right wrist above the distal (ulna) styloid process.



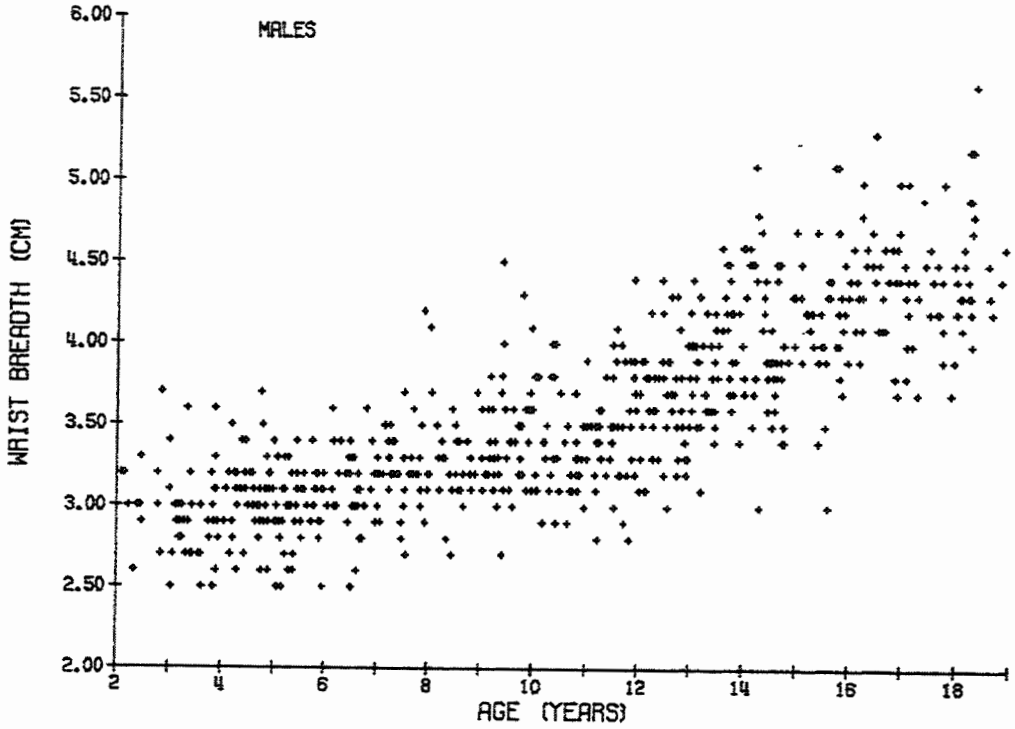


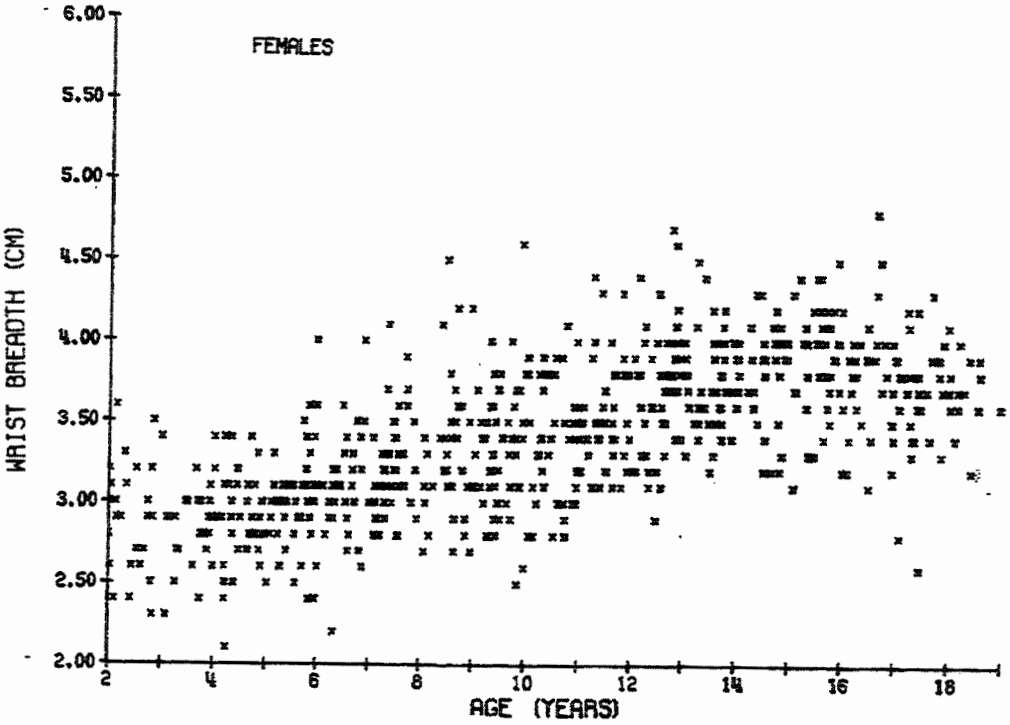


WRIST BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	2.9	0.3	2.3	2.4	2.9	3.5	3.7
3.5-4.5	76	2.9	0.3	2.1	2.4	2.9	3.4	3.6
4.5-5.5	91	3.0	0.2	2.5	2.5	2.9	3.3	3.7
5.5-6.5	80	3.1	0.3	2.2	2.4	3.0	3.5	4.0
6.5-7.5	87	3.2	0.3	2.6	2.7	3.1	3.5	4.1
7.5-8.5	68	3.3	0.3	2.7	2.7	3.2	4.0	4.5
8.5-9.5	91	3.3	0.3	2.7	2.8	3.2	3.8	4.5
9.5-10.5	85	3.4	0.4	2.5	2.8	3.3	4.0	4.6
10.5-11.5	86	3.4	0.3	2.8	2.9	3.4	3.9	4.4
11.5-12.5	96	3.6	0.4	2.8	3.0	3.5	4.2	4.4
12.5-13.5	107	3.7	0.3	3.0	3.2	3.7	4.3	4.7
13.5-14.5	89	4.0	0.4	3.0	3.3	3.9	4.6	5.1
14.5-15.5	80	3.9	0.4	3.1	3.2	3.9	4.5	4.7
15.5-16.5	77	4.1	0.4	3.0	3.3	4.0	4.8	5.3
16.5-17.5	67	4.0	0.5	2.6	3.1	3.9	4.8	5.0
17.5-19.0	63	4.2	0.5	3.2	3.4	4.1	5.0	5.6

(46)


MALES
WRIST BREADTH (CM)
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WRIST BREADTH (CM)
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

WRIST BREADTH (cm)
(Males)

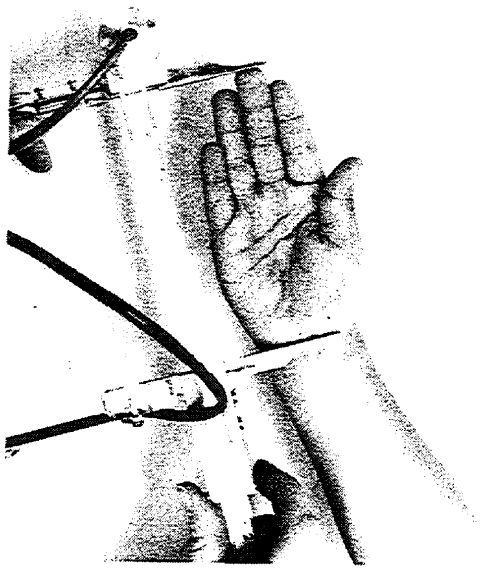
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	3.0	0.3	2.5	2.6	2.9	3.5	3.7
3.5-4.5	36	3.0	0.3	2.5	2.5	2.9	3.4	3.6
4.5-5.5	57	3.0	0.2	2.5	2.5	3.0	3.4	3.7
5.5-6.5	39	3.1	0.2	2.5	2.5	3.1	3.4	3.6
6.5-7.5	41	3.1	0.2	2.6	2.7	3.1	3.4	3.6
7.5-8.5	36	3.3	0.3	2.7	2.7	3.2	3.8	4.2
8.5-9.5	42	3.4	0.3	2.7	2.9	3.2	3.8	4.5
9.5-10.5	40	3.4	0.3	2.9	2.9	3.3	4.0	4.3
10.5-11.5	41	3.4	0.2	2.8	2.9	3.3	3.7	3.9
11.5-12.5	54	3.6	0.4	2.8	3.0	3.6	4.2	4.4
12.5-13.5	57	3.7	0.3	3.0	3.1	3.7	4.2	4.4
13.5-14.5	48	4.1	0.4	3.0	3.4	4.1	4.7	5.1
14.5-15.5	42	4.1	0.3	3.4	3.4	4.0	4.5	4.7
15.5-16.5	37	4.3	0.5	3.0	3.4	4.3	5.1	5.3
16.5-17.5	28	4.3	0.4	3.7	3.7	4.3	4.9	5.0
17.5-19.0	38	4.4	0.4	3.7	3.8	4.3	5.1	5.6

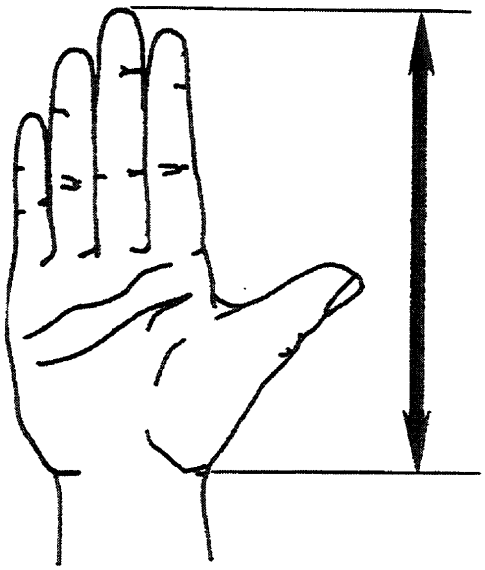
WRIST BREADTH (cm)
(Females)

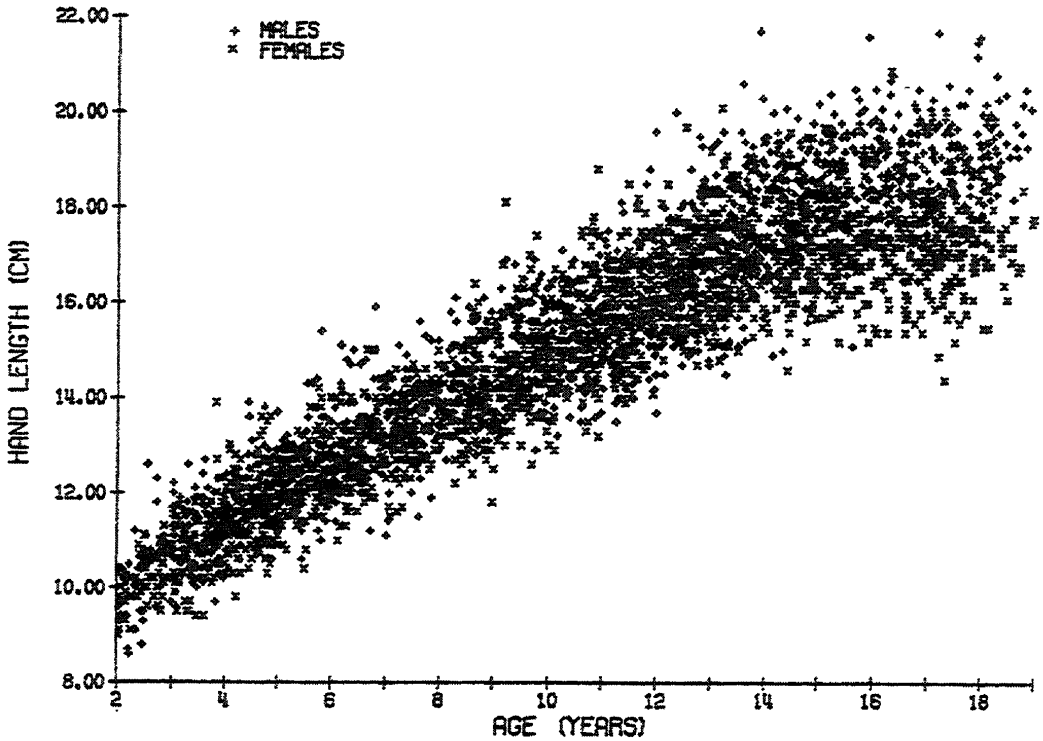
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	2.9	0.3	2.3	2.3	2.8	3.4	3.6
3.5-4.5	40	2.9	0.3	2.1	2.2	2.9	3.3	3.4
4.5-5.5	34	2.9	0.2	2.5	2.5	2.9	3.2	3.4
5.5-6.5	41	3.0	0.4	2.2	2.3	3.0	3.6	4.0
6.5-7.5	46	3.2	0.3	2.6	2.7	3.1	3.6	4.1
7.5-8.5	32	3.3	0.4	2.7	2.7	3.2	4.0	4.5
8.5-9.5	49	3.3	0.4	2.7	2.7	3.2	3.9	4.2
9.5-10.5	45	3.4	0.4	2.5	2.6	3.3	3.9	4.6
10.5-11.5	45	3.5	0.4	2.8	2.8	3.4	4.1	4.4
11.5-12.5	42	3.6	0.4	2.9	3.0	3.5	4.1	4.4
12.5-13.5	50	3.8	0.3	3.1	3.2	3.7	4.4	4.7
13.5-14.5	41	3.8	0.3	3.2	3.3	3.7	4.2	4.3
14.5-15.5	38	3.8	0.4	3.1	3.1	3.8	4.3	4.4
15.5-16.5	40	3.9	0.3	3.2	3.2	3.8	4.2	4.5
16.5-17.5	39	3.7	0.4	2.6	2.8	3.7	4.3	4.8
17.5-19.0	25	3.7	0.3	3.2	3.2	3.7	4.1	4.3

HAND LENGTH

Subject extends right hand and fingers with palm up. With the pointed blades of an automated sliding caliper, measure the distance from the wrist crease to the tip of the middle finger parallel to the fingers.



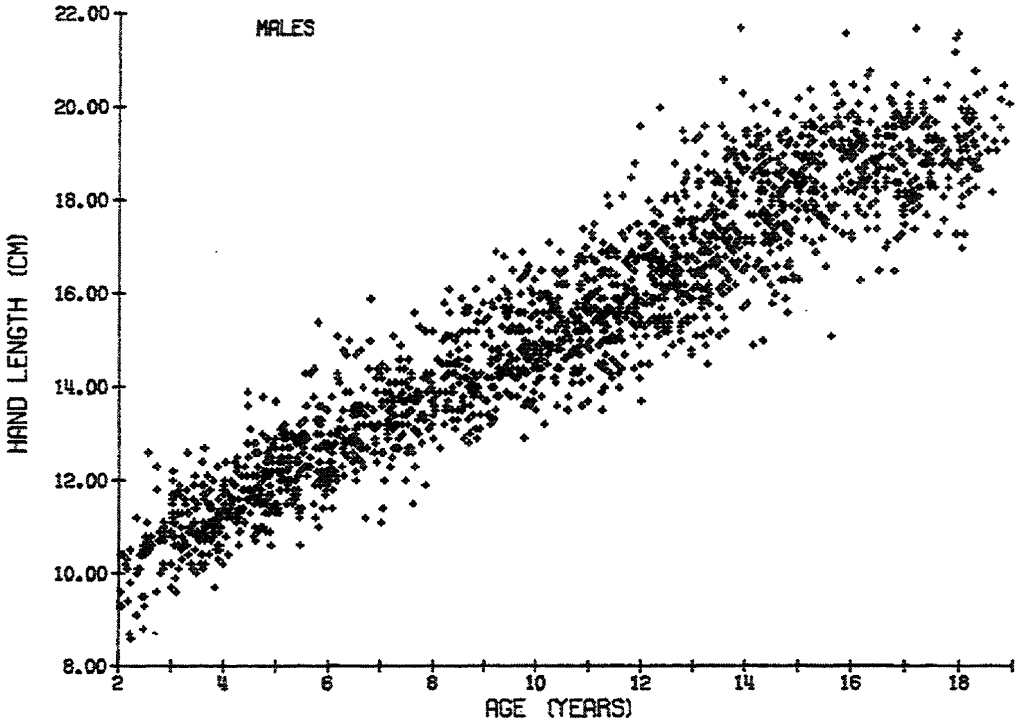


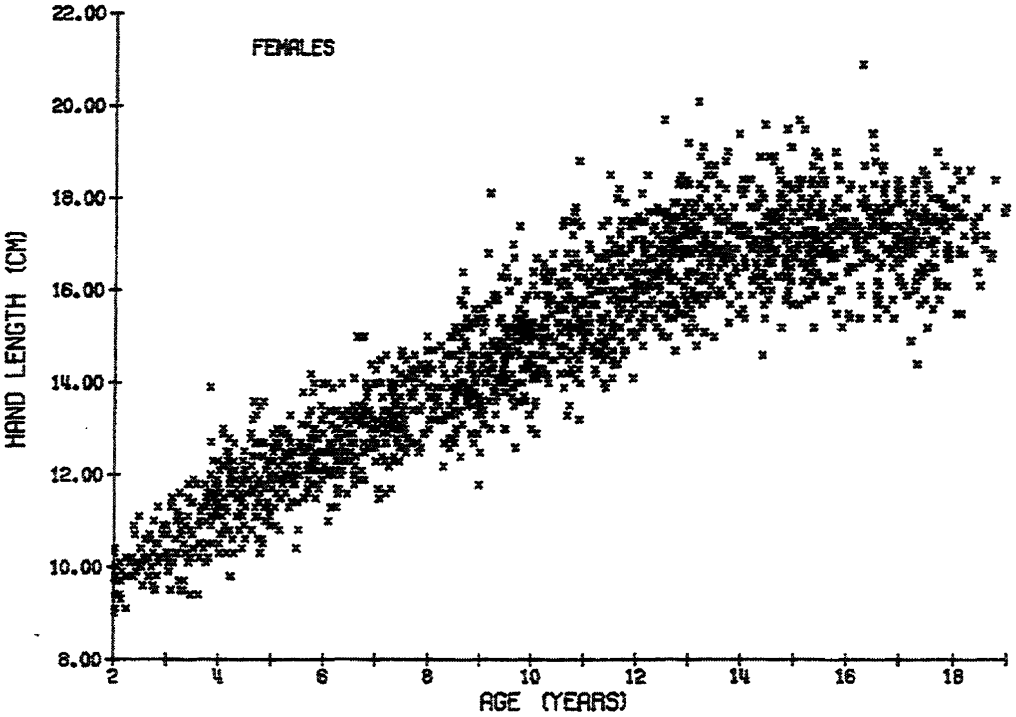


HAND LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	10.5	0.7	8.6	9.3	10.5	11.7	12.6
3.5-4.5	227	11.4	0.7	9.4	10.2	11.3	12.5	13.9
4.5-5.5	260	12.0	0.8	5.5	10.8	11.9	13.1	13.8
5.5-6.5	219	12.7	0.8	10.8	11.5	12.6	14.1	15.4
6.5-7.5	224	13.3	0.8	11.1	11.9	13.2	14.6	15.9
7.5-8.5	192	13.8	0.8	11.5	12.6	13.7	15.1	16.1
8.5-9.5	251	14.4	0.9	11.8	13.0	14.3	15.9	18.1
9.5-10.5	251	15.0	0.9	12.6	13.6	14.9	16.4	17.4
10.5-11.5	281	15.6	1.0	13.2	14.0	15.5	17.3	18.8
11.5-12.5	287	16.3	1.0	13.7	14.5	16.1	17.8	20.0
12.5-13.5	312	16.9	1.0	14.5	15.1	16.8	18.6	20.1
13.5-14.5	269	17.5	1.1	14.6	15.7	17.2	19.3	21.7
14.5-15.5	262	17.8	1.1	15.2	16.0	17.7	19.5	20.4
15.5-16.5	197	18.0	1.3	15.1	16.0	17.9	20.0	21.6
16.5-17.5	221	17.9	1.3	14.4	15.8	17.9	19.9	21.7
17.5-19.0	156	18.4	1.3	15.5	16.2	18.4	20.2	21.6

(47)


MALES
HAND LENGTH (CM)
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HAND LENGTH (CM)
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HAND LENGTH (cm)
(Males)

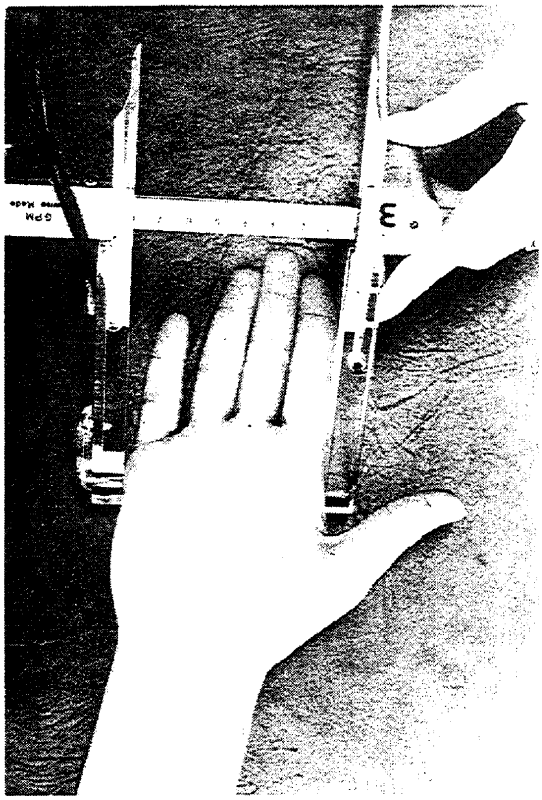
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	10.7	0.8	8.6	9.3	10.7	11.9	12.6
3.5-4.5	118	11.4	0.7	9.7	10.3	11.3	12.5	13.9
4.5-5.5	142	12.0	0.9	5.5	10.9	12.0	13.0	13.8
5.5-6.5	108	12.9	0.8	11.0	11.6	12.8	14.4	15.4
6.5-7.5	104	13.4	0.9	11.1	11.8	13.3	14.8	15.9
7.5-8.5	98	13.9	0.8	11.5	12.6	13.8	15.2	16.1
8.5-9.5	114	14.5	0.9	12.8	13.0	14.3	15.9	16.9
9.5-10.5	123	15.1	0.9	12.9	13.6	14.9	16.4	17.1
10.5-11.5	141	15.5	0.9	13.5	14.0	15.4	17.0	18.1
11.5-12.5	154	16.2	1.0	13.7	14.5	16.0	17.8	20.0
12.5-13.5	152	16.9	1.1	14.5	15.1	16.7	18.7	19.6
13.5-14.5	153	17.8	1.2	14.9	15.9	17.7	19.4	21.7
14.5-15.5	130	18.2	1.0	15.6	16.3	18.2	19.7	20.4
15.5-16.5	99	18.9	1.0	15.1	17.3	18.9	20.4	21.6
16.5-17.5	104	18.9	0.9	16.5	17.2	18.8	20.1	21.7
17.5-19.0	88	19.2	0.9	17.0	17.4	19.1	20.5	21.6

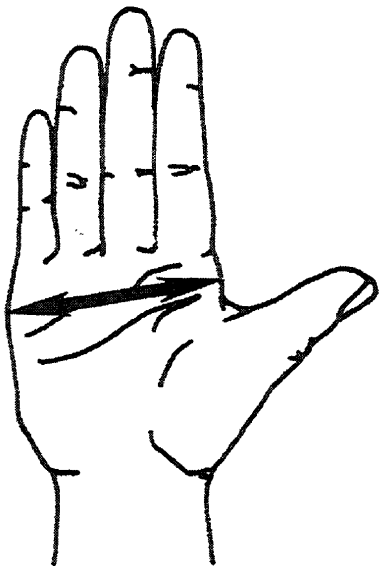
HAND LENGTH (cm)
(Females)

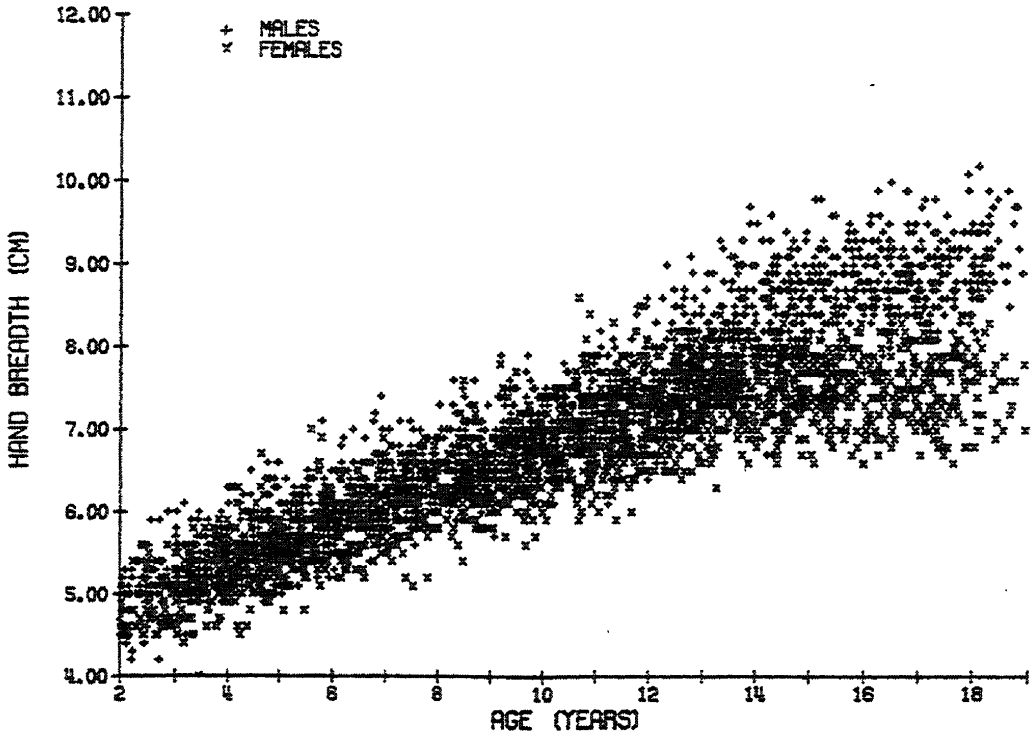
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	10.3	0.6	9.0	9.3	10.2	11.4	11.8
3.5-4.5	109	11.5	0.8	9.4	10.2	11.4	12.7	13.9
4.5-5.5	118	12.0	0.7	10.3	10.7	11.9	13.0	13.6
5.5-6.5	111	12.6	0.7	10.8	11.4	12.5	13.8	14.2
6.5-7.5	120	13.1	0.8	11.5	11.8	13.1	14.5	15.0
7.5-8.5	94	13.7	0.7	12.2	12.6	13.6	14.8	15.2
8.5-9.5	137	14.4	0.9	11.8	12.9	14.2	15.9	18.1
9.5-10.5	128	15.0	0.9	12.6	13.5	14.9	16.5	17.4
10.5-11.5	140	15.7	1.1	13.2	14.0	15.6	17.4	18.8
11.5-12.5	133	16.3	1.0	14.1	14.6	16.2	17.7	19.7
12.5-13.5	160	16.9	1.0	14.7	15.1	16.9	18.4	20.1
13.5-14.5	116	17.0	0.9	14.6	15.6	16.9	18.4	19.6
14.5-15.5	132	17.3	0.9	15.2	15.8	17.2	18.8	19.7
15.5-16.5	98	17.2	0.9	15.2	15.5	17.1	18.6	20.9
16.5-17.5	117	17.1	0.9	14.4	15.6	17.1	18.4	18.8
17.5-19.0	68	17.3	0.8	15.5	15.7	17.3	18.5	19.0

HAND BREADTH

Subject extends right hand and fingers with palm up, thumb away (abducted) from hand. With the paddle blades of an automated sliding caliper, measure the width across the knuckles of the hand.



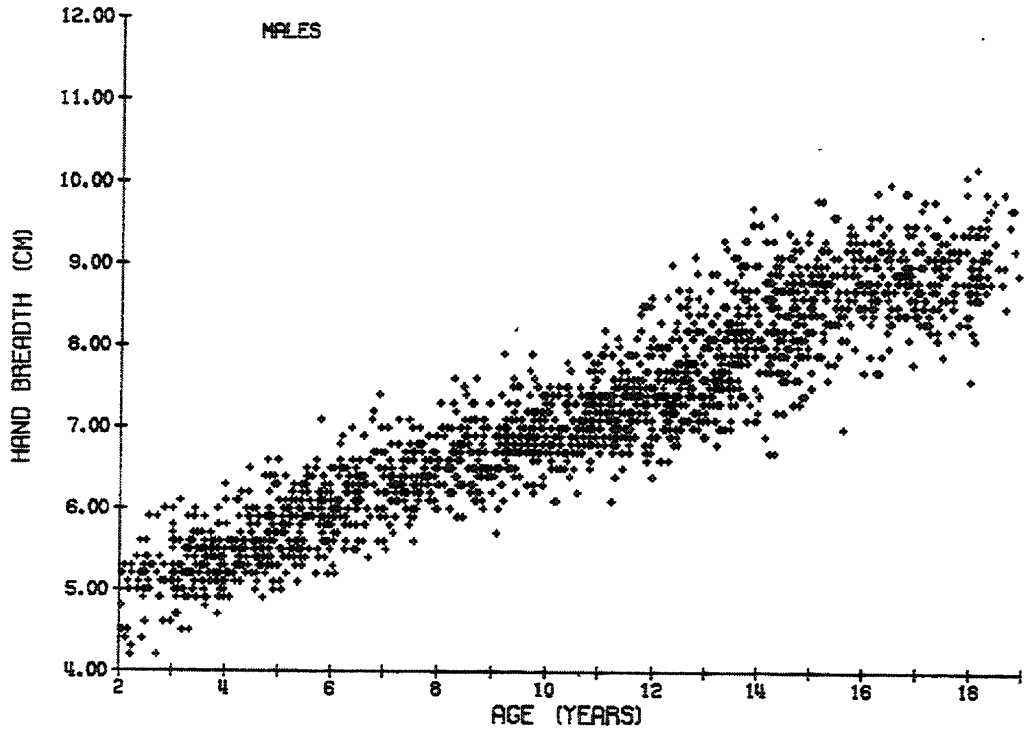


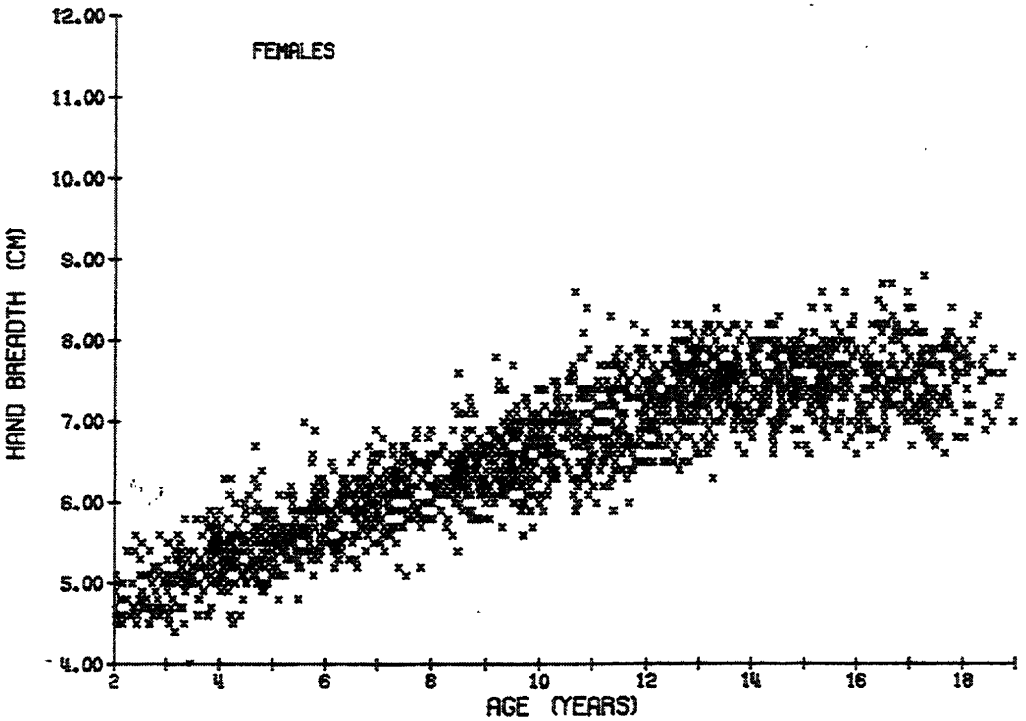


HAND BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	5.1	0.4	4.0	4.4	5.0	5.8	6.1
3.5-4.5	227	5.4	0.3	4.5	4.8	5.4	6.0	6.5
4.5-5.5	260	5.6	0.4	4.8	5.0	5.5	6.2	6.7
5.5-6.5	219	5.9	0.4	5.1	5.3	5.9	6.5	7.1
6.5-7.5	225	6.2	0.4	5.2	5.5	6.1	6.7	7.4
7.5-8.5	192	6.4	0.4	5.1	5.7	6.3	7.0	7.6
8.5-9.5	251	6.6	0.4	5.7	5.9	6.5	7.3	7.9
9.5-10.5	251	6.8	0.4	5.6	6.1	6.8	7.4	7.9
10.5-11.5	281	7.1	0.5	5.9	6.2	7.0	7.8	8.6
11.5-12.5	286	7.3	0.5	6.0	6.5	7.3	8.1	9.0
12.5-13.5	311	7.6	0.5	6.3	6.8	7.5	8.5	9.3
13.5-14.5	270	7.9	0.6	6.6	6.9	7.9	9.0	9.7
14.5-15.5	263	8.0	0.7	6.6	7.0	7.8	9.1	9.8
15.5-16.5	197	8.2	0.8	6.6	6.9	8.1	9.4	10.0
16.5-17.5	221	8.1	0.8	6.7	6.9	8.1	9.3	9.9
17.5-19.0	156	8.4	0.8	6.6	7.0	8.5	9.6	10.2

(48)


MALES
HAND BREADTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HAND BREADTH (CM)
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HAND BREADTH (cm)
(Males)

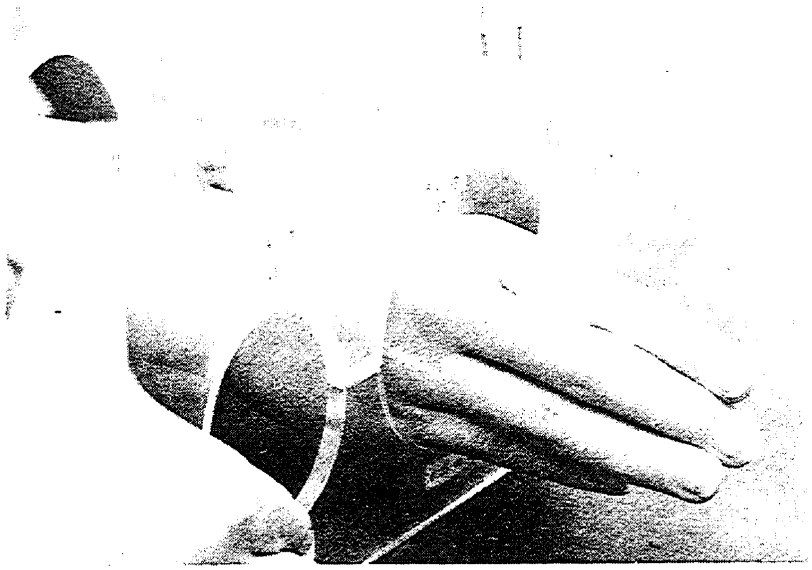
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	5.2	0.4	4.2	4.4	5.1	5.9	6.1
3.5-4.5	118	5.4	0.3	4.7	4.9	5.4	6.1	6.5
4.5-5.5	142	5.7	0.4	4.9	5.1	5.6	6.3	6.6
5.5-6.5	108	6.0	0.4	5.2	5.3	6.0	6.6	7.1
6.5-7.5	104	6.3	0.4	5.4	5.6	6.2	7.0	7.4
7.5-8.5	98	6.5	0.4	5.6	5.9	6.5	7.2	7.6
8.5-9.5	114	6.7	0.4	5.7	6.1	6.7	7.4	7.9
9.5-10.5	123	7.0	0.4	6.1	6.3	6.9	7.6	7.9
10.5-11.5	141	7.2	0.4	6.1	6.5	7.1	7.8	8.2
11.5-12.5	154	7.4	0.5	6.4	6.7	7.3	8.4	9.0
12.5-13.5	151	7.8	0.5	6.8	7.0	7.6	8.8	9.3
13.5-14.5	154	8.3	0.6	6.7	7.1	8.2	9.1	9.7
14.5-15.5	131	8.5	0.5	7.3	7.5	8.5	9.3	9.8
15.5-16.5	99	8.8	0.5	7.0	7.7	8.8	9.5	10.0
16.5-17.5	104	8.8	0.4	7.8	8.2	8.8	9.5	9.9
17.5-19.0	88	9.0	0.5	7.6	8.2	8.9	9.8	10.2

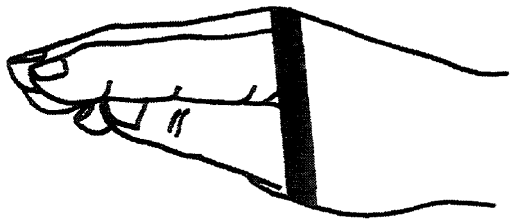
HAND BREADTH (cm)
(Females)

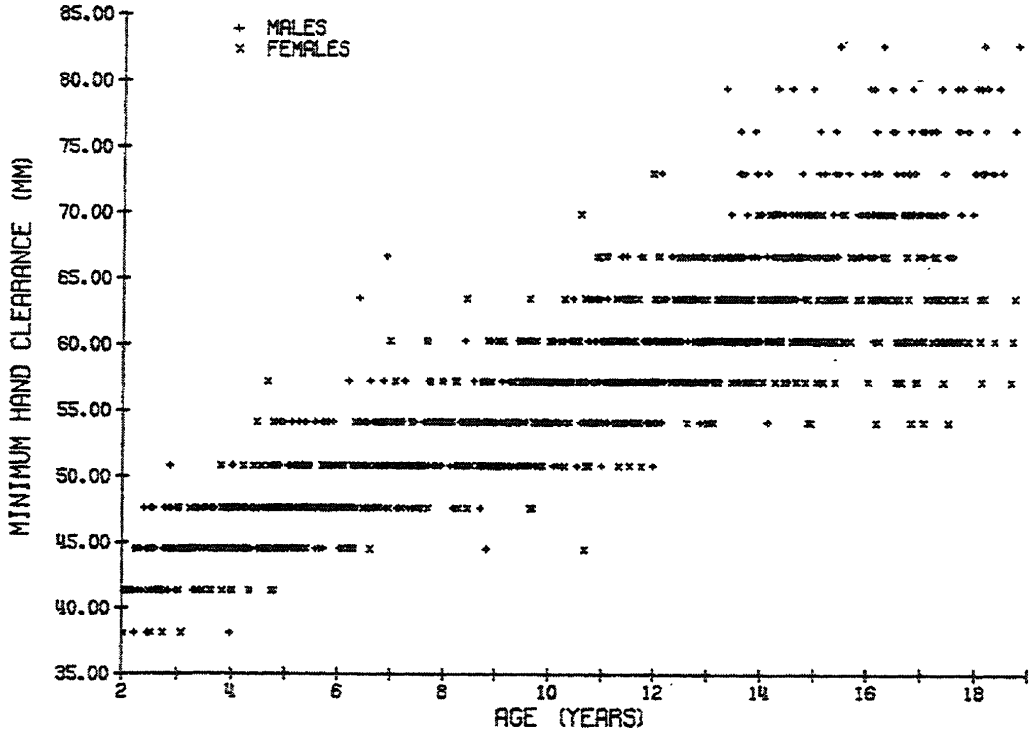
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	5.0	0.3	4.0	4.4	4.9	5.5	5.8
3.5-4.5	109	5.4	0.4	4.5	4.6	5.3	5.9	6.3
4.5-5.5	118	5.5	0.3	4.8	4.9	5.5	6.1	6.7
5.5-6.5	111	5.8	0.4	5.1	5.2	5.8	6.4	7.0
6.5-7.5	121	6.0	0.4	5.2	5.4	6.0	6.6	6.9
7.5-8.5	94	6.3	0.4	5.1	5.6	6.2	6.8	7.6
8.5-9.5	137	6.5	0.4	5.7	5.8	6.4	7.1	7.8
9.5-10.5	128	6.7	0.4	5.6	5.9	6.6	7.3	7.5
10.5-11.5	140	7.0	0.5	5.9	6.1	6.9	7.8	8.6
11.5-12.5	132	7.2	0.4	6.0	6.4	7.2	7.8	8.2
12.5-13.5	160	7.5	0.4	6.3	6.6	7.5	8.1	8.4
13.5-14.5	116	7.5	0.4	6.6	6.8	7.4	8.1	8.2
14.5-15.5	132	7.5	0.4	6.6	6.9	7.4	8.0	8.6
15.5-16.5	98	7.6	0.4	6.6	6.8	7.5	8.2	8.7
16.5-17.5	117	7.5	0.4	6.7	6.8	7.4	8.3	8.8
17.5-19.0	68	7.6	0.4	6.6	6.8	7.6	8.1	8.4

MINIMUM HAND CLEARANCE

Subject extends right hand reduced to its narrowest configuration. With a hand measurement board, record the smallest diameter through which the hand can pass without forcing it. The measurement is typed into the computer.



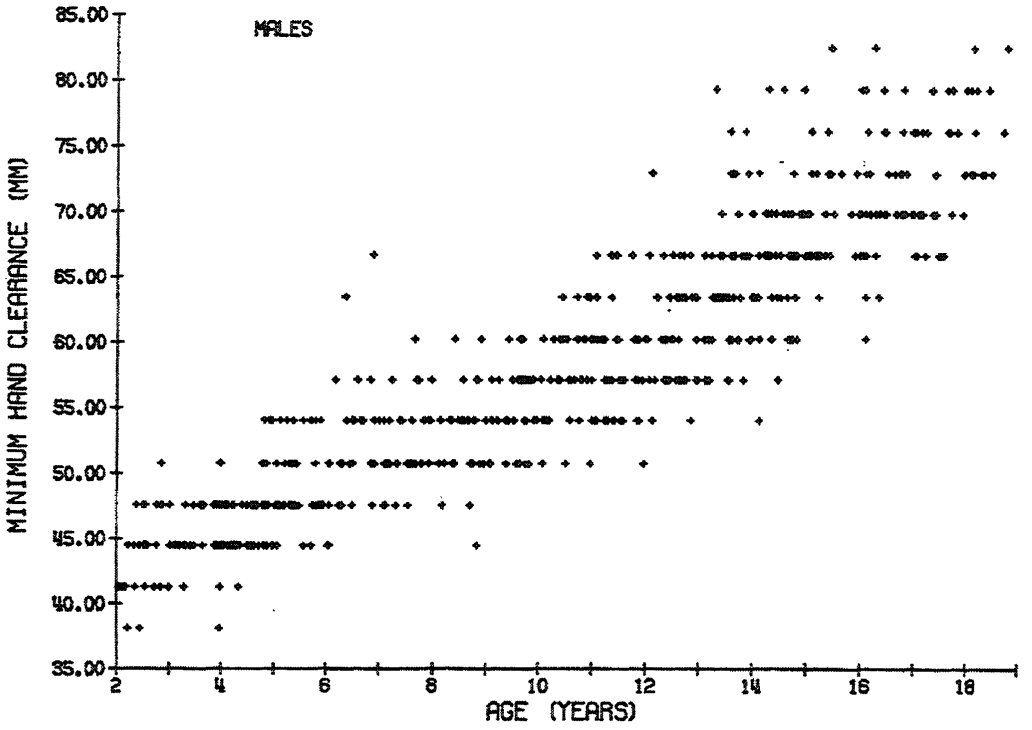


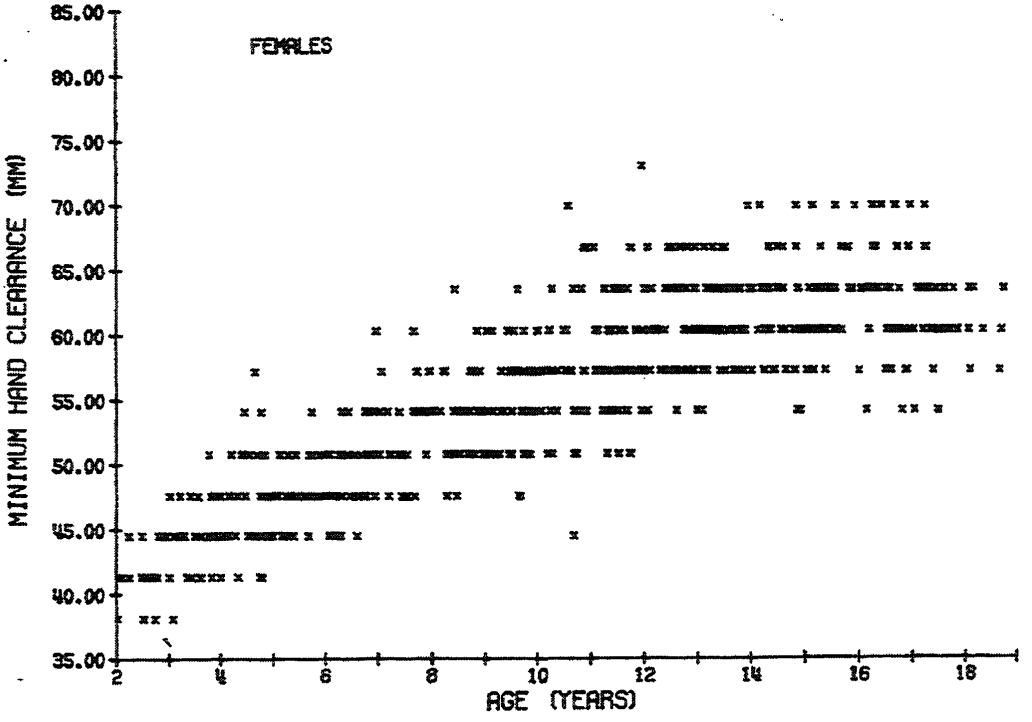


MINIMUM HAND CLEARANCE (mm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	43.6	2.9	38.1	38.1	42.0	47.0	50.8
3.5-4.5	70	45.8	2.8	38.1	39.1	44.2	49.2	54.1
4.5-5.5	92	47.8	3.1	41.3	41.6	46.0	52.4	57.2
5.5-6.5	62	49.2	3.6	44.5	44.5	47.1	53.6	63.5
6.5-7.5	62	51.8	3.7	44.5	44.9	49.9	56.3	66.7
7.5-8.5	60	53.1	3.5	47.6	47.6	51.2	58.2	63.5
8.5-9.5	78	53.9	3.1	44.5	47.9	52.2	58.3	60.3
9.5-10.5	93	56.2	3.3	47.6	48.3	55.0	59.9	63.5
10.5-11.5	98	58.5	4.4	44.5	49.4	56.8	64.9	69.9
11.5-12.5	94	59.4	4.2	50.8	51.4	57.3	65.6	73.0
12.5-13.5	107	61.3	4.0	54.1	54.2	59.8	65.9	79.4
13.5-14.5	98	64.0	4.9	54.1	55.1	61.9	72.0	79.4
14.5-15.5	94	65.2	5.5	54.1	55.8	63.3	73.5	82.6
15.5-16.5	56	67.9	5.9	54.1	57.7	66.3	77.5	82.6
16.5-17.5	80	66.7	6.8	54.1	54.6	65.6	76.2	85.7
17.5-19.0	46	69.6	7.8	57.2	57.3	69.9	79.3	82.6

(49)


MALES
MINIMUM HAND CLEARANCE (MM)
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MINIMUM HAND CLEARANCE (MM)
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MINIMUM HAND CLEARANCE (mm)
(Males)

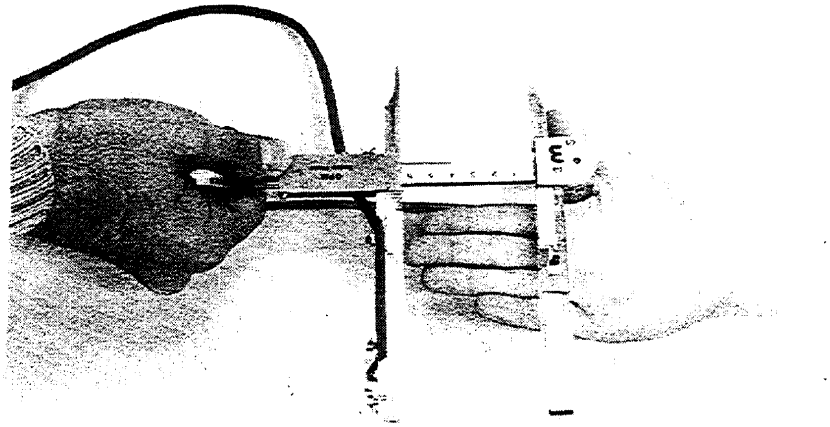
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	44.3	2.9	38.1	38.2	42.8	47.3	50.8
3.5-4.5	36	45.9	2.5	38.1	39.4	44.5	47.9	50.8
4.5-5.5	49	48.4	2.9	44.5	44.5	46.4	52.8	54.1
5.5-6.5	26	50.1	4.4	44.5	44.5	47.6	56.3	63.5
6.5-7.5	29	52.7	4.0	47.6	47.6	50.9	56.7	66.7
7.5-8.5	30	52.8	3.2	47.6	47.6	50.6	58.0	60.3
8.5-9.5	38	53.6	3.1	44.5	47.3	52.1	57.4	60.3
9.5-10.5	47	56.3	3.1	50.8	50.8	55.1	59.8	63.5
10.5-11.5	52	58.8	4.0	50.8	51.0	57.4	64.6	66.7
11.5-12.5	46	59.5	4.2	50.8	51.7	57.2	65.9	73.0
12.5-13.5	46	61.8	4.7	54.1	54.4	60.5	66.6	79.4
13.5-14.5	54	65.5	5.5	54.1	55.4	63.5	73.5	79.4
14.5-15.5	49	68.4	4.9	60.3	60.3	66.3	77.1	82.6
15.5-16.5	31	71.2	5.2	60.3	61.2	68.9	78.8	82.6
16.5-17.5	38	72.2	4.2	66.7	66.7	69.7	78.4	85.7
17.5-19.0	27	75.4	4.3	66.7	66.7	73.8	80.4	82.6

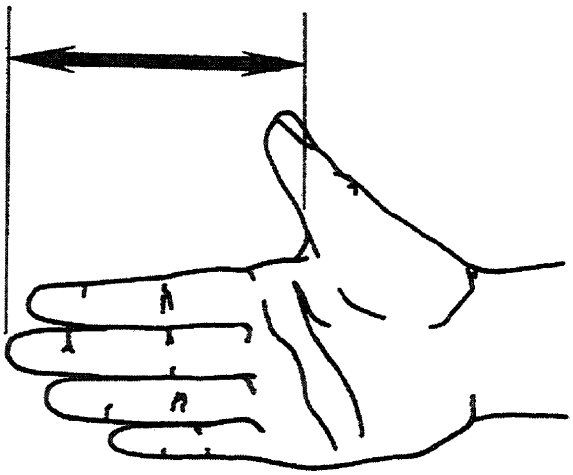
MINIMUM HAND CLEARANCE (mm)
(Females)

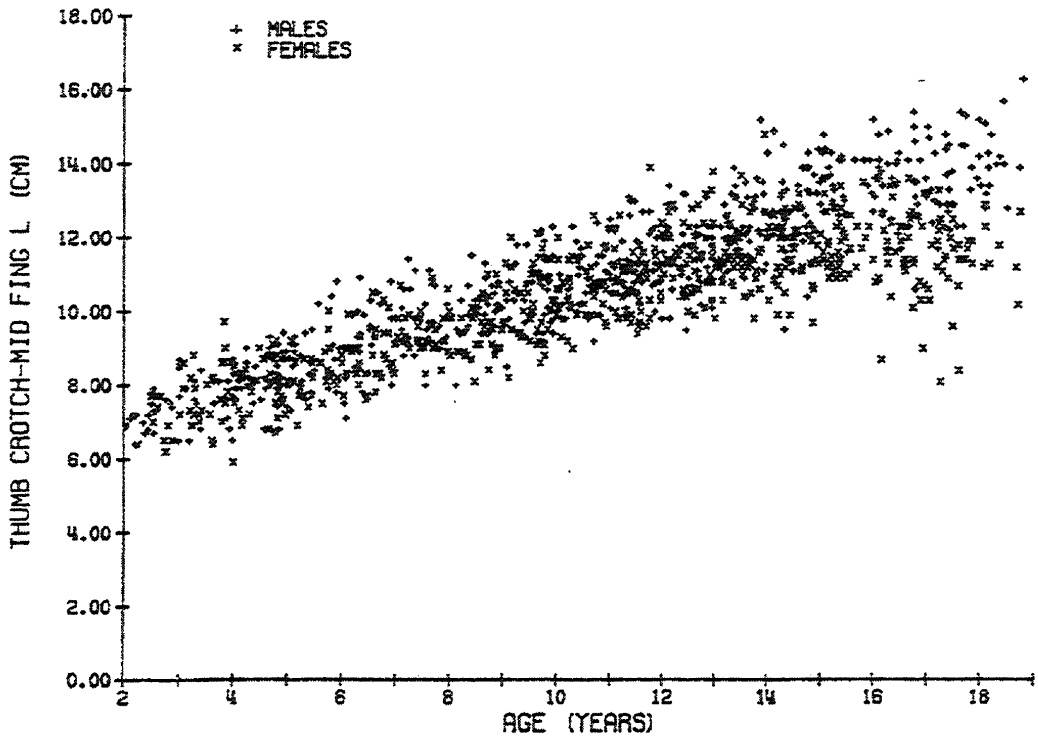
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	42.6	2.6	38.1	38.1	41.0	45.9	47.6
3.5-4.5	34	45.7	3.1	41.3	41.3	43.8	50.1	54.1
4.5-5.5	43	47.3	3.2	41.3	41.3	45.5	50.7	57.2
5.5-6.5	36	48.6	2.7	44.5	44.5	46.8	52.1	54.1
6.5-7.5	33	50.9	3.4	44.5	44.7	49.1	55.2	60.3
7.5-8.5	30	53.3	3.8	47.6	47.6	51.8	58.7	63.5
8.5-9.5	40	54.2	3.0	50.8	50.8	52.2	58.7	60.3
9.5-10.5	46	56.0	3.6	47.6	47.8	55.0	60.1	63.5
10.5-11.5	46	58.2	4.9	44.5	47.2	56.2	65.3	69.9
11.5-12.5	48	59.4	4.3	50.8	51.1	57.4	65.2	73.0
12.5-13.5	61	61.0	3.4	54.1	54.1	59.4	65.3	66.7
13.5-14.5	44	62.1	3.2	57.2	57.2	60.9	66.5	69.9
14.5-15.5	45	61.6	3.5	54.1	54.3	59.7	66.5	69.9
15.5-16.5	25	63.9	3.9	54.1	54.9	62.2	68.9	69.9
16.5-17.5	42	61.6	4.2	54.1	54.1	59.5	68.2	69.9
17.5-19.0	19	61.5	2.2	57.2	**	60.1	**	63.5

THUMB CROTCH-MIDDLE FINGER LENGTH

Subject extends right hand and fingers with palm up, thumb away (abducted) from hand. With an automated sliding caliper, measure the distance from the crotch of the thumb to the tip of middle finger parallel to the fingers. A constant correction factor for the caliper blade offset is added to the measurement.



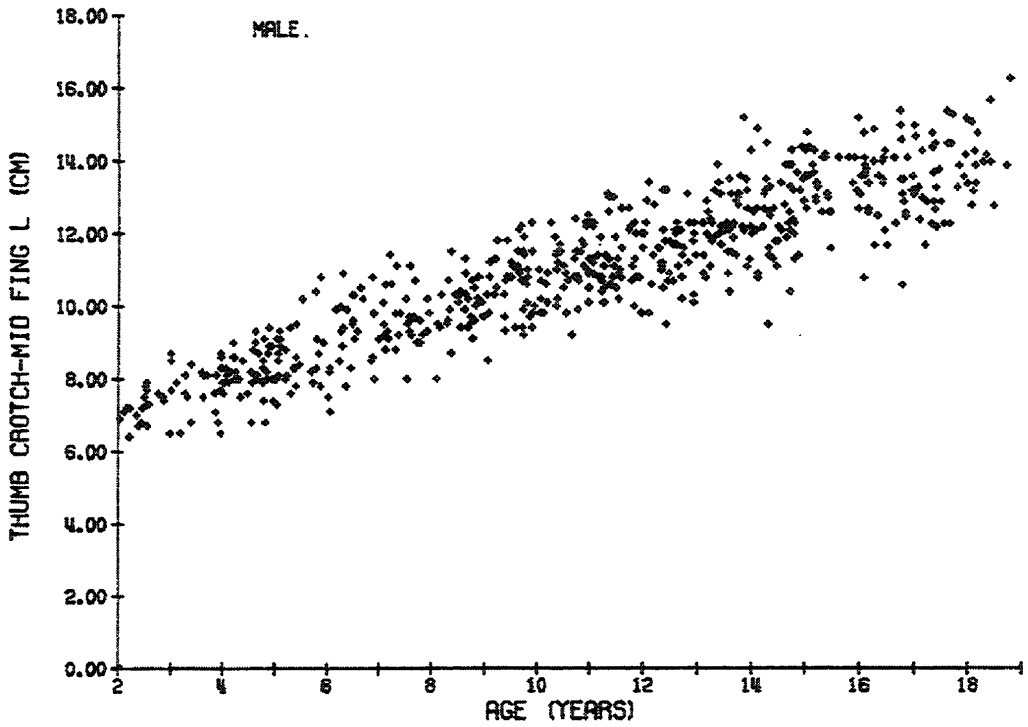


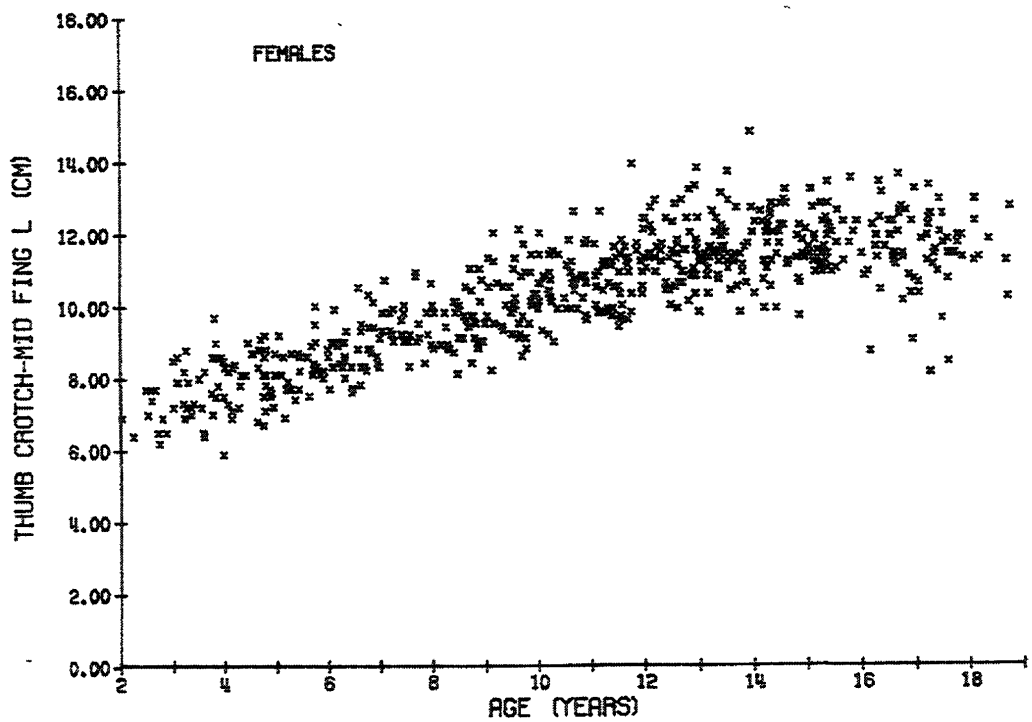


THUMB CROTCH-MIDDLE FINGER LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	54	7.4	0.6	6.2	6.4	7.2	8.5	8.8
3.5-4.5	62	7.9	0.7	5.9	6.5	8.0	8.8	9.7
4.5-5.5	83	8.2	0.7	6.7	6.8	8.1	9.2	9.5
5.5-6.5	59	8.7	0.8	7.1	7.5	8.5	10.2	10.9
6.5-7.5	62	9.4	0.8	7.8	8.2	9.3	10.7	11.4
7.5-8.5	60	9.5	0.8	8.0	8.1	9.4	10.8	11.5
8.5-9.5	79	10.0	0.8	8.2	8.8	9.9	11.3	12.0
9.5-10.5	92	10.6	0.9	8.6	9.1	10.5	12.0	12.3
10.5-11.5	98	11.0	0.8	9.2	9.7	10.8	12.5	13.1
11.5-12.5	94	11.3	1.0	9.4	9.7	11.2	12.9	13.9
12.5-13.5	107	11.7	0.8	9.8	10.2	11.6	13.1	13.9
13.5-14.5	97	12.0	1.1	9.5	10.2	12.0	13.8	15.2
14.5-15.5	95	12.5	1.1	9.7	10.7	12.3	14.2	14.8
15.5-16.5	55	12.7	1.3	8.7	10.5	12.6	14.4	15.2
16.5-17.5	80	12.4	1.4	8.1	10.1	12.4	14.7	15.4
17.5-19.0	46	13.0	1.6	8.4	10.3	12.9	15.4	15.3

(50)


MALE.
THUMB CROTCH-MID FING L (CM)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
THUMB CROTCH-MID FING L (CM)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

THUMB CROTCH-MIDDLE FINGER LENGTH (cm)
(Males)

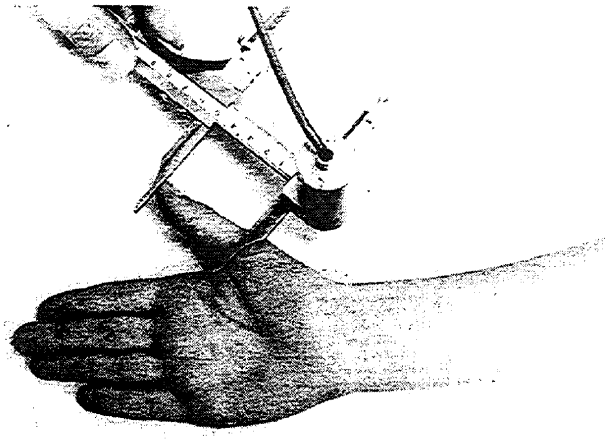
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	7.4	0.6	6.4	6.4	7.3	8.4	8.7
3.5-4.5	32	8.0	0.5	6.5	6.7	8.0	8.6	9.0
4.5-5.5	46	8.4	0.7	6.8	6.9	8.2	9.3	9.5
5.5-6.5	24	8.9	1.1	7.1	7.2	8.7	10.7	10.9
6.5-7.5	29	9.7	0.8	8.0	8.2	9.4	11.0	11.4
7.5-8.5	30	9.6	0.8	8.0	8.0	9.5	10.9	11.5
8.5-9.5	39	10.3	0.7	8.5	9.1	10.2	11.3	11.8
9.5-10.5	46	10.8	0.8	9.2	9.3	10.9	12.2	12.3
10.5-11.5	52	11.2	0.9	9.2	9.9	11.0	12.7	13.1
11.5-12.5	46	11.4	1.0	9.5	9.7	11.2	13.0	13.4
12.5-13.5	46	11.9	0.8	10.1	10.2	11.9	13.2	13.9
13.5-14.5	53	12.3	1.1	9.5	10.2	12.2	14.4	15.2
14.5-15.5	50	13.0	1.0	10.4	11.3	13.1	14.3	14.8
15.5-16.5	31	13.5	0.9	10.8	11.3	13.5	14.8	15.2
16.5-17.5	38	13.3	1.0	10.6	11.1	13.2	14.9	15.4
17.5-19.0	27	14.0	1.0	12.3	12.3	13.9	15.6	16.3

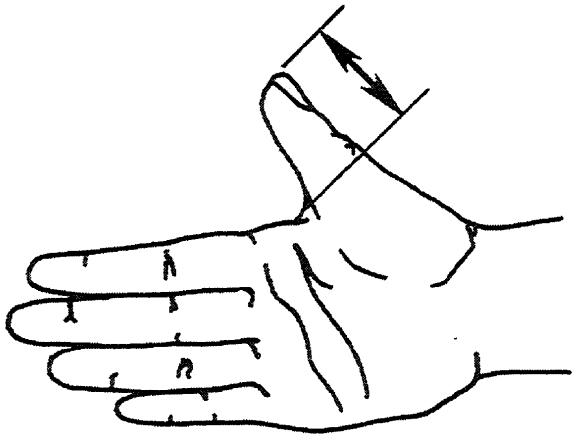
THUMB CROTCH-MIDDLE FINGER LENGTH (cm)
(Females)

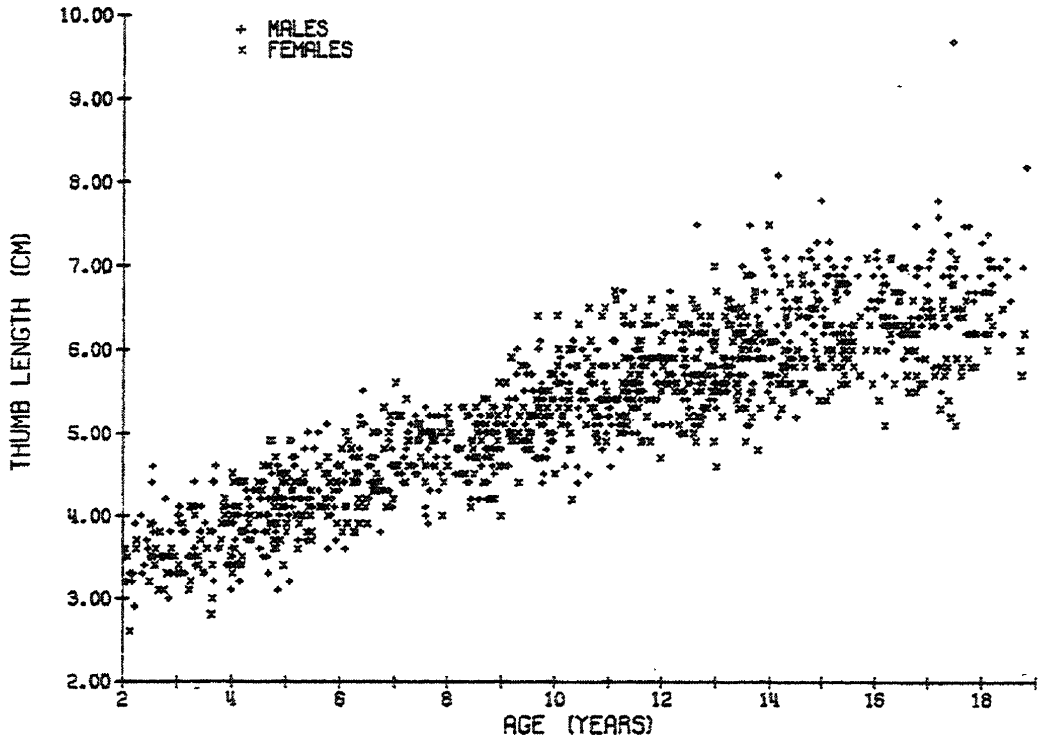
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	24	7.4	0.7	6.2	6.2	7.2	8.6	8.8
3.5-4.5	30	7.9	0.9	5.9	6.1	8.0	8.9	9.7
4.5-5.5	37	8.1	0.7	6.7	6.8	8.0	9.1	9.2
5.5-6.5	35	8.6	0.6	7.5	7.6	8.4	9.6	10.0
6.5-7.5	33	9.2	0.7	7.8	8.1	9.2	10.4	10.7
7.5-8.5	30	9.4	0.7	8.1	8.2	9.1	10.7	10.9
8.5-9.5	40	9.8	0.8	8.2	8.4	9.6	11.2	12.0
9.5-10.5	46	10.3	0.9	8.6	8.9	10.2	11.6	12.1
10.5-11.5	46	10.7	0.7	9.6	9.7	10.6	11.8	12.6
11.5-12.5	48	11.2	0.9	9.4	9.5	11.2	12.6	13.9
12.5-13.5	61	11.5	0.8	9.8	10.1	11.4	13.1	13.8
13.5-14.5	44	11.6	1.0	9.8	9.9	11.4	12.9	14.8
14.5-15.5	45	11.8	0.8	9.7	10.6	11.6	13.0	13.4
15.5-16.5	24	11.7	1.0	8.7	9.0	11.7	13.3	13.5
16.5-17.5	42	11.6	1.1	8.1	9.1	11.5	13.2	13.6
17.5-19.0	19	11.5	1.0	8.4	**	11.4	**	12.9

THUMB LENGTH

Subject extends right hand and fingers with palm up, thumb away (abducted) from hand. With the pointed blades of an automated sliding caliper, measure the distance from the skin crease at the base of the thumb to the tip of the thumb parallel to the long axis of the thumb.



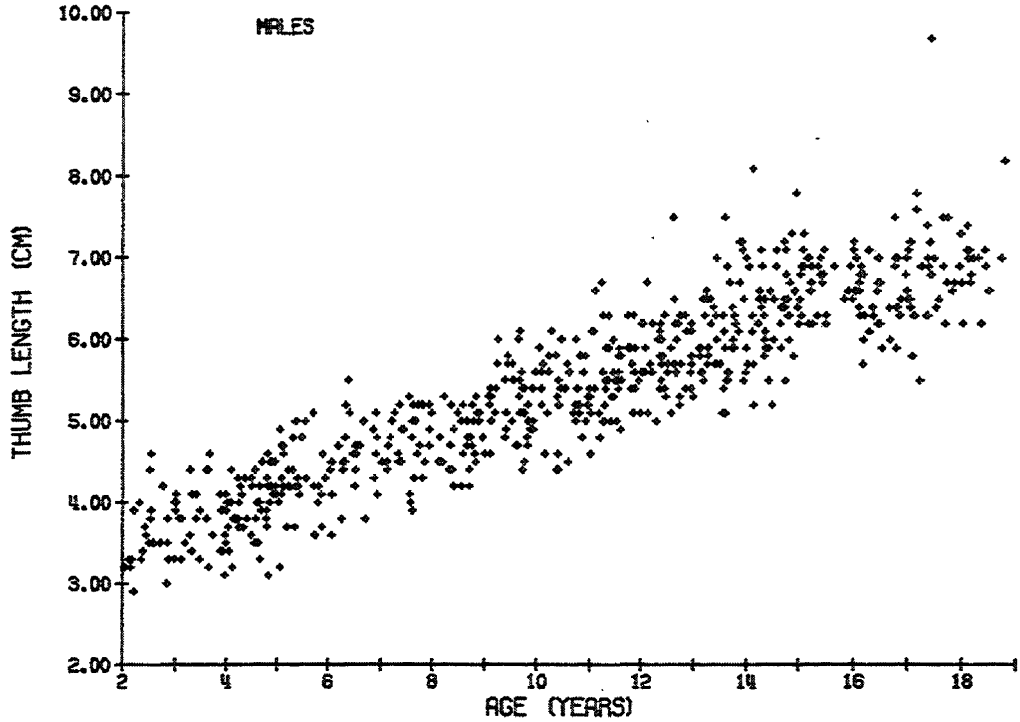


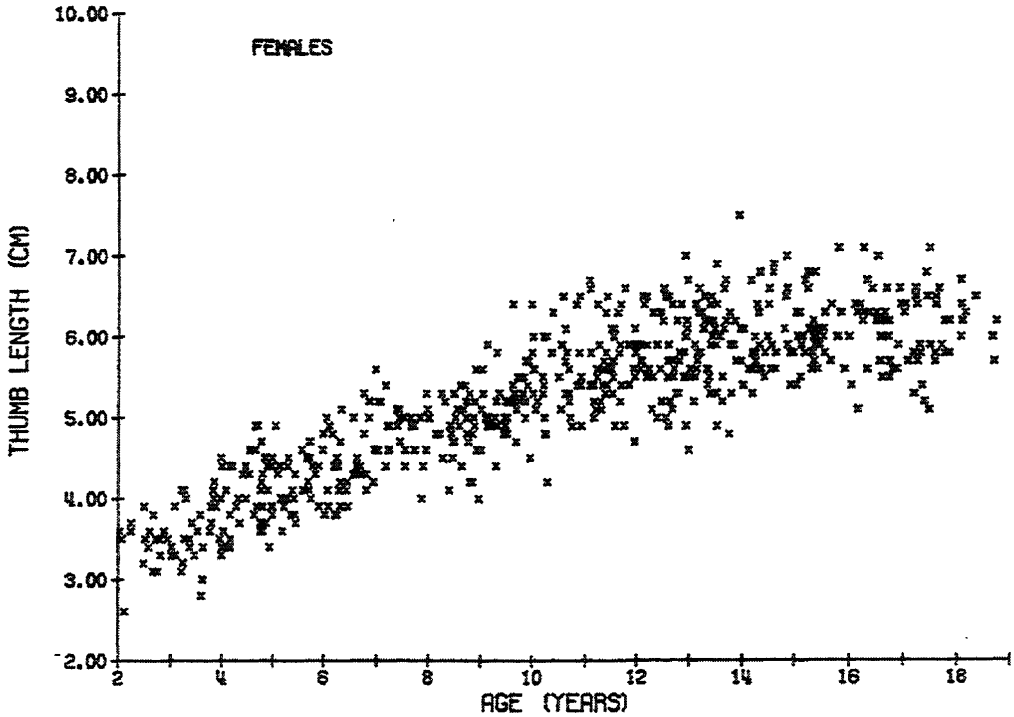


THUMB LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	75	3.6	0.4	2.6	3.0	3.5	4.1	4.6
3.5-4.5	71	3.8	0.4	2.8	3.1	3.8	4.4	4.6
4.5-5.5	94	4.1	0.4	3.1	3.4	4.1	4.8	5.0
5.5-6.5	62	4.4	0.4	3.6	3.7	4.3	5.1	5.5
6.5-7.5	63	4.7	0.4	3.8	4.1	4.6	5.2	5.6
7.5-8.5	60	4.8	0.4	3.9	4.0	4.8	5.2	5.3
8.5-9.5	79	5.0	0.4	4.0	4.1	4.9	5.7	6.0
9.5-10.5	93	5.3	0.5	4.2	4.5	5.3	6.0	6.4
10.5-11.5	98	5.5	0.5	4.5	4.8	5.4	6.5	6.7
11.5-12.5	94	5.7	0.4	4.7	4.9	5.7	6.4	6.7
12.5-13.5	107	5.9	0.5	4.6	5.1	5.8	6.6	7.5
13.5-14.5	98	6.1	0.6	4.8	5.1	6.0	7.1	8.1
14.5-15.5	95	6.4	0.5	5.4	5.5	6.3	7.1	7.8
15.5-16.5	56	6.4	0.5	5.1	5.5	6.4	7.1	7.2
16.5-17.5	80	6.4	0.7	5.1	5.4	6.3	7.4	9.7
17.5-19.0	46	6.6	0.5	5.7	5.7	6.5	7.4	8.2

(51)


MALES
THUMB LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
THUMB LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

THUMB LENGTH (cm)
(Males)

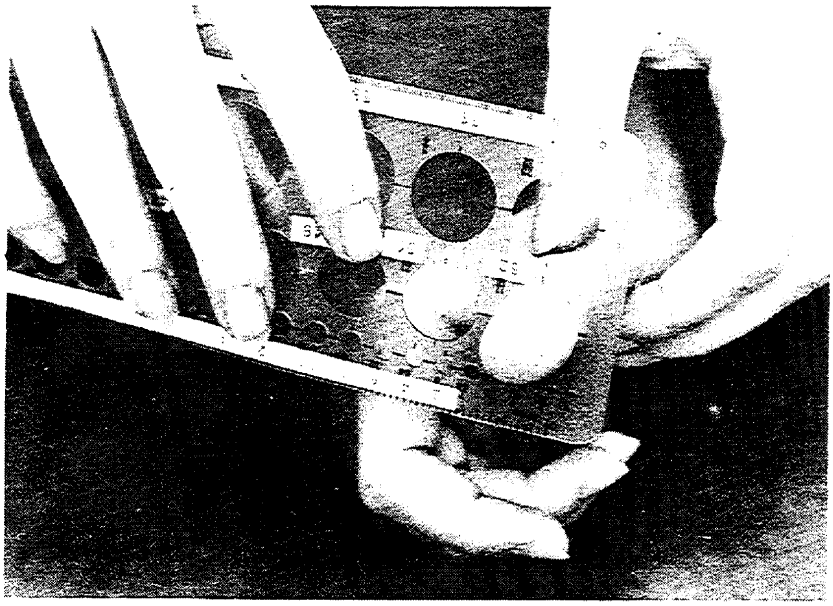
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	43	3.7	0.4	2.9	3.0	3.6	4.3	4.6
3.5-4.5	37	3.9	0.4	3.1	3.1	3.8	4.4	4.6
4.5-5.5	50	4.2	0.4	3.1	3.2	4.1	4.8	5.0
5.5-6.5	26	4.4	0.5	3.6	3.6	4.3	5.2	5.5
6.5-7.5	30	4.7	0.3	3.8	3.9	4.6	5.1	5.2
7.5-8.5	30	4.7	0.4	3.9	3.9	4.7	5.2	5.3
8.5-9.5	39	5.0	0.4	4.2	4.2	5.0	5.7	6.0
9.5-10.5	47	5.3	0.5	4.4	4.4	5.2	6.0	6.1
10.5-11.5	52	5.5	0.5	4.5	4.7	5.3	6.2	6.7
11.5-12.5	46	5.7	0.4	4.9	5.0	5.6	6.3	6.7
12.5-13.5	46	6.0	0.5	5.1	5.2	5.8	6.6	7.5
13.5-14.5	54	6.2	0.6	5.1	5.1	6.1	7.2	8.1
14.5-15.5	50	6.6	0.4	5.5	5.8	6.5	7.2	7.8
15.5-16.5	31	6.6	0.4	5.7	5.9	6.6	7.1	7.2
16.5-17.5	38	6.8	0.7	5.5	5.8	6.7	7.6	9.7
17.5-19.0	27	6.9	0.4	6.2	6.2	6.8	7.5	8.2

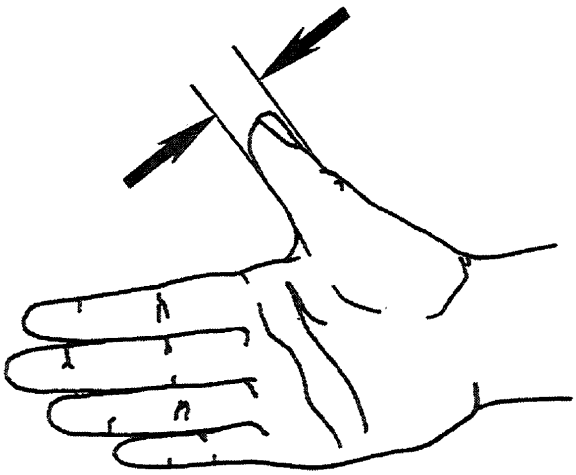
THUMB LENGTH (cm)
(Females)

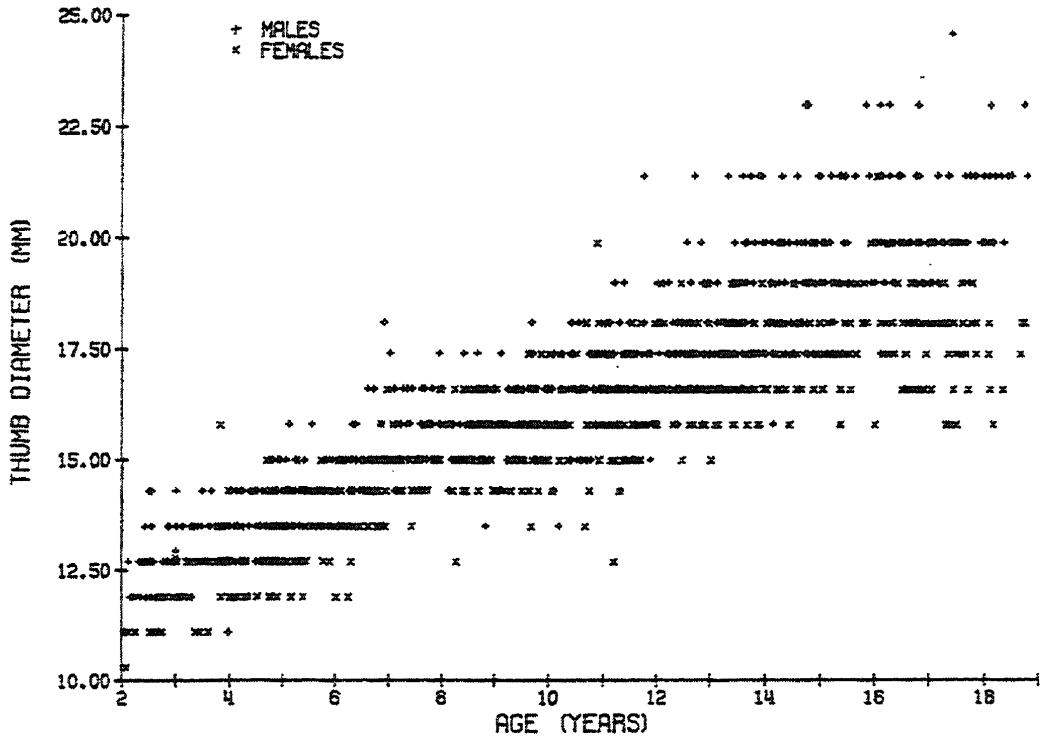
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	3.5	0.3	2.6	2.7	3.4	4.0	4.1
3.5-4.5	34	3.8	0.4	2.8	2.9	3.8	4.4	4.5
4.5-5.5	44	4.1	0.4	3.4	3.5	4.0	4.8	4.9
5.5-6.5	36	4.3	0.4	3.8	3.8	4.3	4.9	5.1
6.5-7.5	33	4.7	0.4	4.1	4.1	4.6	5.3	5.6
7.5-8.5	30	4.8	0.3	4.0	4.0	4.8	5.2	5.3
8.5-9.5	40	5.0	0.4	4.0	4.1	4.9	5.6	5.9
9.5-10.5	46	5.4	0.5	4.2	4.6	5.3	6.2	6.4
10.5-11.5	46	5.6	0.5	4.9	4.9	5.5	6.5	6.7
11.5-12.5	48	5.7	0.5	4.7	4.8	5.7	6.4	6.6
12.5-13.5	61	5.9	0.5	4.6	4.9	5.8	6.5	7.0
13.5-14.5	44	5.9	0.5	4.8	5.0	5.8	6.8	7.5
14.5-15.5	45	6.1	0.4	5.4	5.4	5.9	6.8	7.0
15.5-16.5	25	6.2	0.5	5.1	5.2	6.2	6.8	7.1
16.5-17.5	42	6.0	0.5	5.1	5.2	6.0	6.8	7.1
17.5-19.0	19	6.2	0.3	5.7	**	6.1	**	6.7

THUMB DIAMETER

Subject extends thumb of right hand. With a finger measurement board, record the greatest diameter through which the first joint of the thumb cannot pass. The measurement is typed into the computer.



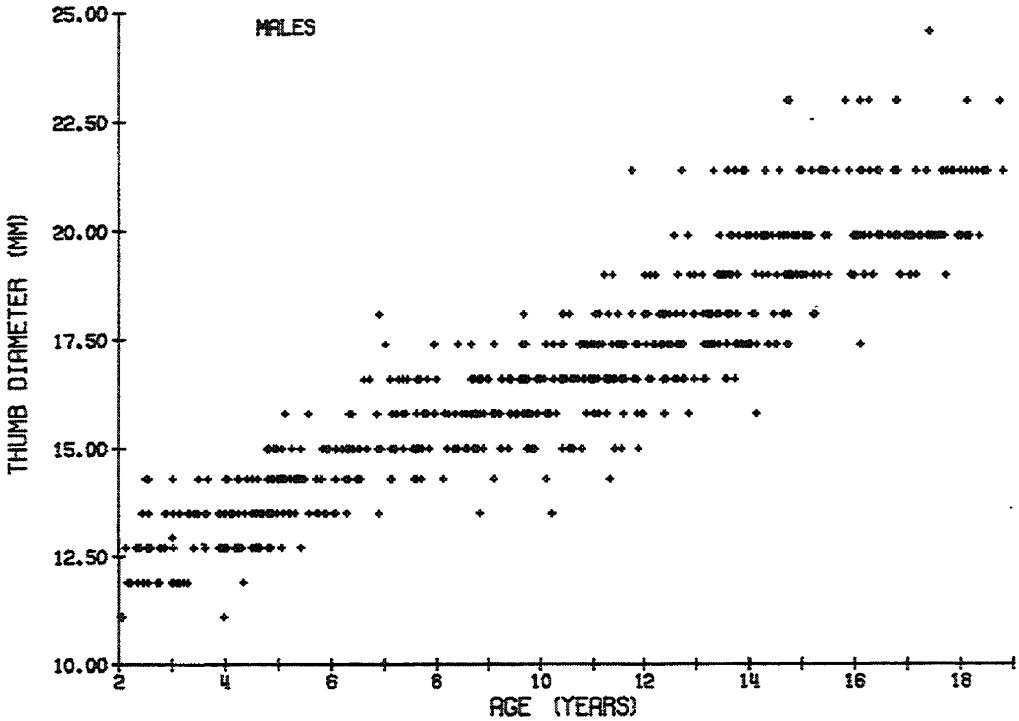


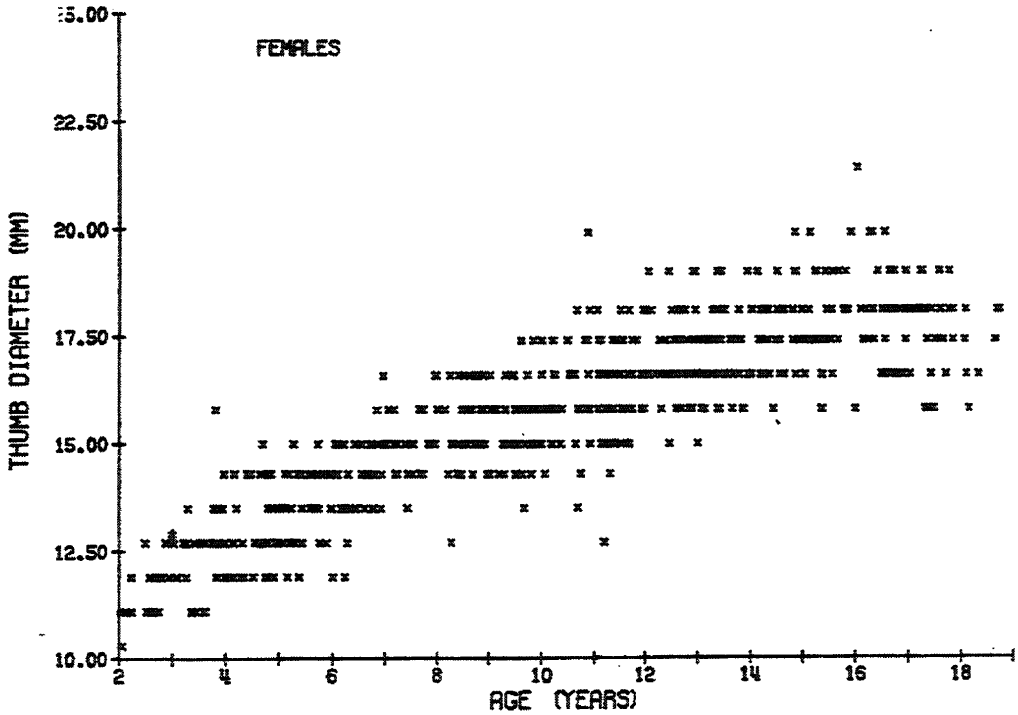


THUMB DIAMETER (mm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	12.4	0.9	10.3	10.5	11.9	13.5	14.3
3.5-4.5	70	13.1	0.9	11.1	11.1	12.6	14.1	15.8
4.5-5.5	93	13.6	0.9	11.9	11.9	13.2	14.7	15.8
5.5-6.5	62	14.1	0.8	11.9	12.2	13.7	15.0	15.8
6.5-7.5	62	15.0	1.0	13.5	13.5	14.6	16.5	18.1
7.5-8.5	59	15.4	0.9	12.7	13.0	14.9	16.5	17.4
8.5-9.5	79	15.7	0.8	13.5	13.8	15.3	16.5	17.4
9.5-10.5	90	15.9	1.0	13.5	13.9	15.5	17.3	18.1
10.5-11.5	99	16.5	1.2	12.7	14.3	16.2	17.9	19.9
11.5-12.5	91	17.0	1.1	15.0	15.0	16.5	18.4	21.4
12.5-13.5	106	17.5	1.1	15.0	15.4	17.0	19.0	21.4
13.5-14.5	98	18.1	1.5	15.8	15.8	17.4	20.3	21.4
14.5-15.5	95	18.7	1.5	15.8	16.1	18.1	20.9	23.0
15.5-16.5	55	19.4	1.7	15.8	16.5	19.0	21.5	23.0
16.5-17.5	80	18.9	1.8	15.8	15.8	18.5	21.2	24.6
17.5-19.0	46	19.5	1.8	15.8	16.1	19.2	21.4	23.0

(52)


MALES
THUMB DIAMETER (MM)
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
THUMB DIAMETER (MM)
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

THUMB DIAMETER (mm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	12.7	0.9	11.1	11.1	12.2	13.9	14.3
3.5-4.5	36	13.3	0.7	11.1	11.7	12.9	14.1	14.3
4.5-5.5	50	13.9	0.8	12.7	12.7	13.6	14.8	15.8
5.5-6.5	26	14.4	0.8	13.5	13.5	14.1	15.5	15.8
6.5-7.5	30	15.5	1.0	13.5	13.6	14.9	17.0	18.1
7.5-8.5	29	15.5	0.9	14.3	14.3	15.0	16.8	17.4
8.5-9.5	39	15.8	0.8	13.5	14.3	15.4	16.6	17.4
9.5-10.5	44	16.2	1.0	13.5	14.3	15.7	17.6	18.1
10.5-11.5	52	16.8	1.0	14.3	14.6	16.4	18.0	19.0
11.5-12.5	44	17.2	1.2	15.0	15.0	16.8	18.6	21.4
12.5-13.5	45	18.0	1.2	15.8	15.9	17.5	19.8	21.4
13.5-14.5	54	18.8	1.5	15.8	16.3	18.4	20.8	21.4
14.5-15.5	50	19.7	1.3	17.4	17.4	19.1	21.3	23.0
15.5-16.5	31	20.4	1.3	17.4	17.5	19.6	22.2	23.0
16.5-17.5	38	20.4	1.2	19.0	19.0	19.6	22.3	24.6
17.5-19.0	27	20.8	1.0	19.0	19.0	20.0	21.9	23.0

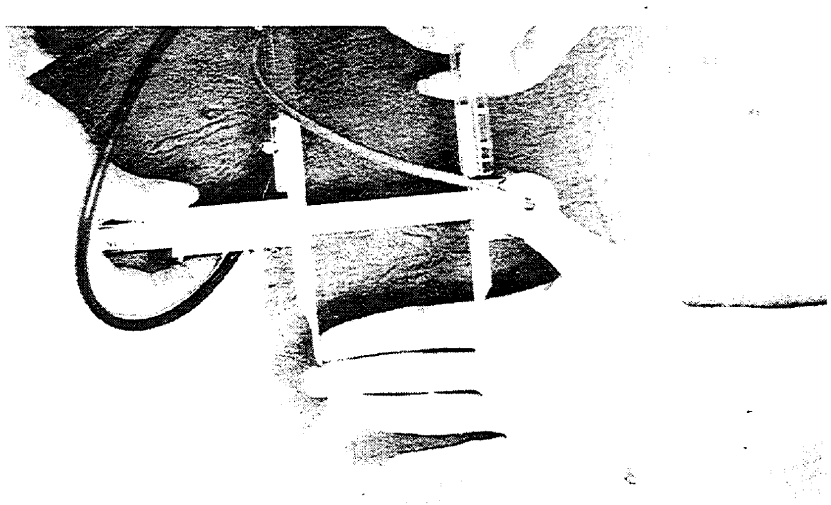
THUMB DIAMETER (mm)
(Females)

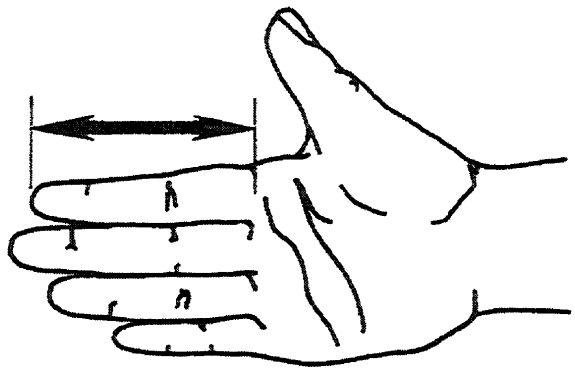
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	11.9	0.8	10.3	10.4	11.5	12.7	13.5
3.5-4.5	34	12.9	1.0	11.1	11.1	12.3	14.2	15.8
4.5-5.5	43	13.2	0.9	11.9	11.9	12.6	14.3	15.0
5.5-6.5	36	13.8	0.8	11.9	11.9	13.5	14.7	15.0
6.5-7.5	32	14.6	0.8	13.5	13.5	14.2	15.6	16.6
7.5-8.5	30	15.2	0.9	12.7	12.8	14.8	16.4	16.6
8.5-9.5	40	15.5	0.8	14.3	14.3	15.1	16.4	16.6
9.5-10.5	46	15.7	0.9	13.5	13.8	15.3	17.1	17.4
10.5-11.5	47	16.2	1.3	12.7	13.6	15.9	17.8	19.9
11.5-12.5	47	16.8	1.0	15.0	15.0	16.3	18.1	19.0
12.5-13.5	61	17.1	0.9	15.0	15.2	16.7	18.3	19.0
13.5-14.5	44	17.2	0.8	15.8	15.8	16.9	18.1	19.0
14.5-15.5	45	17.6	0.9	15.8	15.8	17.1	19.0	19.9
15.5-16.5	24	18.2	1.3	15.8	15.9	17.7	19.8	21.4
16.5-17.5	42	17.6	1.0	15.8	15.8	17.5	18.8	19.9
17.5-19.0	19	17.6	0.8	15.8	**	17.3	**	19.0

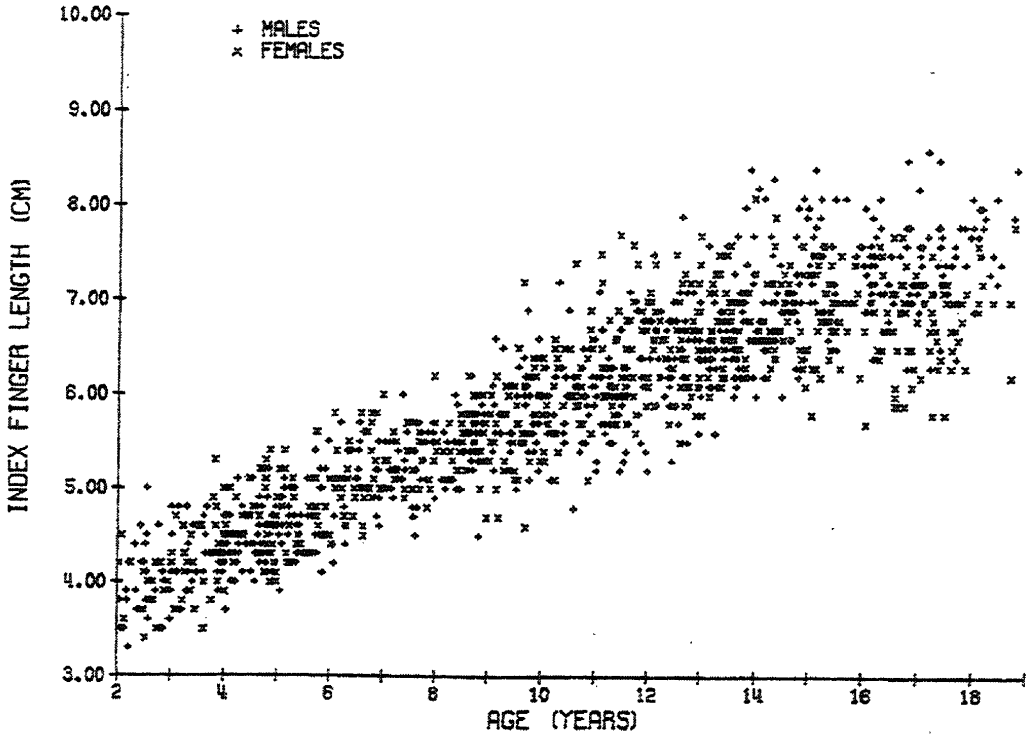
(53)

INDEX FINGER LENGTH

Subject extends right hand and fingers with palm up. With the pointed blades of an automated sliding caliper, measure the distance from the skin crease at the base of the index finger to the tip of the index finger parallel to the long axis of the index finger.



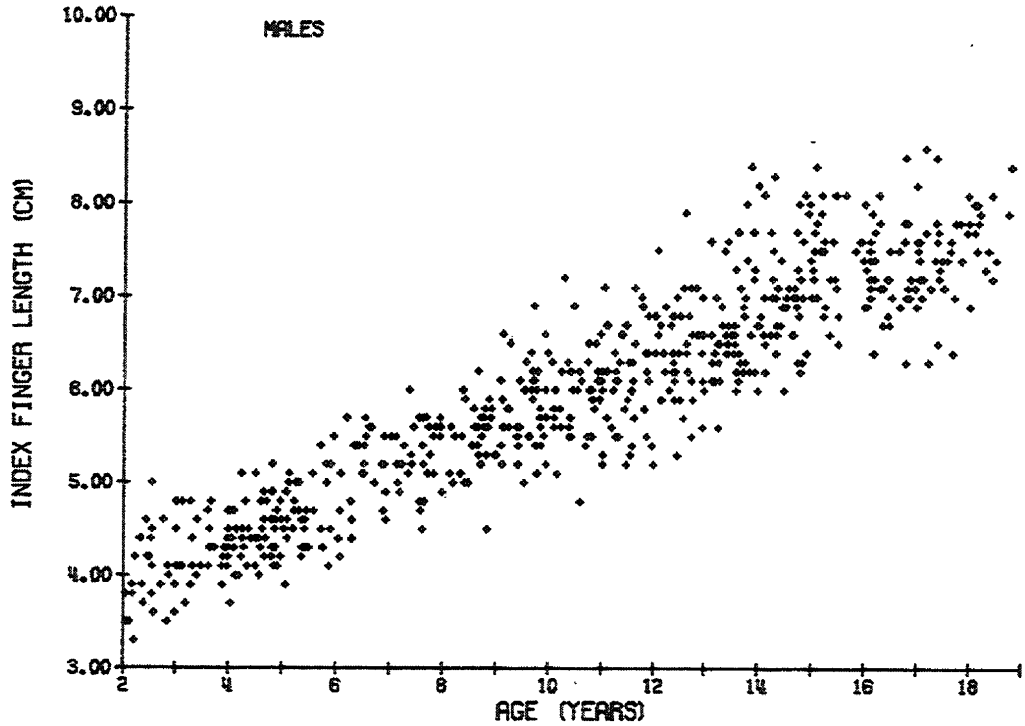


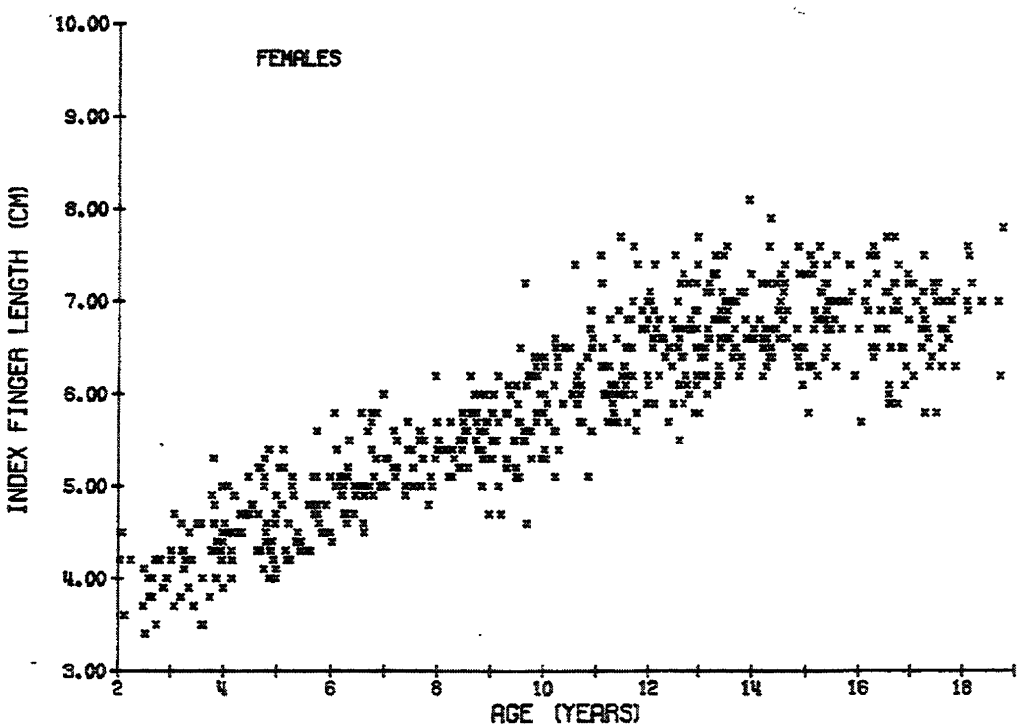


INDEX FINGER LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	4.1	0.4	3.3	3.4	4.0	4.7	5.0
3.5-4.5	71	4.4	0.4	3.5	3.8	4.3	5.0	5.3
4.5-5.5	94	4.6	0.4	3.9	4.0	4.5	5.2	5.4
5.5-6.5	62	4.9	0.4	4.1	4.2	4.9	5.5	5.8
6.5-7.5	63	5.2	0.3	4.5	4.6	5.2	5.8	6.0
7.5-8.5	60	5.3	0.3	4.5	4.7	5.3	5.8	6.2
8.5-9.5	79	5.6	0.4	4.5	4.8	5.6	6.1	6.6
9.5-10.5	93	5.9	0.5	4.6	5.1	5.8	6.6	7.2
10.5-11.5	98	6.1	0.5	4.8	5.2	6.0	6.9	7.7
11.5-12.5	94	6.4	0.5	5.2	5.4	6.4	7.1	7.6
12.5-13.5	107	6.6	0.5	5.5	5.7	6.5	7.5	7.9
13.5-14.5	98	6.8	0.5	6.0	6.1	6.6	8.0	8.4
14.5-15.5	95	7.1	0.5	5.8	6.2	7.0	8.0	8.4
15.5-16.5	56	7.1	0.5	5.7	6.3	7.1	7.9	8.1
16.5-17.5	80	7.0	0.6	5.8	5.9	7.0	7.8	8.6
17.5-19.0	46	7.3	0.6	6.2	6.3	7.3	8.0	8.4

(53)


MALES
INDEX FINGER LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
INDEX FINGER LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

INDEX FINGER LENGTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	4.1	0.4	3.3	3.4	4.0	4.7	5.0
3.5-4.5	37	4.4	0.3	3.7	3.9	4.3	4.8	5.1
4.5-5.5	50	4.6	0.3	3.9	4.0	4.5	5.0	5.2
5.5-6.5	26	4.9	0.5	4.1	4.1	5.0	5.5	5.7
6.5-7.5	30	5.3	0.3	4.6	4.6	5.2	5.6	6.0
7.5-8.5	30	5.3	0.4	4.5	4.6	5.3	5.8	6.0
8.5-9.5	39	5.6	0.4	4.5	4.7	5.5	6.2	6.6
9.5-10.5	47	5.9	0.5	5.0	5.1	5.8	6.7	7.2
10.5-11.5	52	6.0	0.5	4.8	5.1	6.0	6.7	7.1
11.5-12.5	46	6.3	0.5	5.2	5.3	6.3	7.0	7.5
12.5-13.5	46	6.5	0.5	5.5	5.6	6.5	7.5	7.9
13.5-14.5	54	6.9	0.6	6.0	6.0	6.7	8.1	8.4
14.5-15.5	50	7.2	0.5	6.2	6.3	7.1	8.0	8.4
15.5-16.5	31	7.3	0.4	6.4	6.5	7.2	8.0	8.1
16.5-17.5	38	7.4	0.5	6.3	6.3	7.3	8.4	8.6
17.5-19.0	27	7.6	0.4	6.4	6.6	7.6	8.1	8.4

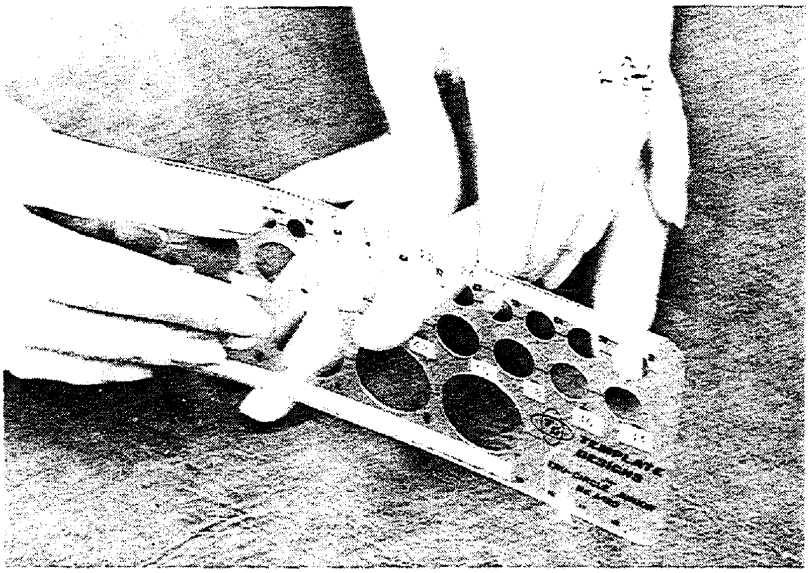
INDEX FINGER LENGTH (cm)
(Females)

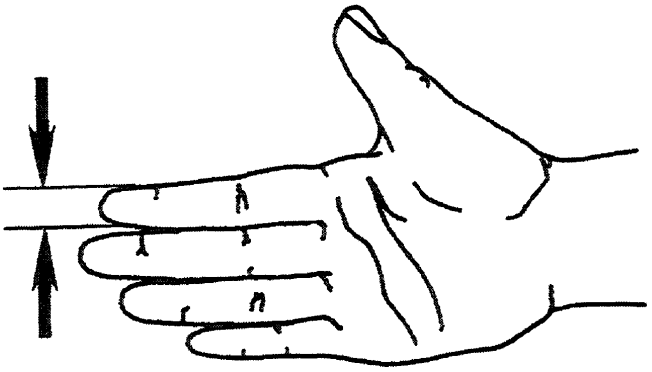
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	4.1	0.3	3.4	3.5	4.1	4.5	4.7
3.5-4.5	34	4.4	0.4	3.5	3.5	4.4	5.0	5.3
4.5-5.5	44	4.6	0.4	4.0	4.0	4.5	5.3	5.4
5.5-6.5	36	4.9	0.3	4.3	4.3	4.8	5.5	5.8
6.5-7.5	33	5.2	0.4	4.5	4.6	5.1	5.8	6.0
7.5-8.5	30	5.4	0.3	4.8	4.8	5.3	5.7	6.2
8.5-9.5	40	5.6	0.4	4.7	4.7	5.6	6.1	6.2
9.5-10.5	46	5.9	0.5	4.6	4.8	5.8	6.5	7.2
10.5-11.5	46	6.2	0.5	5.1	5.4	6.0	7.3	7.7
11.5-12.5	48	6.5	0.5	5.6	5.7	6.5	7.2	7.6
12.5-13.5	61	6.7	0.5	5.5	5.8	6.6	7.4	7.7
13.5-14.5	44	6.8	0.4	6.2	6.2	6.6	7.6	8.1
14.5-15.5	45	6.9	0.4	5.8	6.1	6.8	7.5	7.6
15.5-16.5	25	6.9	0.5	5.7	5.8	6.9	7.5	7.6
16.5-17.5	42	6.7	0.5	5.8	5.8	6.7	7.5	7.7
17.5-19.0	19	6.9	0.4	6.2	**	6.9	**	7.8

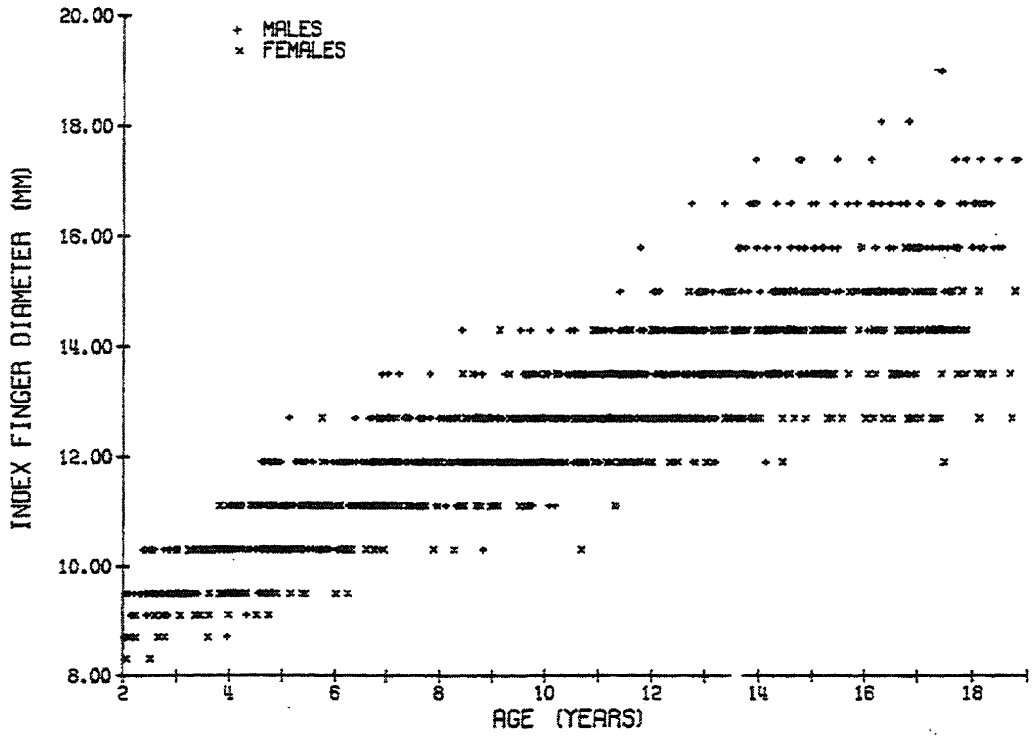
(54)

INDEX FINGER DIAMETER

Subject extends index finger of right hand. With a finger measurement board, record the greatest diameter through which the first joint of the index finger cannot pass. The measurement is typed into the computer.



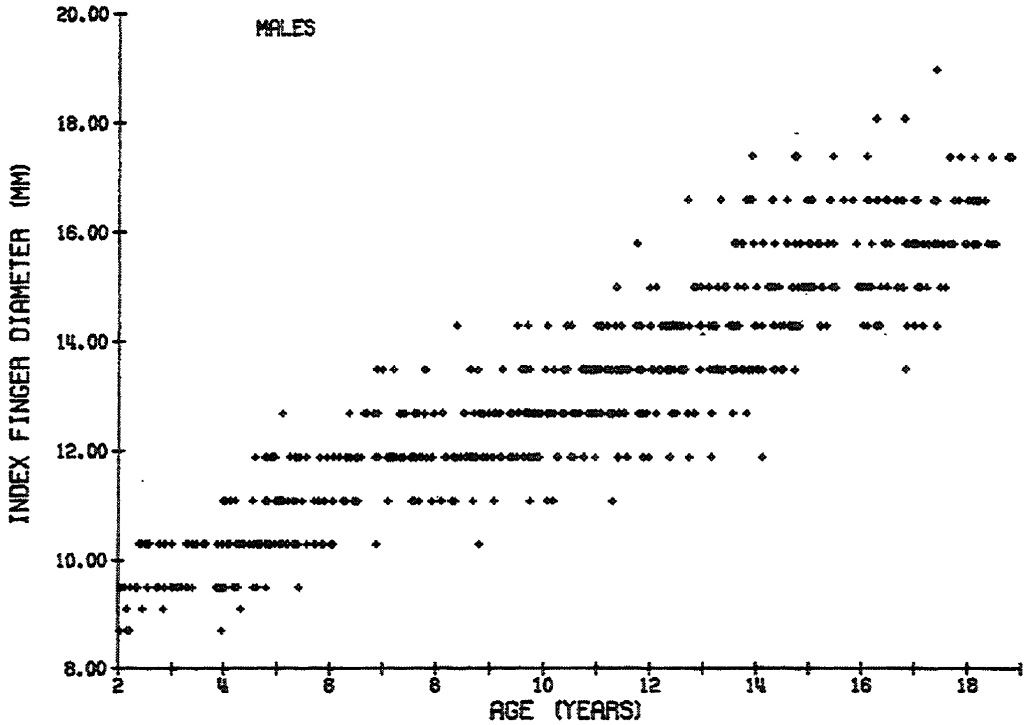


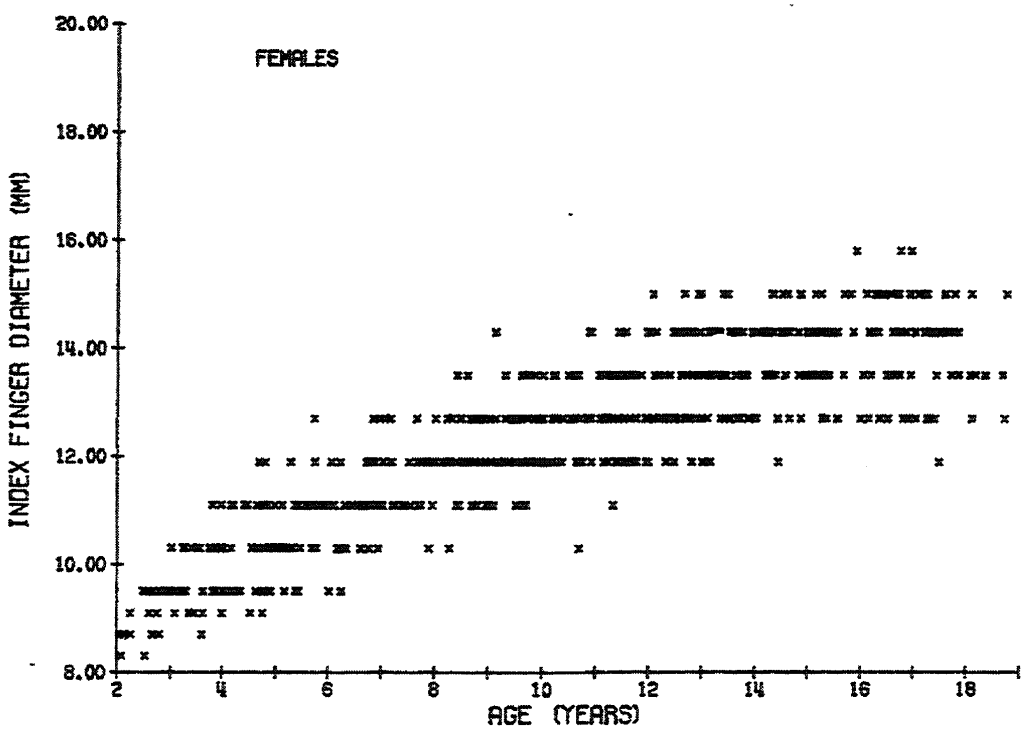


INDEX FINGER DIAMETER (mm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	76	9.6	0.6	8.3	8.4	9.3	10.2	10.3
3.5-4.5	70	10.1	0.6	8.7	8.9	9.7	10.9	11.1
4.5-5.5	93	10.6	0.8	9.1	9.2	10.1	11.7	12.7
5.5-6.5	61	11.0	0.7	9.5	9.5	10.6	11.8	12.7
6.5-7.5	62	11.7	0.8	10.3	10.3	11.3	12.7	13.5
7.5-8.5	60	11.9	0.8	10.3	10.3	11.5	12.7	14.3
8.5-9.5	79	12.2	0.7	10.3	10.6	11.8	13.1	14.3
9.5-10.5	92	12.6	0.8	11.1	11.1	12.2	13.5	14.3
10.5-11.5	99	13.0	0.8	10.3	11.2	12.6	14.0	15.0
11.5-12.5	94	13.2	0.9	11.9	11.9	12.8	14.3	15.8
12.5-13.5	106	13.8	0.9	11.9	11.9	13.3	14.8	16.6
13.5-14.5	98	14.1	1.1	11.9	12.1	13.7	15.8	17.4
14.5-15.5	94	14.6	1.1	12.7	12.7	14.2	16.3	17.4
15.5-16.5	56	15.0	1.2	12.7	12.7	14.6	16.7	18.1
16.5-17.5	80	14.8	1.4	11.9	12.1	14.5	16.5	19.0
17.5-19.0	46	15.4	1.4	12.7	12.7	15.2	17.1	17.4

(54)


MALES
INDEX FINGER DIAMETER (MM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
INDEX FINGER DIAMETER (MM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

INDEX FINGER DIAMETER (mm)
(Males)

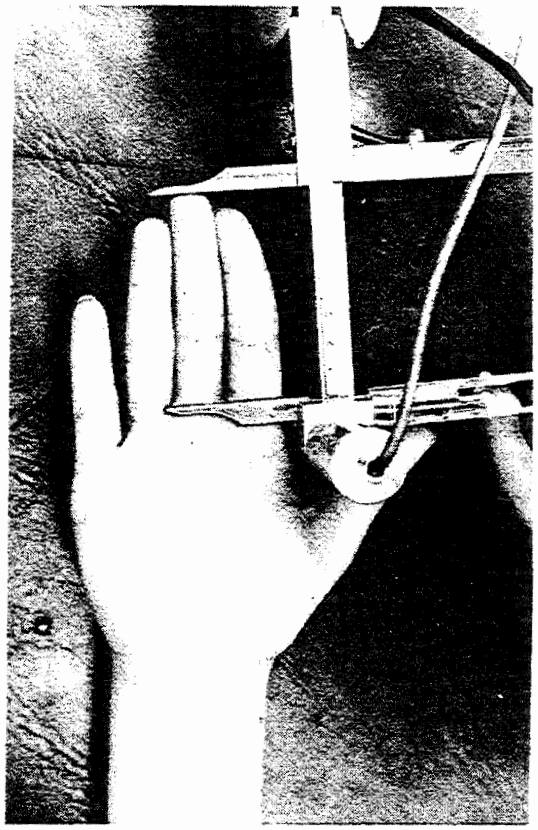
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	9.7	0.5	8.7	8.7	9.4	10.2	10.3
3.5-4.5	36	10.1	0.6	8.7	9.0	9.8	10.8	11.1
4.5-5.5	50	10.8	0.8	9.5	9.5	10.4	11.8	12.7
5.5-6.5	26	11.2	0.7	10.3	10.3	10.8	11.9	12.7
6.5-7.5	30	12.1	0.8	10.3	10.4	11.6	13.1	13.5
7.5-8.5	30	12.0	0.7	11.1	11.1	11.5	13.1	14.3
8.5-9.5	39	12.3	0.7	10.3	10.7	11.8	13.1	13.5
9.5-10.5	46	12.8	0.8	11.1	11.1	12.4	13.8	14.3
10.5-11.5	52	13.2	0.8	11.1	11.4	12.8	14.1	15.0
11.5-12.5	46	13.5	0.9	11.9	11.9	13.1	14.5	15.8
12.5-13.5	45	14.0	1.0	11.9	11.9	13.5	15.0	16.6
13.5-14.5	54	14.5	1.2	11.9	12.6	14.0	16.3	17.4
14.5-15.5	49	15.3	1.0	13.5	13.5	14.8	16.7	17.4
15.5-16.5	31	15.7	1.0	14.3	14.3	15.0	17.2	18.1
16.5-17.5	38	15.8	1.1	13.5	13.7	15.4	17.4	19.0
17.5-19.0	27	16.4	0.7	15.0	15.0	15.8	17.2	17.4

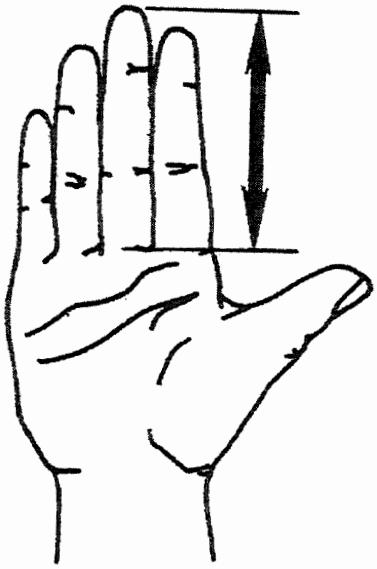
INDEX FINGER DIAMETER (mm)
(Females)

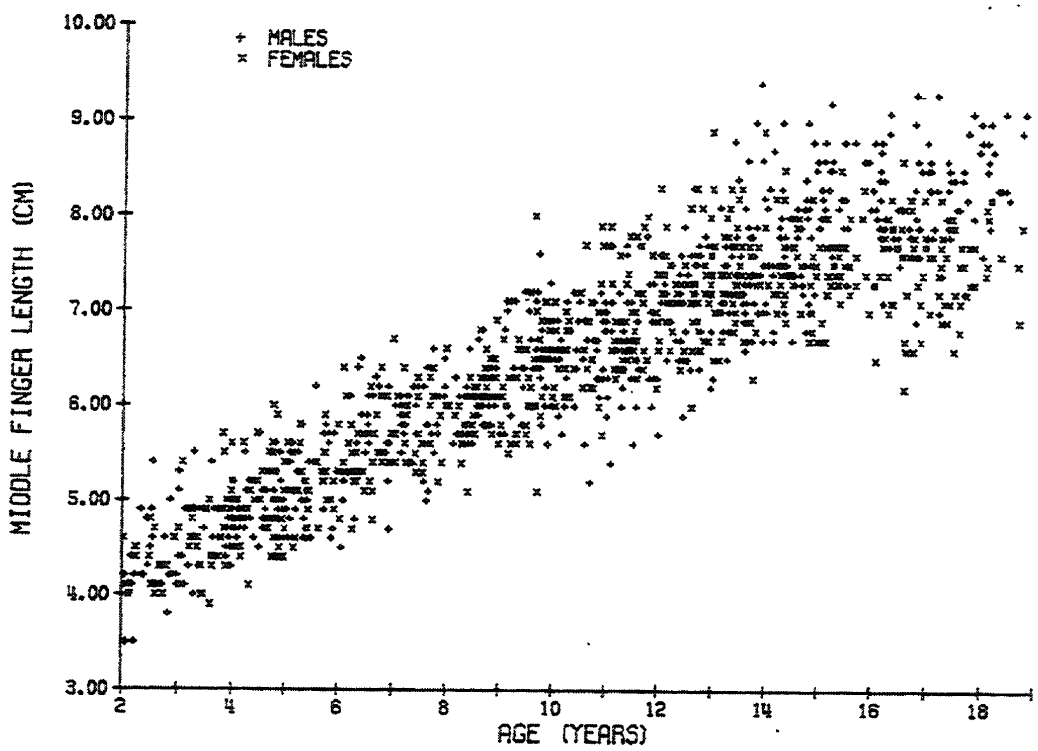
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	9.3	0.5	8.3	8.3	9.2	10.0	10.3
3.5-4.5	34	10.0	0.7	8.7	8.8	9.6	10.9	11.1
4.5-5.5	43	10.4	0.7	9.1	9.1	9.9	11.3	11.9
5.5-6.5	35	10.9	0.7	9.5	9.5	10.5	11.7	12.7
6.5-7.5	32	11.3	0.7	10.3	10.3	10.8	12.4	12.7
7.5-8.5	30	11.8	0.8	10.3	10.3	11.4	12.6	13.5
8.5-9.5	40	12.2	0.7	11.1	11.1	11.7	13.1	14.3
9.5-10.5	46	12.4	0.7	11.1	11.1	12.0	13.3	13.5
10.5-11.5	47	12.8	0.8	10.3	11.1	12.4	13.7	14.3
11.5-12.5	48	13.0	0.8	11.9	11.9	12.5	14.1	15.0
12.5-13.5	61	13.6	0.8	11.9	11.9	13.2	14.6	15.0
13.5-14.5	44	13.7	0.7	11.9	12.0	13.4	14.3	15.0
14.5-15.5	45	13.9	0.7	12.7	12.7	13.5	14.8	15.0
15.5-16.5	25	14.2	0.9	12.7	12.7	13.9	15.0	15.8
16.5-17.5	42	13.9	1.0	11.9	11.9	13.6	15.0	15.8
17.5-19.0	19	14.0	0.8	12.7	**	13.6	**	15.0

MIDDLE FINGER LENGTH

Subject extends right hand and fingers with palm up. With the pointed blades of an automated sliding caliper, measure the distance from the skin crease at the base of the middle finger to the tip of the middle finger parallel to the long axis of the middle finger.



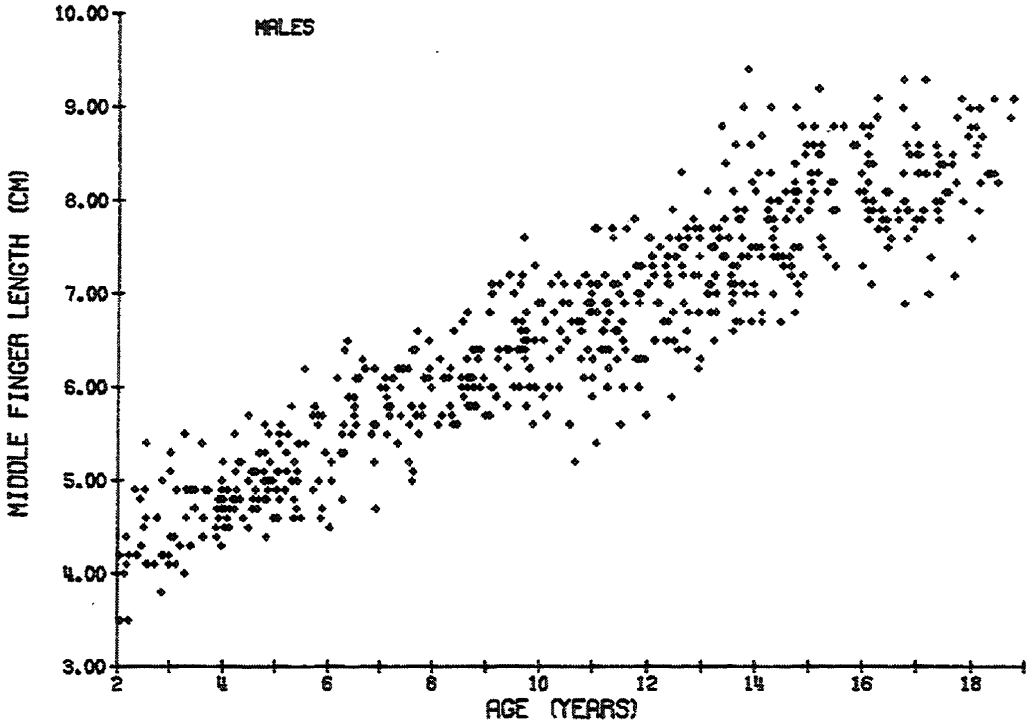


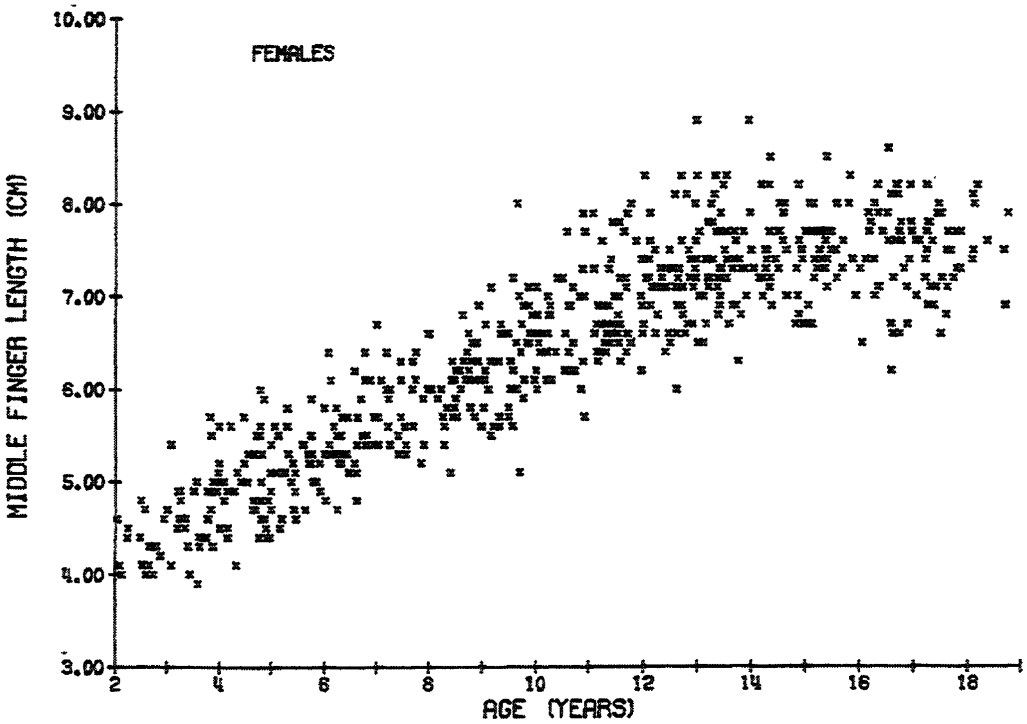


MIDDLE FINGER LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	4.4	0.4	3.5	3.8	4.3	5.2	5.5
3.5-4.5	71	4.8	0.4	3.9	4.2	4.8	5.5	5.7
4.5-5.5	94	5.1	0.4	4.4	4.4	5.0	5.6	6.0
5.5-6.5	62	5.4	0.4	4.5	4.6	5.3	6.2	6.5
6.5-7.5	63	5.8	0.4	4.7	5.1	5.8	6.3	6.7
7.5-8.5	60	5.9	0.4	5.0	5.1	5.8	6.5	6.6
8.5-9.5	79	6.2	0.4	5.5	5.6	6.1	7.0	7.2
9.5-10.5	93	6.5	0.5	5.1	5.8	6.4	7.2	8.0
10.5-11.5	98	6.7	0.5	5.2	5.9	6.6	7.7	7.9
11.5-12.5	94	7.0	0.5	5.6	6.0	7.0	7.8	8.3
12.5-13.5	107	7.3	0.5	6.0	6.4	7.2	8.2	8.9
13.5-14.5	98	7.5	0.6	6.3	6.6	7.4	8.6	9.4
14.5-15.5	95	7.8	0.6	6.7	6.7	7.7	8.6	9.2
15.5-16.5	56	7.9	0.6	6.5	6.9	7.8	8.8	9.1
16.5-17.5	80	7.8	0.6	6.2	6.6	7.8	8.6	9.3
17.5-19.0	46	8.1	0.6	6.8	7.0	8.1	9.0	9.1

(55)


MALES
MIDDLE FINGER LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MIDDLE FINGER LENGTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
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3.00
2
4
6
8
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12
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16
18
AGE (YEARS)

MIDDLE FINGER LENGTH (cm)
(Males)

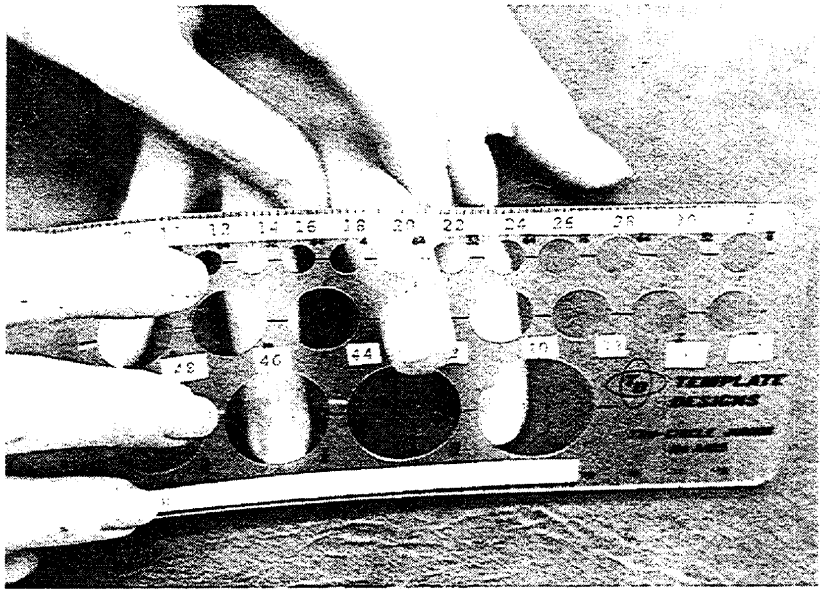
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	4.5	0.5	3.5	3.5	4.3	5.3	5.5
3.5-4.5	37	4.8	0.3	4.3	4.3	4.7	5.2	5.5
4.5-5.5	50	5.1	0.3	4.4	4.5	5.0	5.6	5.8
5.5-6.5	26	5.4	0.5	4.5	4.5	5.4	6.3	6.5
6.5-7.5	30	5.8	0.4	4.7	4.9	5.8	6.2	6.3
7.5-8.5	30	5.9	0.4	5.0	5.0	5.8	6.5	6.6
8.5-9.5	39	6.2	0.4	5.7	5.7	6.0	7.1	7.2
9.5-10.5	47	6.5	0.5	5.6	5.7	6.4	7.2	7.6
10.5-11.5	52	6.7	0.5	5.2	5.5	6.7	7.6	7.7
11.5-12.5	46	6.9	0.6	5.6	5.8	6.9	7.7	7.9
12.5-13.5	46	7.3	0.5	6.2	6.3	7.3	8.2	8.8
13.5-14.5	54	7.6	0.7	6.6	6.6	7.4	8.7	9.4
14.5-15.5	50	8.0	0.6	6.8	7.0	8.0	8.8	9.2
15.5-16.5	31	8.2	0.5	7.1	7.2	8.0	8.8	9.1
16.5-17.5	38	8.1	0.5	6.9	7.0	8.0	9.0	9.3
17.5-19.0	27	8.5	0.5	7.2	7.3	8.4	9.1	9.1

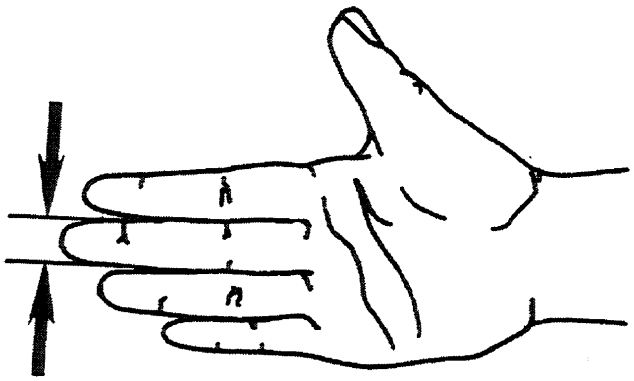
MIDDLE FINGER LENGTH (cm)
(Females)

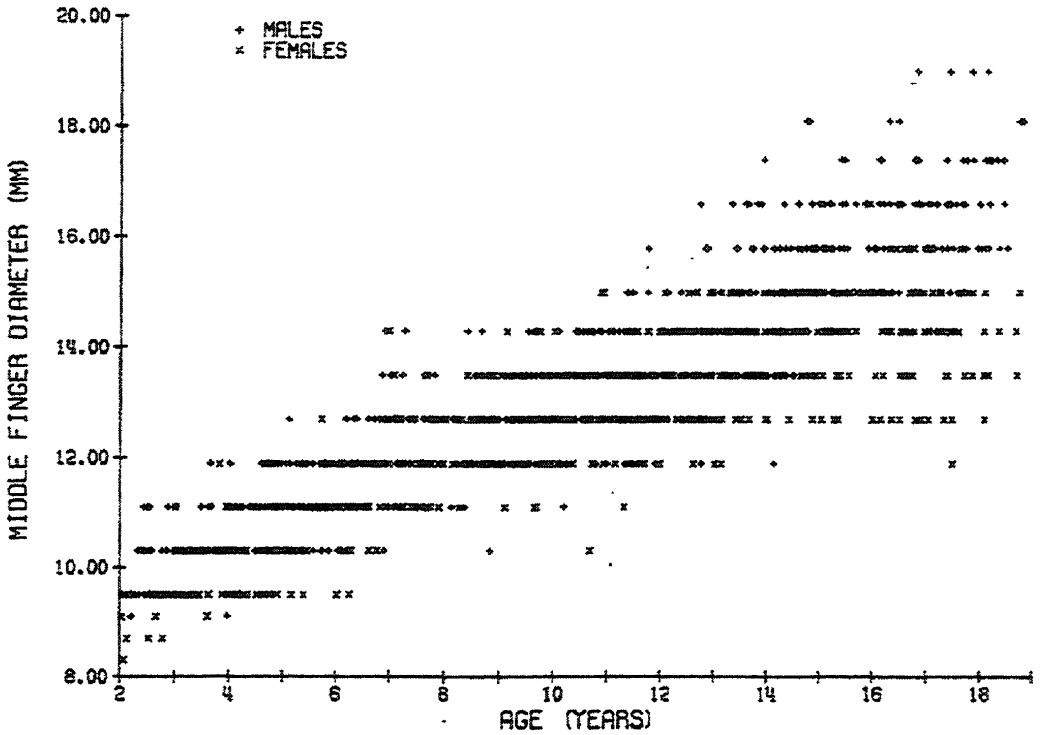
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	4.4	0.3	4.0	4.0	4.4	4.9	5.4
3.5-4.5	34	4.9	0.4	3.9	4.0	4.9	5.6	5.7
4.5-5.5	44	5.0	0.4	4.4	4.4	5.0	5.8	6.0
5.5-6.5	36	5.4	0.4	4.7	4.7	5.3	5.9	6.4
6.5-7.5	33	5.8	0.4	4.8	5.0	5.7	6.4	6.7
7.5-8.5	30	5.9	0.4	5.1	5.1	5.9	6.4	6.6
8.5-9.5	40	6.2	0.4	5.5	5.5	6.2	6.8	7.1
9.5-10.5	46	6.5	0.5	5.1	5.7	6.5	7.2	8.0
10.5-11.5	46	6.8	0.5	5.7	6.0	6.6	7.8	7.9
11.5-12.5	48	7.1	0.5	6.2	6.3	7.1	7.9	8.3
12.5-13.5	61	7.3	0.5	6.0	6.5	7.2	8.2	8.9
13.5-14.5	44	7.4	0.5	6.3	6.7	7.3	8.3	8.9
14.5-15.5	45	7.5	0.4	6.7	6.7	7.5	8.0	8.5
15.5-16.5	25	7.5	0.4	6.5	6.6	7.5	8.1	8.3
16.5-17.5	42	7.4	0.6	6.2	6.3	7.5	8.2	8.6
17.5-19.0	19	7.5	0.4	6.8	**	7.5	**	8.2

MIDDLE FINGER DIAMETER

Subject extends middle finger of right hand. With a finger measurement board, record the greatest diameter through which the first joint of the middle finger cannot pass. The measurement is typed into the computer.



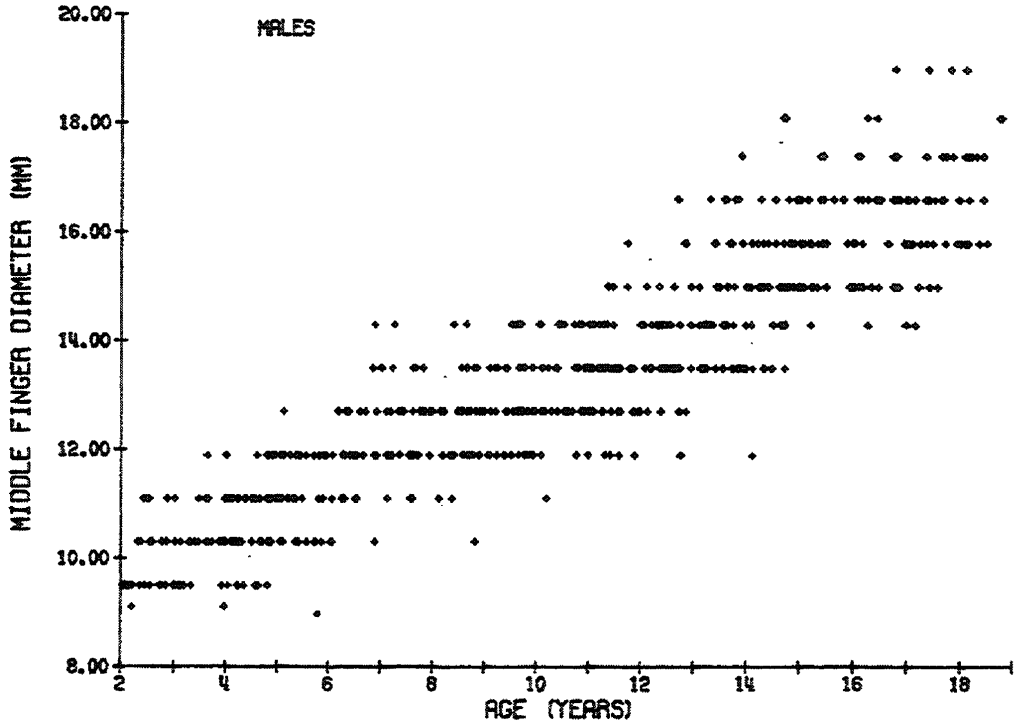


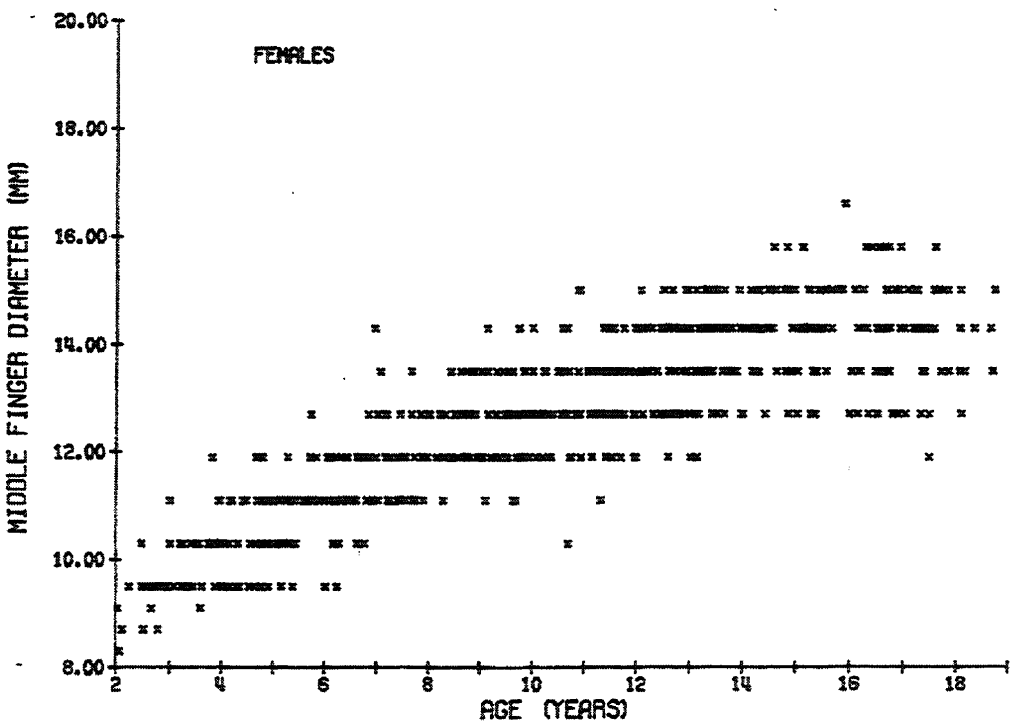


MIDDLE FINGER DIAMETER (mm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	77	9.9	0.6	8.3	8.7	9.4	10.8	11.1
3.5-4.5	71	10.4	0.7	9.1	9.1	10.0	11.2	11.9
4.5-5.5	93	10.8	0.8	9.5	9.5	10.4	11.7	12.7
5.5-6.5	62	11.3	0.7	9.5	9.6	10.9	12.1	12.7
6.5-7.5	63	12.0	0.9	10.3	10.3	11.5	13.5	14.3
7.5-8.5	60	12.2	0.7	11.1	11.1	11.8	13.2	14.3
8.5-9.5	79	12.6	0.7	10.3	11.2	12.2	13.4	14.3
9.5-10.5	92	12.9	0.8	11.1	11.2	12.4	14.0	14.3
10.5-11.5	99	13.2	0.9	10.3	11.4	12.9	14.3	15.0
11.5-12.5	94	13.5	0.8	11.9	11.9	13.1	14.4	15.8
12.5-13.5	106	14.0	0.9	11.9	12.0	13.5	15.1	16.6
13.5-14.5	98	14.4	1.1	11.9	12.3	13.9	16.1	17.4
14.5-15.5	95	15.0	1.1	12.7	12.7	14.5	16.5	18.1
15.5-16.5	56	15.3	1.3	12.7	12.7	14.8	17.2	18.1
16.5-17.5	80	15.1	1.4	11.9	12.2	14.7	17.0	19.0
17.5-19.0	46	15.8	1.5	12.7	12.9	15.4	18.0	19.0

(56)


MALES
MIDDLE FINGER DIAMETER (MM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MIDDLE FINGER DIAMETER (MM)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MIDDLE FINGER DIAMETER (mm)
(Males)

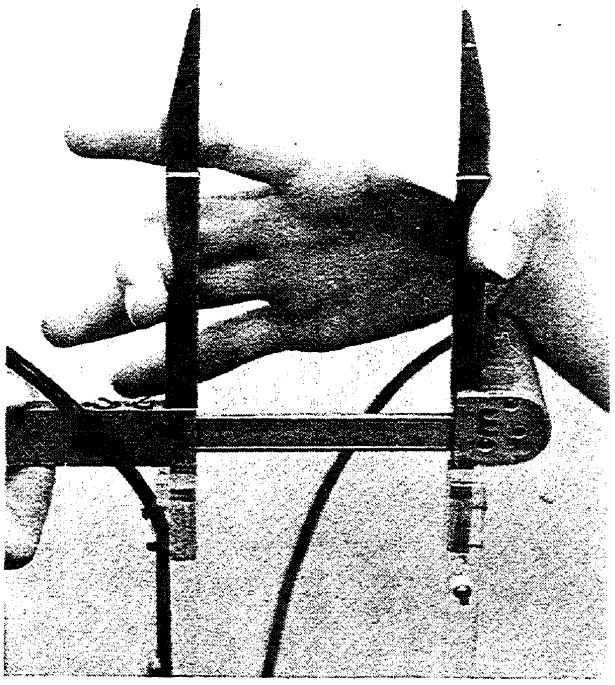
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	44	10.1	0.6	9.1	9.1	9.6	10.9	11.1
3.5-4.5	37	10.5	0.7	9.1	9.2	10.1	11.4	11.9
4.5-5.5	50	11.0	0.7	9.5	9.5	10.7	11.8	12.7
5.5-6.5	26	11.4	0.8	10.3	10.3	11.2	12.4	12.7
6.5-7.5	30	12.3	0.9	10.3	10.4	11.9	13.7	14.3
7.5-8.5	30	12.3	0.8	11.1	11.1	11.8	13.4	14.3
8.5-9.5	39	12.6	0.8	10.3	10.4	12.2	13.4	14.3
9.5-10.5	46	13.1	0.9	11.1	11.2	12.6	14.1	14.3
10.5-11.5	52	13.4	0.8	11.9	11.9	13.0	14.3	15.0
11.5-12.5	46	13.7	0.8	11.9	11.9	13.2	14.7	15.8
12.5-13.5	45	14.2	1.0	11.9	12.4	13.7	15.7	16.6
13.5-14.5	54	14.7	1.2	11.9	12.1	14.4	16.4	17.4
14.5-15.5	50	15.6	1.0	13.5	13.6	15.1	17.2	18.1
15.5-16.5	31	16.0	1.0	14.3	14.3	15.5	17.6	18.1
16.5-17.5	38	16.2	1.1	14.3	14.3	15.7	17.5	19.0
17.5-19.0	27	16.9	1.0	15.0	15.0	16.4	18.4	19.0

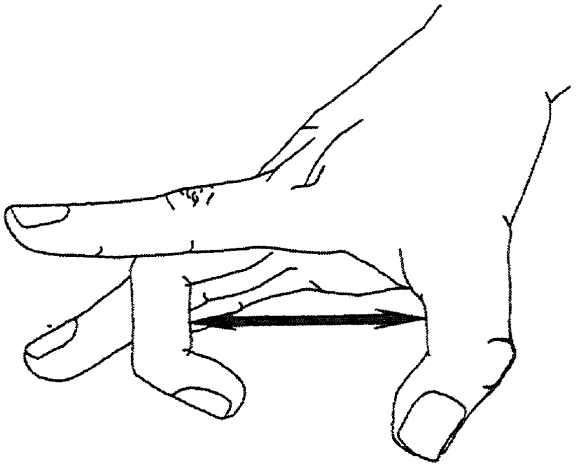
MIDDLE FINGER DIAMETER (mm)
(Females)

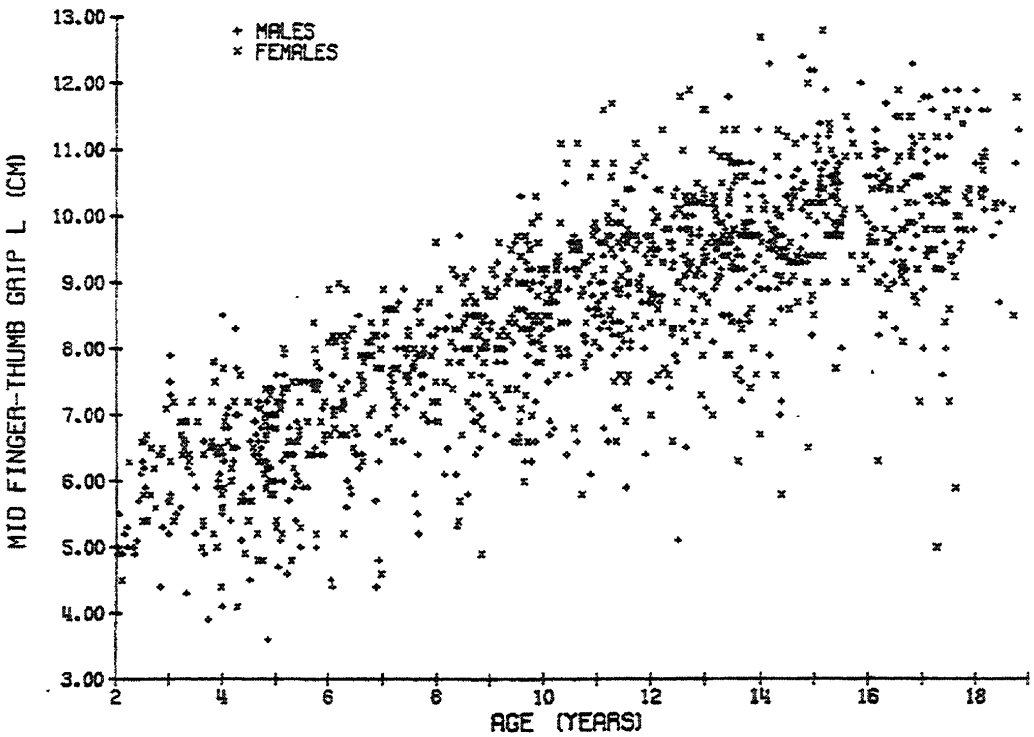
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	9.6	0.6	8.3	8.4	9.3	10.2	11.1
3.5-4.5	34	10.2	0.7	9.1	9.1	9.8	11.0	11.9
4.5-5.5	43	10.6	0.7	9.5	9.5	10.1	11.6	11.9
5.5-6.5	36	11.2	0.7	9.5	9.5	10.8	11.8	12.7
6.5-7.5	33	11.7	0.9	10.3	10.3	11.2	13.0	14.3
7.5-8.5	30	12.1	0.7	11.1	11.1	11.7	12.9	13.5
8.5-9.5	40	12.6	0.7	11.1	11.1	12.1	13.4	14.3
9.5-10.5	46	12.7	0.7	11.1	11.1	12.3	13.5	14.3
10.5-11.5	47	13.1	0.9	10.3	11.2	12.7	14.2	15.0
11.5-12.5	48	13.3	0.8	11.9	11.9	13.0	14.2	15.0
12.5-13.5	61	13.8	0.9	11.9	11.9	13.4	14.8	15.0
13.5-14.5	44	14.0	0.8	12.7	12.7	13.7	14.8	15.0
14.5-15.5	45	14.3	0.8	12.7	12.7	13.9	15.2	15.8
15.5-16.5	25	14.4	1.0	12.7	12.7	14.2	15.7	16.6
16.5-17.5	42	14.1	1.0	11.9	12.0	13.8	15.4	15.8
17.5-19.0	19	14.4	0.8	12.7	**	14.2	**	15.8

MIDDLE FINGER-THUMB GRIP LENGTH

Subject grasps the pointed blades of an automated sliding caliper with right hand. Measure the distance between the middle phalanges of the middle finger and thumb keeping the middle phalanges of these digits parallel.



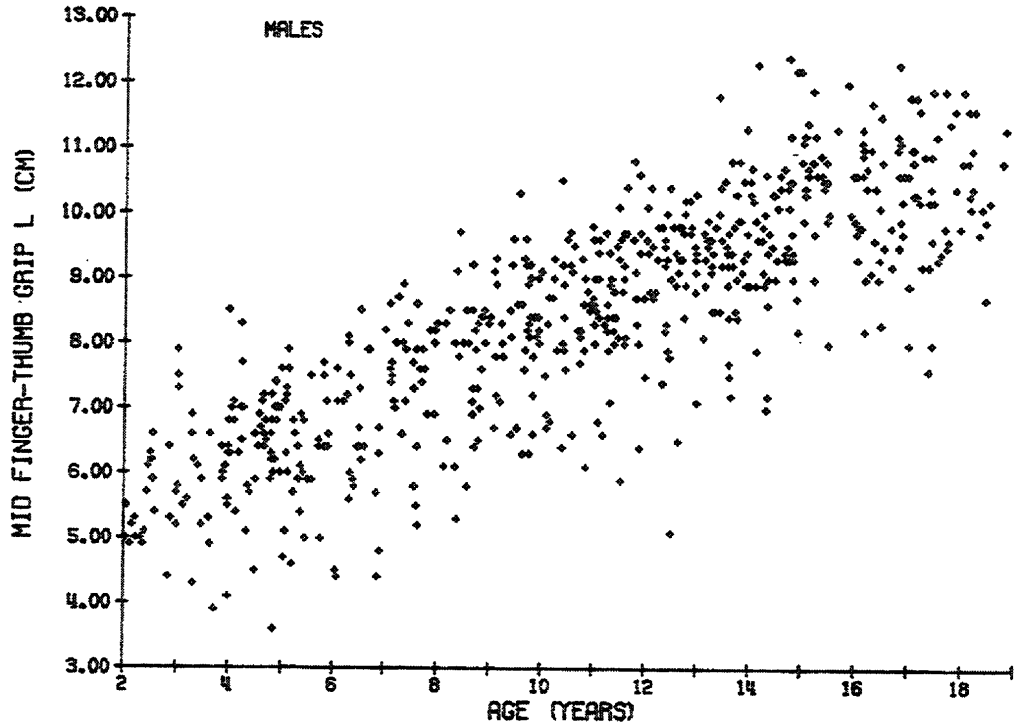


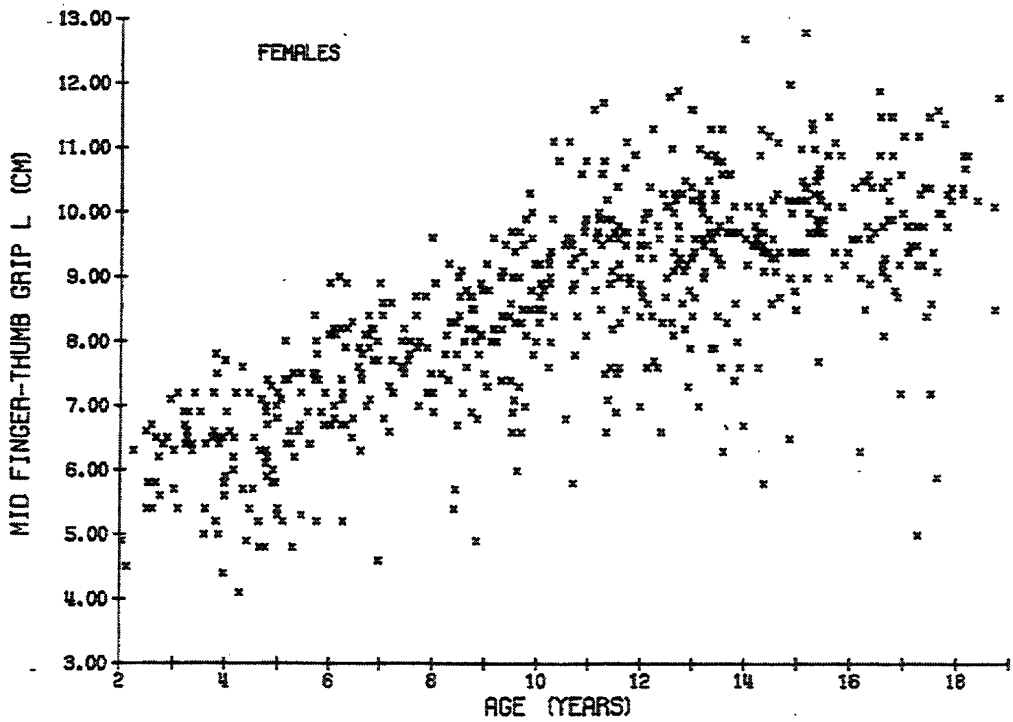


MIDDLE FINGER-THUMB GRIP LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	64	6.0	0.8	4.3	4.5	5.9	7.2	7.9
3.5-4.5	63	6.2	1.0	3.9	4.1	6.3	7.7	8.5
4.5-5.5	90	6.4	0.8	3.6	4.7	6.5	7.5	8.0
5.5-6.5	61	7.0	1.0	4.4	5.0	7.0	8.4	9.0
6.5-7.5	62	7.5	1.0	4.4	4.9	7.6	8.6	8.9
7.5-8.5	59	7.6	1.1	5.2	5.4	7.8	9.1	9.7
8.5-9.5	78	8.1	0.9	4.9	6.5	8.1	9.5	9.7
9.5-10.5	92	8.5	1.1	6.0	6.4	8.4	10.1	11.1
10.5-11.5	98	8.9	1.1	5.8	6.6	8.9	10.6	11.7
11.5-12.5	94	9.1	1.1	5.1	6.9	9.2	10.7	11.3
12.5-13.5	107	9.5	1.0	6.5	7.6	9.5	11.2	11.9
13.5-14.5	97	9.4	1.2	5.8	7.1	9.5	11.2	12.7
14.5-15.5	95	10.2	1.0	6.5	8.4	10.2	11.9	12.8
15.5-16.5	56	10.1	1.1	6.3	8.3	10.1	11.5	12.0
16.5-17.5	80	10.0	1.2	5.0	7.6	10.0	11.6	12.3
17.5-19.0	45	10.3	1.1	5.9	8.5	10.2	11.7	11.9

(57)


MALES
MID FINGER-THUMB GRIP L (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MID FINGER-THUMB GRIP L (CM)
13.00
12.00
11.00
10.00
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18
AGE (YEARS)

MIDDLE FINGER-THUMB GRIP LENGTH (cm)
(Males)

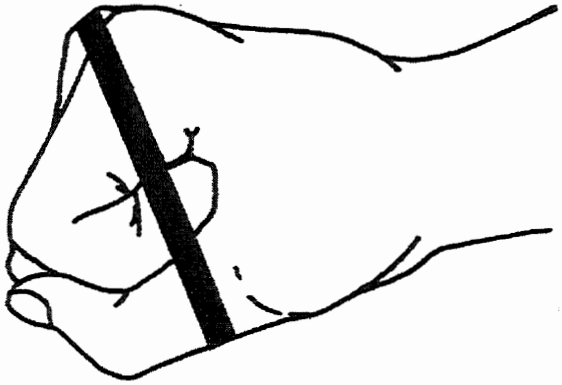
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	36	5.8	0.8	4.3	4.4	5.6	7.3	7.9
3.5-4.5	32	6.1	1.1	3.9	4.0	6.2	7.9	8.5
4.5-5.5	50	6.4	0.8	3.6	4.6	6.5	7.4	7.9
5.5-6.5	25	6.6	1.0	4.4	4.4	6.4	7.9	8.1
6.5-7.5	29	7.2	1.1	4.4	4.6	7.3	8.7	8.9
7.5-8.5	29	7.4	1.1	5.2	5.2	7.6	8.9	9.7
8.5-9.5	39	8.0	0.9	5.8	6.4	8.0	9.3	9.6
9.5-10.5	47	8.2	1.0	6.3	6.3	8.3	9.5	10.5
10.5-11.5	52	8.6	0.9	6.1	6.5	8.5	9.7	10.1
11.5-12.5	46	8.9	1.2	5.1	6.0	9.1	10.4	10.8
12.5-13.5	46	9.4	0.9	6.5	7.4	9.4	10.4	11.8
13.5-14.5	53	9.4	1.0	7.0	7.2	9.4	10.8	12.3
14.5-15.5	50	10.3	1.0	8.0	8.4	10.4	12.0	12.4
15.5-16.5	31	10.3	1.0	8.2	8.3	10.3	11.6	12.0
16.5-17.5	38	10.3	1.1	7.6	7.8	10.3	11.8	12.3
17.5-19.0	26	10.5	0.9	8.7	8.9	10.3	11.7	11.9

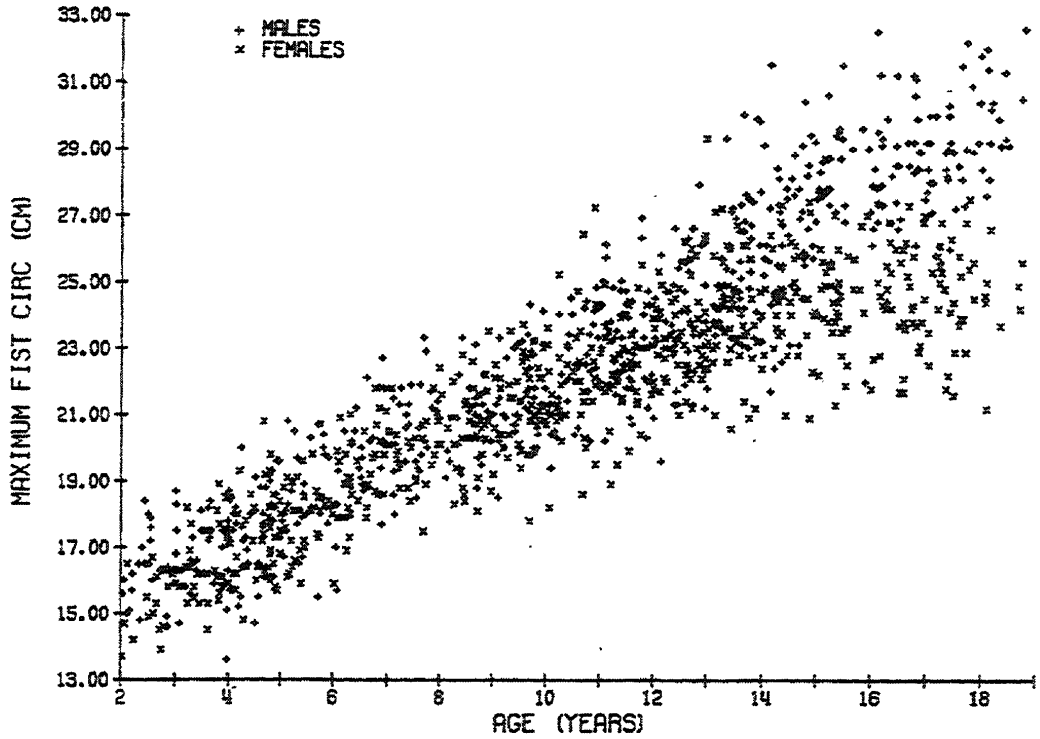
MIDDLE FINGER-THUMB GRIP LENGTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	28	6.2	0.7	4.5	4.7	6.3	7.1	7.2
3.5-4.5	31	6.2	1.0	4.1	4.3	6.3	7.6	7.8
4.5-5.5	40	6.4	0.9	4.8	4.8	6.4	7.4	8.0
5.5-6.5	36	7.3	0.9	5.2	5.2	7.2	8.7	9.0
6.5-7.5	33	7.6	0.8	4.6	5.7	7.7	8.5	8.9
7.5-8.5	30	7.9	0.9	5.4	5.5	7.8	9.1	9.6
8.5-9.5	39	8.2	0.9	4.9	6.7	8.2	9.5	9.7
9.5-10.5	45	8.7	1.1	6.0	6.4	8.8	10.2	11.1
10.5-11.5	46	9.2	1.3	5.8	6.7	9.4	11.0	11.7
11.5-12.5	48	9.2	1.1	6.6	7.2	9.2	10.9	11.3
12.5-13.5	61	9.6	1.1	7.0	7.5	9.6	11.4	11.9
13.5-14.5	44	9.4	1.4	5.8	6.4	9.5	11.2	12.7
14.5-15.5	45	10.0	1.1	6.5	7.9	10.0	11.4	12.8
15.5-16.5	25	9.9	1.1	6.3	6.8	9.7	11.4	11.9
16.5-17.5	42	9.6	1.3	5.0	6.2	9.6	11.3	11.5
17.5-19.0	19	10.1	1.3	5.9	**	10.2	**	11.8

MAXIMUM FIST CIRCUMFERENCE

Subject extends right hand contracted to form a fist, thumb lying across fingers. With an automated tape device, measure the maximum circumference of the fist by passing the tape over the thumb and across the knuckles.

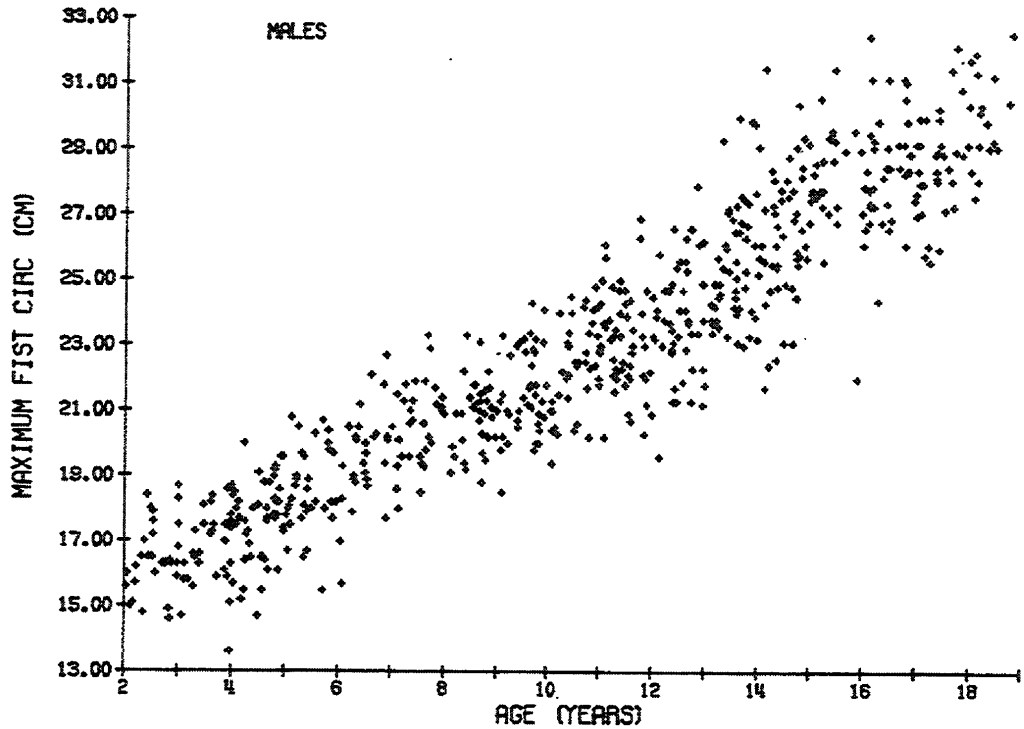


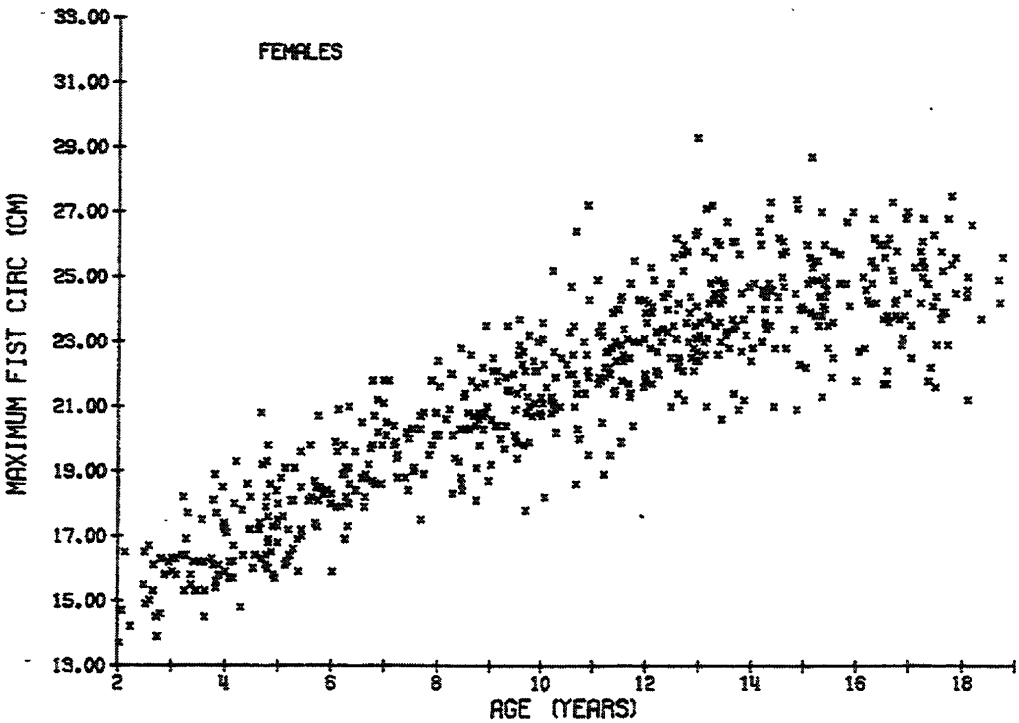


MAXIMUM FIST CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	16.2	1.1	13.7	14.2	16.2	18.1	18.7
3.5-4.5	71	17.0	1.3	13.6	14.8	17.2	18.6	20.0
4.5-5.5	94	17.8	1.2	15.5	15.9	17.8	19.6	20.8
5.5-6.5	61	18.8	1.3	15.5	15.9	18.5	20.7	21.2
6.5-7.5	63	20.0	1.2	17.7	18.0	19.9	21.8	22.7
7.5-8.5	59	20.4	1.3	17.5	18.4	20.2	22.8	23.3
8.5-9.5	79	21.0	1.1	18.1	18.8	20.8	23.1	23.5
9.5-10.5	92	21.7	1.4	17.8	19.5	21.5	23.9	25.2
10.5-11.5	99	22.8	1.6	18.6	20.0	22.6	25.0	27.2
11.5-12.5	93	23.1	1.5	19.6	20.6	23.0	25.5	26.9
12.5-13.5	106	24.3	1.7	20.6	21.3	24.1	27.1	29.3
13.5-14.5	98	25.1	2.1	20.9	21.7	24.7	28.5	31.5
14.5-15.5	94	26.2	2.2	20.9	22.5	25.9	29.4	31.5
15.5-16.5	56	26.6	2.5	21.8	22.0	26.7	30.0	32.5
16.5-17.5	80	26.3	2.5	21.6	21.8	26.1	30.0	31.2
17.5-19.0	47	27.6	2.9	21.2	23.0	27.7	31.9	32.6

(58)


MALES
MAXIMUM FIST CIRC (CM)
33.00
31.00
29.00
27.00
25.00
23.00
21.00
19.00
17.00
15.00
13.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MAXIMUM FIST CIRC (CM)
33.00
31.00
29.00
27.00
25.00
23.00
21.00
19.00
17.00
15.00
13.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MAXIMUM FIST CIRCUMFERENCE (cm)
(Males)

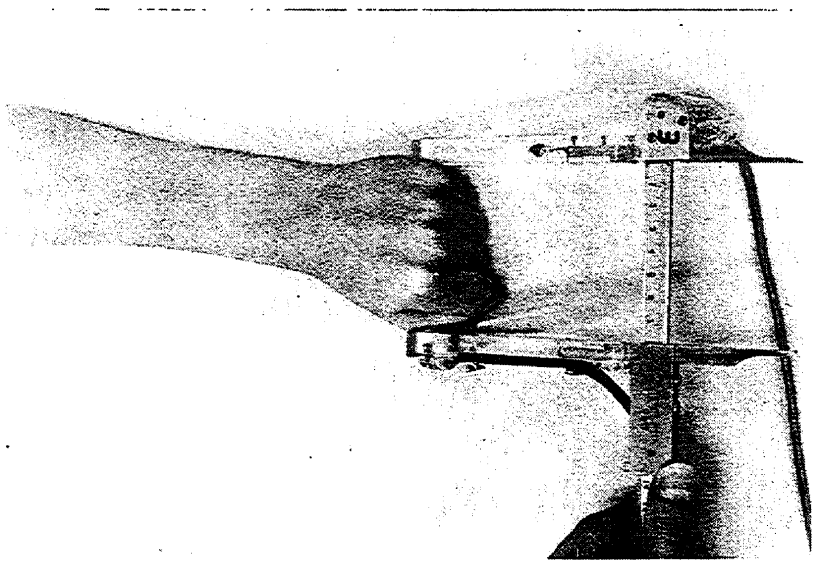
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	16.5	1.0	14.6	14.7	16.3	18.3	18.7
3.5-4.5	37	17.1	1.3	13.6	14.5	17.3	18.6	20.0
4.5-5.5	50	18.1	1.1	15.5	15.9	18.0	19.6	20.8
5.5-6.5	26	19.0	1.5	15.5	15.6	19.0	20.6	21.2
6.5-7.5	30	20.2	1.2	17.7	17.8	20.1	22.0	22.7
7.5-8.5	29	20.6	1.3	18.5	18.8	20.4	23.0	23.3
8.5-9.5	39	21.1	1.1	18.5	18.8	21.0	23.1	23.3
9.5-10.5	47	21.9	1.3	19.4	19.8	21.7	24.1	24.5
10.5-11.5	52	23.1	1.3	20.2	20.3	23.0	24.9	26.1
11.5-12.5	46	23.2	1.7	19.6	20.4	23.2	26.1	26.9
12.5-13.5	46	24.6	1.8	21.2	21.4	24.6	27.2	29.3
13.5-14.5	55	25.9	2.1	21.7	22.5	25.6	29.8	31.5
14.5-15.5	50	27.5	1.7	23.1	24.1	27.6	30.0	31.5
15.5-16.5	31	28.1	2.0	22.0	23.3	28.0	30.8	32.5
16.5-17.5	38	28.5	1.4	25.6	25.8	28.4	30.6	31.2
17.5-19.0	27	29.8	1.6	27.2	27.2	29.2	32.1	32.6

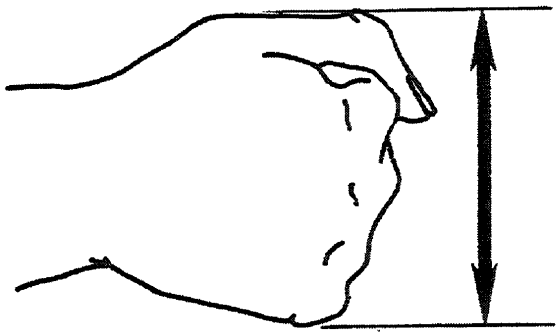
MAXIMUM FIST CIRCUMFERENCE (cm)
(Females)

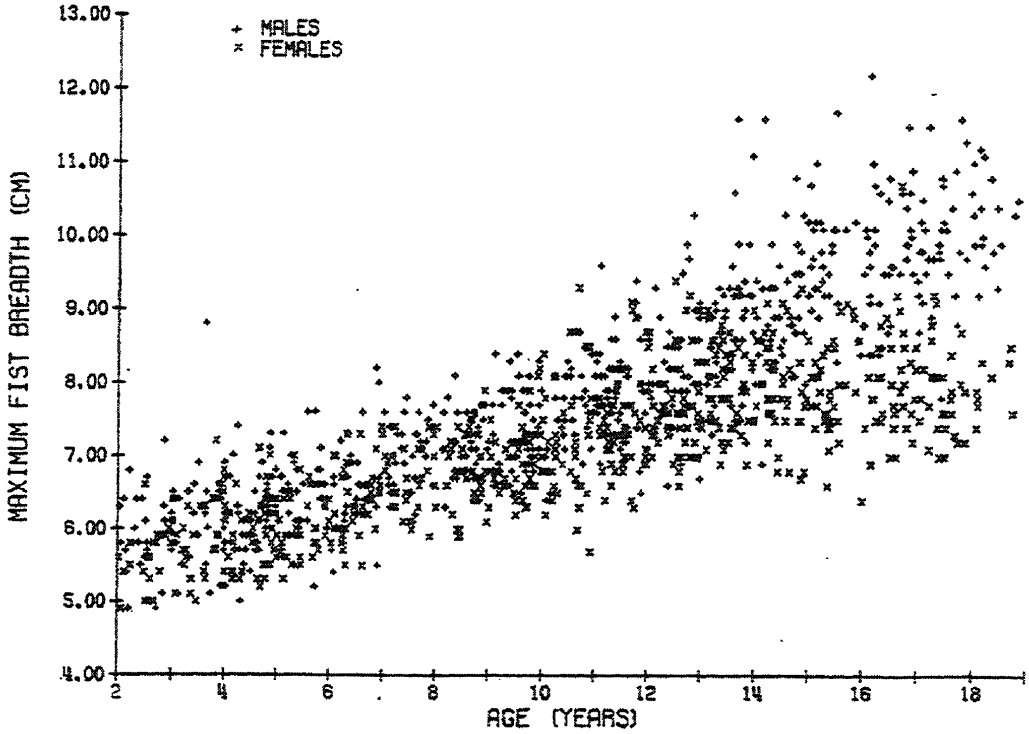
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	15.7	1.0	13.7	13.8	15.7	17.2	18.2
3.5-4.5	34	16.8	1.2	14.5	14.7	16.4	18.7	19.3
4.5-5.5	44	17.5	1.2	15.7	15.8	17.2	19.5	20.8
5.5-6.5	35	18.6	1.1	15.9	16.6	18.4	20.7	21.0
6.5-7.5	33	19.8	1.1	17.9	18.1	19.7	21.5	21.8
7.5-8.5	30	20.2	1.3	17.5	17.9	20.1	22.2	22.8
8.5-9.5	40	20.9	1.2	18.1	18.7	20.7	22.6	23.5
9.5-10.5	45	21.5	1.4	17.8	18.5	21.3	23.5	25.2
10.5-11.5	47	22.4	1.7	18.6	19.0	22.2	24.8	27.2
11.5-12.5	47	23.0	1.3	19.9	20.6	23.0	24.9	25.5
12.5-13.5	60	24.0	1.7	20.6	21.2	23.7	26.4	29.3
13.5-14.5	43	24.0	1.5	20.9	21.0	23.8	26.7	27.3
14.5-15.5	44	24.7	1.6	20.9	21.5	24.6	27.2	28.7
15.5-16.5	25	24.6	1.5	21.8	21.8	24.6	26.8	27.0
16.5-17.5	42	24.4	1.6	21.6	21.7	24.4	26.8	27.3
17.5-19.0	20	24.8	1.4	21.2	**	24.6	**	27.5

MAXIMUM FIST BREADTH

Subject extends right hand contracted to form a fist, thumb lying across fingers. With the paddle blades of an automated sliding caliper, measure the maximum breadth across the fist of the hand at the level of the knuckles.



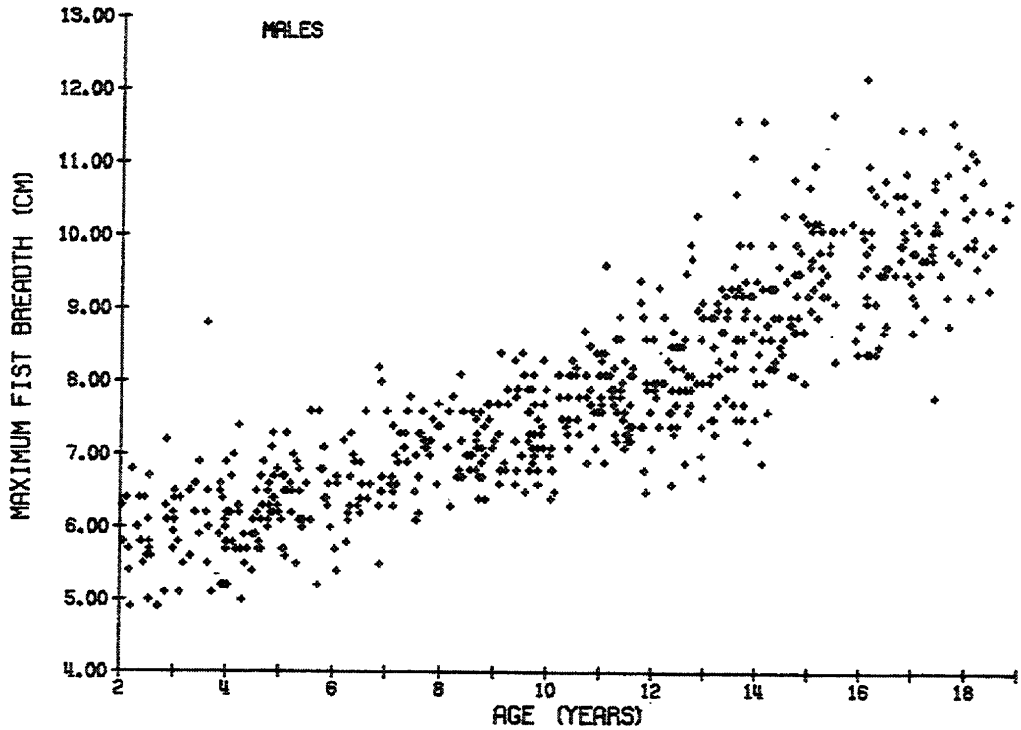


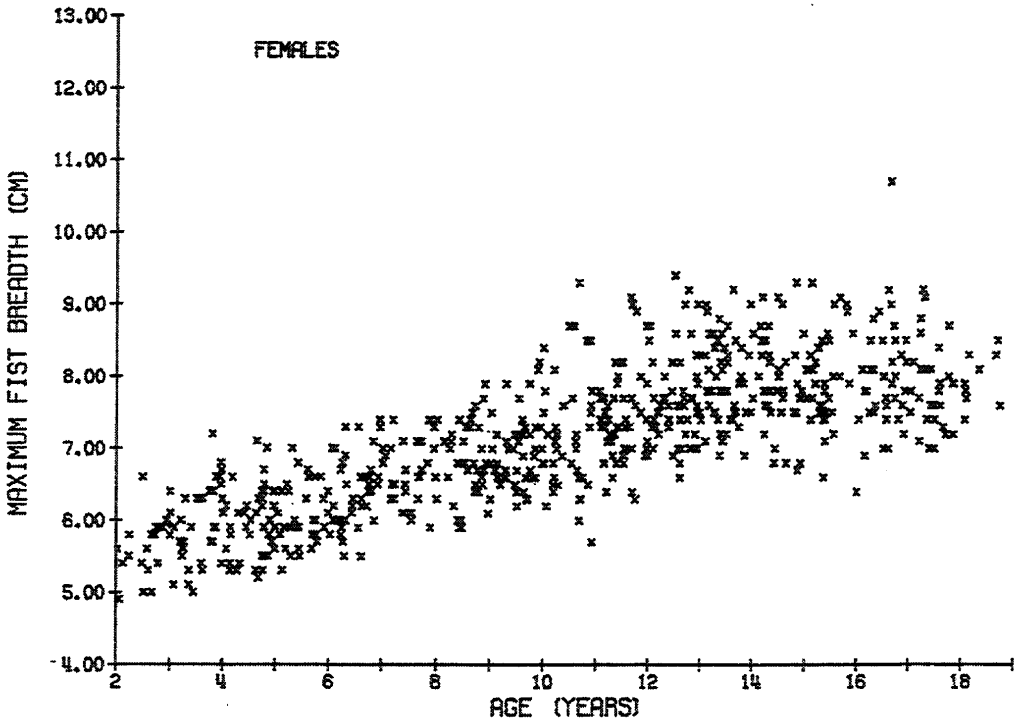


MAXIMUM FIST BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	5.8	0.5	4.9	4.9	5.8	6.6	7.2
3.5-4.5	71	6.1	0.6	5.0	5.2	6.0	6.9	8.8
4.5-5.5	94	6.2	0.5	5.2	5.3	6.1	7.0	7.3
5.5-6.5	62	6.3	0.5	5.2	5.5	6.2	7.2	7.6
6.5-7.5	63	6.7	0.5	5.5	5.9	6.6	7.6	8.2
7.5-8.5	60	6.9	0.5	5.9	5.9	6.9	7.6	8.1
8.5-9.5	79	7.1	0.5	6.1	6.3	6.9	7.9	8.4
9.5-10.5	93	7.3	0.6	6.2	6.3	7.2	8.2	8.7
10.5-11.5	99	7.6	0.7	5.7	6.4	7.6	8.6	9.6
11.5-12.5	94	7.7	0.7	6.3	6.7	7.6	9.0	9.4
12.5-13.5	107	8.1	0.8	6.6	6.9	7.9	9.2	10.3
13.5-14.5	99	8.4	0.9	6.8	7.1	8.3	9.8	11.6
14.5-15.5	95	8.7	1.1	6.6	7.0	8.6	10.3	11.7
15.5-16.5	56	8.9	1.1	6.4	7.1	8.7	10.7	12.2
16.5-17.5	80	8.9	1.2	7.0	7.0	8.9	10.7	11.5
17.5-19.0	46	9.2	1.3	7.2	7.2	9.3	11.2	11.6

(59)


MALES
MAXIMUM FIST BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MAXIMUM FIST BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MAXIMUM FIST BREADTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	6.0	0.6	4.9	4.9	6.0	6.8	7.2
3.5-4.5	37	6.1	0.7	5.0	5.1	5.9	7.1	8.8
4.5-5.5	50	6.3	0.4	5.5	5.6	6.2	7.0	7.3
5.5-6.5	26	6.5	0.6	5.2	5.3	6.4	7.4	7.6
6.5-7.5	30	6.9	0.6	5.5	5.8	6.7	7.9	8.2
7.5-8.5	30	7.1	0.5	6.1	6.1	7.1	7.7	8.1
8.5-9.5	39	7.2	0.5	6.4	6.4	7.1	7.9	8.4
9.5-10.5	47	7.4	0.5	6.4	6.5	7.3	8.2	8.4
10.5-11.5	52	7.9	0.5	6.9	7.0	7.8	8.6	9.6
11.5-12.5	46	7.9	0.7	6.5	6.7	7.8	9.0	9.4
12.5-13.5	46	8.4	0.8	6.7	6.9	8.2	9.6	10.3
13.5-14.5	55	8.8	1.0	6.9	7.3	8.6	10.7	11.6
14.5-15.5	50	9.5	0.8	8.0	8.1	9.4	10.7	11.7
15.5-16.5	31	9.6	0.9	8.4	8.4	9.4	10.9	12.2
16.5-17.5	38	9.9	0.7	7.8	8.6	9.8	10.9	11.5
17.5-19.0	27	10.2	0.7	8.8	8.9	10.1	11.3	11.6

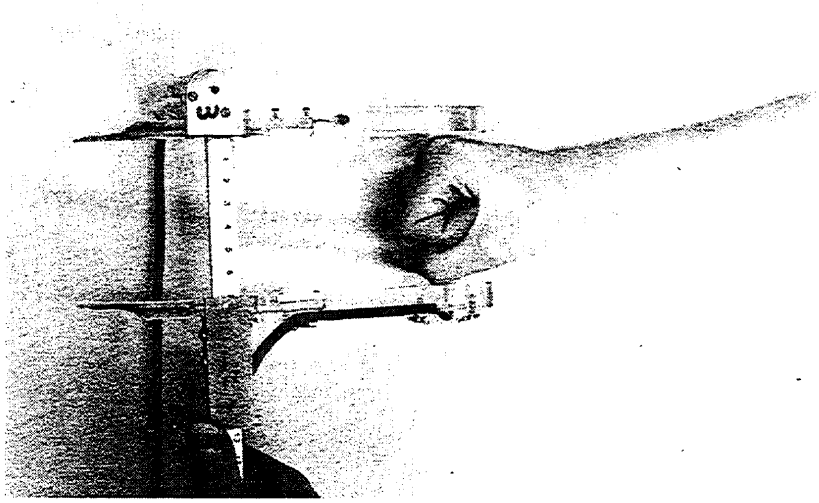
MAXIMUM FIST BREADTH (cm)
(Females)

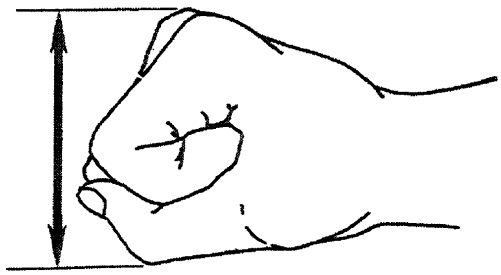
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	5.6	0.4	4.9	4.9	5.6	6.3	6.6
3.5-4.5	34	6.1	0.5	5.3	5.3	6.0	6.7	7.2
4.5-5.5	44	6.0	0.5	5.2	5.2	5.9	6.9	7.1
5.5-6.5	36	6.2	0.4	5.5	5.6	6.0	7.0	7.3
6.5-7.5	33	6.6	0.4	5.5	5.8	6.5	7.3	7.4
7.5-8.5	30	6.7	0.5	5.9	5.9	6.7	7.3	7.4
8.5-9.5	40	6.9	0.4	6.1	6.3	6.7	7.7	7.9
9.5-10.5	46	7.1	0.6	6.2	6.2	7.0	8.2	8.7
10.5-11.5	47	7.3	0.7	5.7	6.1	7.2	8.4	9.3
11.5-12.5	48	7.6	0.7	6.3	6.6	7.4	9.0	9.4
12.5-13.5	61	7.8	0.6	6.6	6.9	7.7	8.9	9.2
13.5-14.5	44	8.0	0.6	6.8	6.9	7.8	9.0	9.2
14.5-15.5	45	7.9	0.6	6.6	6.7	7.7	8.9	9.3
15.5-16.5	25	8.0	0.7	6.4	6.5	8.0	9.0	9.1
16.5-17.5	42	8.0	0.7	7.0	7.0	7.8	9.1	10.7
17.5-19.0	19	7.9	0.4	7.2	**	7.8	**	8.7

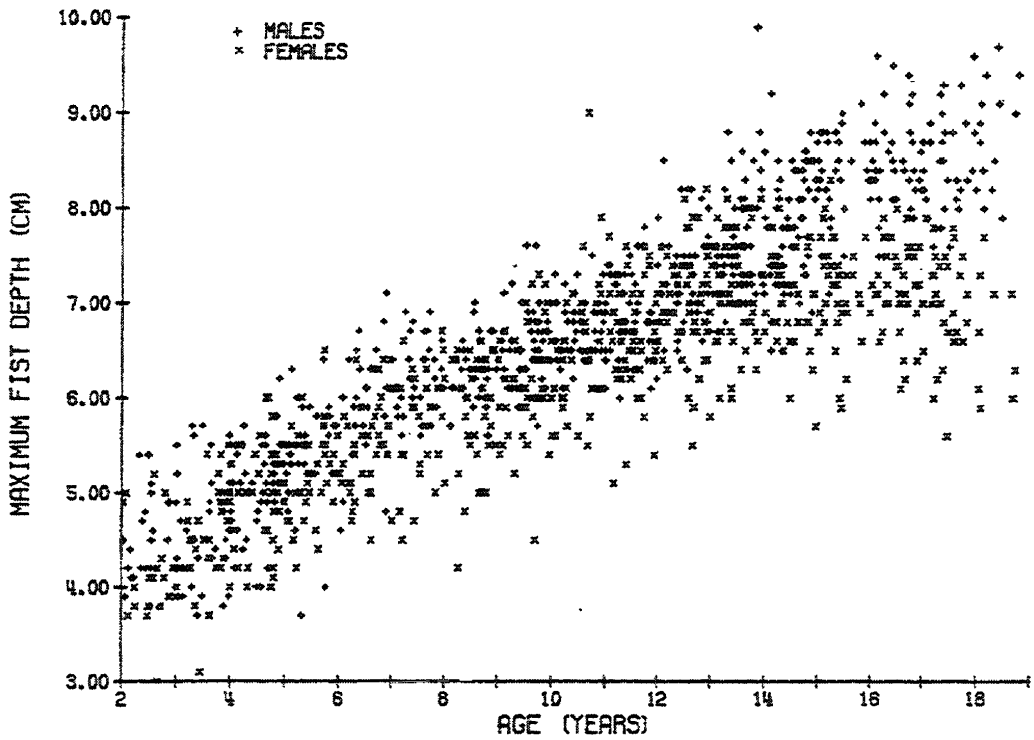
(60)

MAXIMUM FIST DEPTH

Subject extends right hand contracted to form a fist, thumb lying across fingers. With the paddle blades of an automated sliding caliper, measure the maximum depth of the fist of the hand between the knuckles and thumb.



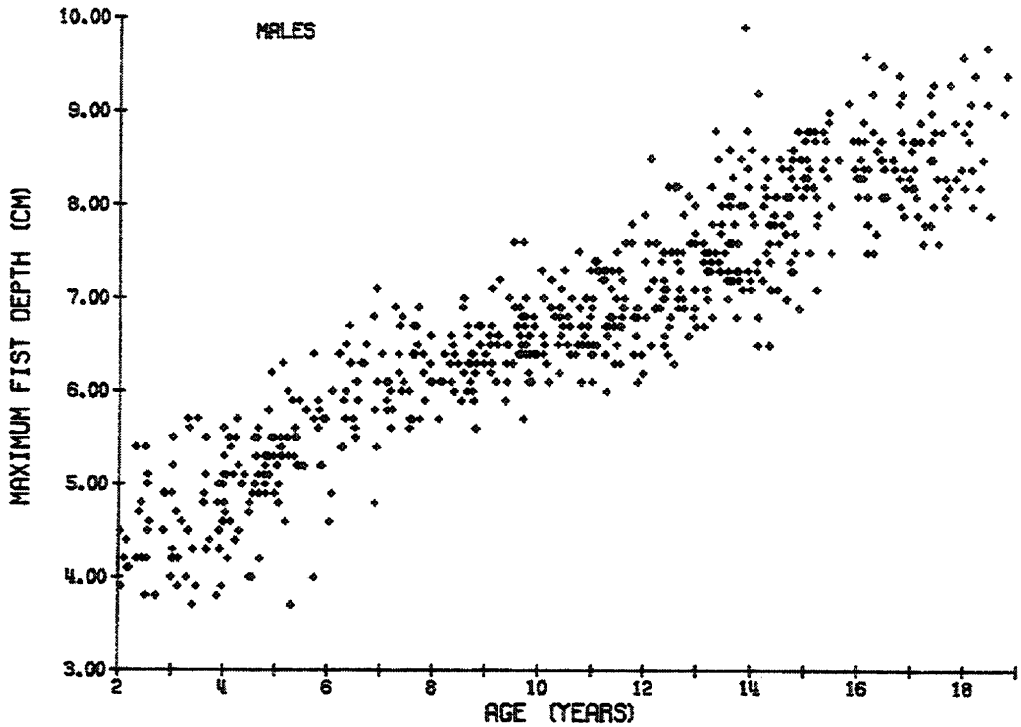


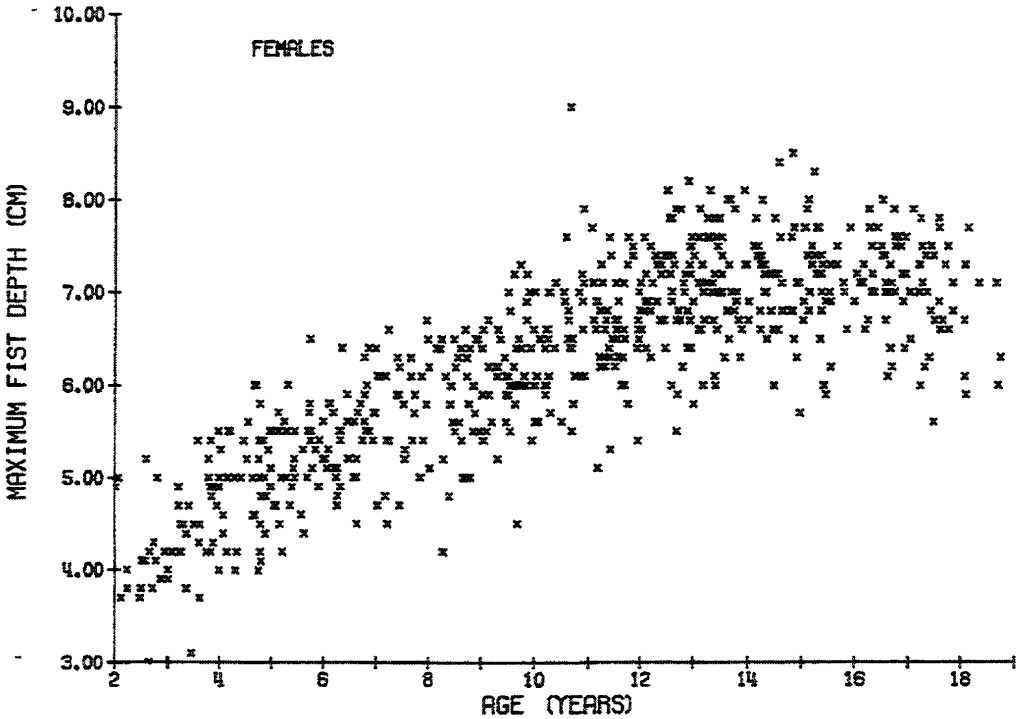


MAXIMUM FIST DEPTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	74	4.4	0.6	3.0	3.4	4.2	5.4	5.7
3.5-4.5	71	4.8	0.5	3.7	3.9	4.8	5.5	5.7
4.5-5.5	94	5.2	0.5	3.7	4.1	5.2	5.9	6.3
5.5-6.5	62	5.5	0.5	4.0	4.5	5.4	6.4	6.7
6.5-7.5	63	5.8	0.6	4.5	4.6	5.9	6.7	7.1
7.5-8.5	60	6.0	0.5	4.2	5.0	6.0	6.6	6.9
8.5-9.5	79	6.2	0.5	5.0	5.2	6.2	6.9	7.2
9.5-10.5	93	6.5	0.5	4.5	5.5	6.4	7.2	7.6
10.5-11.5	99	6.8	0.5	5.1	6.0	6.7	7.5	9.0
11.5-12.5	94	6.9	0.5	5.4	6.1	6.8	7.6	8.5
12.5-13.5	107	7.2	0.6	5.5	6.0	7.2	8.1	8.8
13.5-14.5	99	7.4	0.7	6.0	6.4	7.3	8.5	9.9
14.5-15.5	95	7.7	0.8	5.7	6.4	7.6	8.7	9.0
15.5-16.5	56	7.9	0.8	6.2	6.6	7.8	9.1	9.6
16.5-17.5	80	7.7	0.9	5.6	6.1	7.7	9.1	9.4
17.5-19.0	46	7.9	1.0	5.9	6.0	8.0	9.4	9.7

(60)


MALES
MAXIMUM FIST DEPTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
MAXIMUM FIST DEPTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

MAXIMUM FIST DEPTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	42	4.5	0.6	3.7	3.8	4.4	5.6	5.7
3.5-4.5	37	4.8	0.5	3.8	3.9	4.8	5.6	5.7
4.5-5.5	50	5.2	0.5	3.7	4.1	5.2	5.9	6.3
5.5-6.5	26	5.7	0.6	4.0	4.2	5.7	6.5	6.7
6.5-7.5	30	6.1	0.5	4.8	5.1	6.0	6.8	7.1
7.5-8.5	30	6.2	0.3	5.6	5.6	6.2	6.7	6.9
8.5-9.5	39	6.4	0.4	5.6	5.7	6.3	7.0	7.2
9.5-10.5	47	6.7	0.4	5.7	5.9	6.6	7.3	7.6
10.5-11.5	52	6.8	0.4	6.0	6.1	6.7	7.4	7.5
11.5-12.5	46	7.0	0.5	6.1	6.2	6.9	7.9	8.5
12.5-13.5	46	7.4	0.5	6.3	6.6	7.4	8.2	8.8
13.5-14.5	55	7.7	0.7	6.5	6.6	7.6	8.7	9.9
14.5-15.5	50	8.1	0.5	6.9	7.0	8.2	8.8	9.0
15.5-16.5	31	8.5	0.5	7.5	7.5	8.4	9.3	9.6
16.5-17.5	38	8.5	0.4	7.6	7.7	8.4	9.2	9.4
17.5-19.0	27	8.6	0.6	7.6	7.7	8.4	9.5	9.7

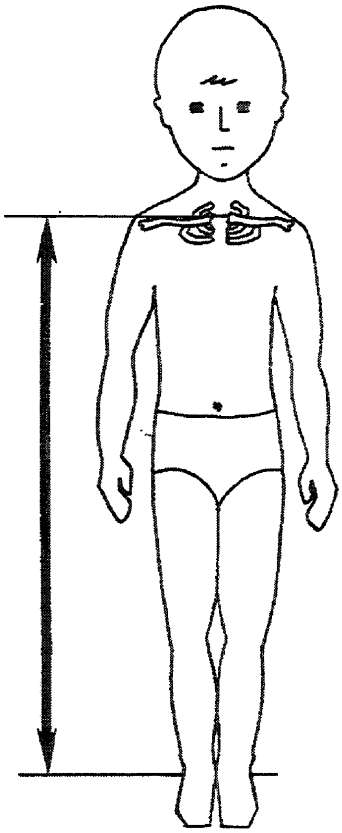
MAXIMUM FIST DEPTH (cm)
(Females)

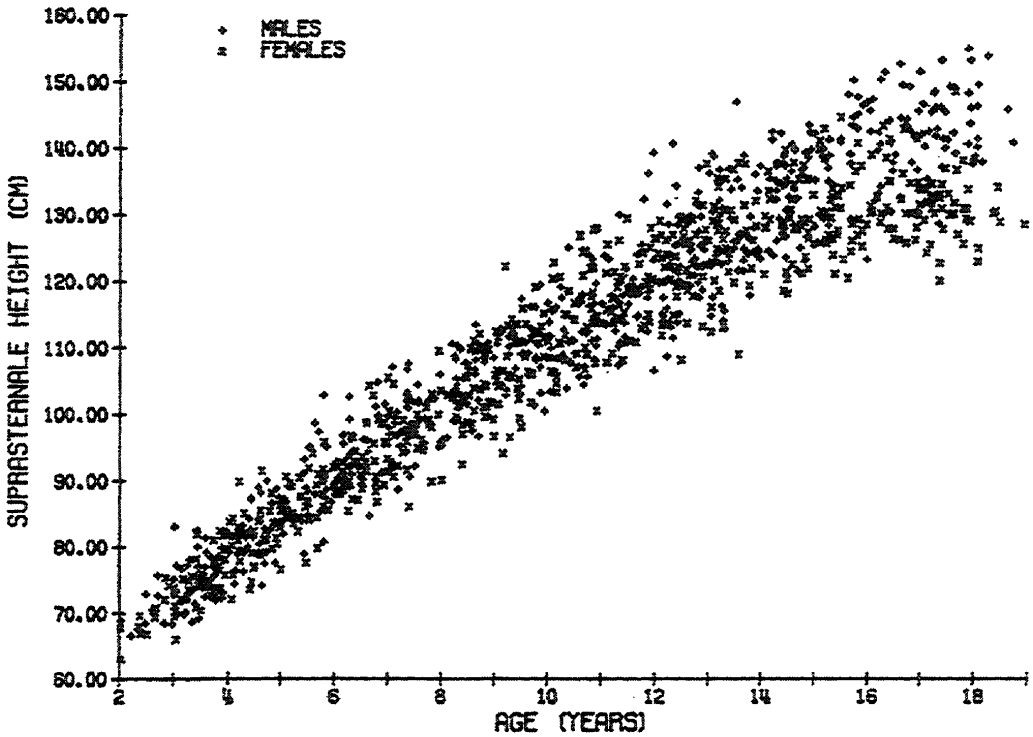
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	4.2	0.5	3.0	3.1	4.1	5.0	5.2
3.5-4.5	34	4.8	0.5	3.7	3.8	4.8	5.4	5.5
4.5-5.5	44	5.1	0.5	4.0	4.1	5.0	5.9	6.0
5.5-6.5	36	5.3	0.4	4.4	4.6	5.3	6.0	6.5
6.5-7.5	33	5.6	0.6	4.5	4.5	5.6	6.4	6.6
7.5-8.5	30	5.8	0.6	4.2	4.5	5.8	6.5	6.7
8.5-9.5	40	6.0	0.5	5.0	5.0	6.0	6.6	6.7
9.5-10.5	46	6.3	0.6	4.5	5.4	6.1	7.1	7.3
10.5-11.5	47	6.7	0.7	5.1	5.4	6.6	7.7	9.0
11.5-12.5	48	6.8	0.5	5.4	5.8	6.7	7.5	7.6
12.5-13.5	61	7.1	0.6	5.5	5.9	7.0	7.9	8.2
13.5-14.5	44	7.1	0.5	6.0	6.2	7.0	8.0	8.1
14.5-15.5	45	7.2	0.6	5.7	5.9	7.1	8.2	8.5
15.5-16.5	25	7.2	0.4	6.2	6.2	7.1	7.7	7.9
16.5-17.5	42	7.1	0.6	5.6	6.0	7.1	7.8	8.0
17.5-19.0	19	6.9	0.6	5.9	**	6.8	**	7.8

TORSO, PELVIS, LEG, AND FOOT MEASUREMENTS

SUPRASTERNALE HEIGHT

Subject stands erect, feet together, weight evenly distributed, arms hanging at sides. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to suprasternale.

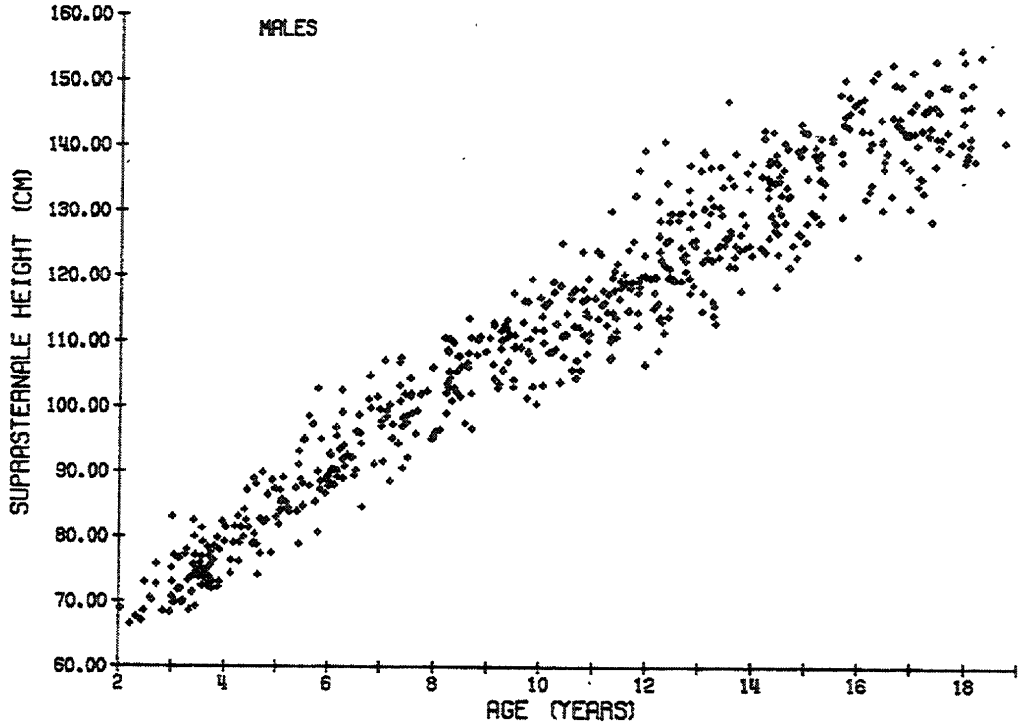


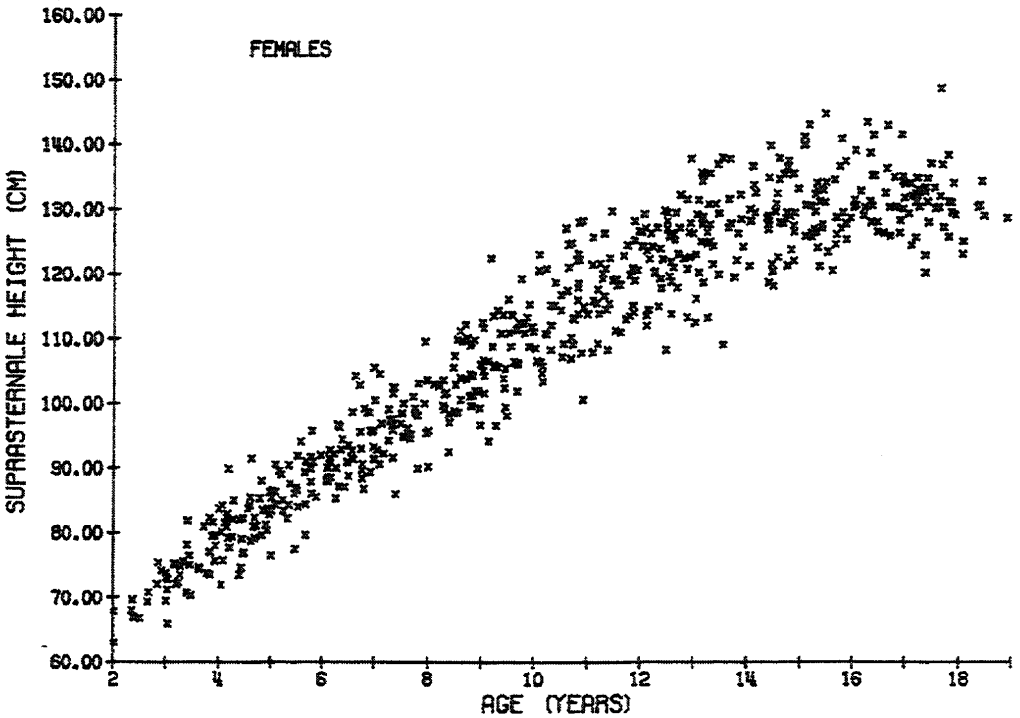


SUPRASTERNALE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	72.4	4.1	63.0	66.6	72.0	79.3	83.0
3.5-4.5	79	78.4	4.0	71.9	72.3	78.2	84.2	89.8
4.5-5.5	76	84.3	3.9	74.1	77.4	84.2	90.4	93.2
5.5-6.5	77	90.6	4.3	79.7	84.3	90.0	97.5	102.8
6.5-7.5	76	96.4	5.2	84.6	88.0	96.6	104.9	107.5
7.5-8.5	64	101.1	4.8	89.8	92.8	101.4	109.4	110.6
8.5-9.5	81	106.6	5.4	94.1	96.6	106.4	113.5	122.3
9.5-10.5	74	111.5	5.2	100.5	102.8	111.0	119.8	125.1
10.5-11.5	96	116.0	6.2	100.5	106.6	116.1	126.9	130.1
11.5-12.5	96	121.0	6.7	106.6	111.1	120.0	131.9	140.8
12.5-13.5	100	125.9	6.9	112.4	113.7	125.4	137.0	147.0
13.5-14.5	82	129.7	6.8	109.0	118.4	128.6	139.7	142.6
14.5-15.5	87	132.5	6.1	121.1	122.1	132.4	142.0	144.8
15.5-16.5	62	136.1	8.0	120.5	123.4	135.2	148.2	151.6
16.5-17.5	74	137.0	7.7	120.1	125.2	135.0	149.5	153.4
17.5-19.0	45	138.0	8.5	123.0	125.2	138.2	152.5	155.1

(61)


MALES
SUPRASTERNALE HEIGHT (CM)
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SUPRASTERNALE HEIGHT (CM)
160.00
150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SUPRASTERNALE HEIGHT (cm)
(Males)

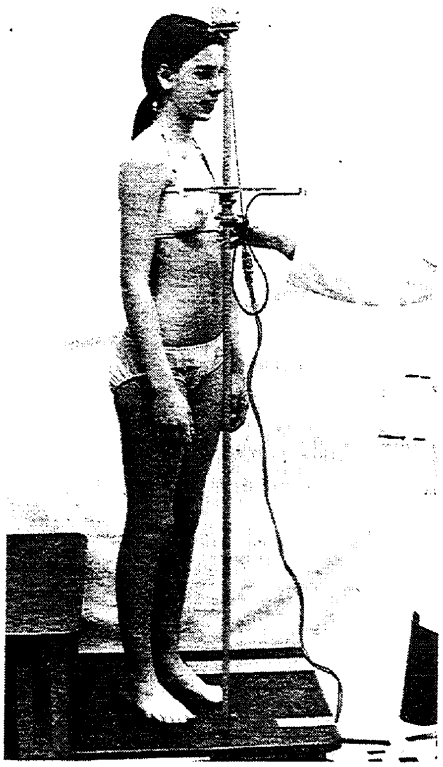
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	72.7	4.2	66.5	66.9	71.8	80.4	83.0
3.5-4.5	44	77.6	4.0	71.9	72.2	76.9	84.0	87.3
4.5-5.5	35	84.4	4.4	74.1	76.6	84.3	90.2	93.2
5.5-6.5	43	91.2	4.7	80.7	84.7	90.1	99.1	102.8
6.5-7.5	34	97.7	5.3	84.6	87.4	97.8	106.9	107.5
7.5-8.5	32	103.0	4.5	95.1	95.3	102.4	110.0	110.6
8.5-9.5	33	108.2	4.6	96.6	97.2	108.7	113.4	117.4
9.5-10.5	37	111.6	5.4	100.5	101.3	111.0	119.3	125.1
10.5-11.5	49	115.0	5.3	104.5	105.4	115.2	123.6	130.1
11.5-12.5	53	121.2	7.3	106.6	110.5	119.9	135.2	140.8
12.5-13.5	50	126.4	7.4	112.9	114.4	125.0	138.1	147.0
13.5-14.5	51	130.9	6.5	117.9	120.2	129.7	140.7	142.6
14.5-15.5	38	134.7	6.1	121.6	122.9	135.1	142.2	143.6
15.5-16.5	30	141.3	6.8	123.3	126.3	142.5	150.4	151.6
16.5-17.5	38	142.3	6.0	128.8	130.5	142.7	151.8	153.4
17.5-19.0	23	144.4	5.5	137.8	137.8	142.0	154.0	155.1

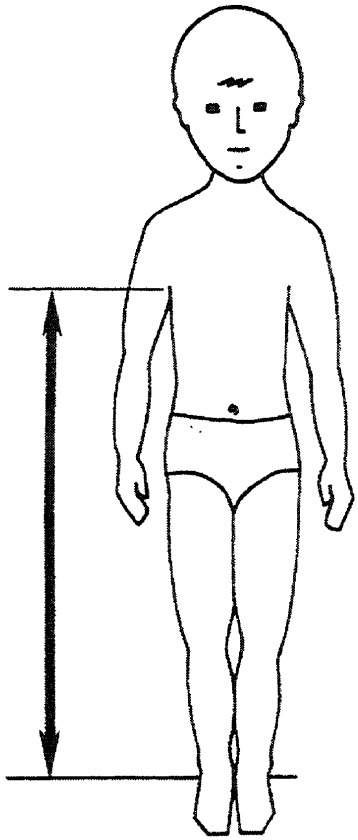
SUPRASTERNALE HEIGHT (cm)
(Females)

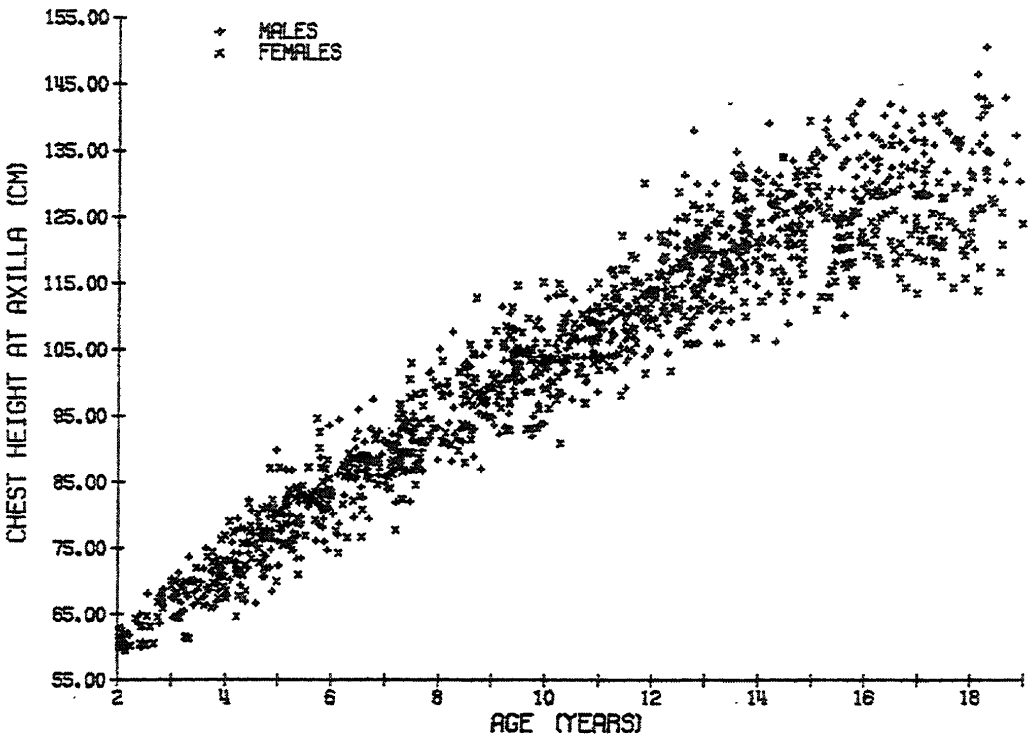
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	72.0	4.0	63.0	64.4	72.0	77.2	81.8
3.5-4.5	35	79.3	4.0	72.0	72.6	79.3	84.4	89.8
4.5-5.5	41	84.1	3.5	76.5	77.6	83.9	90.4	91.4
5.5-6.5	34	89.7	3.7	79.7	82.7	89.9	95.9	96.6
6.5-7.5	42	95.4	5.0	85.9	86.9	95.5	104.1	105.5
7.5-8.5	32	99.2	4.5	89.8	90.0	98.9	106.2	109.5
8.5-9.5	48	105.5	5.6	94.1	96.5	105.0	113.5	122.3
9.5-10.5	37	111.4	5.1	101.8	103.1	110.9	120.4	122.9
10.5-11.5	47	117.1	6.9	100.5	106.9	116.9	127.6	129.6
11.5-12.5	43	120.7	5.8	108.2	110.9	120.5	129.0	129.8
12.5-13.5	50	125.3	6.3	112.4	113.1	125.7	135.5	137.8
13.5-14.5	31	127.7	6.8	109.0	114.0	128.1	137.8	139.8
14.5-15.5	49	130.7	5.6	121.1	121.5	129.5	140.7	144.8
15.5-16.5	32	131.2	5.6	120.5	122.2	130.2	141.1	143.5
16.5-17.5	36	131.4	4.7	120.1	122.3	131.7	138.0	143.0
17.5-19.0	22	131.3	5.3	123.0	123.2	130.2	138.2	148.8

CHEST HEIGHT AT AXILLA

Subject stands erect, with feet together, weight evenly distributed, arms initially raised then lowered when instrument is in place. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the right axilla (armpit).



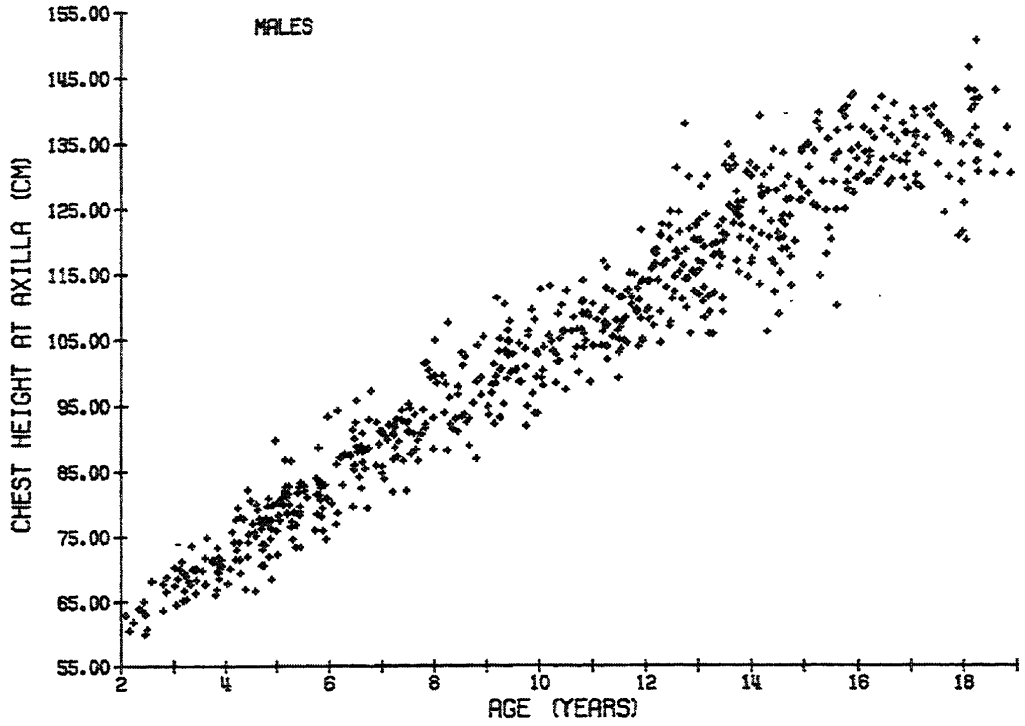


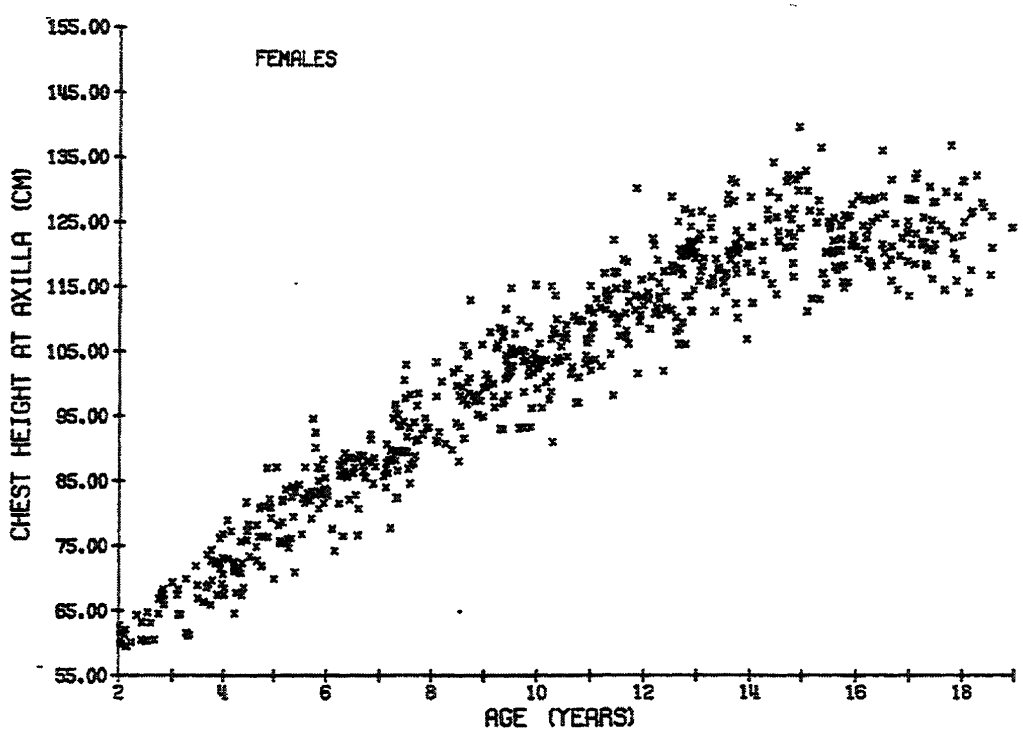


CHEST HEIGHT AT AXILLA (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	65.2	3.7	59.5	59.9	64.8	70.2	73.6
3.5-4.5	78	72.0	3.9	64.6	66.3	71.4	79.0	82.2
4.5-5.5	93	78.2	4.5	66.6	70.5	78.1	86.7	89.8
5.5-6.5	78	83.8	4.6	74.2	76.0	83.2	92.5	94.6
6.5-7.5	86	88.9	4.7	76.6	81.1	88.6	96.6	103.0
7.5-8.5	67	94.1	5.0	84.6	87.0	93.1	102.1	107.7
8.5-9.5	90	100.4	5.5	87.0	92.4	100.0	109.6	114.7
9.5-10.5	84	102.9	5.2	90.9	93.2	103.2	112.3	115.2
10.5-11.5	86	107.9	5.0	97.0	98.9	107.7	116.7	122.2
11.5-12.5	96	112.7	5.7	101.5	104.0	112.0	122.4	130.1
12.5-13.5	108	117.7	6.0	106.0	106.9	117.9	126.8	138.0
13.5-14.5	90	122.8	6.7	106.3	112.3	122.5	132.5	139.2
14.5-15.5	80	125.2	6.9	109.0	113.1	124.9	136.4	139.7
15.5-16.5	79	127.7	7.4	110.3	115.7	127.9	140.4	142.5
16.5-17.5	67	127.9	7.5	113.6	116.0	128.3	140.0	141.2
17.5-19.0-	63	130.7	8.3	114.1	116.0	131.0	143.2	150.8

(62)


MALES
CHEST HEIGHT AT AXILLA (CM)
155.00
145.00
135.00
125.00
115.00
105.00
95.00
85.00
75.00
65.00
55.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CHEST HEIGHT AT AXILLA (CM)
155.00
145.00
135.00
125.00
115.00
105.00
95.00
85.00
75.00
65.00
55.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

CHEST HEIGHT AT AXILLA (cm)
(Males)

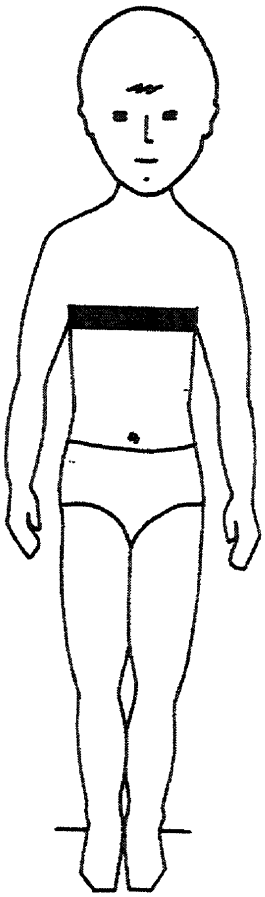
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	66.6	3.4	60.0	60.3	67.1	70.6	73.6
3.5-4.5	37	72.3	4.0	66.1	66.7	71.4	79.6	82.2
4.5-5.5	58	78.1	4.6	66.6	69.4	77.8	86.7	89.8
5.5-6.5	37	83.3	5.0	74.6	75.7	82.6	92.7	94.4
6.5-7.5	41	88.9	4.0	79.4	81.9	88.8	94.3	97.4
7.5-8.5	36	94.6	5.0	86.7	87.6	93.2	102.4	107.7
8.5-9.5	41	99.5	5.7	87.0	89.1	99.4	107.8	111.5
9.5-10.5	39	102.5	5.0	92.0	92.9	102.6	110.5	113.3
10.5-11.5	41	107.3	4.2	98.7	99.3	106.9	114.0	117.1
11.5-12.5	55	112.1	5.7	103.2	104.0	111.4	122.0	124.7
12.5-13.5	58	117.6	6.5	106.0	106.1	117.6	130.0	138.0
13.5-14.5	49	124.5	6.7	106.3	112.9	124.6	133.6	139.2
14.5-15.5	42	125.9	7.3	109.0	113.5	125.8	137.2	139.7
15.5-16.5	38	133.2	6.0	110.3	123.5	133.1	142.1	142.5
16.5-17.5	28	134.9	4.1	128.3	128.3	135.4	140.6	141.2
17.5-19.0	38	134.9	6.8	120.3	120.8	135.1	143.6	150.8

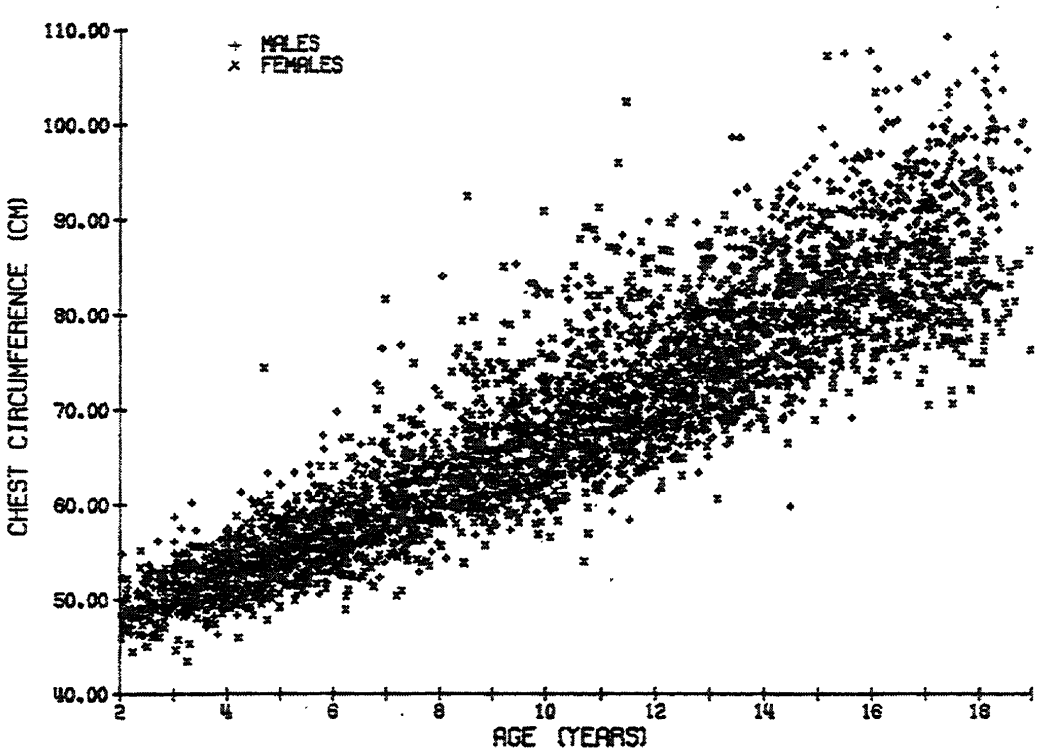
CHEST HEIGHT AT AXILLA (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	63.8	3.5	59.5	59.5	63.1	69.5	71.9
3.5-4.5	41	71.7	3.9	64.6	65.9	71.4	78.2	81.7
4.5-5.5	35	78.4	4.5	69.9	70.6	77.7	85.0	87.1
5.5-6.5	41	84.3	4.2	74.2	76.5	83.5	90.1	94.6
6.5-7.5	45	88.9	5.4	76.6	78.4	88.2	97.5	103.0
7.5-8.5	31	93.4	4.9	84.6	85.8	92.3	102.0	103.3
8.5-9.5	49	101.2	5.2	91.5	92.9	100.3	110.1	114.7
9.5-10.5	45	103.3	5.4	90.9	93.1	103.5	112.7	115.2
10.5-11.5	45	108.5	5.6	97.0	97.3	108.9	117.1	122.2
11.5-12.5	41	113.4	5.8	101.5	102.1	112.7	122.3	130.1
12.5-13.5	50	117.8	5.3	106.0	107.0	118.1	125.9	126.9
13.5-14.5	41	120.8	6.2	106.8	110.2	120.5	130.9	134.1
14.5-15.5	38	124.4	6.5	111.1	112.8	124.2	133.2	139.6
15.5-16.5	41	122.7	4.4	114.8	115.6	121.9	128.7	136.0
16.5-17.5	39	122.9	4.8	113.6	114.5	121.8	131.5	132.4
17.5-19.0	25	124.2	5.9	114.1	114.2	124.3	131.9	136.8

CHEST CIRCUMFERENCE AT AXILLA

Subject stands erect, arms initially raised, then lowered when tape is in place. With an automated tape device, measure the horizontal circumference of the chest during normal breathing at the level of the axilla (armpit).

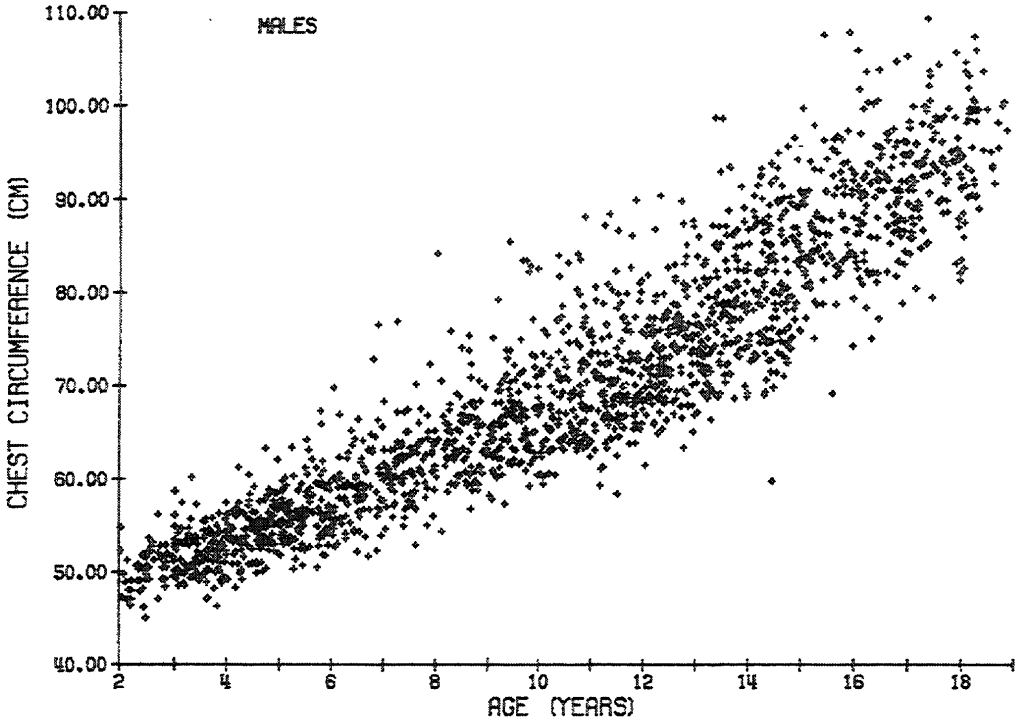


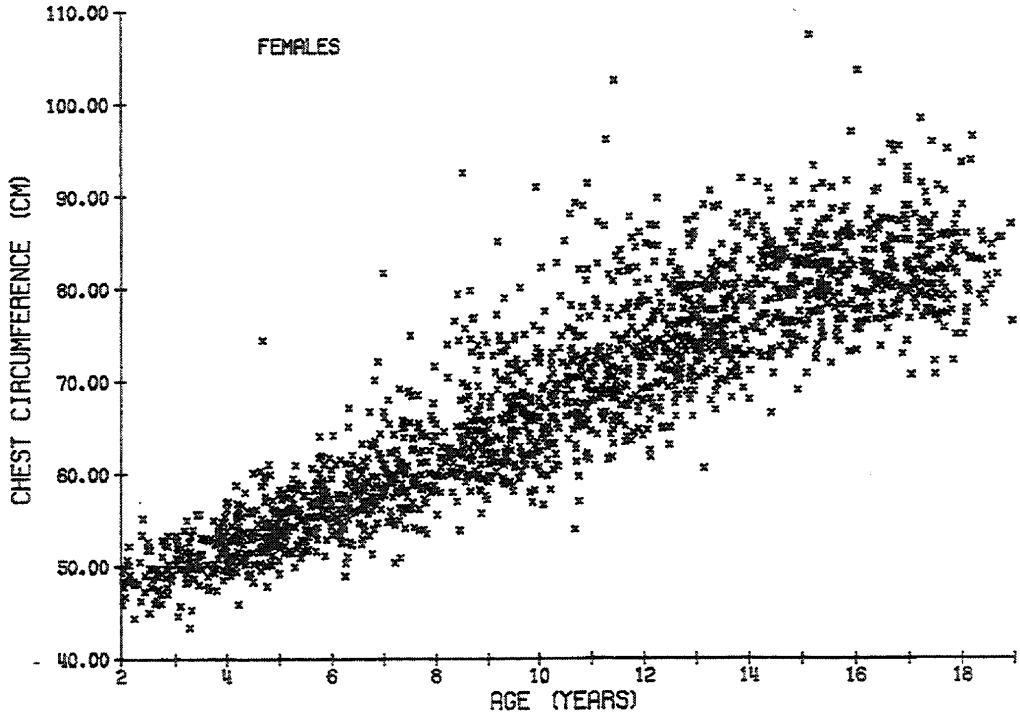


CHEST CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	211	50.7	2.7	43.4	46.1	50.5	54.9	60.2
3.5-4.5	226	52.7	2.7	45.9	48.6	52.7	57.0	61.3
4.5-5.5	263	55.0	3.0	47.8	50.4	54.8	59.7	74.4
5.5-6.5	219	57.3	3.4	48.9	52.2	56.9	63.6	69.8
6.5-7.5	225	60.2	4.5	50.4	53.9	59.5	67.9	81.7
7.5-8.5	188	62.5	5.2	52.9	55.2	62.1	71.2	92.5
8.5-9.5	251	65.4	5.1	55.7	58.7	64.6	74.7	85.4
9.5-10.5	253	67.6	5.7	56.6	60.3	66.7	78.7	91.0
10.5-11.5	280	70.8	6.6	54.0	62.2	69.6	83.1	102.5
11.5-12.5	286	72.6	5.9	58.4	64.6	71.8	84.4	90.4
12.5-13.5	313	76.1	5.7	60.6	67.9	75.7	86.0	98.8
13.5-14.5	270	79.4	6.2	59.8	70.0	78.8	90.3	93.9
14.5-15.5	263	82.5	6.2	69.0	73.6	82.5	93.1	107.6
15.5-16.5	198	85.9	7.4	69.2	75.5	84.3	99.8	112.3
16.5-17.5	221	87.2	7.5	70.6	77.0	86.4	99.9	111.1
17.5-19.0	156	89.6	8.0	72.2	76.7	90.1	102.3	107.5

(63)


MALES
CHEST CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CHEST CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

CHEST CIRCUMFERENCE (cm)
(Males)

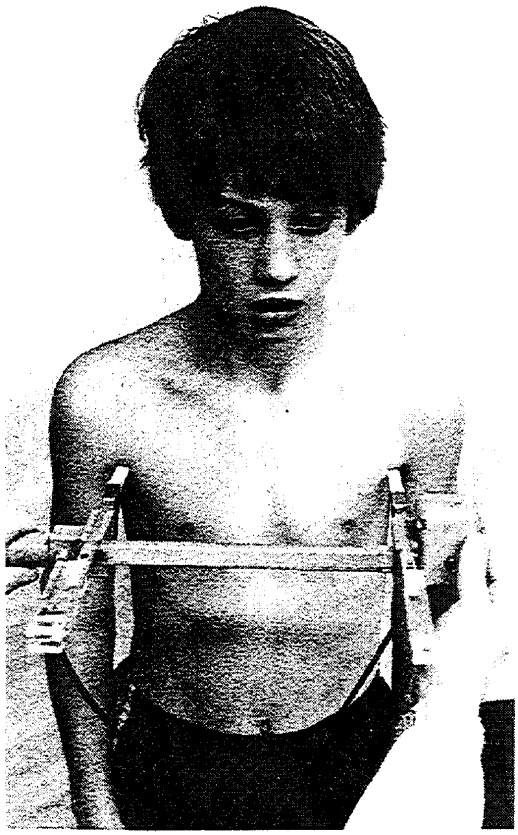
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	115	51.3	2.6	45.0	47.1	51.1	55.8	60.2
3.5-4.5	118	53.0	2.7	46.3	48.7	53.0	57.2	61.3
4.5-5.5	143	55.4	2.7	49.9	50.9	55.2	59.8	63.4
5.5-6.5	108	57.8	3.6	50.5	52.5	57.3	64.3	69.8
6.5-7.5	104	60.6	4.2	51.7	54.4	60.2	67.1	76.9
7.5-8.5	95	62.9	4.6	52.9	56.5	62.7	70.2	84.1
8.5-9.5	114	65.3	4.6	56.8	58.7	65.1	73.7	85.4
9.5-10.5	124	68.0	5.7	59.2	60.5	67.0	81.1	83.9
10.5-11.5	141	70.4	5.9	59.3	63.1	69.1	80.9	88.4
11.5-12.5	154	72.1	5.4	58.4	65.0	71.3	81.5	90.4
12.5-13.5	154	76.0	6.2	63.4	67.4	75.4	86.7	98.8
13.5-14.5	154	80.1	6.5	59.8	69.9	79.4	91.6	93.9
14.5-15.5	131	84.2	6.7	71.0	73.5	84.3	94.7	107.6
15.5-16.5	100	89.6	7.3	69.2	78.4	90.5	101.8	112.3
16.5-17.5	104	92.4	6.3	78.9	82.5	92.0	103.7	111.1
17.5-19.0	88	94.8	5.6	81.4	83.4	94.5	104.2	107.5

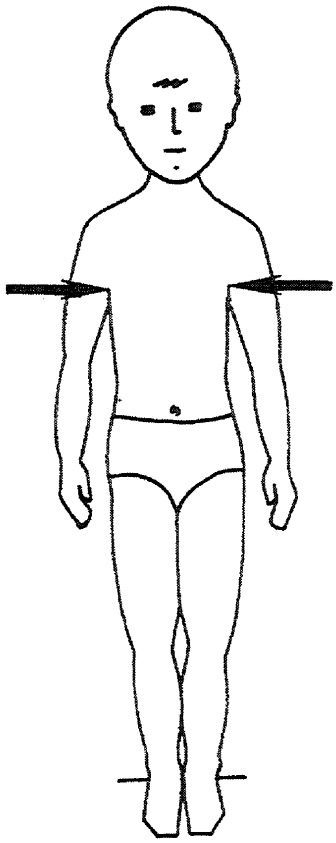
CHEST CIRCUMFERENCE (cm)
(Females)

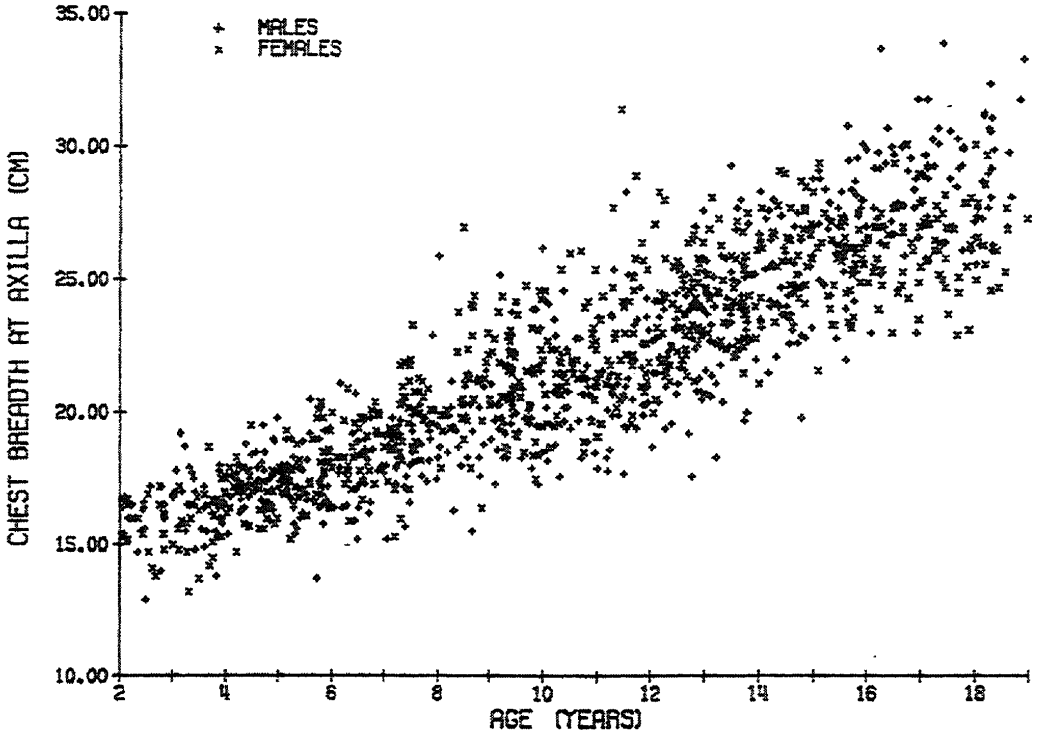
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	96	49.9	2.6	43.4	45.2	49.7	53.9	55.6
3.5-4.5	108	52.4	2.6	45.9	48.4	52.5	56.7	60.1
4.5-5.5	120	54.6	3.3	47.8	50.0	54.2	59.5	74.4
5.5-6.5	111	56.8	3.2	48.9	51.5	56.6	61.8	67.1
6.5-7.5	121	59.8	4.8	50.4	53.3	58.9	68.8	81.7
7.5-8.5	93	62.2	5.8	53.5	54.0	61.3	72.4	92.5
8.5-9.5	137	65.4	5.4	55.7	58.3	64.4	75.1	85.1
9.5-10.5	129	67.3	5.8	56.6	59.6	66.4	76.9	91.0
10.5-11.5	139	71.2	7.3	54.0	61.6	70.0	86.8	102.5
11.5-12.5	132	73.3	6.3	61.8	64.0	72.9	84.8	89.8
12.5-13.5	159	76.2	5.3	60.6	68.4	75.8	85.8	90.6
13.5-14.5	116	78.5	5.7	66.5	70.1	78.2	87.8	91.9
14.5-15.5	132	80.8	5.1	69.0	73.3	80.5	88.8	107.4
15.5-16.5	98	82.1	5.3	71.9	74.2	81.7	90.7	103.6
16.5-17.5	117	82.7	5.2	70.6	75.4	82.1	92.1	98.3
17.5-19.0	68	82.8	4.9	72.2	75.3	82.4	92.5	96.4

CHEST BREADTH AT AXILLA

Subject stands erect with feet together, weight evenly distributed, arms initially raised then lowered when instrument is in place. With the pointed blades of an automated anthropometer, measure the horizontal breadth of the chest at the level of the axilla (armpit).



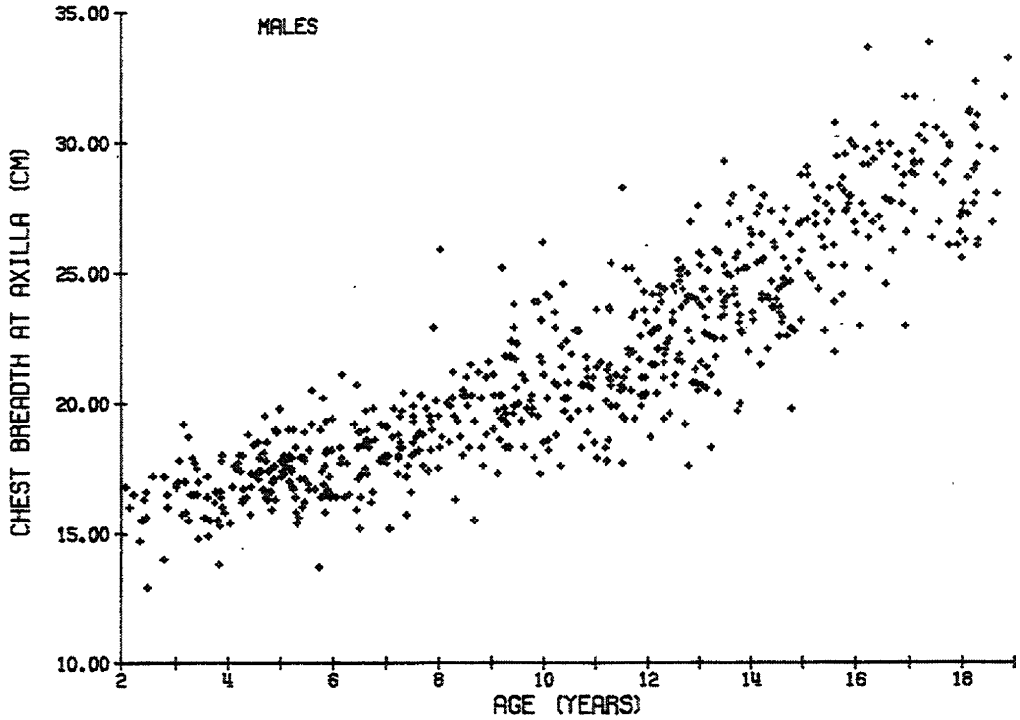


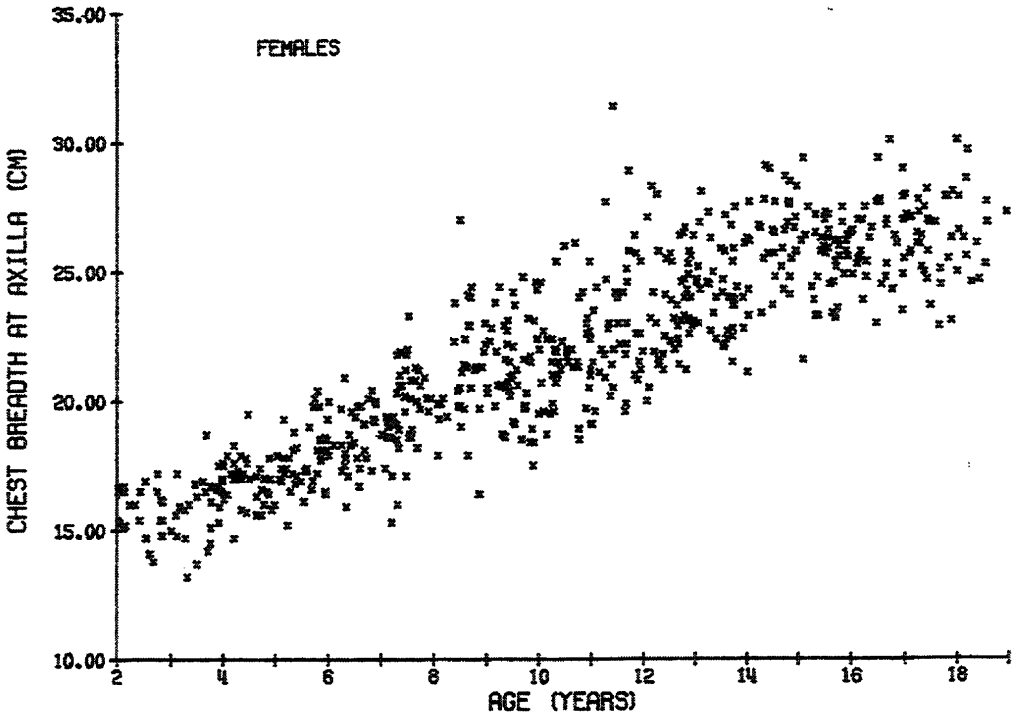


CHEST BREADTH AT AXILLA (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	65	16.1	1.2	12.9	13.8	16.0	17.8	19.2
3.5-4.5	77	16.7	1.1	13.7	14.5	16.7	18.3	19.5
4.5-5.5	92	17.3	1.0	15.2	15.6	17.1	19.0	19.8
5.5-6.5	79	17.9	1.4	13.7	15.8	17.9	20.4	21.1
6.5-7.5	87	18.7	1.5	15.2	16.1	18.6	21.1	22.0
7.5-8.5	68	19.8	1.8	16.3	17.5	19.7	23.1	27.0
8.5-9.5	91	20.8	1.9	15.5	17.8	20.6	24.0	25.2
9.5-10.5	85	21.1	2.1	17.3	18.0	20.8	24.6	26.2
10.5-11.5	86	21.6	2.2	17.7	18.2	21.3	24.9	31.4
11.5-12.5	97	22.7	2.2	18.7	19.5	22.2	26.5	28.9
12.5-13.5	107	23.7	2.0	17.6	20.5	23.8	26.8	29.3
13.5-14.5	90	24.9	2.0	19.7	21.4	24.7	27.9	29.1
14.5-15.5	81	25.8	1.9	19.8	22.6	25.9	28.7	29.4
15.5-16.5	79	26.7	2.1	22.0	23.2	26.5	30.0	33.7
16.5-17.5	67	27.3	2.1	23.0	23.9	27.1	30.6	33.9
17.5-19.0	63	27.9	2.3	22.9	24.5	27.6	31.3	33.3

(64)


MALES
CHEST BREADTH AT AXILLA (CM)
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CHEST BREADTH AT AXILLA (CM)
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

CHEST BREADTH AT AXILLA (cm)
(Males)

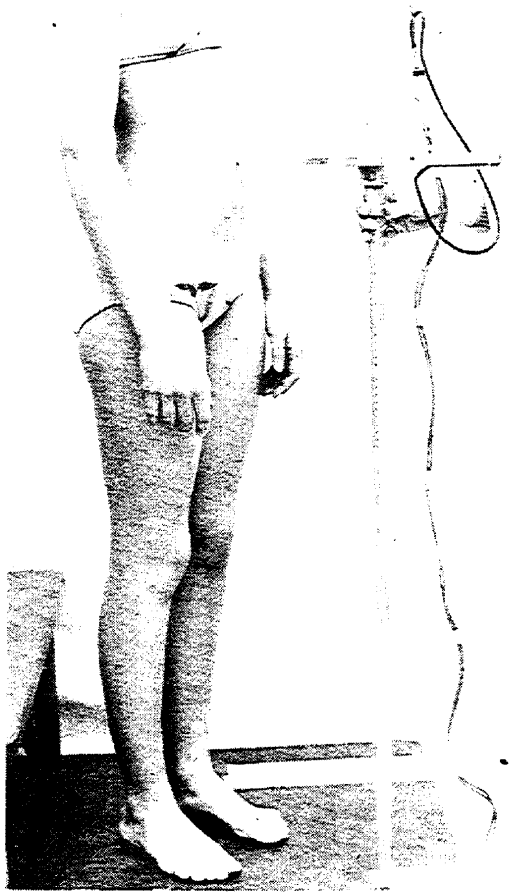
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	16.5	1.3	12.9	13.6	16.5	18.2	19.2
3.5-4.5	36	16.7	1.1	13.8	14.7	16.5	18.1	18.8
4.5-5.5	58	17.4	1.0	15.4	15.8	17.4	19.1	19.8
5.5-6.5	39	17.7	1.6	13.7	15.1	17.5	20.5	21.1
6.5-7.5	41	18.1	1.2	15.2	15.7	18.0	19.7	20.4
7.5-8.5	36	19.3	1.6	16.3	17.2	19.1	21.5	25.9
8.5-9.5	42	20.2	1.8	15.5	17.3	20.0	22.8	25.2
9.5-10.5	40	20.9	2.1	17.3	17.6	20.3	24.2	26.2
10.5-11.5	41	20.8	1.7	17.7	17.8	20.7	23.6	25.4
11.5-12.5	55	22.2	1.9	18.7	19.1	22.0	24.8	28.3
12.5-13.5	58	23.3	2.2	17.6	19.1	23.5	26.0	29.3
13.5-14.5	49	24.9	2.0	19.7	20.7	24.9	27.9	28.3
14.5-15.5	42	25.5	2.2	19.8	21.3	25.5	28.6	29.1
15.5-16.5	38	27.7	2.3	22.0	22.9	27.6	30.7	33.7
16.5-17.5	28	28.6	2.2	23.0	23.6	28.8	31.6	33.9
17.5-19.0	38	28.9	2.0	25.6	25.7	28.8	31.9	33.3

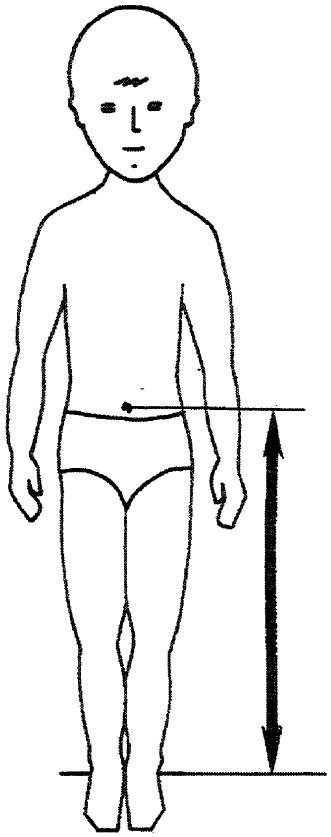
CHEST BREADTH AT AXILLA (cm)
(Females)

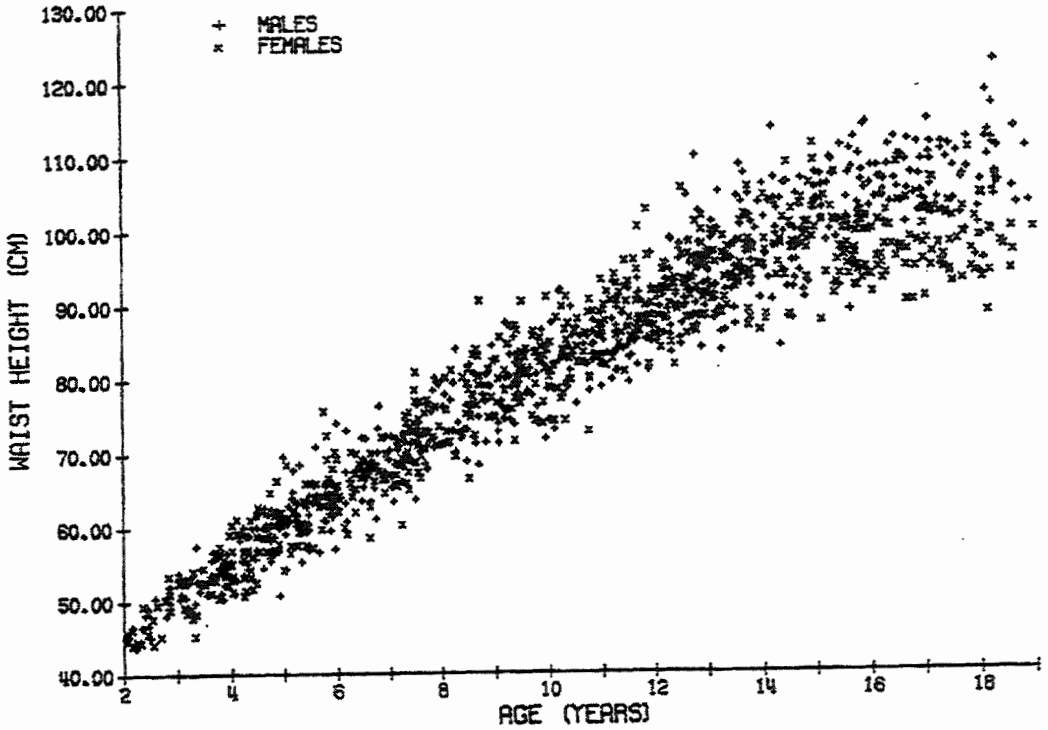
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	15.7	1.0	13.2	13.6	15.7	17.0	17.2
3.5-4.5	41	16.7	1.2	13.7	14.2	16.8	18.3	19.5
4.5-5.5	34	17.0	0.9	15.2	15.3	16.9	18.4	19.3
5.5-6.5	40	18.2	1.2	15.9	16.1	18.1	20.1	20.9
6.5-7.5	46	19.2	1.5	15.3	16.2	19.1	21.7	22.0
7.5-8.5	32	20.4	1.8	17.9	18.1	20.0	23.5	27.0
8.5-9.5	49	21.3	1.8	16.4	18.1	21.2	24.2	24.4
9.5-10.5	45	21.3	2.0	17.5	18.1	21.1	24.7	26.0
10.5-11.5	45	22.3	2.4	18.5	18.9	21.9	25.9	31.4
11.5-12.5	42	23.3	2.4	19.6	19.9	22.5	27.9	28.9
12.5-13.5	49	24.3	1.6	21.2	21.5	24.1	26.8	28.1
13.5-14.5	41	24.9	2.0	21.1	21.5	24.3	27.8	29.1
14.5-15.5	39	26.1	1.6	21.6	22.4	26.1	28.5	29.4
15.5-16.5	41	25.7	1.4	23.0	23.2	25.7	27.5	29.4
16.5-17.5	39	26.4	1.4	23.5	23.7	26.4	28.2	30.1
17.5-19.0	25	26.4	1.8	22.9	22.9	26.2	29.4	30.1

WAIST HEIGHT

Subject stands erect with feet together and weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the umbilicus (navel).



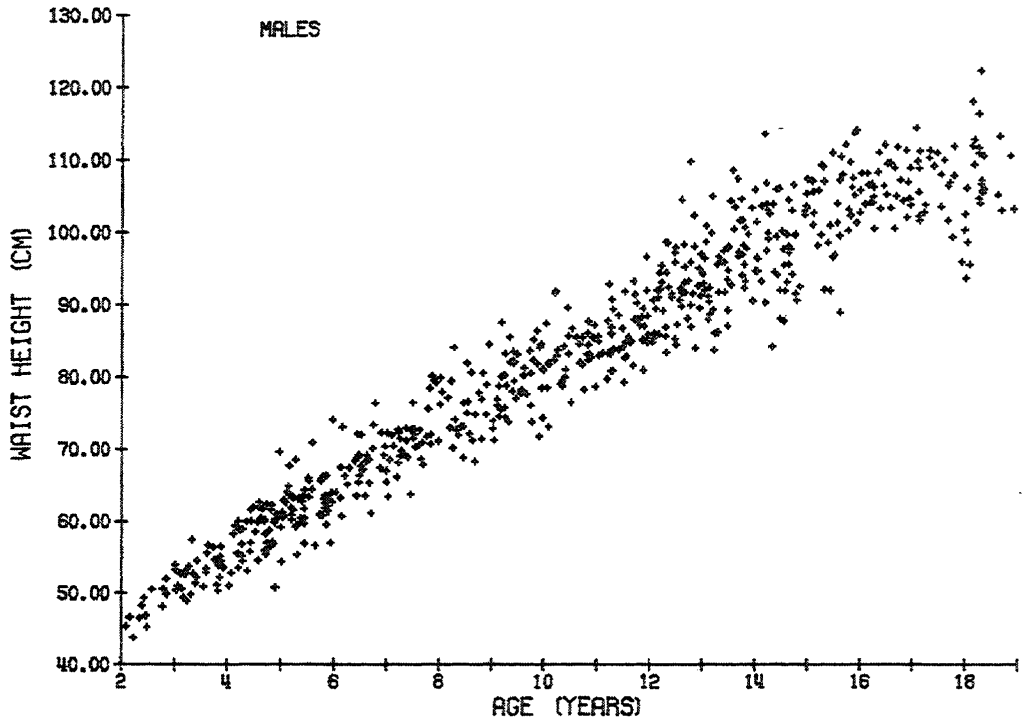


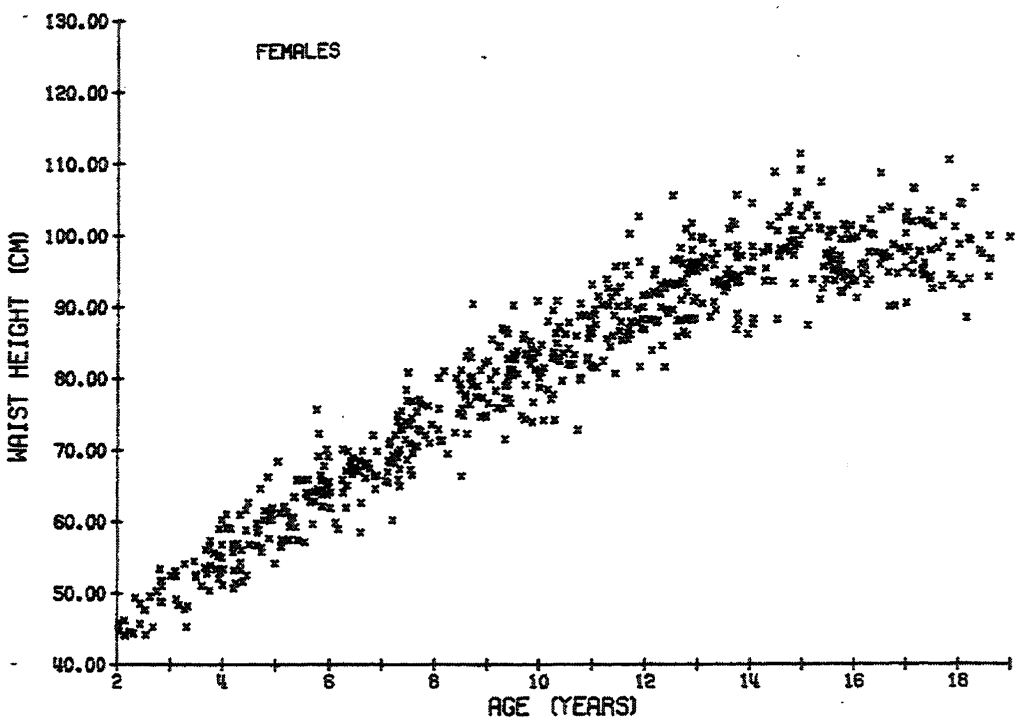


WAIST HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	49.3	3.3	43.7	44.2	49.3	54.0	57.5
3.5-4.5	78	55.4	3.2	50.3	50.9	55.0	61.2	62.7
4.5-5.5	93	60.6	3.5	50.7	55.0	60.4	66.8	69.6
5.5-6.5	80	65.2	3.8	56.6	59.0	64.9	72.1	75.7
6.5-7.5	86	69.2	3.8	58.5	62.9	68.9	75.4	80.9
7.5-8.5	68	73.9	4.0	66.4	67.5	72.9	80.1	84.0
8.5-9.5	91	79.2	4.5	68.3	71.5	79.0	86.9	90.5
9.5-10.5	84	81.8	4.5	71.8	73.9	82.1	89.5	91.9
10.5-11.5	86	85.6	4.1	72.8	79.4	85.5	92.8	95.7
11.5-12.5	97	89.5	4.8	81.0	82.5	88.7	98.1	105.6
12.5-13.5	108	93.6	4.7	83.7	86.2	93.3	100.8	109.9
13.5-14.5	90	97.6	5.8	84.2	87.8	97.2	106.6	113.7
14.5-15.5	81	99.8	5.4	87.5	91.1	99.7	108.4	111.5
15.5-16.5	79	101.3	6.0	89.0	92.2	100.9	111.2	114.3
16.5-17.5	67	101.8	6.1	90.1	91.3	102.0	111.4	114.6
17.5-19.0	62	103.7	6.9	88.6	93.2	103.7	113.4	122.5

(65)


MALES
WAIST HEIGHT (CM)
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WAIST HEIGHT (CM)
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

WAIST HEIGHT (cm)
(Males)

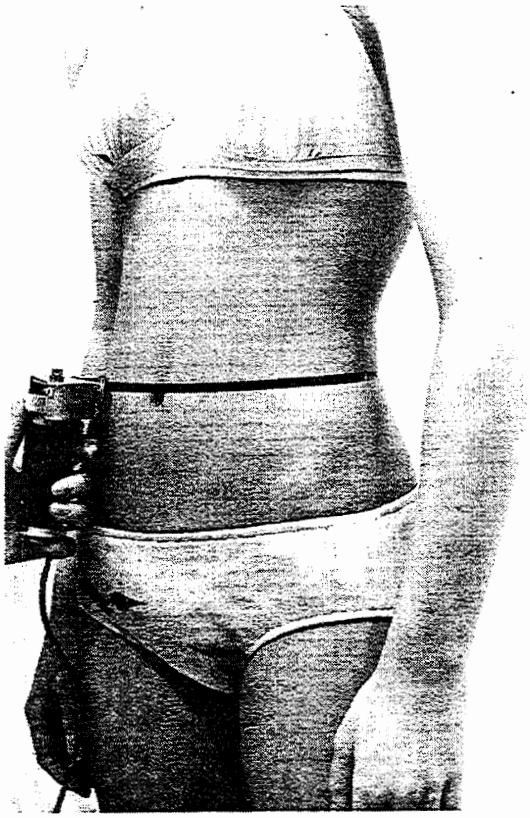
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	50.4	3.1	43.7	44.7	50.5	54.1	57.5
3.5-4.5	37	55.5	3.0	50.3	50.8	55.0	60.2	61.9
4.5-5.5	58	60.6	3.6	50.7	54.5	60.4	67.8	69.6
5.5-6.5	39	64.8	3.9	56.6	57.0	64.2	72.1	74.1
6.5-7.5	41	69.2	3.2	61.1	63.4	69.0	72.9	76.4
7.5-8.5	36	74.0	3.9	67.8	68.4	72.7	79.9	84.0
8.5-9.5	42	77.9	4.4	68.3	69.9	77.8	84.3	87.5
9.5-10.5	40	81.3	4.6	71.8	73.1	81.1	89.6	91.9
10.5-11.5	41	84.5	3.1	78.2	78.7	84.2	89.4	92.9
11.5-12.5	55	88.9	4.7	81.0	82.3	87.8	97.5	98.8
12.5-13.5	58	93.5	5.2	83.7	85.9	92.4	102.6	109.9
13.5-14.5	49	99.1	5.9	84.2	89.1	99.3	107.2	113.7
14.5-15.5	42	100.0	5.8	87.8	90.8	99.7	109.0	111.2
15.5-16.5	38	105.8	4.7	89.0	98.6	106.0	112.5	114.3
16.5-17.5	28	107.1	3.8	100.7	101.1	107.1	111.8	114.6
17.5-19.0	38	106.9	6.1	93.8	95.5	106.6	116.8	122.5

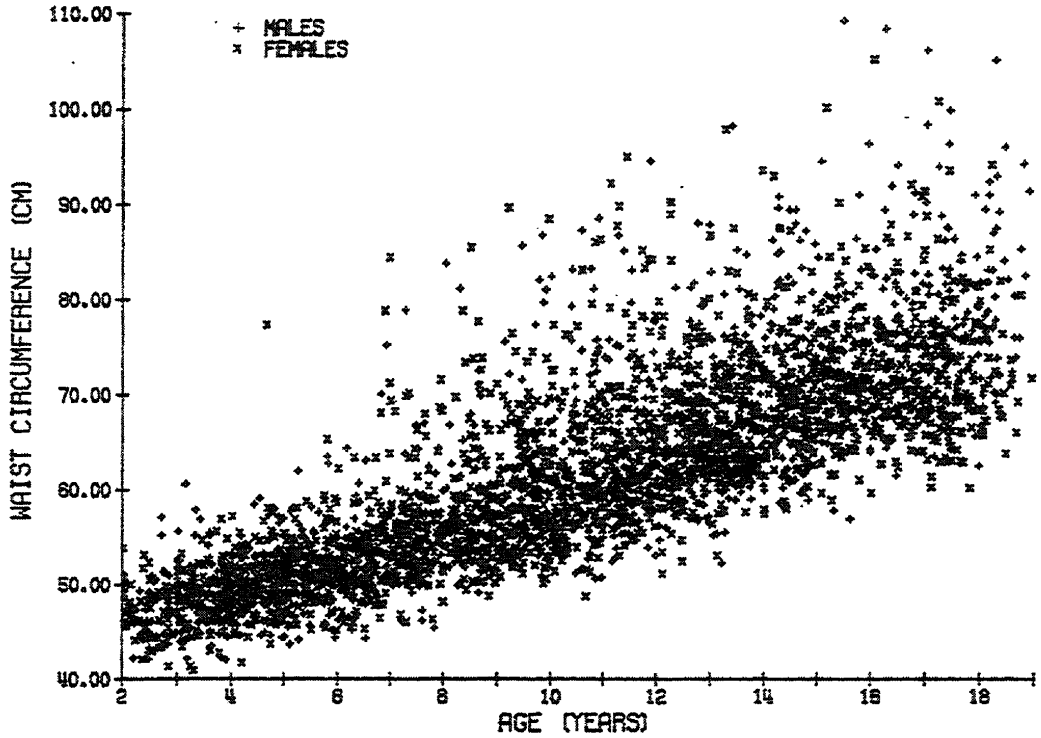
WAIST HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	48.2	3.2	44.1	44.1	48.2	53.6	54.5
3.5-4.5	41	55.4	3.3	50.4	50.7	55.0	61.1	62.7
4.5-5.5	35	60.5	3.3	54.2	55.4	60.2	66.0	68.5
5.5-6.5	41	65.5	3.6	57.2	59.0	65.1	70.2	75.7
6.5-7.5	45	69.3	4.4	58.5	60.8	68.5	76.6	80.9
7.5-8.5	32	73.9	4.1	66.4	66.5	73.0	80.5	81.2
8.5-9.5	49	80.2	4.4	71.5	73.3	79.9	87.1	90.5
9.5-10.5	44	82.2	4.3	73.9	74.1	82.8	89.3	90.9
10.5-11.5	45	86.6	4.6	72.8	79.9	86.6	93.1	95.7
11.5-12.5	42	90.4	5.0	81.7	81.9	89.6	99.9	105.6
12.5-13.5	50	93.8	4.1	85.9	86.4	93.7	99.8	101.8
13.5-14.5	41	95.8	5.1	86.3	86.9	95.1	104.4	108.9
14.5-15.5	39	99.6	4.8	87.5	90.9	99.2	107.6	111.5
15.5-16.5	41	97.1	3.7	91.3	92.1	96.1	102.3	108.8
16.5-17.5	39	98.0	4.2	90.1	90.2	97.6	104.1	106.7
17.5-19.0	24	98.6	4.9	88.6	89.5	98.3	106.3	110.7

WAIST CIRCUMFERENCE

Subject stands erect with feet together, weight evenly distributed, and arms hanging at sides. With an automated tape device, measure the horizontal circumference of the waist during normal breathing at the level of the umbilicus (navel).

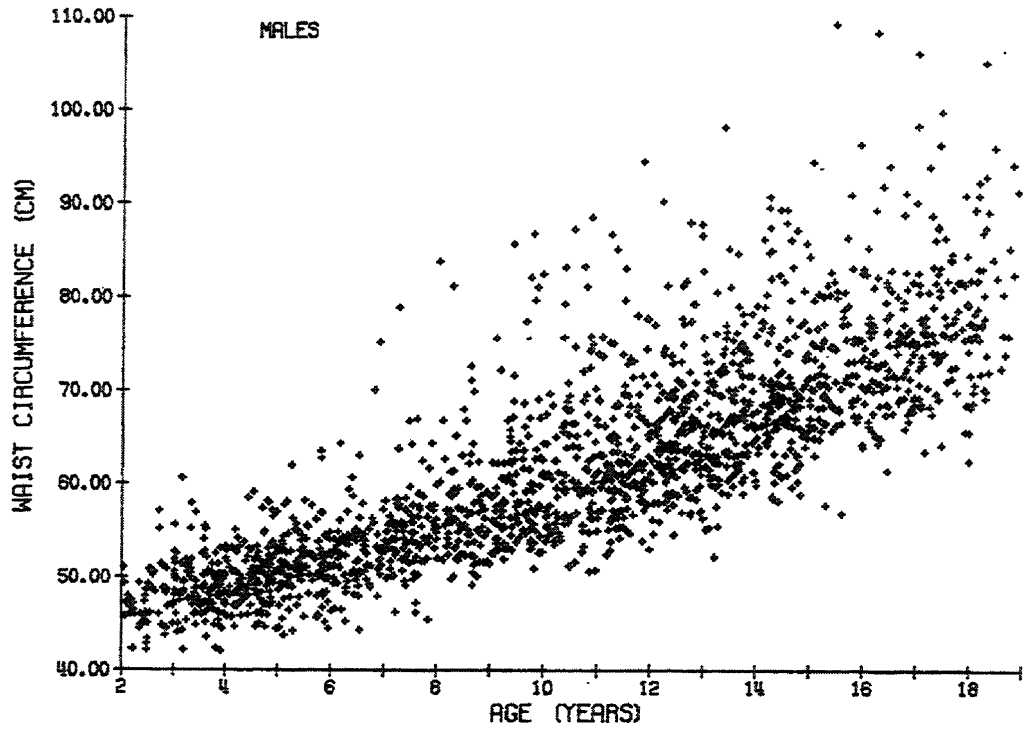


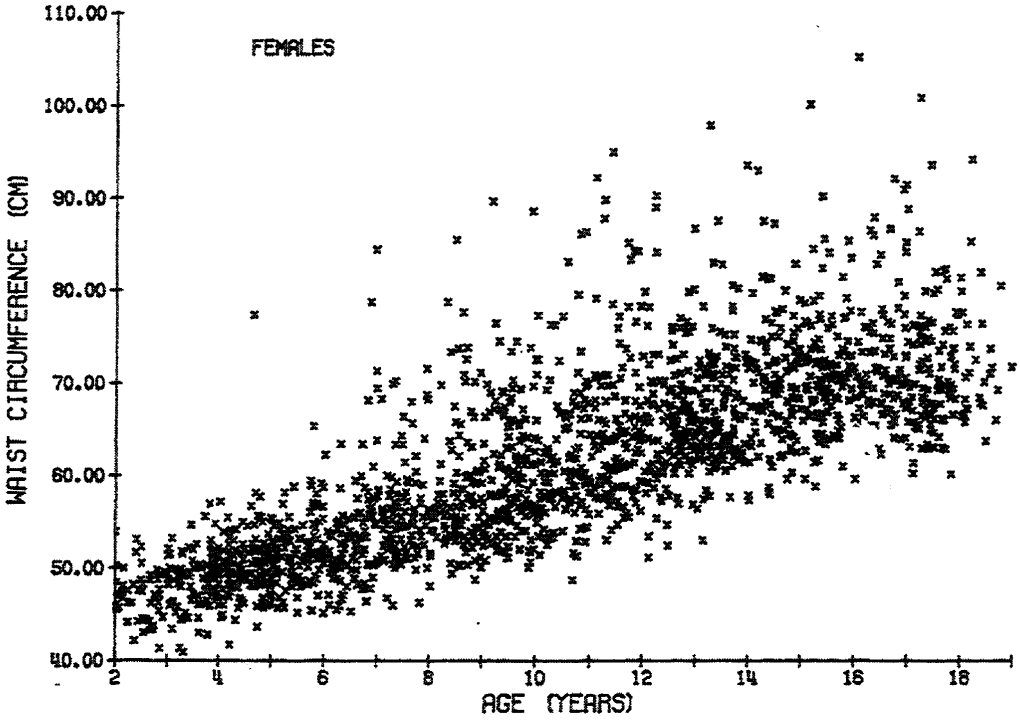


WAIST CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	210	48.1	3.2	38.8	43.1	48.1	52.9	60.6
3.5-4.5	226	49.3	2.9	41.7	44.7	49.1	54.1	58.5
4.5-5.5	262	51.1	3.6	43.7	45.7	50.9	57.2	77.4
5.5-6.5	219	52.0	3.7	44.4	45.9	51.5	58.7	65.3
6.5-7.5	224	54.9	5.7	44.3	48.0	53.9	66.7	84.5
7.5-8.5	189	56.8	6.1	45.4	49.9	55.5	67.9	85.5
8.5-9.5	251	58.8	6.5	48.7	51.2	57.3	71.1	89.7
9.5-10.5	253	60.9	7.0	50.1	52.8	59.4	75.9	88.6
10.5-11.5	279	63.4	7.9	48.7	53.8	61.2	79.6	95.1
11.5-12.5	286	64.8	7.1	51.1	55.6	63.3	78.2	94.6
12.5-13.5	312	67.1	6.9	52.2	57.5	65.8	80.0	98.3
13.5-14.5	270	69.2	6.9	57.4	60.2	68.0	81.9	93.7
14.5-15.5	263	71.0	7.0	57.8	61.8	69.7	83.3	109.4
15.5-16.5	196	73.2	7.3	56.9	64.2	71.6	86.2	108.5
16.5-17.5	219	74.2	7.8	60.3	64.1	73.2	90.3	106.3
17.5-19.0	155	75.9	7.7	60.2	65.5	75.6	90.5	105.3

(66)


MALES
WAIST CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WAIST CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
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12
14
16
18
AGE (YEARS)

WAIST CIRCUMFERENCE (cm)
(Males)

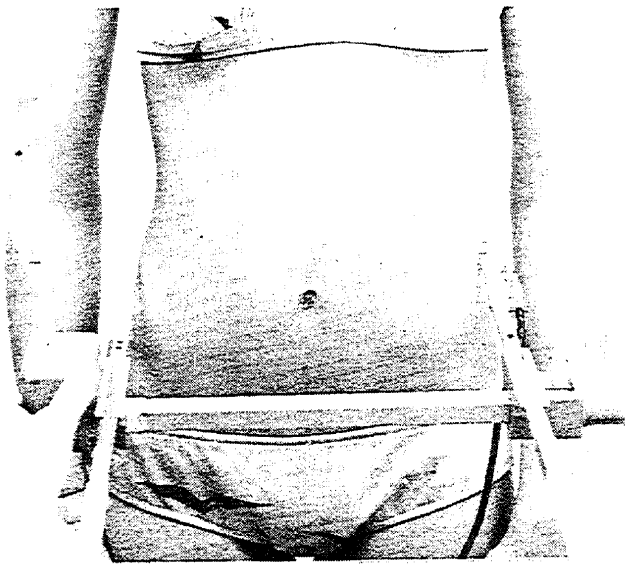
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	115	48.5	3.3	42.1	43.6	48.1	54.3	60.6
3.5-4.5	117	49.2	2.9	42.0	44.7	48.8	53.8	58.5
4.5-5.5	142	51.0	3.4	43.7	45.0	50.9	57.4	62.0
5.5-6.5	108	51.9	3.7	44.4	45.8	51.5	58.3	64.4
6.5-7.5	104	54.3	5.0	44.3	48.9	53.5	62.4	78.9
7.5-8.5	96	56.6	5.7	45.4	49.5	55.6	65.5	83.8
8.5-9.5	114	58.3	5.9	49.1	51.5	57.1	70.3	85.7
9.5-10.5	124	61.0	7.3	50.9	53.5	59.2	78.9	86.8
10.5-11.5	141	63.0	7.7	50.6	53.3	60.9	75.8	88.6
11.5-12.5	154	64.4	6.6	53.0	56.1	62.9	75.4	94.6
12.5-13.5	154	67.1	7.5	52.2	56.9	65.7	81.2	98.3
13.5-14.5	155	69.2	6.8	58.2	60.3	68.0	83.1	90.9
14.5-15.5	131	71.5	7.6	57.8	61.7	70.0	85.1	109.4
15.5-16.5	100	74.4	7.7	56.9	64.4	73.0	89.5	108.5
16.5-17.5	104	76.6	7.7	63.5	67.3	75.2	91.1	106.3
17.5-19.0	88	78.8	7.6	62.5	68.4	77.4	92.1	105.3

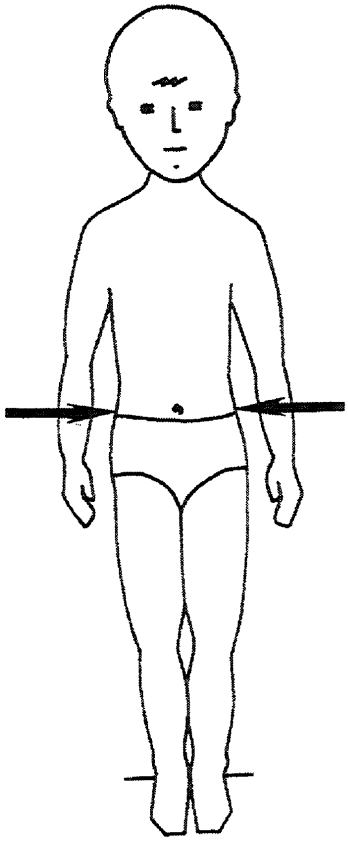
WAIST CIRCUMFERENCE (cm)
(Females)

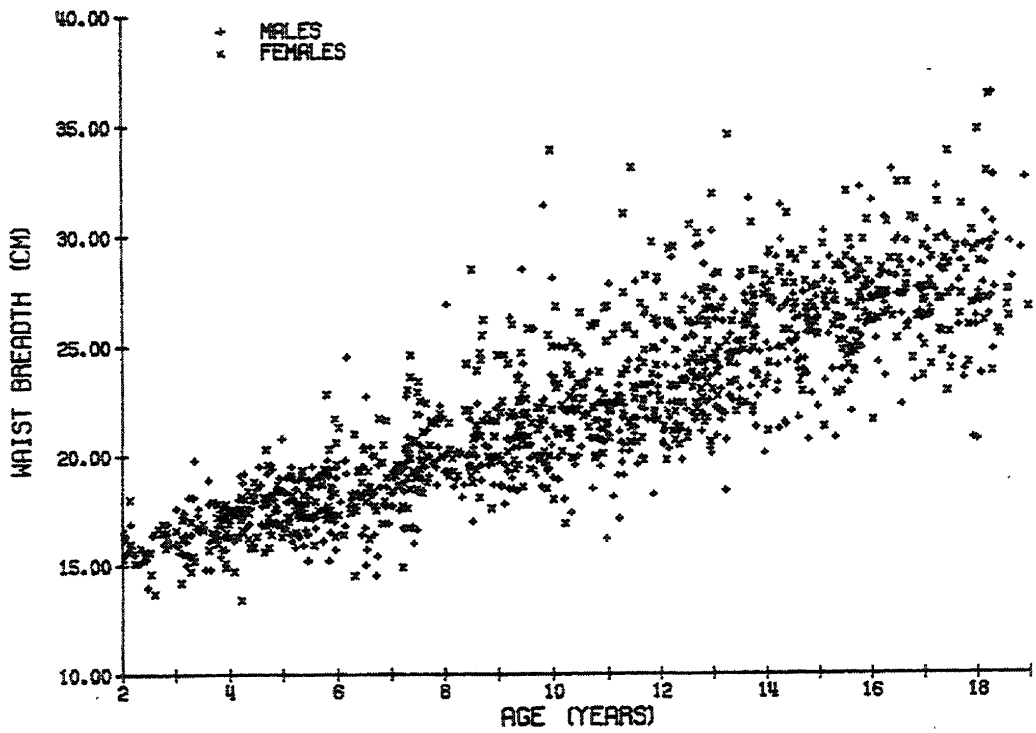
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	95	47.6	3.0	38.8	41.9	48.0	52.2	54.7
3.5-4.5	109	49.5	2.9	41.7	44.6	49.4	54.5	57.2
4.5-5.5	120	51.1	3.9	43.7	46.0	50.8	56.7	77.4
5.5-6.5	111	52.1	3.7	45.1	46.0	51.4	58.8	65.3
6.5-7.5	120	55.3	6.3	45.3	47.7	54.2	68.3	84.5
7.5-8.5	93	57.0	6.5	46.3	49.9	55.4	69.1	85.5
8.5-9.5	137	59.2	7.0	48.7	50.5	57.5	71.4	89.7
9.5-10.5	129	60.9	6.7	50.1	51.9	59.6	73.7	88.6
10.5-11.5	138	63.7	8.1	48.7	54.0	61.8	80.0	95.1
11.5-12.5	132	65.2	7.7	51.1	55.4	63.8	81.3	90.3
12.5-13.5	158	67.2	6.3	53.0	58.4	65.9	77.2	98.0
13.5-14.5	115	69.1	7.0	57.4	58.7	68.0	81.1	93.7
14.5-15.5	132	70.5	6.3	58.9	61.9	69.5	81.1	100.3
15.5-16.5	96	71.9	6.7	59.7	62.9	70.7	84.3	105.4
16.5-17.5	115	72.2	7.3	60.3	63.2	70.5	87.3	101.0
17.5-19.0	67	72.0	6.1	60.2	63.3	70.3	82.2	94.3

WAIST BREADTH

Subject stands erect with feet together, weight evenly distributed. With the paddle blades of an automated anthropometer, measure the horizontal breadth of the torso at the level of the umbilicus (navel) at a fixed pressure value.



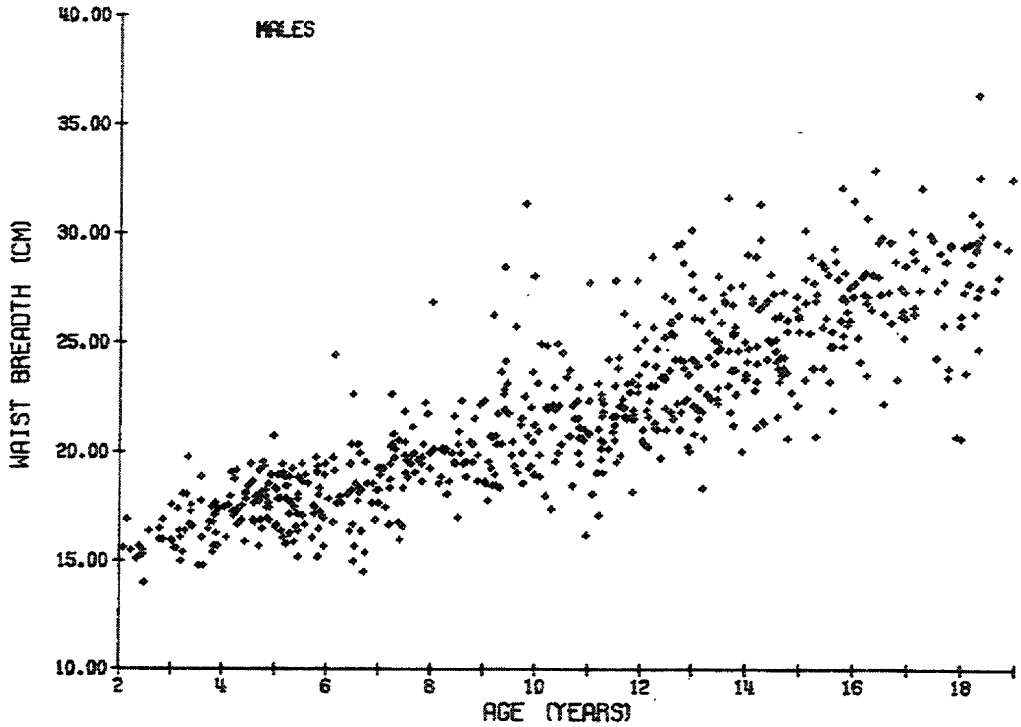


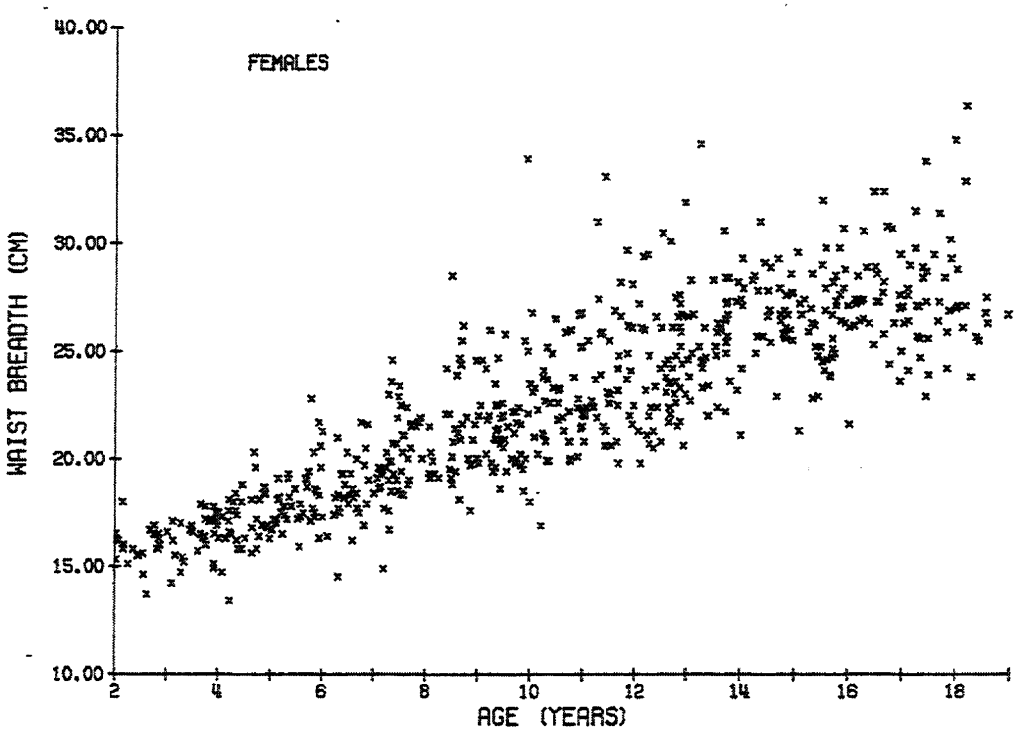


WAIST BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	65	16.1	1.0	13.7	14.3	16.0	17.9	19.8
3.5-4.5	77	17.0	1.1	13.4	14.8	17.1	18.7	19.2
4.5-5.5	93	17.8	1.2	15.2	15.8	17.8	19.5	20.8
5.5-6.5	78	18.3	1.6	14.5	15.9	18.1	21.0	24.5
6.5-7.5	87	19.0	2.0	14.5	15.5	18.7	22.8	24.6
7.5-8.5	68	20.4	1.8	18.1	18.5	20.0	22.5	28.5
8.5-9.5	90	21.3	2.2	17.0	18.2	20.9	25.1	28.5
9.5-10.5	85	21.9	2.8	16.9	18.1	21.4	26.3	33.9
10.5-11.5	86	22.4	2.7	16.2	18.6	22.0	26.8	33.1
11.5-12.5	97	23.4	2.5	18.2	19.8	23.0	28.1	29.7
12.5-13.5	108	24.5	2.7	18.4	20.8	24.2	29.6	34.6
13.5-14.5	89	25.8	2.4	20.1	21.3	25.7	29.6	31.7
14.5-15.5	81	25.9	2.2	20.7	21.7	26.1	29.0	32.0
15.5-16.5	79	27.1	2.2	21.6	23.6	27.1	30.8	33.0
16.5-17.5	67	27.5	2.3	22.3	23.5	27.3	31.3	33.8
17.5-19.0	63	28.0	3.1	20.7	23.5	27.5	32.9	36.5

(67)


MALES
WAIST BREADTH (CM)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
WAIST BREADTH (CM)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

WAIST BREADTH (cm)
(Males)

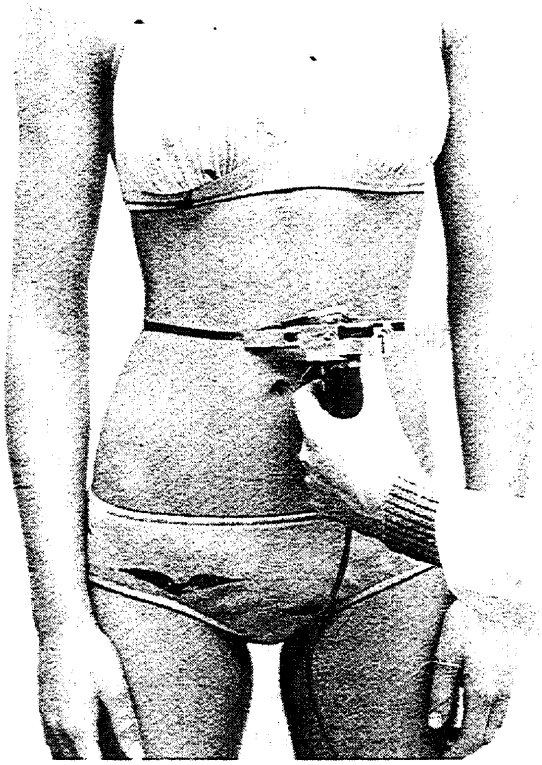
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	16.3	1.1	14.0	14.6	16.0	17.9	19.8
3.5-4.5	37	17.2	1.1	14.8	14.8	17.3	18.9	19.2
4.5-5.5	58	17.8	1.2	15.2	15.8	17.8	19.5	20.8
5.5-6.5	39	18.2	1.6	15.2	15.7	18.0	19.8	24.5
6.5-7.5	41	18.5	1.9	14.5	15.0	18.4	20.9	22.7
7.5-8.5	36	20.1	1.5	18.1	18.5	19.8	22.0	26.9
8.5-9.5	41	20.8	2.3	17.0	17.8	20.3	24.2	28.5
9.5-10.5	40	21.6	2.8	17.4	18.0	21.2	25.8	31.4
10.5-11.5	41	21.2	2.1	16.2	17.1	21.0	24.3	27.8
11.5-12.5	55	22.9	2.2	18.2	19.7	22.6	27.3	29.0
12.5-13.5	58	24.1	2.6	18.4	20.3	23.9	28.8	30.2
13.5-14.5	49	25.4	2.6	20.1	21.2	25.1	29.5	31.7
14.5-15.5	42	25.4	2.2	20.7	20.9	25.5	28.7	30.2
15.5-16.5	38	27.2	2.4	22.0	23.2	27.1	31.7	33.0
16.5-17.5	28	27.6	2.1	22.3	22.7	27.4	30.1	32.2
17.5-19.0	38	28.0	3.1	20.7	20.8	28.1	32.6	36.5

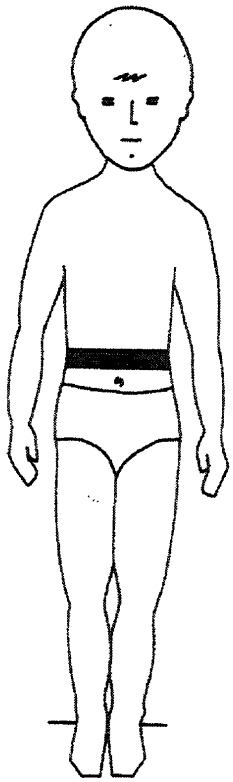
WAIST BREADTH (cm)
(Females)

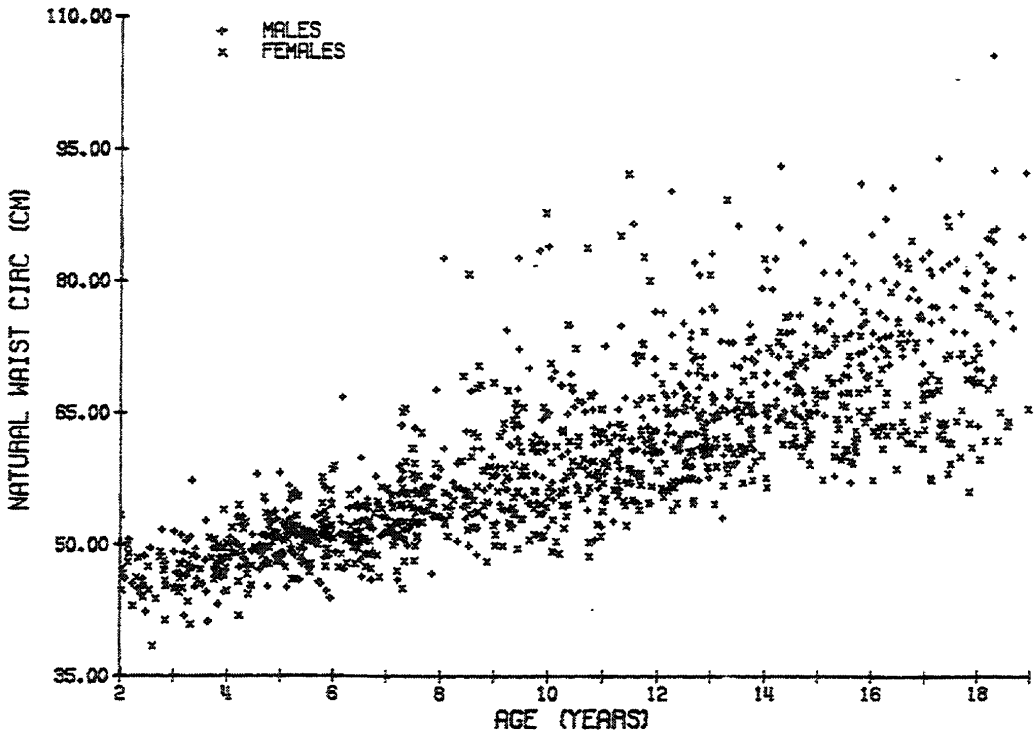
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	15.9	0.9	13.7	14.0	15.9	17.0	18.0
3.5-4.5	40	16.8	1.1	13.4	14.7	16.9	18.1	18.8
4.5-5.5	35	17.6	1.1	15.6	15.7	17.4	19.4	20.3
5.5-6.5	39	18.4	1.7	14.5	15.8	18.1	21.3	22.8
6.5-7.5	46	19.4	2.0	14.9	16.3	19.1	23.3	24.6
7.5-8.5	32	20.8	2.0	18.3	18.4	20.2	23.2	28.5
8.5-9.5	49	21.7	2.1	17.6	18.3	21.4	25.1	26.2
9.5-10.5	45	22.2	2.9	16.9	18.1	21.6	26.3	33.9
10.5-11.5	45	23.4	2.7	19.9	20.0	22.4	27.2	33.1
11.5-12.5	42	23.9	2.8	19.8	19.9	23.2	29.3	29.7
12.5-13.5	50	25.1	2.7	20.6	21.5	24.5	30.3	34.6
13.5-14.5	40	26.4	2.2	21.1	22.2	26.4	29.3	31.0
14.5-15.5	39	26.5	2.0	21.3	22.7	26.4	29.3	32.0
15.5-16.5	41	27.0	2.1	21.6	23.8	27.0	30.6	32.4
16.5-17.5	39	27.4	2.4	22.9	23.6	27.1	31.5	33.8
17.5-19.0	25	28.1	3.1	23.8	23.9	27.0	34.3	36.4

NATURAL WAIST CIRCUMFERENCE

Subject stands erect, arms hanging at sides. With an automated tape device, measure the circumference of the torso at the natural waist.



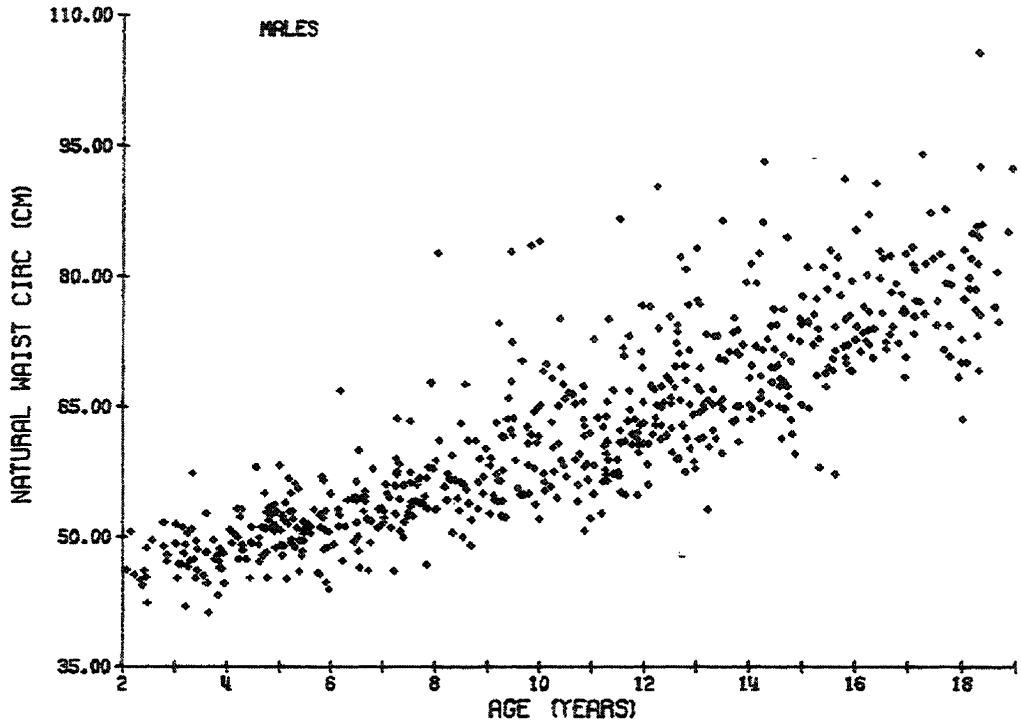


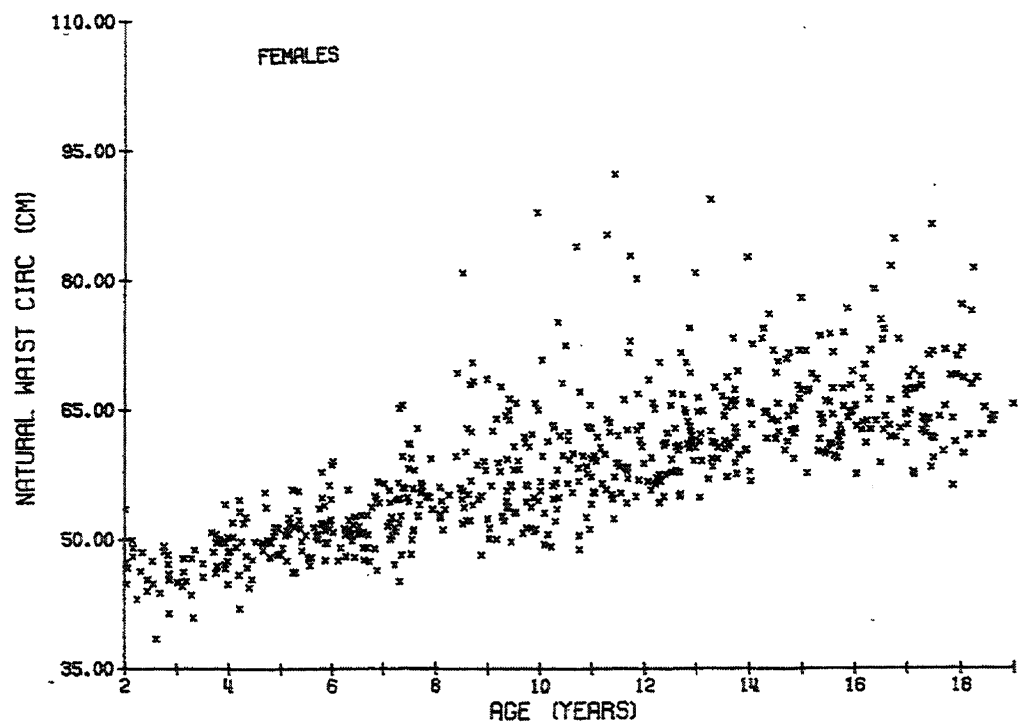


NATURAL WAIST CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	65	47.0	3.1	38.4	41.5	46.9	51.4	57.3
3.5-4.5	67	48.4	2.8	41.2	43.6	48.4	53.1	54.5
4.5-5.5	88	50.9	2.8	45.1	46.0	50.8	55.9	58.2
5.5-6.5	79	51.6	3.5	43.9	45.8	51.1	56.9	66.8
6.5-7.5	87	53.3	4.1	45.0	46.3	52.8	60.3	65.5
7.5-8.5	68	56.3	5.9	46.7	50.1	55.4	65.9	82.6
8.5-9.5	90	58.4	6.2	48.1	49.8	56.8	68.4	82.7
9.5-10.5	84	60.3	7.8	49.0	50.6	58.2	74.5	87.8
10.5-11.5	86	60.3	7.0	48.7	51.3	59.0	71.1	92.2
11.5-12.5	93	63.6	7.1	54.0	54.5	62.1	76.5	90.3
12.5-13.5	97	65.3	7.1	53.1	56.5	64.2	79.3	89.3
13.5-14.5	80	68.1	7.0	56.6	57.7	66.0	81.4	93.2
14.5-15.5	81	68.3	6.1	57.5	59.5	67.3	78.5	84.5
15.5-16.5	78	70.4	7.7	57.2	59.2	70.5	83.2	91.2
16.5-17.5	66	71.0	8.4	57.4	58.5	69.5	84.3	94.1
17.5-19.0	63	74.3	9.4	56.1	60.3	73.7	87.5	105.8

(68)


MALES
NATURAL WAIST CIRC (CM)
110.00
95.00
80.00
65.00
50.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
NATURAL WAIST CIRC (CM)
110.00
95.00
80.00
65.00
50.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

NATURAL WAIST CIRCUMFERENCE (cm)
(Males)

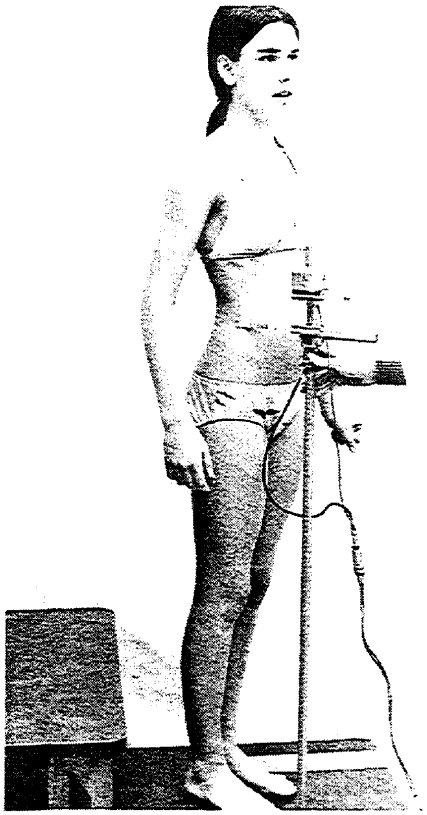
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	47.8	3.0	41.9	42.2	47.3	51.6	57.3
3.5-4.5	33	48.3	2.8	41.2	42.5	48.3	52.8	53.2
4.5-5.5	55	51.2	3.0	45.1	45.7	51.0	57.0	58.2
5.5-6.5	39	51.7	4.0	43.9	44.7	51.2	56.5	66.8
6.5-7.5	41	53.4	3.7	46.0	46.0	52.9	59.0	63.6
7.5-8.5	36	56.8	5.8	46.7	49.7	56.1	64.2	82.6
8.5-9.5	42	59.2	6.8	48.9	50.1	57.6	71.9	82.7
9.5-10.5	39	62.2	7.5	52.0	53.6	60.6	75.4	84.0
10.5-11.5	41	60.4	5.2	50.6	52.1	59.0	67.3	75.0
11.5-12.5	53	65.3	6.9	54.8	55.0	63.2	76.5	90.3
12.5-13.5	51	67.3	7.3	53.1	57.6	65.6	81.4	86.4
13.5-14.5	41	71.1	6.7	60.9	63.2	70.6	82.5	93.2
14.5-15.5	42	70.8	6.3	57.9	59.7	69.8	81.0	84.5
15.5-16.5	38	75.6	6.6	57.2	67.9	74.1	87.6	91.2
16.5-17.5	27	77.8	5.5	68.4	69.2	76.7	86.0	94.1
17.5-19.0	38	79.3	8.0	63.6	67.9	78.6	92.5	105.8

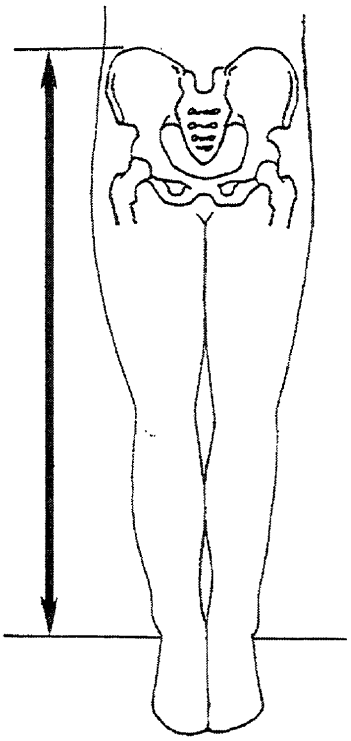
NATURAL WAIST CIRCUMFERENCE (cm)
(Females)

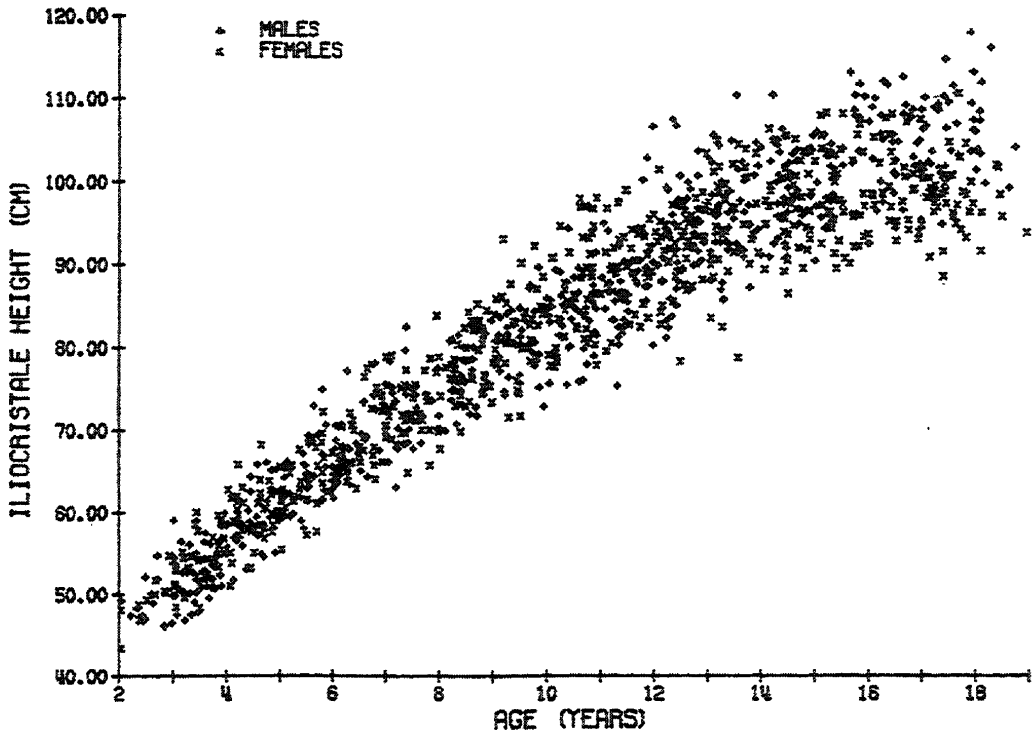
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	46.1	2.9	38.4	39.9	46.2	49.5	53.4
3.5-4.5	34	48.6	2.9	41.9	43.6	48.5	53.4	54.5
4.5-5.5	33	50.5	2.4	46.0	46.1	50.3	55.4	55.7
5.5-6.5	40	51.4	3.0	46.9	47.4	50.8	57.7	59.0
6.5-7.5	46	53.2	4.5	45.0	46.5	52.6	60.8	65.5
7.5-8.5	32	55.9	6.1	48.2	49.2	54.8	65.4	80.8
8.5-9.5	48	57.7	5.7	48.1	49.7	56.1	68.1	70.4
9.5-10.5	45	58.6	7.7	49.0	49.6	56.3	72.0	87.8
10.5-11.5	45	60.2	8.3	48.7	50.5	58.8	79.6	92.2
11.5-12.5	40	61.5	6.8	54.0	54.0	58.6	72.9	82.8
12.5-13.5	46	63.2	6.4	54.7	54.9	61.2	73.6	89.3
13.5-14.5	39	64.9	5.8	56.6	57.1	64.0	74.4	82.6
14.5-15.5	39	65.5	4.6	57.5	59.1	64.9	73.5	77.9
15.5-16.5	40	65.5	5.2	57.4	58.7	64.0	75.4	78.9
16.5-17.5	39	66.2	6.6	57.4	57.7	64.0	81.8	86.4
17.5-19.0	25	66.8	5.9	56.1	57.0	65.3	76.9	81.4

ILIOCRISTALE (PELVIS) HEIGHT

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the highest point on the right iliac crest of the pelvis.



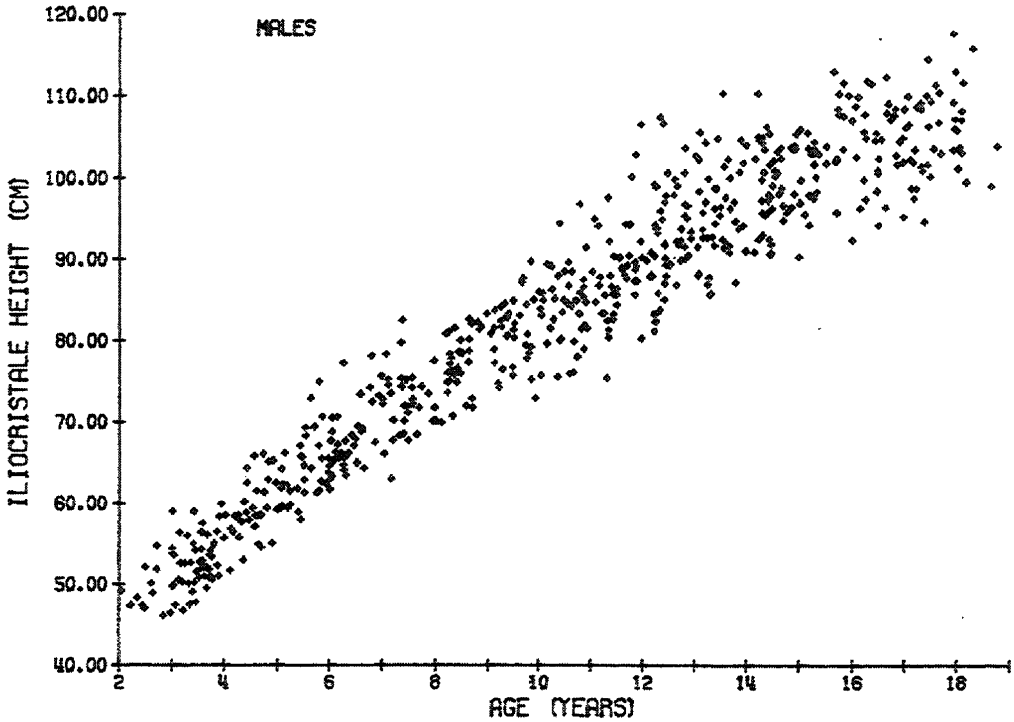


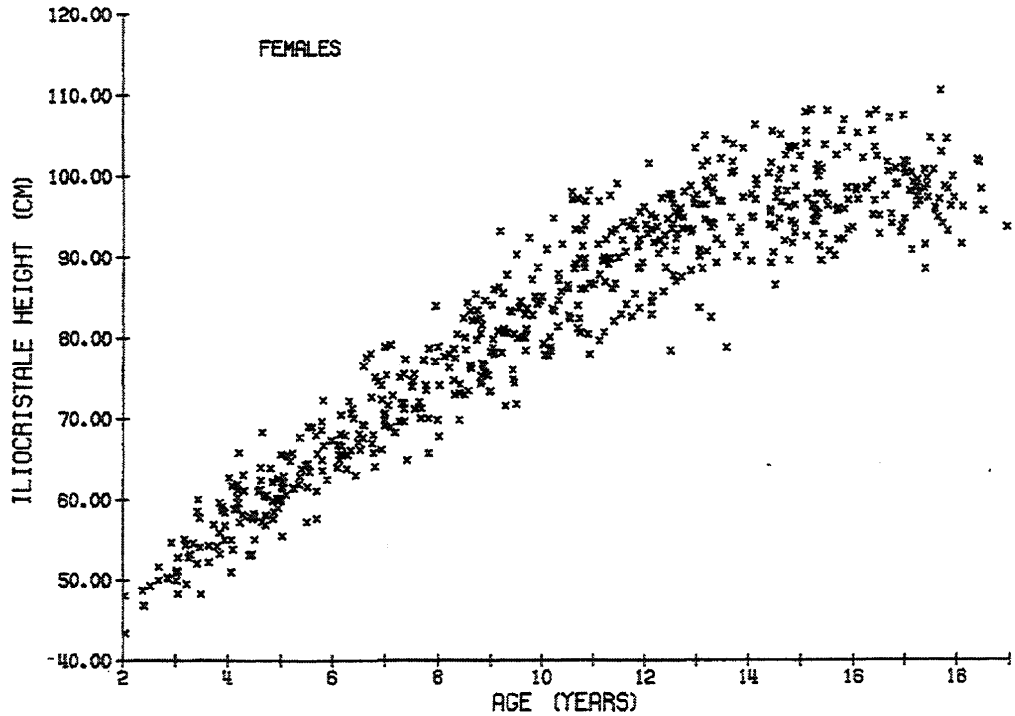


ILIOCRISTALE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	51.4	3.6	43.4	46.6	50.7	58.8	60.0
3.5-4.5	79	56.2	3.7	49.5	50.7	56.3	62.5	65.8
4.5-5.5	76	61.4	3.2	54.5	55.3	61.4	66.1	68.2
5.5-6.5	77	66.4	3.4	57.6	61.2	65.9	72.1	77.2
6.5-7.5	75	71.6	4.2	63.0	64.7	71.6	78.4	82.5
7.5-8.5	64	75.0	3.9	65.7	68.5	74.7	81.0	83.9
8.5-9.5	81	79.7	4.3	71.5	71.9	80.5	85.4	93.1
9.5-10.5	75	83.6	4.6	72.9	75.6	83.4	91.0	94.7
10.5-11.5	97	87.2	5.6	75.4	78.0	86.6	97.2	99.0
11.5-12.5	95	91.3	5.7	78.3	82.5	90.7	100.9	107.5
12.5-13.5	100	94.8	5.2	82.5	86.4	94.6	103.7	110.4
13.5-14.5	82	97.2	5.7	78.8	89.2	97.1	105.3	110.4
14.5-15.5	87	99.2	4.5	89.5	91.4	98.5	105.6	108.2
15.5-16.5	63	101.5	6.1	90.1	92.1	101.9	111.4	113.1
16.5-17.5	74	101.7	5.5	88.5	92.5	100.9	109.7	114.7
17.5-19.0	46	102.5	6.4	91.6	93.3	102.0	112.8	117.9

(69)


MALES
ILIOCRISTALE HEIGHT (CM)
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ILIOCRISTALE HEIGHT (CM)
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
-40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ILIOCRISTALE HEIGHT (cm)
(Males)

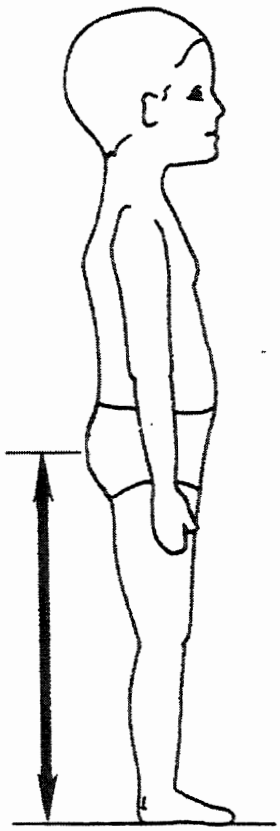
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	51.3	3.7	46.1	46.4	50.2	58.9	59.0
3.5-4.5	44	55.0	3.5	49.5	50.6	54.3	60.1	64.3
4.5-5.5	35	61.2	3.5	54.5	54.8	61.3	66.1	67.1
5.5-6.5	43	66.3	3.6	61.2	61.3	65.6	72.6	77.2
6.5-7.5	34	71.8	4.4	63.0	63.9	71.9	78.7	82.5
7.5-8.5	32	75.1	3.5	68.4	69.3	75.0	80.9	81.5
8.5-9.5	33	79.8	3.8	71.7	71.8	80.9	84.2	84.9
9.5-10.5	37	83.1	4.7	72.9	74.9	83.1	89.4	94.4
10.5-11.5	49	85.3	4.9	75.4	76.0	85.1	94.6	97.6
11.5-12.5	52	91.5	6.3	80.3	81.9	89.9	104.4	107.5
12.5-13.5	50	95.1	5.6	85.7	86.4	94.5	104.6	110.4
13.5-14.5	51	97.8	5.3	87.2	90.7	97.2	105.3	110.4
14.5-15.5	39	100.4	3.7	90.4	94.1	100.5	105.5	106.0
15.5-16.5	31	104.5	5.6	92.5	93.5	104.8	111.8	113.1
16.5-17.5	38	104.9	4.8	94.8	95.3	105.0	110.4	114.7
17.5-19.0	23	106.9	4.9	99.2	99.3	106.1	115.7	117.9

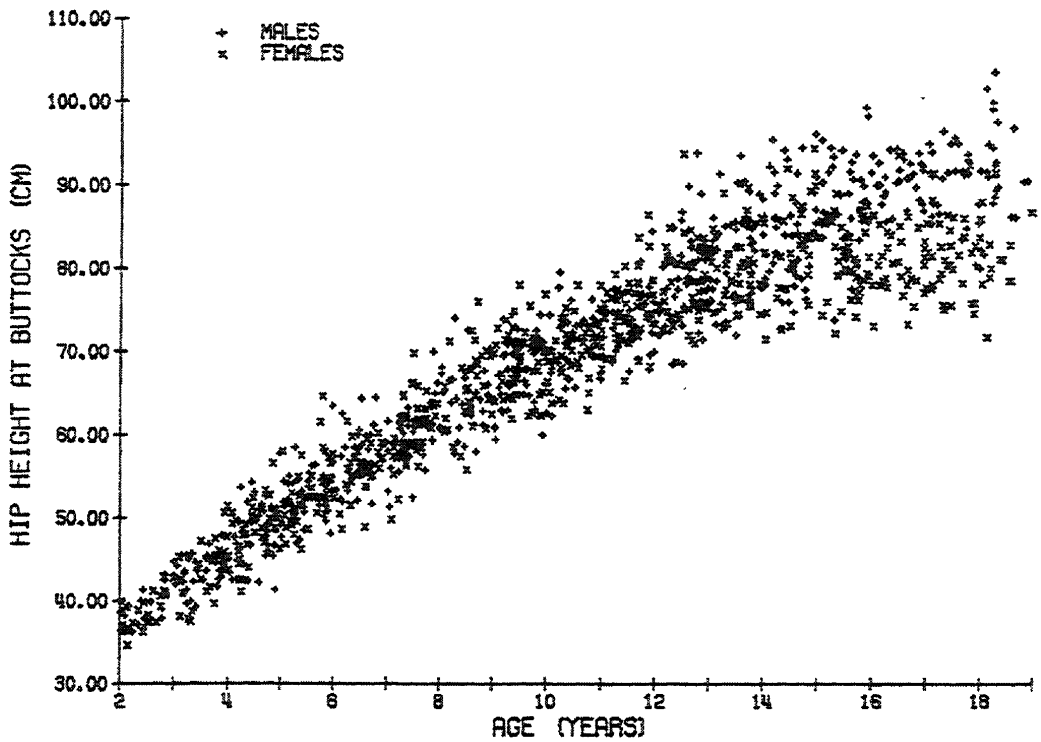
ILIOCRISTALE HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	51.6	3.6	43.4	45.1	51.1	58.1	60.0
3.5-4.5	35	57.6	3.4	51.0	52.0	57.8	62.8	65.8
4.5-5.5	41	61.6	2.9	55.4	56.8	61.3	65.7	68.2
5.5-6.5	34	66.5	3.3	57.6	60.0	66.5	71.5	72.2
6.5-7.5	41	71.4	4.0	64.0	64.8	71.1	78.0	79.1
7.5-8.5	32	74.8	4.2	65.7	66.9	74.2	81.2	83.9
8.5-9.5	48	79.6	4.6	71.5	72.3	79.7	86.1	93.1
9.5-10.5	38	84.2	4.4	77.7	77.8	83.6	91.6	94.7
10.5-11.5	48	89.0	5.6	77.9	79.9	89.1	97.8	99.0
11.5-12.5	43	91.0	5.1	78.3	82.5	91.9	97.5	101.5
12.5-13.5	50	94.5	4.8	82.5	85.2	94.6	101.9	105.0
13.5-14.5	31	96.3	6.1	78.8	83.0	95.6	104.9	106.3
14.5-15.5	48	98.3	4.8	89.5	90.2	97.3	106.9	108.2
15.5-16.5	32	98.7	5.2	90.1	90.5	98.2	107.2	108.1
16.5-17.5	36	98.4	4.0	88.5	90.3	98.7	105.2	107.5
17.5-19.0	23	98.1	4.3	91.6	91.8	96.7	104.3	110.6

HIP HEIGHT AT BUTTOCKS

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the maximum posterior protrusion of the buttocks.

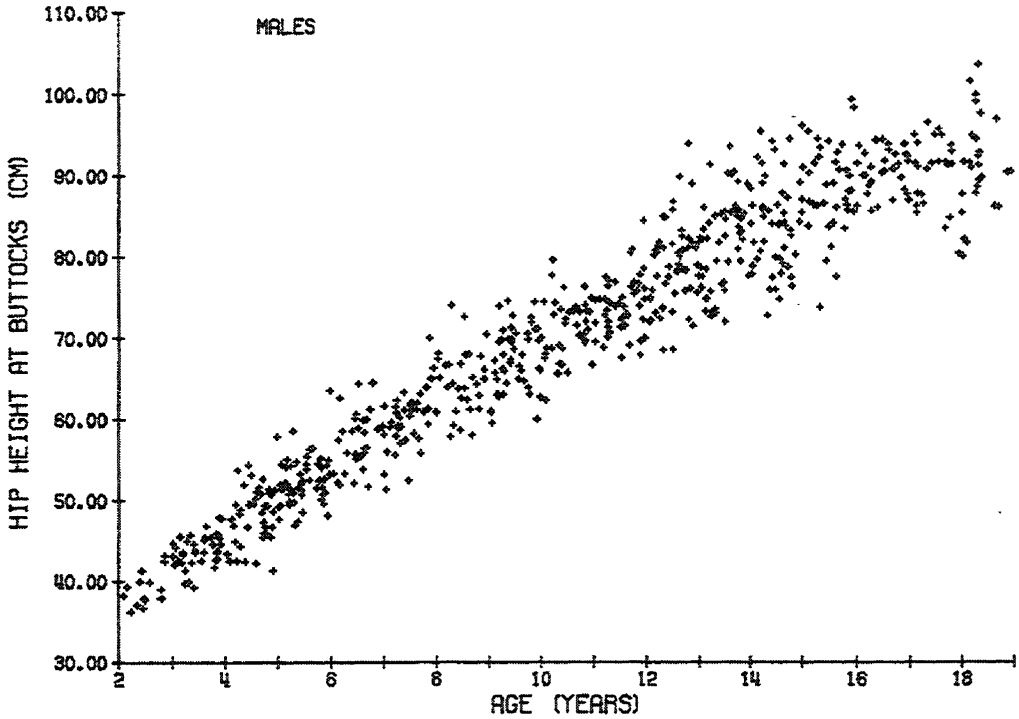


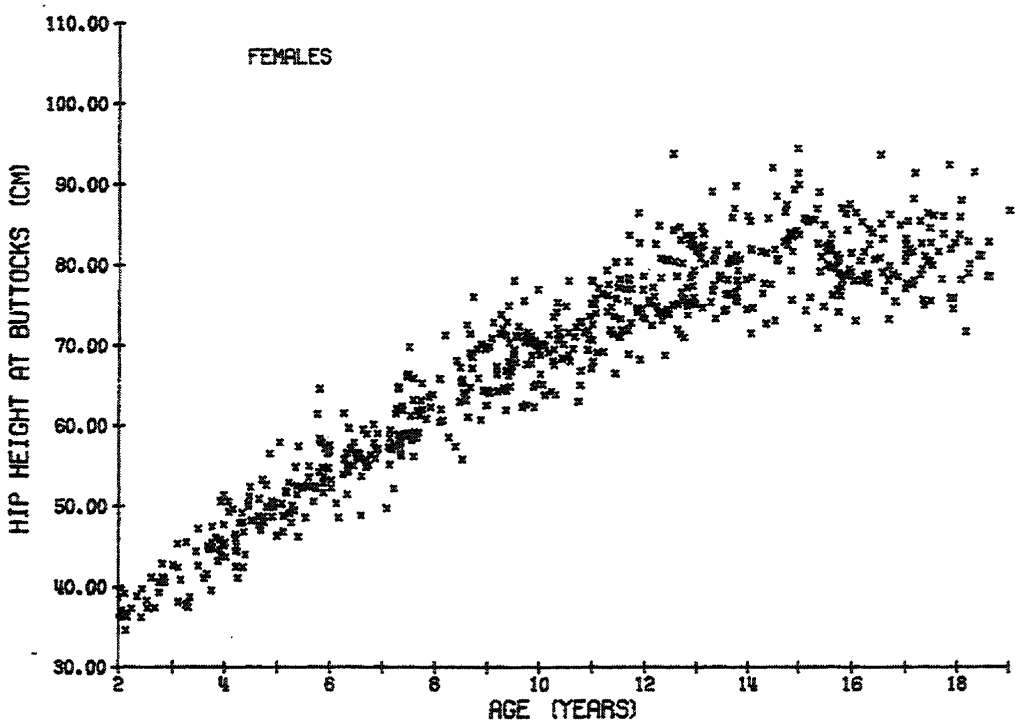


HIP HEIGHT AT BUTTOCKS (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	40.4	2.9	34.6	36.2	39.9	45.2	45.7
3.5-4.5	78	46.2	3.2	39.6	41.5	45.4	52.0	54.3
4.5-5.5	93	50.5	3.2	41.3	45.6	50.7	56.9	58.5
5.5-6.5	80	54.8	3.4	48.1	49.6	54.4	61.5	64.6
6.5-7.5	86	58.5	3.7	48.9	51.8	58.5	64.7	69.8
7.5-8.5	68	62.6	3.7	55.8	56.7	61.9	68.1	74.0
8.5-9.5	91	67.3	4.0	58.0	60.9	67.2	73.8	78.0
9.5-10.5	85	69.2	4.0	60.0	62.4	69.4	75.4	79.6
10.5-11.5	86	72.6	3.4	63.0	66.7	72.6	77.8	80.3
11.5-12.5	97	76.3	4.8	67.9	68.8	75.2	84.9	93.8
12.5-13.5	108	79.3	4.5	71.0	72.1	78.7	85.9	93.9
13.5-14.5	90	82.5	5.6	71.5	73.4	81.8	92.2	95.5
14.5-15.5	81	84.4	5.5	72.2	74.8	83.9	94.5	96.2
15.5-16.5	79	85.2	6.0	73.1	76.3	85.5	94.1	99.4
16.5-17.5	67	85.1	6.1	73.3	75.5	85.2	94.0	96.6
17.5-19.0	63	87.4	7.1	71.8	75.3	87.3	99.0	103.7

(70)


MALES
HIP HEIGHT AT BUTTOCKS (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HIP HEIGHT AT BUTTOCKS (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HIP HEIGHT AT BUTTOCKS (cm)
(Males)

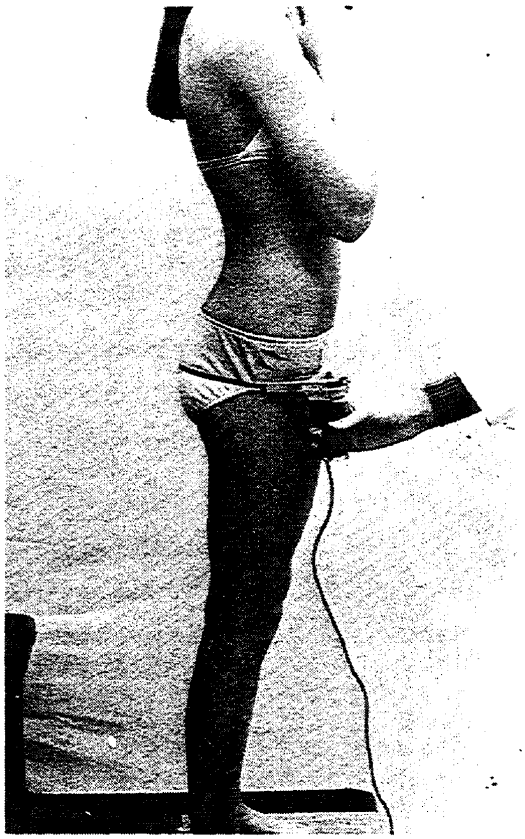
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	41.3	2.8	36.2	36.5	41.6	45.2	45.7
3.5-4.5	37	46.3	3.3	41.7	42.3	45.4	53.2	54.3
4.5-5.5	58	50.4	3.3	41.3	43.6	50.8	55.1	58.5
5.5-6.5	39	54.4	3.4	48.1	49.5	53.9	60.7	63.5
6.5-7.5	41	58.4	3.2	51.3	51.7	58.8	63.3	64.5
7.5-8.5	36	62.9	3.8	55.8	57.2	61.9	68.5	74.0
8.5-9.5	42	66.5	4.0	58.0	59.6	66.2	72.7	74.5
9.5-10.5	40	69.1	4.4	60.0	62.3	68.5	76.2	79.6
10.5-11.5	41	72.5	2.6	66.7	67.7	72.4	76.9	77.5
11.5-12.5	55	76.0	4.7	67.9	68.6	74.9	84.9	86.8
12.5-13.5	58	79.6	5.0	71.5	72.3	78.7	89.1	93.9
13.5-14.5	49	84.8	5.2	72.8	75.1	85.0	93.4	95.5
14.5-15.5	42	85.6	5.9	73.8	75.0	85.4	94.6	96.2
15.5-16.5	38	89.7	4.1	77.6	82.9	90.0	94.9	99.4
16.5-17.5	28	90.9	3.0	85.5	85.8	91.2	94.9	96.6
17.5-19.0	38	91.1	5.6	80.1	80.5	91.4	100.2	103.7

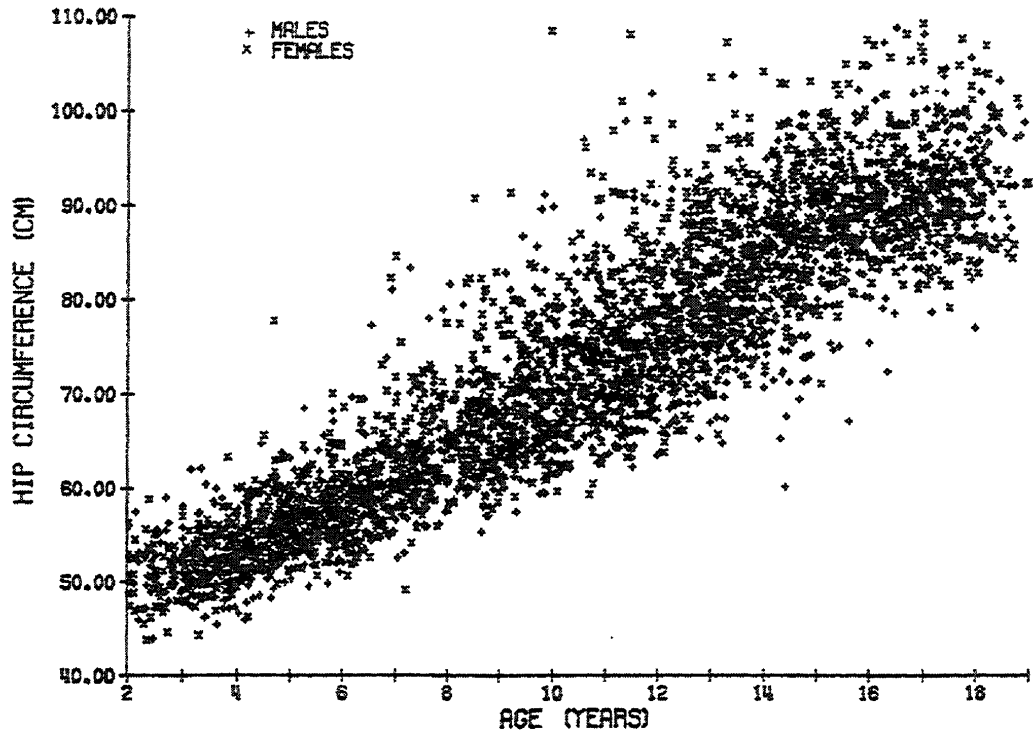
HIP HEIGHT AT BUTTOCKS (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	34	39.4	2.7	34.6	35.7	38.8	44.7	45.5
3.5-4.5	41	46.1	3.2	39.6	40.4	45.4	51.2	52.4
4.5-5.5	35	50.6	3.0	46.2	46.3	50.0	56.8	58.0
5.5-6.5	41	55.1	3.4	48.6	48.7	54.8	61.4	64.6
6.5-7.5	45	58.5	4.1	48.9	50.4	57.6	66.2	69.8
7.5-8.5	32	62.2	3.6	55.8	56.0	61.9	67.5	71.2
8.5-9.5	49	67.9	3.9	60.7	61.4	67.4	74.4	78.0
9.5-10.5	45	69.3	3.6	62.3	62.4	69.9	75.2	76.9
10.5-11.5	45	72.7	4.1	63.0	65.4	72.4	78.1	80.3
11.5-12.5	42	76.6	5.0	68.2	68.8	75.3	84.8	93.8
12.5-13.5	50	79.0	4.0	71.0	71.7	78.6	84.5	89.1
13.5-14.5	41	79.7	4.6	71.5	72.7	78.9	87.0	92.1
14.5-15.5	39	83.2	4.8	72.2	74.3	83.0	90.1	94.5
15.5-16.5	41	81.0	4.0	73.1	74.3	80.3	87.1	93.7
16.5-17.5	39	81.0	4.0	73.3	75.0	80.2	86.6	91.5
17.5-19.0	25	81.8	5.0	71.8	72.5	81.4	90.7	92.5

HIP CIRCUMFERENCE AT BUTTOCKS

Subject stands erect with feet together, weight evenly distributed. With an automated tape device, measure the maximum horizontal circumference of the hips at the level of the greatest posterior protrusion of the buttocks, as viewed from the side.

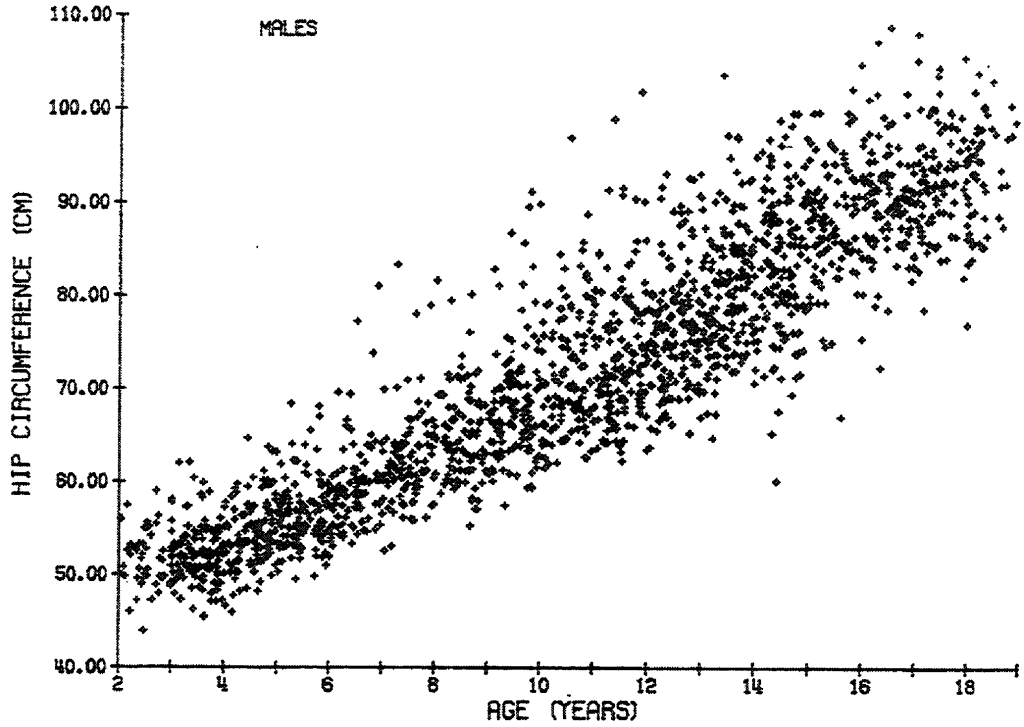


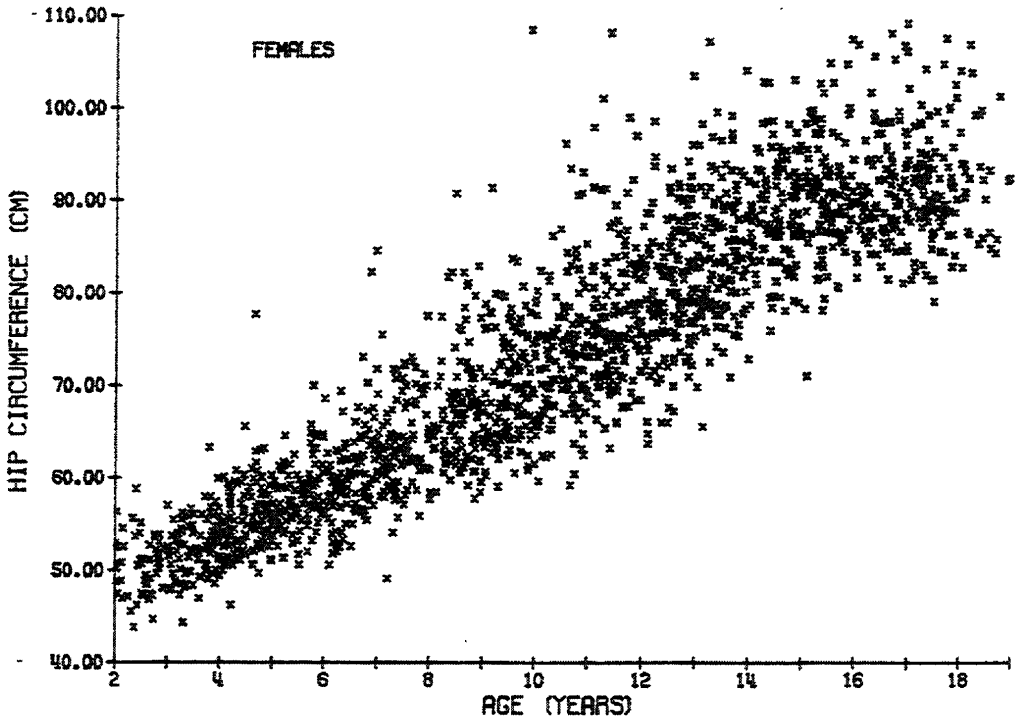


HIP CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	200	51.7	3.2	43.8	46.9	51.8	57.0	62.1
3.5-4.5	225	53.5	3.5	45.4	48.2	53.1	59.4	65.6
4.5-5.5	260	56.1	3.5	48.2	51.2	55.6	62.2	77.7
5.5-6.5	217	58.3	4.0	49.8	52.0	58.0	65.7	70.0
6.5-7.5	222	61.9	5.2	49.1	55.2	60.9	71.7	84.6
7.5-8.5	188	65.0	5.6	55.9	57.7	64.0	76.2	90.8
8.5-9.5	248	67.7	5.9	55.3	59.4	67.0	79.8	91.4
9.5-10.5	247	70.8	6.7	59.4	61.7	69.8	82.8	108.5
10.5-11.5	276	74.3	7.7	59.3	64.2	73.1	90.6	108.2
11.5-12.5	283	76.6	7.2	62.3	66.2	75.7	90.1	101.9
12.5-13.5	310	81.0	7.3	64.8	70.0	79.8	93.3	107.3
13.5-14.5	270	84.3	7.1	60.2	72.9	84.3	96.5	104.2
14.5-15.5	262	88.1	7.1	69.5	75.6	88.2	99.0	115.9
15.5-16.5	198	90.5	6.3	67.1	80.9	90.1	101.5	108.9
16.5-17.5	220	91.8	6.4	78.7	82.9	91.0	104.6	116.0
17.5-19.0	156	93.0	6.0	77.1	84.2	92.4	103.4	112.5

(71)


MALES
HIP CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HIP CIRCUMFERENCE (CM)
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HIP CIRCUMFERENCE (cm)
(Males)

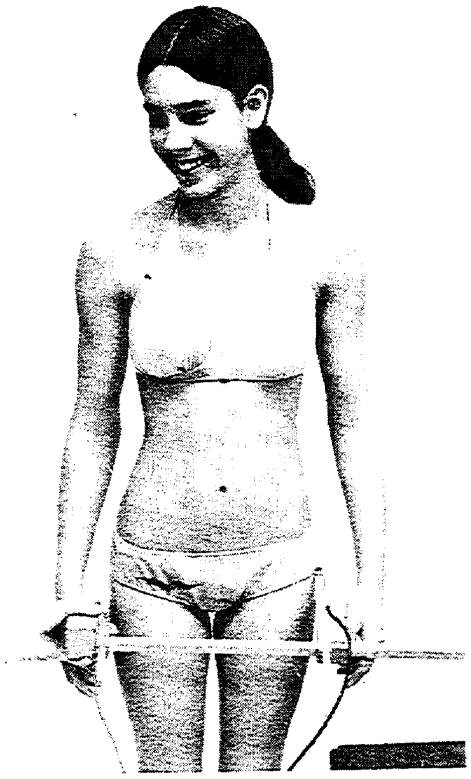
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	105	52.2	3.2	43.9	47.2	52.0	57.7	62.1
3.5-4.5	116	52.8	3.5	45.4	47.2	52.3	58.8	64.7
4.5-5.5	140	55.6	3.4	48.2	50.3	55.0	62.2	68.5
5.5-6.5	106	57.8	4.0	49.8	52.1	57.4	66.0	69.7
6.5-7.5	103	61.2	4.9	52.6	54.8	60.4	70.2	83.4
7.5-8.5	94	64.3	5.2	55.9	57.1	63.8	72.8	81.7
8.5-9.5	111	66.5	5.5	55.3	57.9	66.1	75.4	86.8
9.5-10.5	118	70.0	6.7	59.4	61.4	68.3	83.0	91.2
10.5-11.5	137	72.9	7.0	62.6	64.1	71.1	84.7	99.0
11.5-12.5	150	75.0	6.7	62.3	66.1	74.2	87.7	101.9
12.5-13.5	152	78.8	6.9	64.8	69.1	77.4	90.8	103.8
13.5-14.5	154	82.6	7.0	60.2	72.0	82.4	94.9	99.0
14.5-15.5	129	85.9	7.3	69.5	74.2	86.2	97.2	112.5
15.5-16.5	100	90.2	6.8	67.1	79.1	90.4	101.2	108.9
16.5-17.5	104	91.7	6.2	78.7	83.4	90.7	103.4	116.0
17.5-19.0	88	93.5	5.8	77.1	84.0	93.8	101.5	112.5

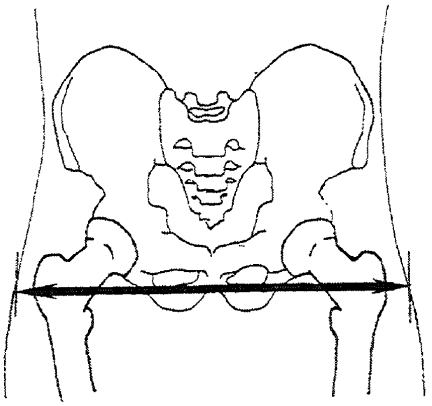
HIP CIRCUMFERENCE (cm)
(Females)

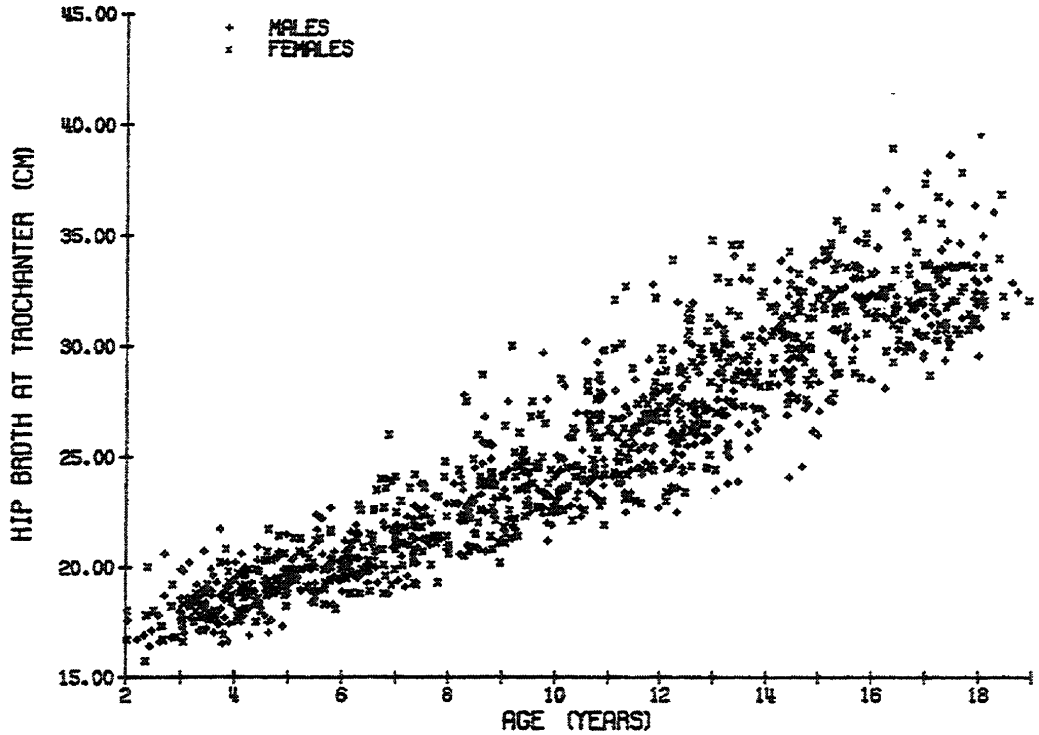
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	95	51.2	3.1	43.8	46.0	51.3	56.2	58.8
3.5-4.5	109	54.1	3.4	46.2	49.1	53.7	59.8	65.6
4.5-5.5	120	56.7	3.6	49.7	52.0	56.2	61.8	77.7
5.5-6.5	111	58.8	4.0	50.6	52.0	58.6	64.8	70.0
6.5-7.5	119	62.5	5.4	49.1	55.7	62.0	71.8	84.6
7.5-8.5	94	65.8	5.9	55.9	58.3	64.6	77.5	90.8
8.5-9.5	137	68.7	6.1	57.8	60.6	67.7	79.9	91.4
9.5-10.5	129	71.6	6.7	59.7	62.3	70.6	82.3	108.5
10.5-11.5	139	75.7	8.1	59.3	64.8	74.2	91.3	108.2
11.5-12.5	133	78.3	7.3	63.8	66.2	77.9	91.1	99.1
12.5-13.5	158	83.0	7.1	65.7	72.5	82.2	94.4	107.3
13.5-14.5	116	86.5	6.7	71.0	75.9	86.5	98.5	104.2
14.5-15.5	133	90.2	6.2	71.1	79.4	90.3	99.6	115.9
15.5-16.5	98	90.9	5.6	80.7	83.4	89.5	101.9	107.6
16.5-17.5	116	91.9	6.5	79.2	81.6	91.6	105.6	113.8
17.5-19.0	68	92.4	6.1	82.9	84.3	91.5	104.1	107.7

HIP BREADTH AT TROCHANTER

Subject stands erect with feet together, weight evenly distributed. With the paddle blades of an automated anthropometer, measure the horizontal distance between the right and left greater trochanter landmarks.



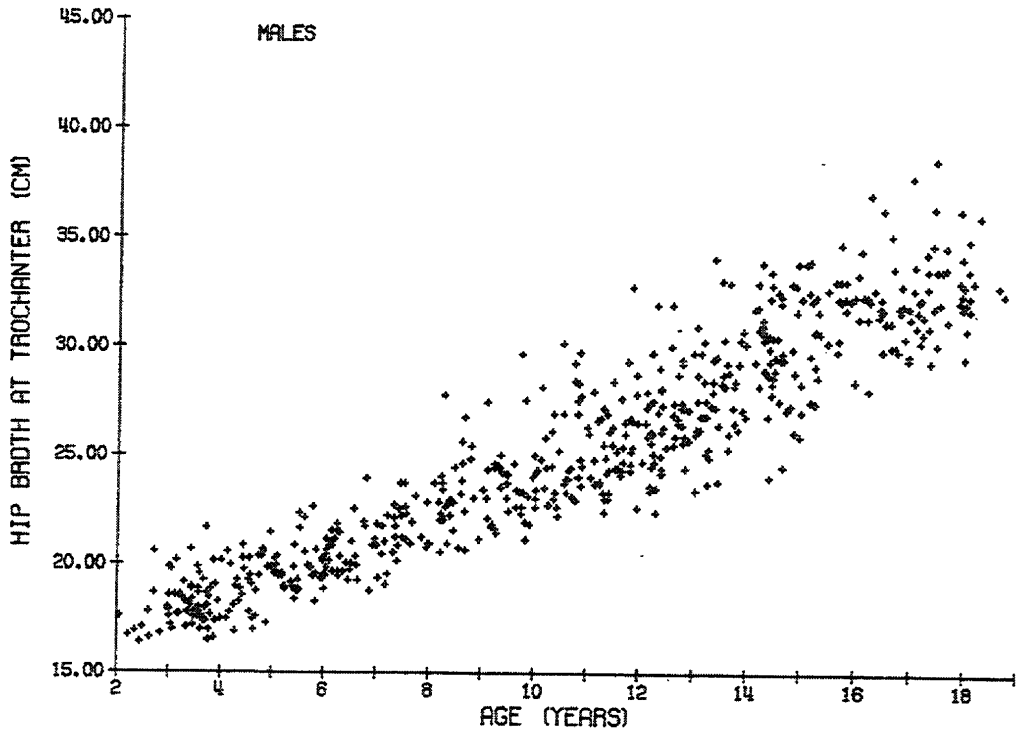


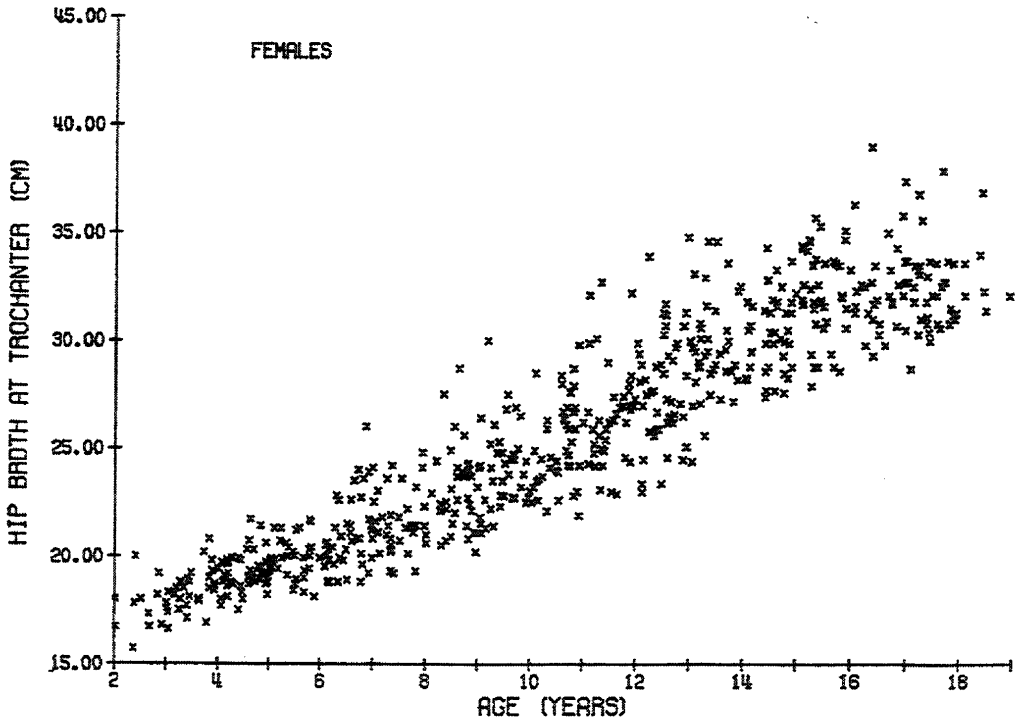


HIP BREADTH AT TROCHANTER (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	18.0	1.0	15.7	16.5	17.9	20.0	20.7
3.5-4.5	79	18.7	1.1	16.5	16.9	18.6	20.3	21.7
4.5-5.5	76	19.6	1.0	17.0	17.6	19.5	21.1	21.7
5.5-6.5	77	20.2	1.1	18.1	18.6	19.9	22.2	22.8
6.5-7.5	74	21.4	1.5	18.8	19.0	21.1	24.0	26.0
7.5-8.5	64	22.4	1.6	19.3	20.5	22.2	24.7	27.8
8.5-9.5	80	23.5	1.8	20.2	20.8	23.6	26.4	30.0
9.5-10.5	74	24.2	1.7	21.2	22.0	23.7	27.5	29.7
10.5-11.5	96	25.8	2.2	21.9	22.9	25.5	29.8	32.7
11.5-12.5	95	26.6	2.3	22.5	23.0	26.5	30.6	33.9
12.5-13.5	100	28.3	2.5	23.5	24.4	27.6	33.0	34.8
13.5-14.5	82	29.7	2.0	24.1	26.3	29.4	33.0	34.3
14.5-15.5	87	30.9	2.3	24.6	27.1	31.2	34.4	35.7
15.5-16.5	63	32.2	2.0	28.1	28.6	32.1	36.1	39.0
16.5-17.5	74	32.4	2.1	28.7	29.6	32.0	36.6	38.7
17.5-19.0	46	32.8	1.7	29.6	30.6	32.4	36.3	37.9

(72)


MALES
HIP BRDTH AT TROCHANTER (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
HIP BRDTH AT TROCHANTER (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

HIP BREADTH AT TROCHANTER (cm)
(Males)

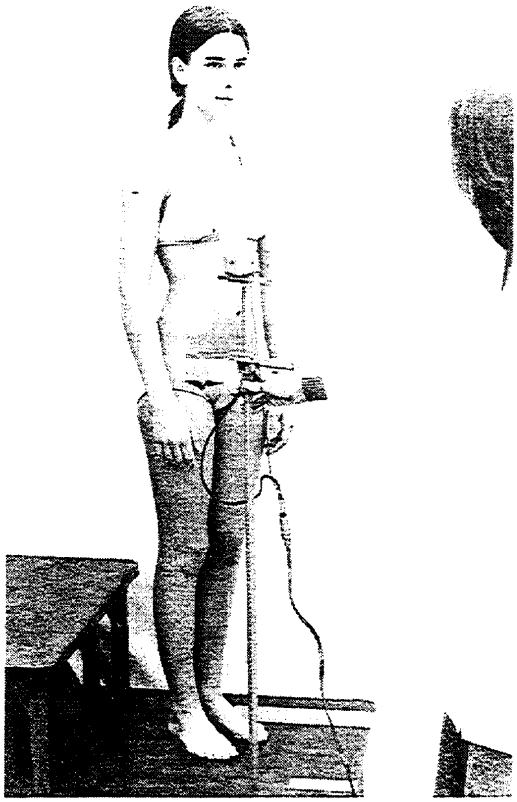
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	36	18.1	1.1	16.4	16.6	17.9	20.3	20.7
3.5-4.5	44	18.5	1.2	16.5	16.7	18.2	20.5	21.7
4.5-5.5	35	19.4	1.1	17.0	17.2	19.4	20.7	21.5
5.5-6.5	43	20.3	1.0	18.3	18.8	20.0	22.2	22.7
6.5-7.5	32	21.2	1.3	18.8	19.0	21.1	23.2	24.0
7.5-8.5	32	22.6	1.4	20.6	20.7	22.4	24.3	27.8
8.5-9.5	33	23.7	1.6	20.7	20.8	23.7	26.1	27.5
9.5-10.5	37	24.0	1.8	21.2	21.8	23.4	27.7	29.7
10.5-11.5	48	25.5	2.0	22.5	23.0	24.7	29.0	30.2
11.5-12.5	52	26.2	2.1	22.5	23.2	26.0	29.6	32.8
12.5-13.5	50	27.5	2.3	23.5	23.8	27.2	31.5	34.1
13.5-14.5	51	29.5	2.1	24.1	25.8	29.2	33.0	33.9
14.5-15.5	39	30.2	2.4	24.6	25.9	30.1	33.5	34.0
15.5-16.5	31	32.2	1.9	28.1	28.3	32.2	35.5	37.1
16.5-17.5	38	32.3	2.2	29.4	29.5	31.8	36.6	38.7
17.5-19.0	23	33.0	1.6	29.6	29.8	32.6	35.9	36.4

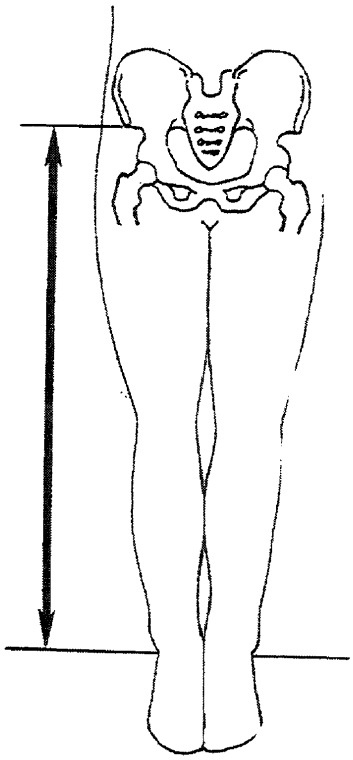
HIP BREADTH AT TROCHANTER (cm)
(Females)

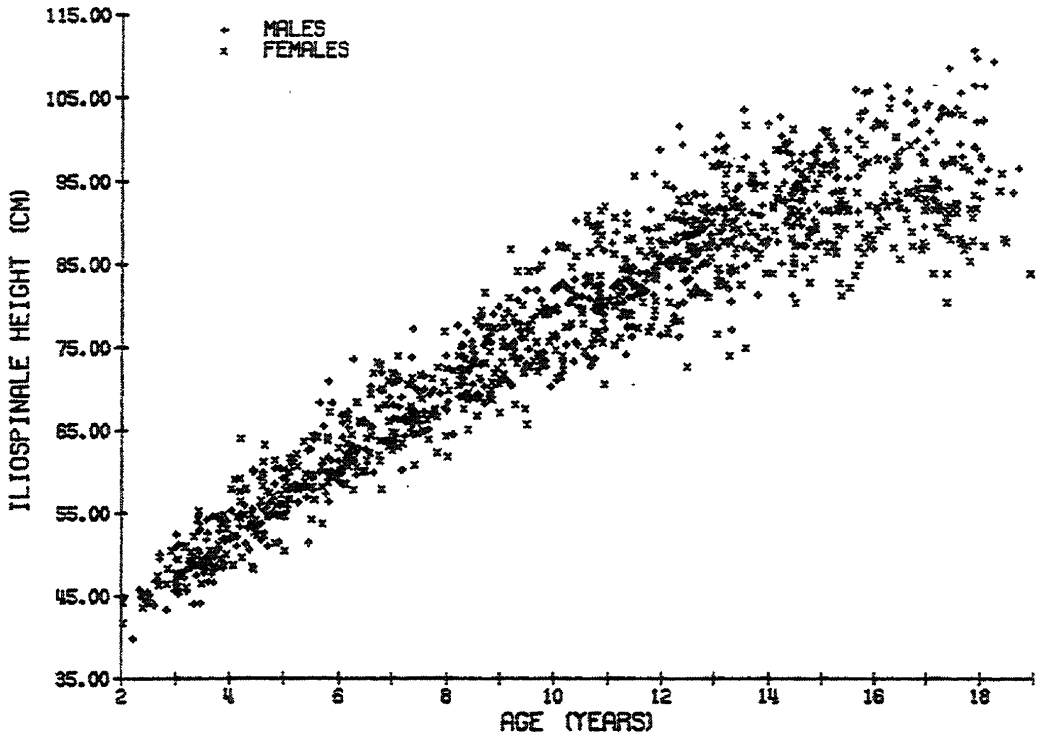
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	17.9	0.9	15.7	16.1	17.9	19.1	20.0
3.5-4.5	35	18.9	0.9	16.9	17.3	18.7	20.0	20.8
4.5-5.5	41	19.7	0.8	18.2	18.4	19.5	21.3	21.7
5.5-6.5	34	20.1	1.1	18.1	18.2	19.9	22.0	22.8
6.5-7.5	42	21.5	1.7	18.8	18.9	21.2	24.1	26.0
7.5-8.5	32	22.3	1.7	19.3	19.8	22.1	24.8	27.5
8.5-9.5	47	23.5	2.0	20.2	20.8	23.4	26.3	30.0
9.5-10.5	37	24.3	1.6	22.1	22.1	24.0	27.0	28.5
10.5-11.5	48	26.1	2.3	21.9	22.7	25.8	30.0	32.7
11.5-12.5	43	27.1	2.4	22.9	23.0	27.0	31.2	33.9
12.5-13.5	50	29.0	2.6	24.4	24.5	29.0	33.5	34.8
13.5-14.5	31	30.0	1.9	27.2	27.3	29.5	33.2	34.3
14.5-15.5	48	31.5	2.1	27.6	27.8	31.7	34.7	35.7
15.5-16.5	32	32.2	2.2	28.6	28.7	31.9	35.6	39.0
16.5-17.5	36	32.6	2.0	28.7	29.6	32.5	36.0	37.4
17.5-19.0	23	32.6	1.9	30.6	30.6	32.0	36.5	37.9

ILIOSPINALE (PELVIS) HEIGHT

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the right anterior superior iliac spine of the pelvis.



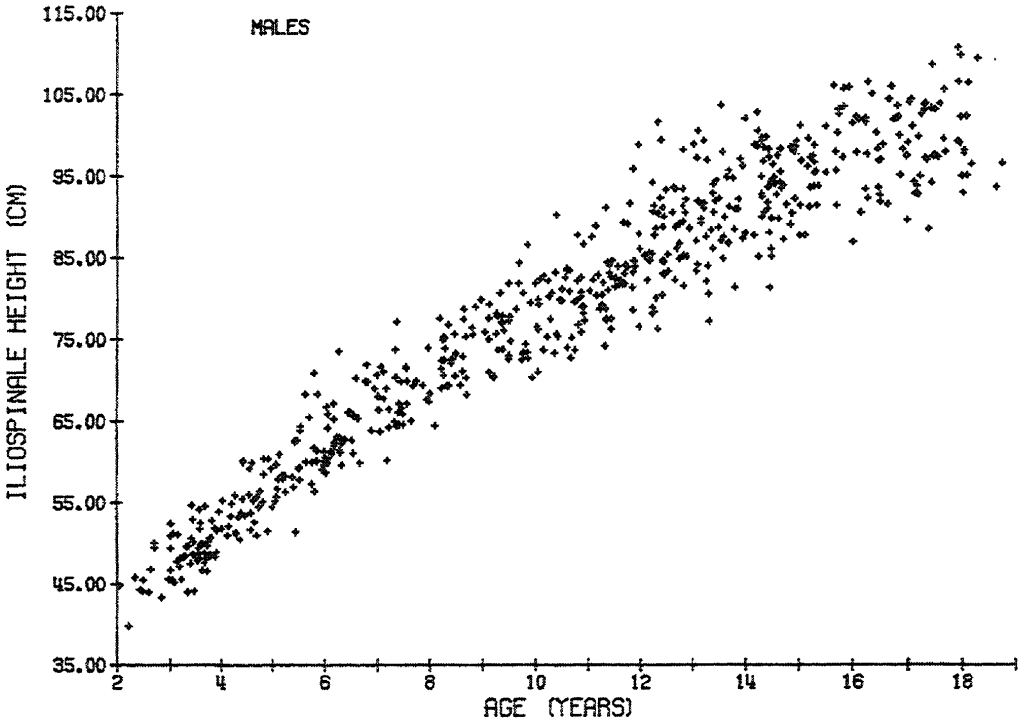


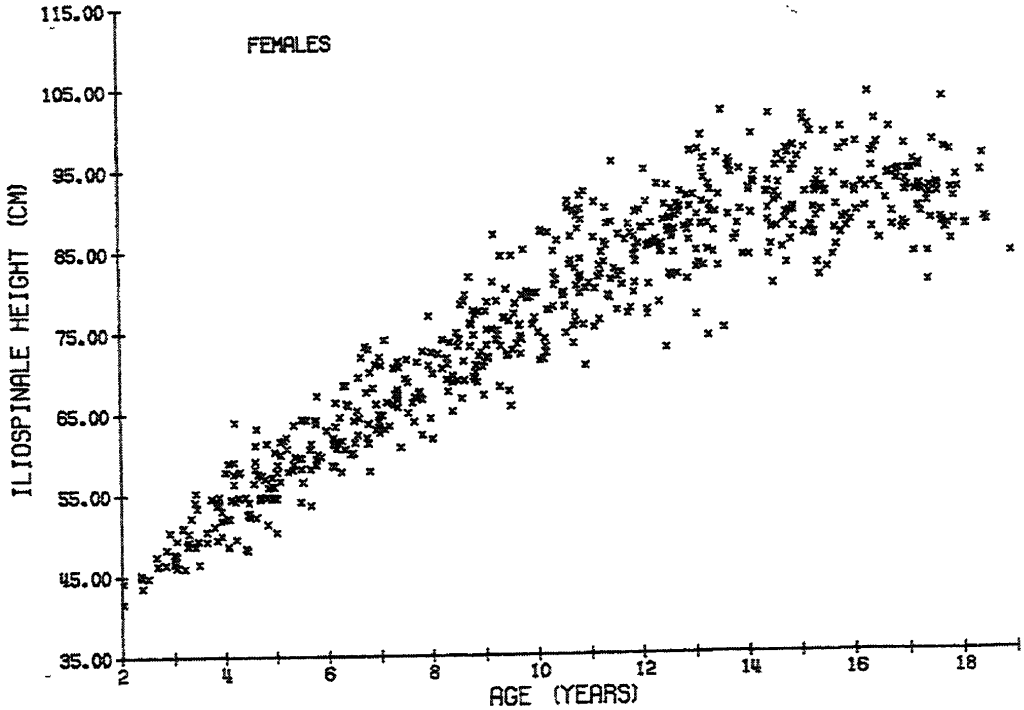


ILIOSPINALE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	47.8	3.1	39.8	43.4	47.6	53.2	55.3
3.5-4.5	79	52.5	3.5	46.6	47.9	52.0	59.0	64.0
4.5-5.5	76	57.3	3.2	50.4	51.4	57.6	62.5	63.6
5.5-6.5	77	62.2	3.5	53.7	57.2	61.3	68.3	73.6
6.5-7.5	76	66.9	3.8	57.9	60.7	66.4	73.0	77.2
7.5-8.5	64	70.3	3.6	61.8	64.0	70.4	75.6	77.6
8.5-9.5	81	74.6	4.2	65.7	67.6	75.0	81.0	86.8
9.5-10.5	75	78.2	4.6	70.3	71.4	78.1	86.7	90.3
10.5-11.5	97	81.9	5.0	70.6	74.0	81.5	90.7	95.7
11.5-12.5	96	85.5	5.4	72.7	77.0	85.3	94.4	101.7
12.5-13.5	100	89.0	5.4	74.1	81.1	89.0	98.3	103.7
13.5-14.5	82	91.8	5.6	75.0	81.5	91.8	100.5	102.9
14.5-15.5	88	93.0	4.6	81.3	85.2	92.8	99.9	101.3
15.5-16.5	63	95.3	6.3	82.3	85.1	95.2	105.7	106.6
16.5-17.5	74	95.5	6.0	80.5	86.0	94.3	104.3	108.8
17.5-19.0	46	95.9	7.1	84.0	85.9	95.2	108.7	110.9

(73)


MALES
ILIOSPINALE HEIGHT (CM)
115.00
105.00
95.00
85.00
75.00
65.00
55.00
45.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ILIOSPINALE HEIGHT (CM)
115.00
105.00
95.00
85.00
75.00
65.00
55.00
45.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ILIOSPINALE HEIGHT (cm)
(Males)

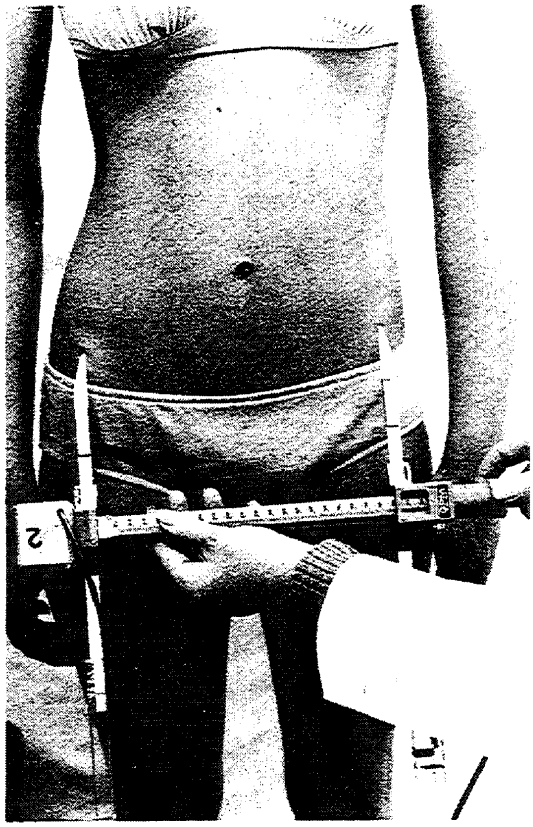
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	47.6	3.1	39.8	42.8	47.6	52.5	54.7
3.5-4.5	44	51.5	3.1	46.6	46.9	51.0	55.8	60.2
4.5-5.5	35	57.0	3.2	51.0	51.3	56.8	62.5	62.7
5.5-6.5	43	62.6	3.6	56.4	57.4	61.6	68.2	73.6
6.5-7.5	34	67.3	3.8	59.9	60.1	66.5	72.5	77.2
7.5-8.5	32	71.3	3.2	64.5	64.9	71.4	76.1	77.6
8.5-9.5	33	75.4	3.5	68.2	69.0	75.8	80.2	81.9
9.5-10.5	37	78.2	4.6	70.3	70.9	78.2	84.7	90.3
10.5-11.5	49	80.8	4.0	72.7	73.8	80.8	87.7	91.2
11.5-12.5	53	86.1	5.7	76.3	77.6	84.7	97.0	101.7
12.5-13.5	50	89.9	5.5	77.2	81.1	89.5	99.2	103.7
13.5-14.5	51	92.7	5.4	81.4	83.3	92.3	100.2	102.9
14.5-15.5	39	94.8	3.8	87.3	87.5	94.6	99.8	101.3
15.5-16.5	31	98.8	5.3	87.0	89.0	98.2	106.1	106.6
16.5-17.5	38	99.3	4.9	88.6	89.6	99.2	104.7	108.8
17.5-19.0	23	100.9	5.3	93.1	93.2	99.3	109.9	110.9

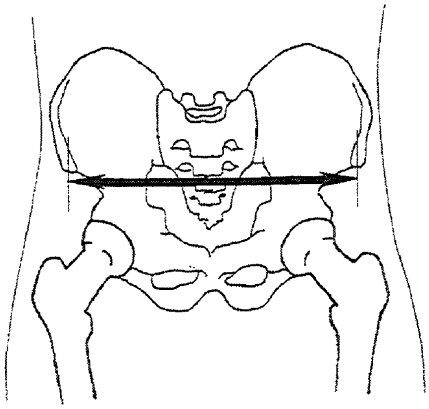
ILIOSPINALE HEIGHT (cm)
(Females)

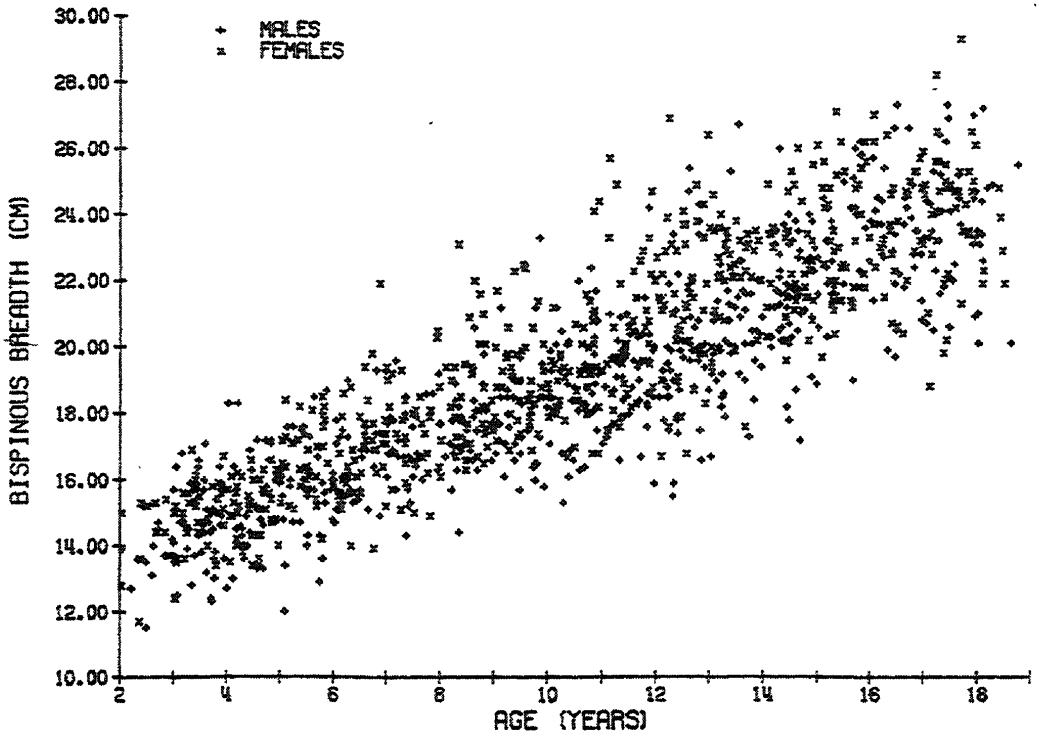
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	48.1	3.2	41.7	42.6	47.5	53.8	55.3
3.5-4.5	35	53.8	3.6	48.2	48.4	53.6	59.0	64.0
4.5-5.5	41	57.6	3.1	50.4	51.4	57.7	62.1	63.6
5.5-6.5	34	61.8	3.4	53.7	55.7	61.2	67.4	68.4
6.5-7.5	42	66.5	3.9	57.9	60.8	66.1	72.8	74.0
7.5-8.5	32	69.2	3.7	61.8	62.1	69.0	74.3	76.9
8.5-9.5	48	74.1	4.6	65.7	66.9	73.9	81.4	86.8
9.5-10.5	38	78.3	4.6	71.3	71.5	77.9	87.0	87.3
10.5-11.5	48	83.1	5.7	70.6	73.9	82.5	91.3	95.7
11.5-12.5	43	84.7	4.9	72.7	76.8	85.4	92.4	94.7
12.5-13.5	50	88.1	5.1	74.1	78.9	88.5	96.7	98.8
13.5-14.5	31	90.4	5.8	75.0	78.0	90.2	100.0	101.8
14.5-15.5	49	91.6	4.8	81.3	82.8	91.5	99.6	101.2
15.5-16.5	32	91.8	5.2	82.3	83.2	91.7	100.0	103.9
16.5-17.5	36	91.4	4.0	80.5	81.9	91.7	97.5	99.5
17.5-19.0	23	90.8	4.5	84.0	84.2	89.5	96.9	103.2

BISPINOUS BREADTH

Subject stands erect with feet together, weight evenly distributed. With the pointed blades of an automated anthropometer, measure the distance between the right and left anterior superior iliac spines of the pelvis.



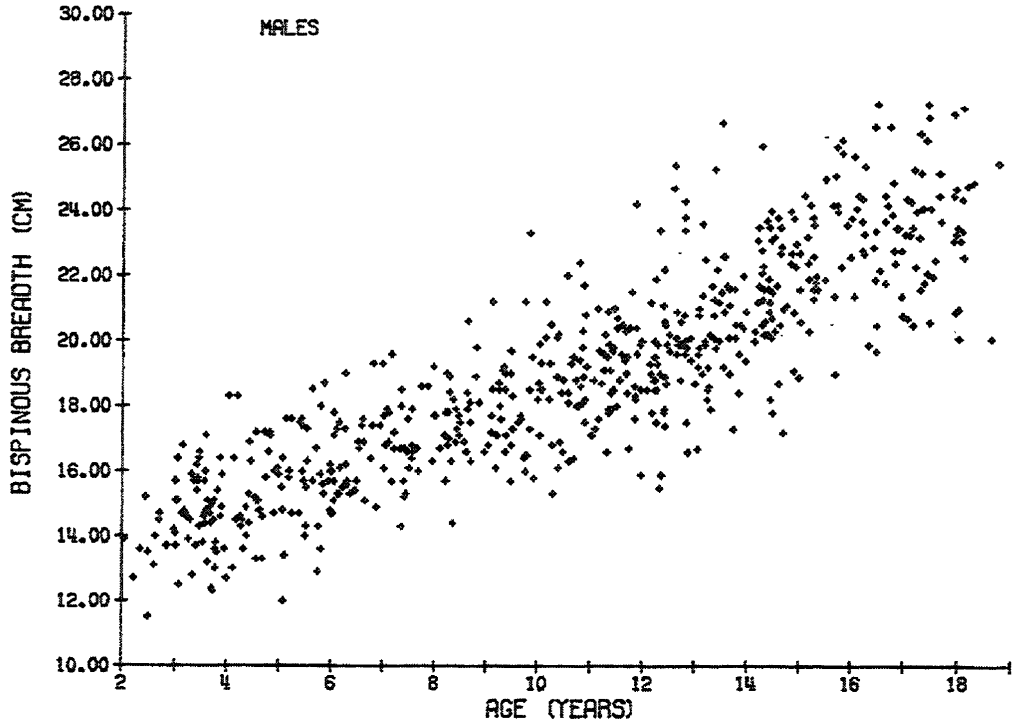


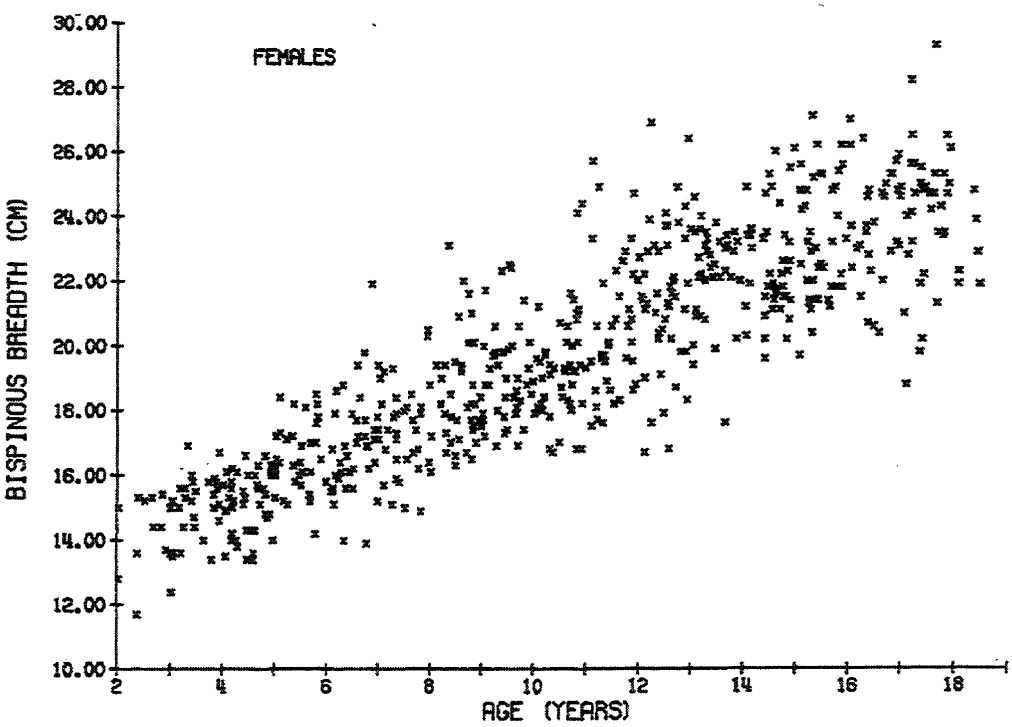


BISPINOUS BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	14.6	1.2	11.5	12.4	14.6	16.4	16.9
3.5-4.5	79	14.9	1.2	12.3	12.8	14.8	16.7	18.3
4.5-5.5	76	15.7	1.3	12.0	13.3	15.8	17.5	18.4
5.5-6.5	77	16.2	1.3	12.9	14.2	16.0	18.5	19.0
6.5-7.5	75	17.2	1.4	13.9	15.0	17.1	19.4	21.9
7.5-8.5	64	17.6	1.4	14.4	15.1	17.4	19.5	23.1
8.5-9.5	80	18.5	1.5	15.7	16.5	18.1	21.2	22.3
9.5-10.5	75	18.7	1.6	15.3	16.1	18.5	21.2	23.3
10.5-11.5	97	19.5	1.8	16.3	16.8	19.3	22.5	25.7
11.5-12.5	96	20.1	2.1	15.5	16.6	19.9	23.7	26.9
12.5-13.5	100	21.3	2.1	16.6	17.9	21.1	24.7	26.7
13.5-14.5	82	21.6	1.7	17.3	18.2	21.6	24.0	26.0
14.5-15.5	88	22.5	1.8	17.2	19.3	22.3	25.6	27.1
15.5-16.5	63	23.5	1.9	19.0	20.0	23.4	26.4	27.3
16.5-17.5	73	23.7	1.9	18.8	20.3	23.9	26.5	28.2
17.5-19.0	45	23.9	1.9	20.1	20.3	24.0	26.9	29.3

(74)


MALES
BISPINOUS BREADTH (CM)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
BISPINOUS BREADTH (CM)
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

BISPINOUS BREADTH (cm)
(Males)

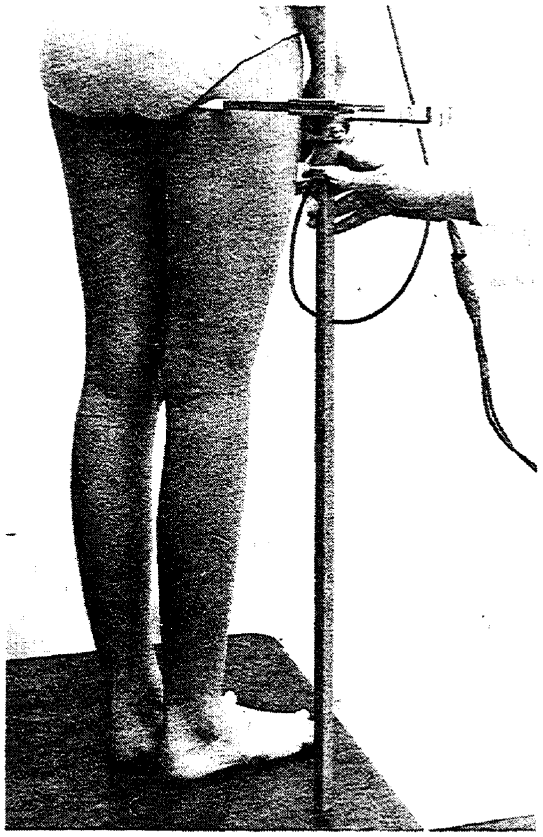
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	14.6	1.2	11.5	12.3	14.5	16.4	16.8
3.5-4.5	44	14.8	1.4	12.3	12.5	14.6	17.1	18.3
4.5-5.5	35	15.6	1.4	12.0	12.5	15.7	17.5	17.6
5.5-6.5	43	16.0	1.3	12.9	13.7	15.6	18.4	19.0
6.5-7.5	34	17.0	1.3	14.3	14.7	16.8	19.0	19.6
7.5-8.5	32	17.3	1.0	14.4	15.2	17.1	18.9	19.2
8.5-9.5	33	18.0	1.3	15.7	16.0	17.9	20.1	21.2
9.5-10.5	37	18.3	1.8	15.3	15.7	18.2	20.9	23.3
10.5-11.5	49	19.1	1.4	16.3	16.5	18.9	21.4	22.4
11.5-12.5	53	19.3	1.7	15.5	15.8	19.1	22.0	24.2
12.5-13.5	50	20.6	2.2	16.6	17.1	20.0	25.0	26.7
13.5-14.5	51	21.2	1.7	17.3	18.0	21.1	23.6	26.0
14.5-15.5	39	22.0	1.7	17.2	18.6	21.9	24.2	25.0
15.5-16.5	31	23.5	2.1	19.0	19.4	23.6	26.4	27.3
16.5-17.5	38	23.4	1.8	20.5	20.6	23.4	26.6	27.3
17.5-19.0	23	23.6	1.9	20.1	20.1	23.4	26.8	27.2

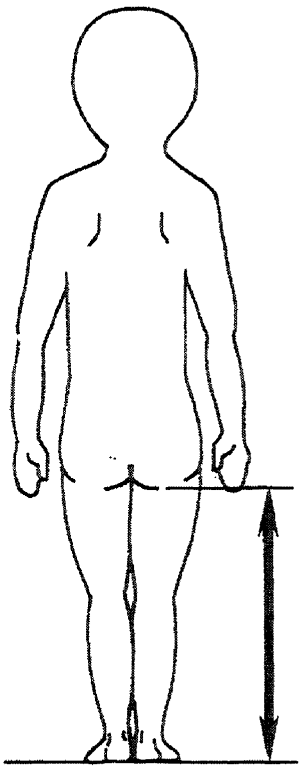
BISPINOUS BREADTH (cm)
(Females)

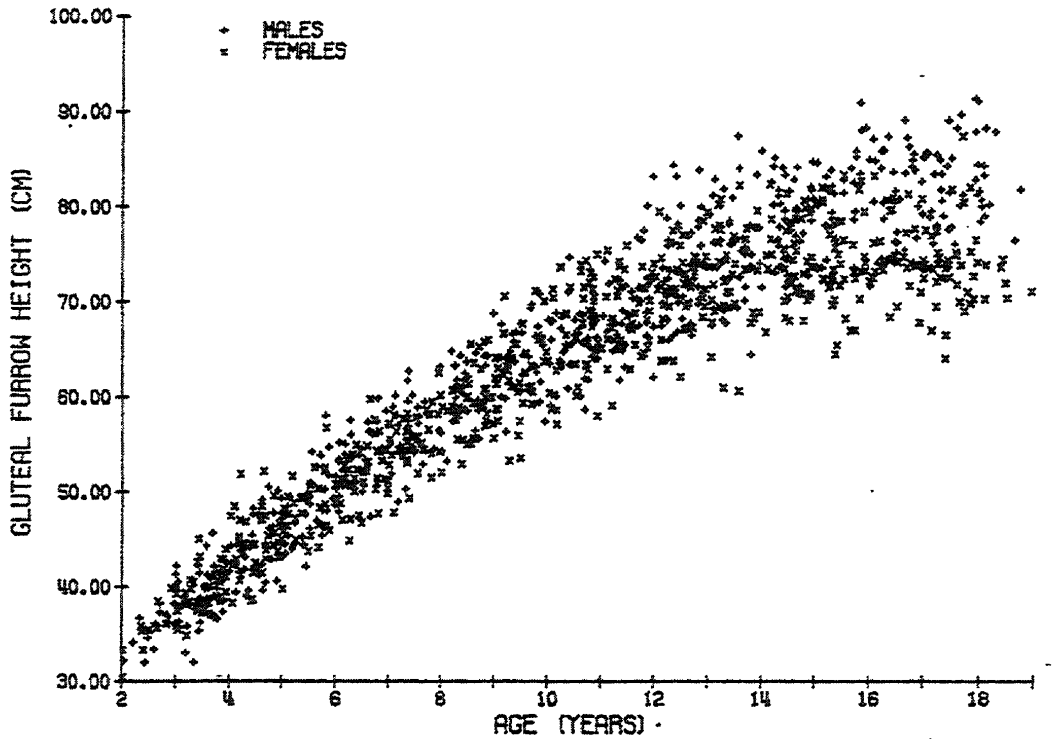
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	14.6	1.1	11.7	12.0	14.8	15.9	16.9
3.5-4.5	35	15.1	0.9	13.4	13.4	15.1	16.3	16.7
4.5-5.5	41	15.8	1.1	13.4	13.6	15.9	17.3	18.4
5.5-6.5	34	16.5	1.2	14.0	14.1	16.1	18.5	18.8
6.5-7.5	41	17.4	1.5	13.9	15.1	17.2	19.4	21.9
7.5-8.5	32	17.8	1.7	14.9	15.0	17.7	20.4	23.1
8.5-9.5	47	18.8	1.5	16.5	16.8	18.3	21.7	22.3
9.5-10.5	38	19.0	1.4	16.7	16.8	18.9	21.5	22.5
10.5-11.5	48	19.9	2.0	16.8	17.1	19.4	24.3	25.7
11.5-12.5	43	21.2	2.1	16.7	17.6	21.1	24.1	26.9
12.5-13.5	50	22.0	1.8	16.8	18.5	22.0	24.4	26.4
13.5-14.5	31	22.4	1.6	17.6	18.7	22.6	24.8	25.3
14.5-15.5	49	22.9	1.8	19.7	20.3	22.4	26.1	27.1
15.5-16.5	32	23.4	1.8	20.6	20.7	23.2	26.3	27.0
16.5-17.5	35	23.9	2.1	18.8	19.5	24.6	26.0	28.2
17.5-19.0	22	24.3	1.8	21.3	21.3	24.3	26.5	29.3

GLUTEAL FURROW HEIGHT

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the lowest point where the buttock curve and the back of the right thigh join.



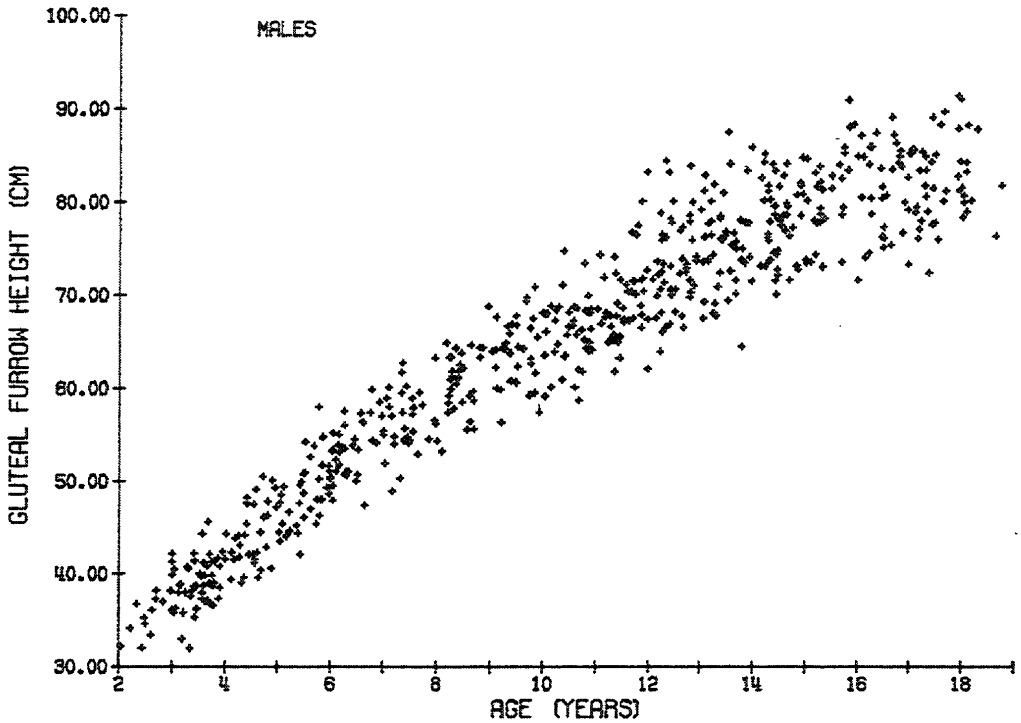


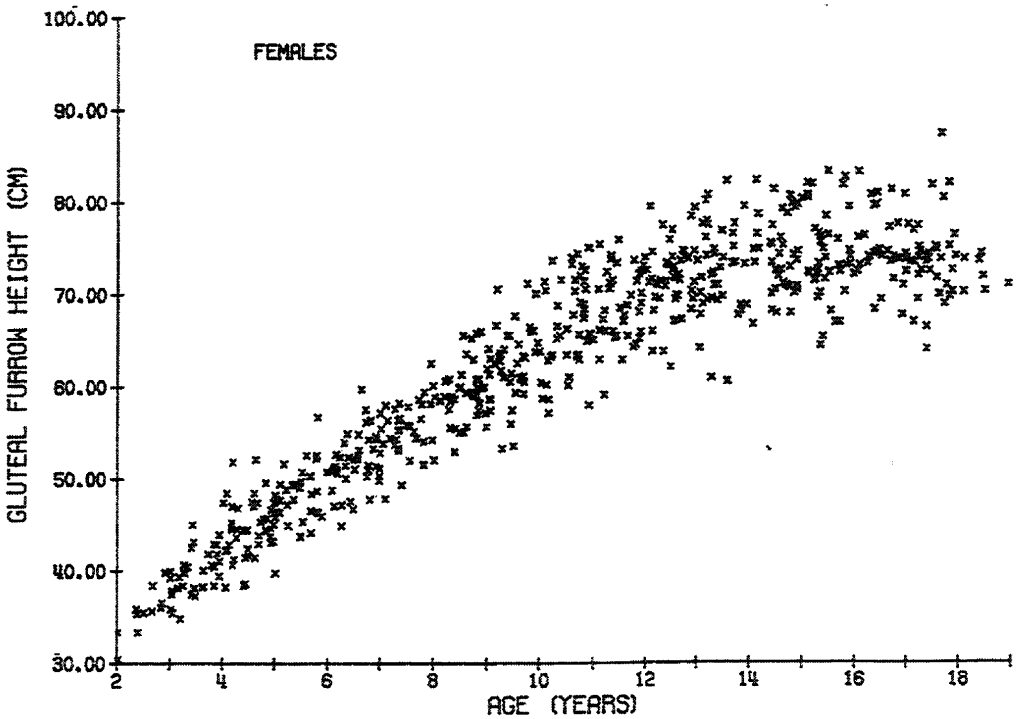


GLUTEAL FURROW HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	37.5	2.9	30.4	32.1	37.5	42.1	45.0
3.5-4.5	79	41.7	3.1	36.6	37.1	41.4	47.4	51.8
4.5-5.5	76	46.1	3.0	39.6	40.6	46.3	50.2	52.1
5.5-6.5	76	50.7	3.1	44.1	45.4	50.9	55.4	58.0
6.5-7.5	76	54.7	3.3	47.4	48.7	54.4	59.9	62.7
7.5-8.5	64	58.2	3.3	51.5	52.1	58.4	63.3	64.8
8.5-9.5	79	61.5	3.8	53.2	55.5	61.3	66.8	70.5
9.5-10.5	75	64.9	4.0	57.1	58.7	64.6	71.1	74.7
10.5-11.5	97	67.6	4.0	58.0	60.0	67.5	74.2	75.9
11.5-12.5	95	71.3	4.7	62.1	63.7	71.1	79.6	84.4
12.5-13.5	100	73.6	4.6	61.0	67.2	73.4	81.0	87.5
13.5-14.5	81	75.5	5.0	60.6	67.8	75.0	83.7	85.9
14.5-15.5	88	76.5	4.6	64.5	69.8	76.7	83.3	84.8
15.5-16.5	63	78.2	5.9	67.0	68.2	76.9	87.5	91.0
16.5-17.5	74	78.0	5.7	64.1	67.6	77.5	86.0	89.2
17.5-19.0	46	78.7	6.5	69.0	69.9	78.5	89.4	91.5

(75)


MALES
GLUTEAL FURROW HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
GLUTEAL FURROW HEIGHT (CM)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

GLUTEAL FURROW HEIGHT (cm)
(Males)

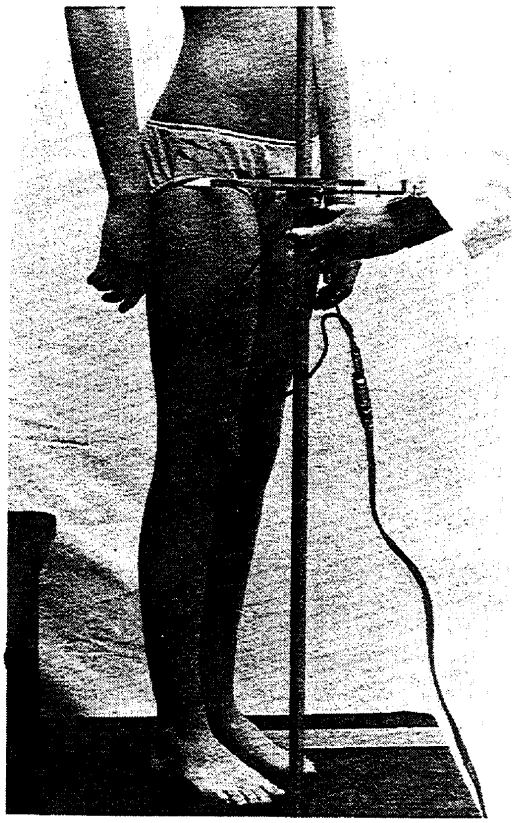
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	37.3	2.8	32.0	32.0	37.4	41.5	42.2
3.5-4.5	44	40.9	2.9	36.6	36.8	40.4	45.6	48.2
4.5-5.5	35	45.6	3.2	39.6	40.2	45.3	50.2	50.8
5.5-6.5	43	51.5	3.0	45.4	46.1	51.1	55.9	58.0
6.5-7.5	34	55.8	3.5	47.4	48.4	55.4	60.6	62.7
7.5-8.5	32	59.4	3.3	52.9	53.1	59.2	63.9	64.8
8.5-9.5	32	62.6	3.7	55.5	55.6	63.7	67.6	68.7
9.5-10.5	37	65.3	3.8	57.4	58.8	65.5	70.8	74.7
10.5-11.5	49	66.9	3.3	58.7	60.5	66.8	72.9	74.3
11.5-12.5	52	72.2	4.9	62.1	65.2	71.3	80.7	84.4
12.5-13.5	50	74.9	4.8	66.5	67.6	74.1	82.4	87.5
13.5-14.5	51	76.6	4.7	64.5	69.8	75.8	84.2	85.9
14.5-15.5	39	79.0	3.7	71.7	72.7	78.7	84.2	84.8
15.5-16.5	31	81.7	5.0	71.7	72.7	82.1	88.2	91.0
16.5-17.5	38	81.9	4.2	72.5	73.3	82.7	87.4	89.2
17.5-19.0	23	83.4	4.6	76.1	76.2	81.8	91.0	91.5

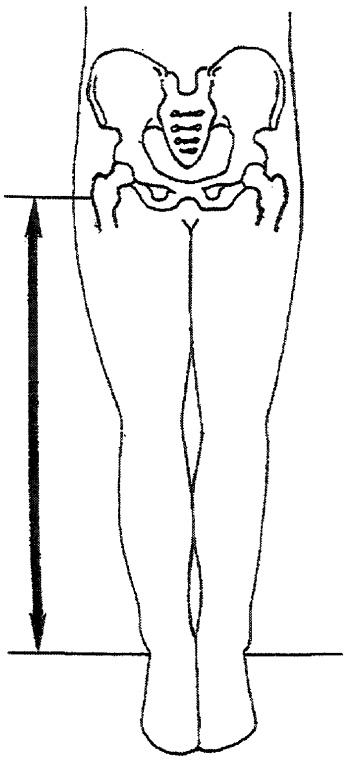
GLUTEAL FURROW HEIGHT (cm)
(Females)

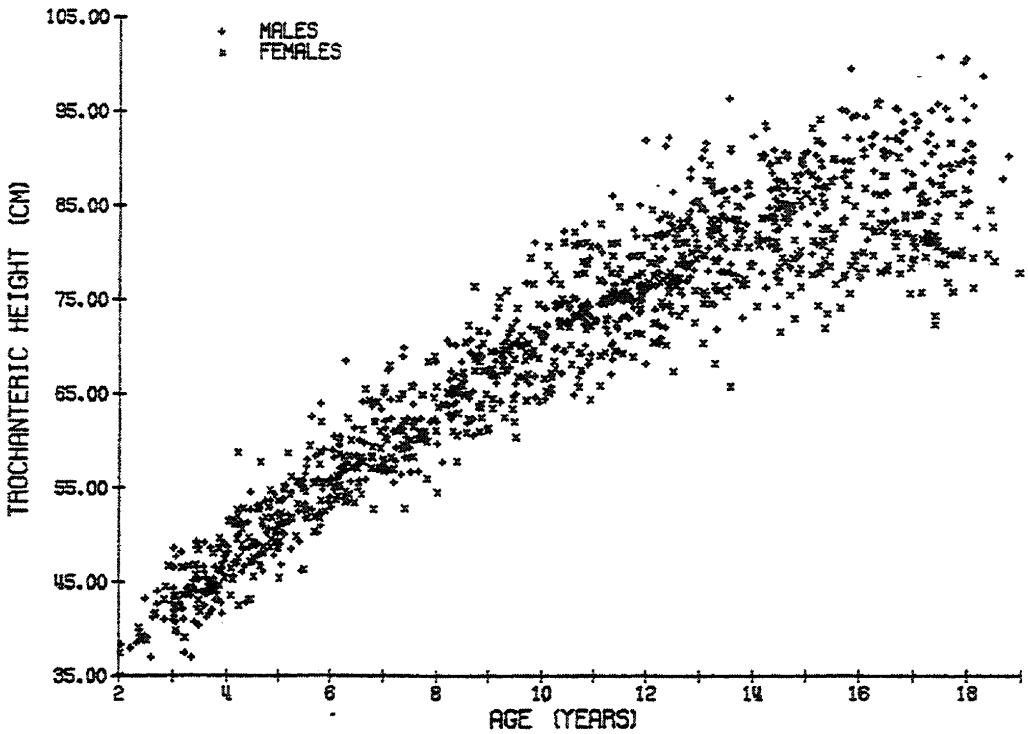
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	37.7	3.1	30.4	31.1	37.4	42.8	45.0
3.5-4.5	35	42.7	3.1	38.2	38.2	42.2	47.6	51.8
4.5-5.5	41	46.5	2.7	39.7	41.5	46.8	49.7	52.1
5.5-6.5	33	49.7	3.1	44.1	44.6	50.4	54.3	56.7
6.5-7.5	42	53.8	2.9	47.7	47.9	53.8	58.0	59.7
7.5-8.5	32	57.0	2.9	51.5	51.7	57.8	60.7	62.5
8.5-9.5	47	60.8	3.7	53.2	54.0	60.7	65.8	70.5
9.5-10.5	38	64.4	4.1	57.1	58.4	63.7	71.3	73.6
10.5-11.5	48	68.4	4.6	58.0	59.5	68.3	74.7	75.9
11.5-12.5	43	70.2	4.1	62.1	63.0	70.9	76.8	79.5
12.5-13.5	50	72.3	4.0	61.0	65.6	71.8	78.9	80.8
13.5-14.5	30	73.6	5.1	60.6	63.7	73.5	81.8	82.4
14.5-15.5	49	74.6	4.4	64.5	66.6	73.8	81.5	83.4
15.5-16.5	32	74.8	4.5	67.0	67.0	74.1	82.2	83.3
16.5-17.5	36	73.8	3.8	64.1	66.0	73.8	81.0	81.9
17.5-19.0	23	73.9	4.4	69.0	69.1	73.2	81.9	87.5

TROCHANTERIC HEIGHT

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the right trochanter landmark.



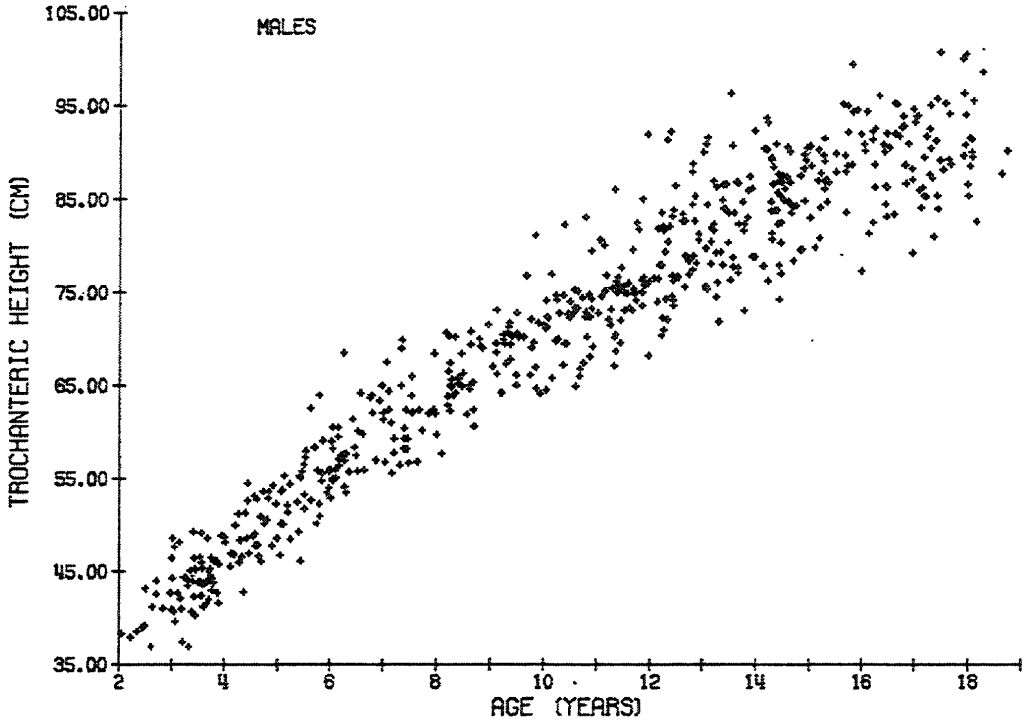


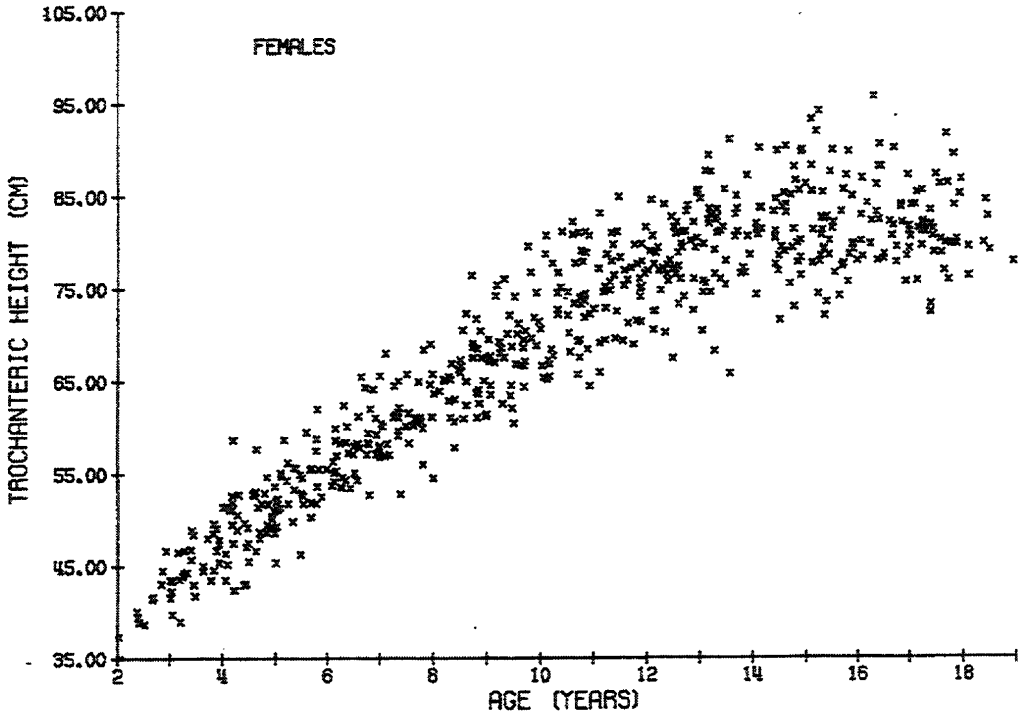


TROCHANTERIC HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	42.6	3.3	35.0	37.0	42.6	48.3	49.3
3.5-4.5	79	46.9	3.4	41.2	42.0	46.5	52.3	58.7
4.5-5.5	76	51.6	3.0	45.4	46.3	51.7	55.9	58.7
5.5-6.5	77	56.3	3.3	50.2	51.2	55.8	62.1	68.5
6.5-7.5	73	60.3	3.7	52.7	54.8	59.8	66.3	69.9
7.5-8.5	64	63.6	3.5	54.5	57.0	63.9	68.9	70.7
8.5-9.5	80	67.5	3.8	60.4	61.0	67.6	73.1	76.4
9.5-10.5	75	71.3	4.4	64.1	64.6	70.8	79.8	82.3
10.5-11.5	97	74.2	4.7	64.4	66.0	74.2	81.3	86.1
11.5-12.5	96	77.3	4.8	67.4	70.0	76.6	84.7	92.3
12.5-13.5	100	80.7	4.9	68.2	72.6	80.5	88.9	96.4
13.5-14.5	82	82.8	5.3	65.8	73.8	82.6	91.0	93.8
14.5-15.5	87	84.2	5.0	72.0	74.8	84.6	90.8	94.2
15.5-16.5	63	85.9	6.2	74.2	76.8	86.2	95.3	99.6
16.5-17.5	74	85.8	6.0	72.4	75.8	84.8	95.2	100.9
17.5-19.0	46	86.7	6.6	75.9	76.5	86.7	98.1	100.7

(76)


MALES
TROCHANTERIC HEIGHT (CM)
105.00
95.00
85.00
75.00
65.00
55.00
45.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
TROCHANTERIC HEIGHT (CM)
105.00
95.00
85.00
75.00
65.00
55.00
45.00
35.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

TROCHANTERIC HEIGHT (cm)
(Males)

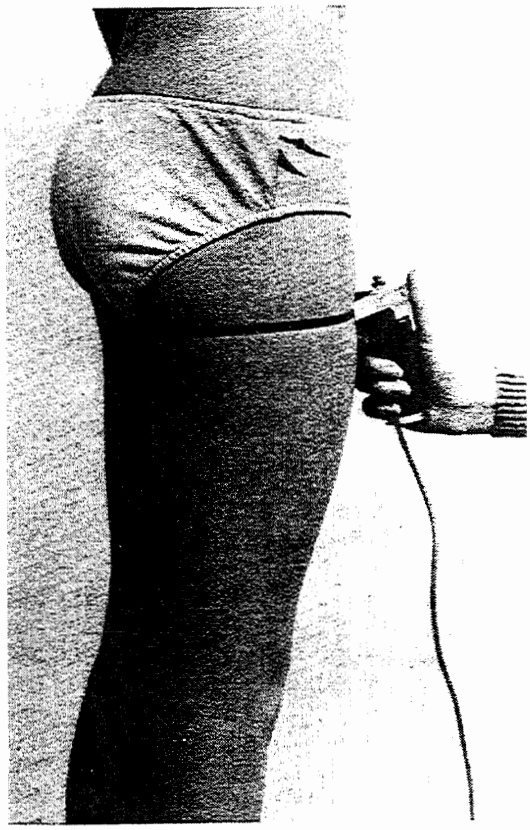
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	42.5	3.4	36.9	36.9	42.4	48.3	49.3
3.5-4.5	44	46.0	3.1	41.2	41.4	45.8	51.3	54.5
4.5-5.5	35	51.3	3.0	46.1	46.2	51.1	55.4	56.5
5.5-6.5	43	56.6	3.5	50.2	51.1	55.9	62.4	68.5
6.5-7.5	32	61.1	3.9	55.6	55.7	60.4	68.1	69.9
7.5-8.5	32	64.4	3.3	56.8	57.3	64.2	70.2	70.7
8.5-9.5	33	68.0	3.2	60.6	61.4	69.1	72.1	73.1
9.5-10.5	37	71.4	4.2	64.1	64.4	71.2	77.6	82.3
10.5-11.5	49	73.6	4.2	64.9	66.4	73.3	80.4	86.1
11.5-12.5	53	78.0	5.3	68.2	70.8	76.4	88.2	92.3
12.5-13.5	50	81.6	5.1	71.9	73.2	80.7	90.5	96.4
13.5-14.5	51	83.9	5.1	73.1	75.4	83.9	91.6	93.8
14.5-15.5	38	86.5	3.5	78.5	79.5	87.0	90.7	91.6
15.5-16.5	31	89.7	4.9	77.4	79.6	90.2	95.7	99.6
16.5-17.5	38	89.9	4.6	79.3	80.9	90.6	95.4	100.9
17.5-19.0	23	91.7	4.6	82.7	83.1	90.2	100.0	100.7

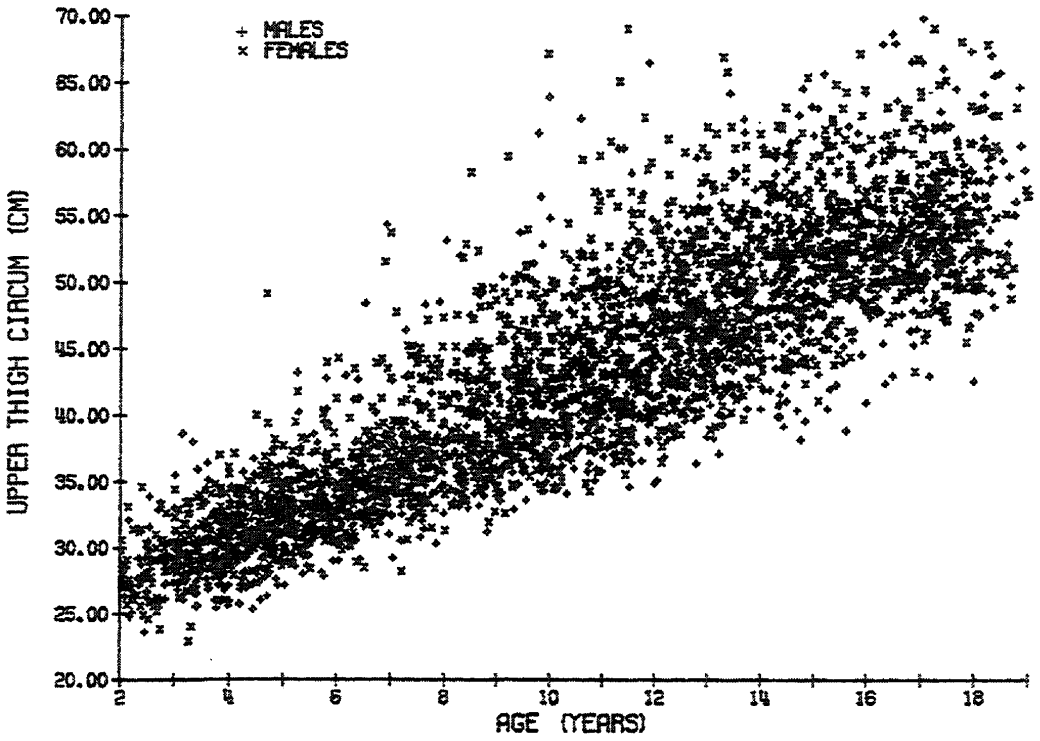
TROCHANTERIC HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	42.8	3.3	35.0	36.2	43.0	47.6	48.9
3.5-4.5	35	48.0	3.5	42.4	42.8	47.7	52.6	58.7
4.5-5.5	41	51.9	3.0	45.4	46.3	51.7	56.2	58.7
5.5-6.5	34	55.8	3.0	50.3	50.8	55.4	60.7	62.4
6.5-7.5	41	59.7	3.4	52.7	52.9	59.3	65.5	68.0
7.5-8.5	32	62.9	3.5	54.5	55.4	63.0	67.7	69.0
8.5-9.5	47	67.1	4.1	60.4	60.9	67.4	74.9	76.4
9.5-10.5	38	71.2	4.7	64.3	65.0	70.4	79.6	81.1
10.5-11.5	48	74.9	5.1	64.4	65.8	74.6	81.8	84.9
11.5-12.5	43	76.3	4.0	67.4	69.0	76.7	82.5	84.6
12.5-13.5	50	79.8	4.5	68.2	71.5	80.1	86.7	89.4
13.5-14.5	31	80.9	5.2	65.8	69.0	80.9	90.0	91.1
14.5-15.5	49	82.5	5.3	72.0	73.2	81.4	91.3	94.2
15.5-16.5	32	82.3	5.0	74.2	75.1	80.1	90.1	95.8
16.5-17.5	36	81.4	3.6	72.4	73.1	81.5	87.2	90.2
17.5-19.0	23	81.8	4.3	75.9	76.0	79.9	89.1	91.7

UPPER THIGH CIRCUMFERENCE

Subject stands erect with legs slightly separated, weight evenly distributed. With an automated tape device, measure the horizontal circumference of the right thigh at the level of the gluteal furrow.

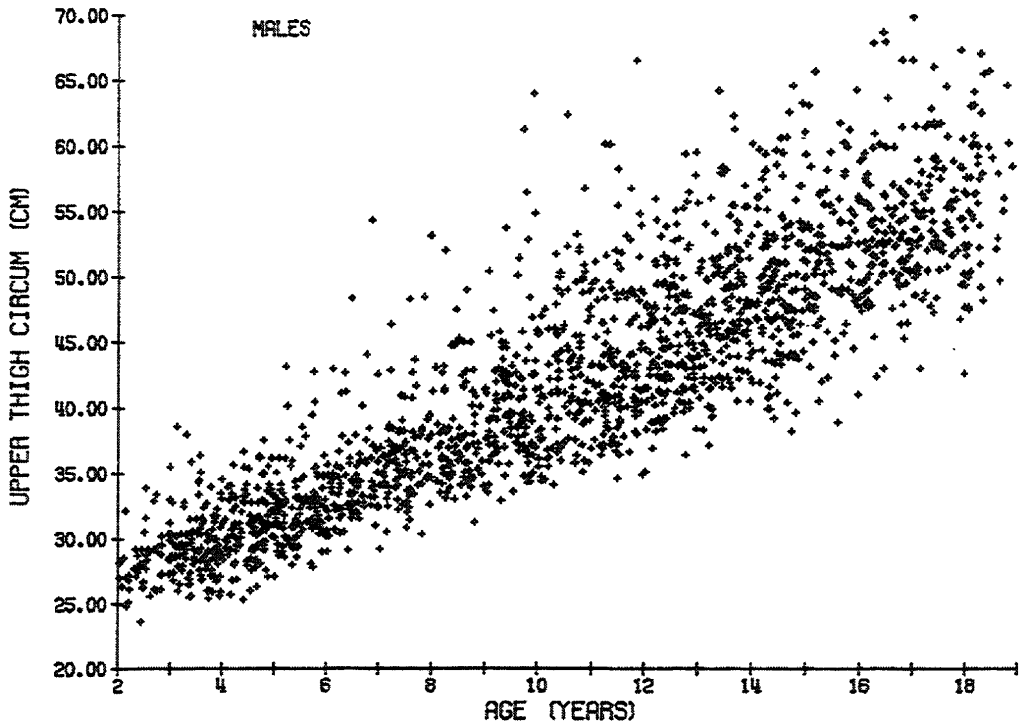


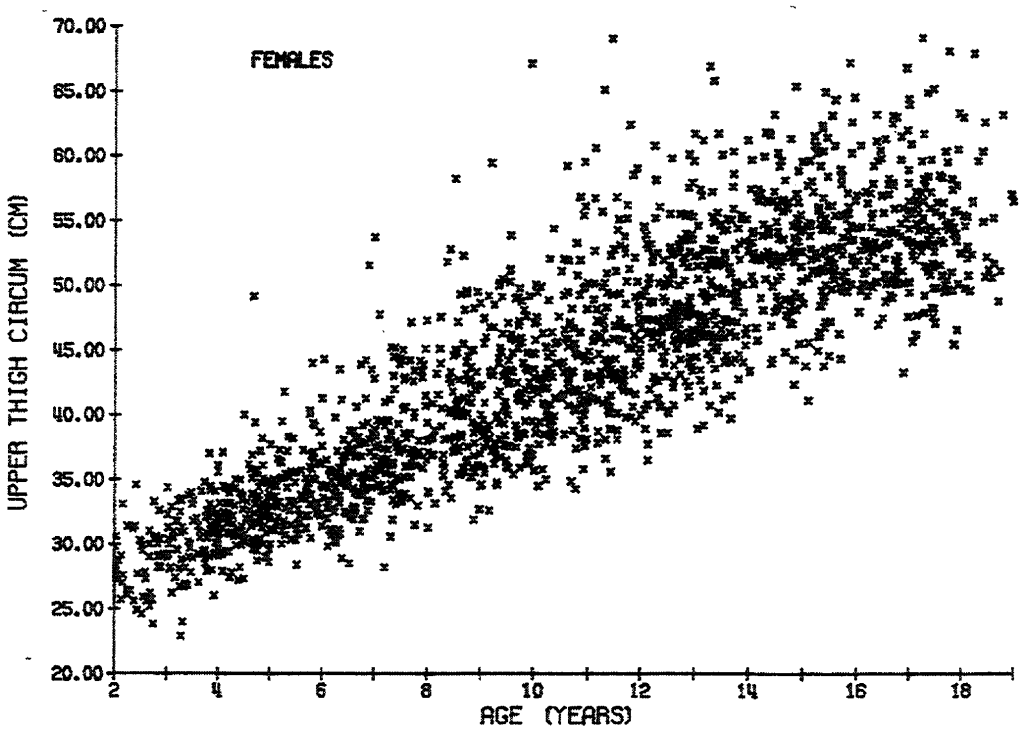


UPPER THIGH CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	209	29.1	2.5	22.9	25.5	28.9	33.4	38.6
3.5-4.5	226	30.9	2.6	25.3	26.8	30.8	34.9	40.0
4.5-5.5	259	32.5	2.9	26.0	28.5	32.1	37.2	49.1
5.5-6.5	217	34.0	3.1	27.8	30.2	33.5	40.3	44.3
6.5-7.5	223	36.4	3.9	28.2	31.8	35.8	44.1	54.3
7.5-8.5	189	38.5	4.6	30.3	32.8	37.4	47.2	58.2
8.5-9.5	248	40.3	4.5	31.2	34.1	39.6	49.1	59.4
9.5-10.5	250	42.1	5.3	33.6	34.9	41.4	50.9	67.1
10.5-11.5	276	44.5	5.7	34.3	36.8	43.4	55.5	69.0
11.5-12.5	281	45.6	5.3	34.9	38.3	44.9	55.1	66.5
12.5-13.5	309	48.0	5.4	36.4	40.1	47.1	57.9	66.9
13.5-14.5	269	49.9	5.1	39.2	41.6	49.5	59.0	63.2
14.5-15.5	258	52.1	5.6	38.2	43.7	52.1	61.4	75.3
15.5-16.5	196	53.5	5.1	38.9	45.6	52.7	62.0	70.5
16.5-17.5	221	54.4	5.1	43.0	47.4	53.5	64.0	72.8
17.5-19.0	155	55.3	5.0	42.6	48.1	54.7	64.6	70.5

(77)


MALES
UPPER THIGH CIRCUM (CM)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
UPPER THIGH CIRCUM (CM)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

UPPER THIGH CIRCUMFERENCE (cm)
(Males)

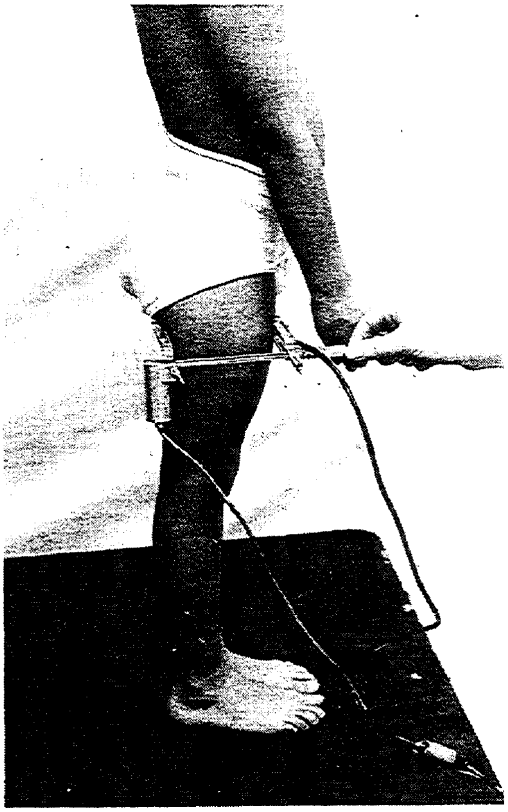
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	112	28.9	2.5	23.6	25.6	28.6	33.2	38.6
3.5-4.5	117	30.2	2.6	25.3	25.9	29.9	34.5	36.7
4.5-5.5	139	31.7	2.7	26.0	27.8	31.2	36.1	43.2
5.5-6.5	107	33.4	3.1	27.8	29.2	32.6	40.2	43.0
6.5-7.5	102	35.6	3.6	29.2	31.7	35.0	42.4	54.3
7.5-8.5	95	37.5	4.3	30.3	32.3	36.5	45.6	53.1
8.5-9.5	111	39.2	4.0	31.2	33.8	38.6	45.4	53.7
9.5-10.5	121	41.2	5.6	33.6	34.5	39.5	51.3	63.9
10.5-11.5	137	43.5	5.4	34.6	36.4	42.4	52.2	62.3
11.5-12.5	150	44.4	5.1	34.9	37.9	43.2	53.5	66.5
12.5-13.5	149	46.6	5.2	36.4	39.6	45.8	57.2	64.2
13.5-14.5	153	48.9	4.9	39.2	41.0	48.3	58.1	62.3
14.5-15.5	125	51.0	5.8	38.2	42.5	50.5	61.0	75.3
15.5-16.5	98	52.9	5.5	38.9	43.9	52.5	61.3	68.7
16.5-17.5	104	54.4	5.4	43.0	47.4	53.2	65.6	72.8
17.5-19.0	88	55.9	5.3	42.6	47.6	55.4	65.2	70.5

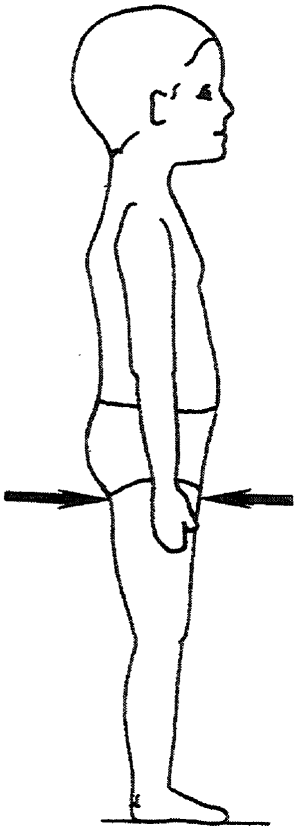
UPPER THIGH CIRCUMFERENCE (cm)
(Females)

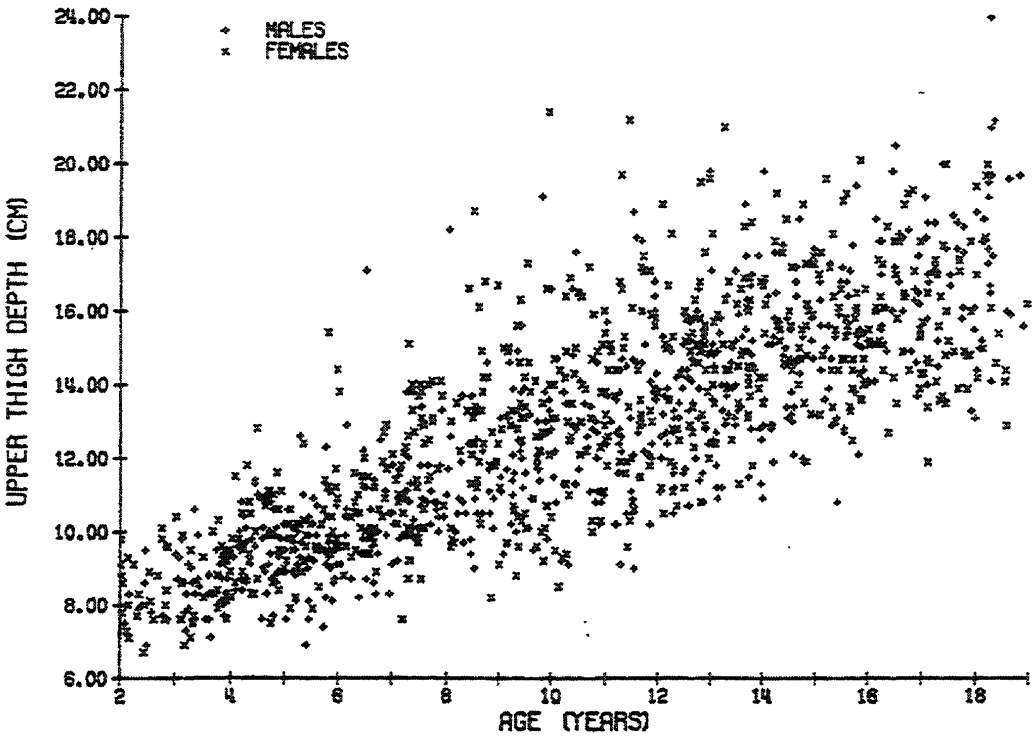
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	97	29.2	2.6	22.9	24.9	29.1	33.4	34.6
3.5-4.5	109	31.6	2.4	26.0	27.6	31.4	35.0	40.0
4.5-5.5	120	33.5	2.9	28.6	29.5	33.1	37.9	49.1
5.5-6.5	110	34.5	3.1	28.4	30.4	34.1	40.2	44.3
6.5-7.5	121	37.1	4.1	28.2	31.6	36.5	44.4	53.7
7.5-8.5	94	39.4	4.6	31.3	33.3	38.2	47.2	58.2
8.5-9.5	137	41.1	4.8	31.9	34.8	40.1	49.4	59.4
9.5-10.5	129	43.0	4.9	34.5	35.9	42.6	50.5	67.1
10.5-11.5	139	45.4	5.9	34.3	37.6	44.3	56.7	69.0
11.5-12.5	131	46.9	5.3	36.5	38.9	46.4	55.8	62.4
12.5-13.5	160	49.4	5.2	38.9	42.1	48.2	59.6	66.9
13.5-14.5	116	51.3	5.0	39.7	43.5	51.8	60.0	63.2
14.5-15.5	133	53.2	5.1	41.1	44.8	52.7	61.4	71.8
15.5-16.5	98	54.1	4.6	44.4	47.7	53.0	62.7	70.5
16.5-17.5	117	54.3	4.8	43.3	47.4	53.8	63.2	69.1
17.5-19.0	67	54.6	4.6	45.5	49.0	54.1	63.1	68.1

UPPER THIGH DEPTH

Subject stands erect with feet together and weight evenly distributed. With the paddle blades of an automated anthropometer or sliding caliper, measure the horizontal depth (anterior-posterior) of the right thigh at the level of the gluteal furrow at a fixed pressure value.



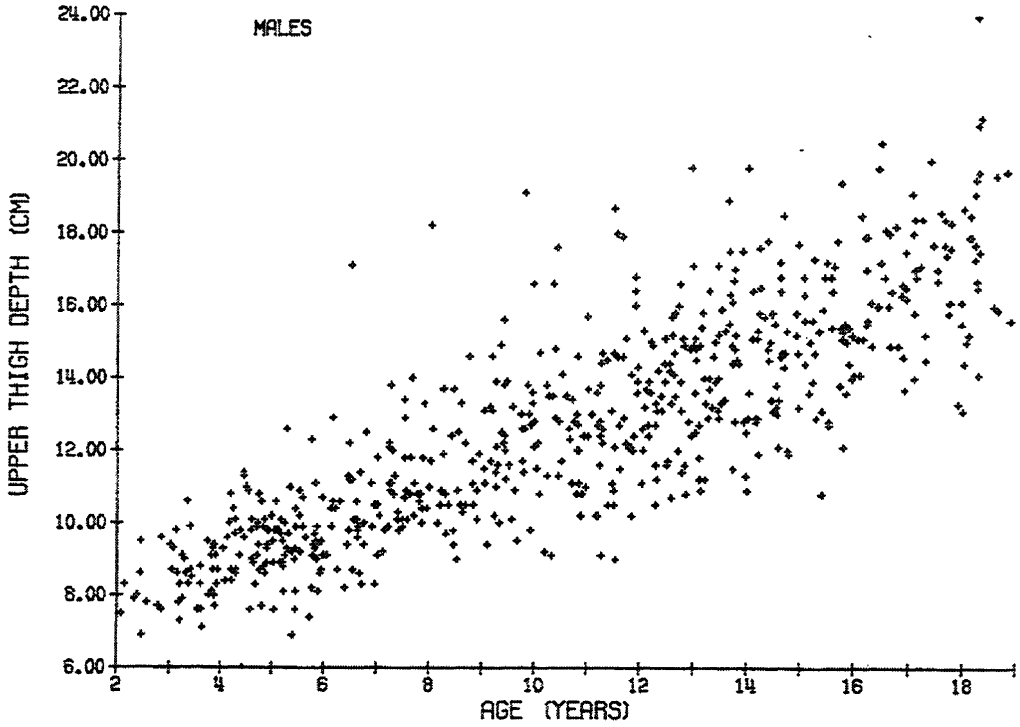


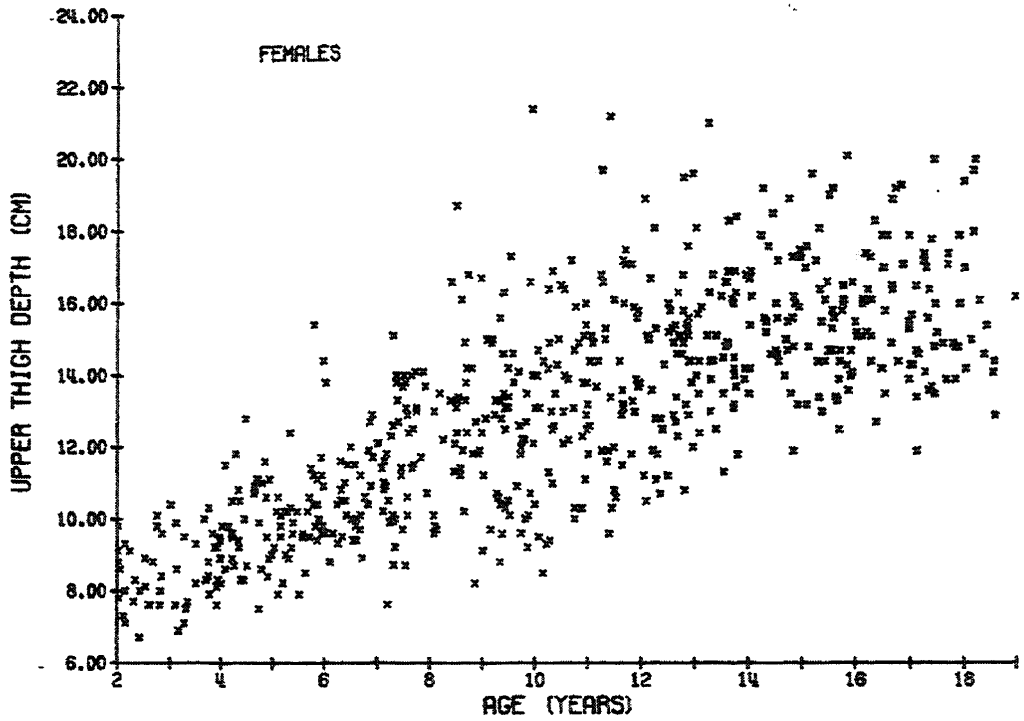


UPPER THIGH DEPTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	62	8.5	0.9	6.7	6.9	8.3	9.9	10.6
3.5-4.5	75	9.2	1.1	6.0	7.4	9.1	11.3	12.8
4.5-5.5	90	9.6	1.1	6.9	7.6	9.6	11.0	12.6
5.5-6.5	76	10.2	1.4	7.4	8.1	9.9	12.4	15.4
6.5-7.5	86	10.9	1.6	7.6	8.6	10.5	13.8	17.1
7.5-8.5	67	11.9	1.9	8.7	9.6	11.6	14.1	18.7
8.5-9.5	89	12.4	1.9	8.2	9.2	12.2	15.5	16.8
9.5-10.5	81	12.8	2.4	8.5	9.2	12.7	16.9	21.4
10.5-11.5	85	13.1	2.2	9.1	10.1	12.8	16.5	21.2
11.5-12.5	95	13.7	2.1	9.0	10.6	13.4	17.6	18.9
12.5-13.5	105	14.4	1.9	10.7	11.1	14.4	17.5	21.0
13.5-14.5	86	15.1	1.9	10.9	11.6	15.0	18.4	19.8
14.5-15.5	79	15.4	2.1	10.8	12.0	15.2	18.5	24.2
15.5-16.5	76	15.6	1.8	12.1	12.7	15.3	19.2	20.5
16.5-17.5	66	16.2	1.8	11.9	13.5	16.2	19.2	20.0
17.5-19.0	62	16.8	2.2	12.9	13.3	16.6	20.0	24.0

(78)


MALES
UPPER THIGH DEPTH (CM)
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
UPPER THIGH DEPTH (CM)
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

UPPER THIGH DEPTH (cm)
(Males)

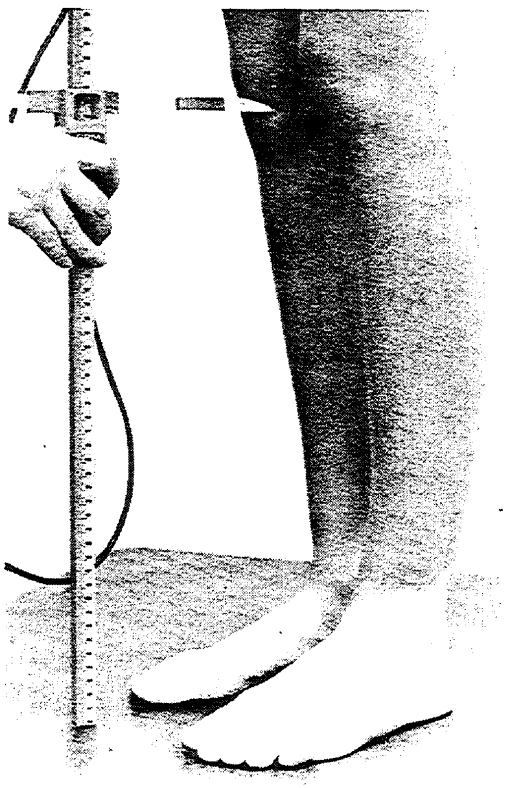
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	29	8.5	0.9	6.9	7.1	8.4	9.9	10.6
3.5-4.5	37	9.0	1.2	6.0	6.9	8.8	11.0	11.4
4.5-5.5	55	9.4	1.0	6.9	7.3	9.4	10.8	12.6
5.5-6.5	38	9.8	1.2	7.4	8.0	9.6	12.2	12.9
6.5-7.5	40	10.6	1.6	8.3	8.3	10.1	12.5	17.1
7.5-8.5	35	11.5	1.7	9.4	9.6	10.8	13.8	18.2
8.5-9.5	40	11.9	1.6	9.0	9.4	11.6	14.6	15.6
9.5-10.5	36	12.8	2.2	9.1	9.2	12.7	16.8	19.1
10.5-11.5	40	12.4	1.5	9.1	9.5	12.4	14.6	15.7
11.5-12.5	53	13.5	2.0	9.0	10.4	13.2	17.2	18.7
12.5-13.5	55	14.0	1.8	10.7	10.9	13.9	16.7	19.8
13.5-14.5	46	14.8	2.0	10.9	11.4	14.9	17.7	19.8
14.5-15.5	40	15.1	2.3	10.8	11.9	14.7	17.7	24.2
15.5-16.5	36	15.8	2.0	12.1	12.6	15.4	19.5	20.5
16.5-17.5	28	16.7	1.6	13.7	13.8	16.6	18.8	20.0
17.5-19.0	38	17.4	2.2	13.1	13.3	17.4	21.0	24.0

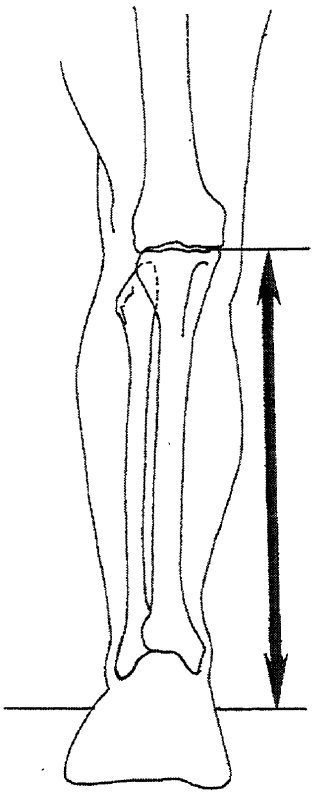
UPPER THIGH DEPTH (cm)
(Females)

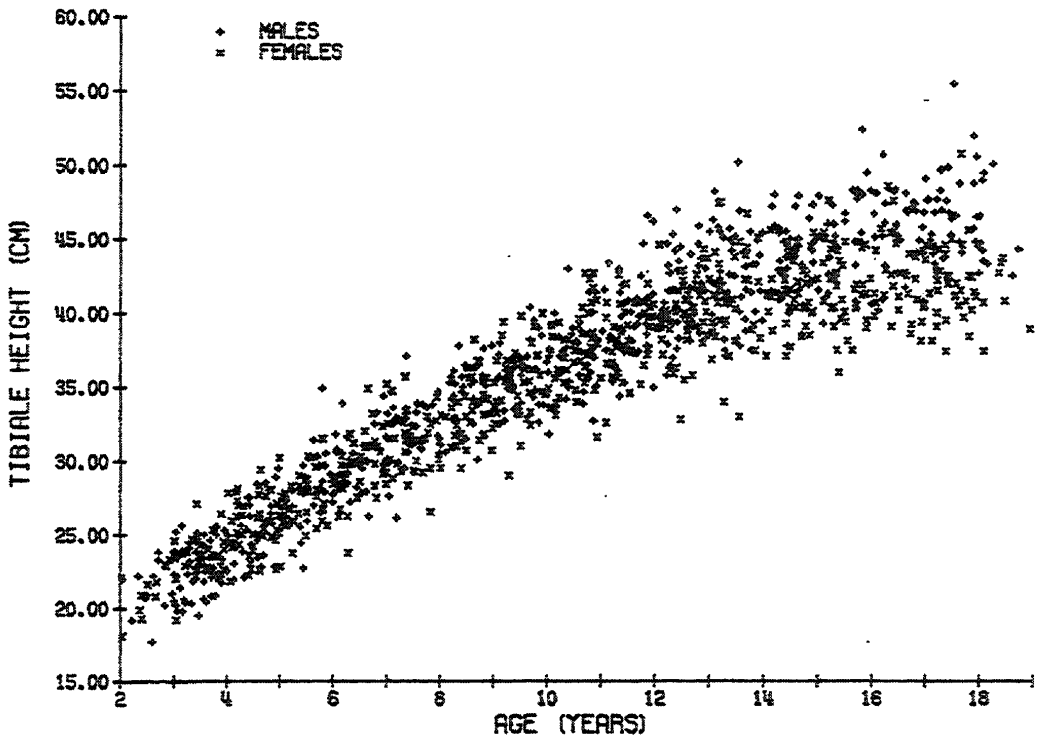
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	8.4	1.0	6.7	6.8	8.2	10.0	10.4
3.5-4.5	38	9.4	1.1	7.6	7.9	9.2	11.5	12.8
4.5-5.5	35	9.9	1.1	7.5	7.8	9.9	11.2	12.4
5.5-6.5	38	10.6	1.5	7.9	8.4	10.3	13.9	15.4
6.5-7.5	46	11.2	1.6	7.6	8.8	10.9	13.9	15.1
7.5-8.5	32	12.4	2.0	8.7	9.2	12.4	15.1	18.7
8.5-9.5	49	12.7	2.1	8.2	8.9	12.8	16.2	16.8
9.5-10.5	45	12.9	2.6	8.5	9.2	12.6	16.8	21.4
10.5-11.5	45	13.8	2.4	9.6	10.0	13.7	17.1	21.2
11.5-12.5	42	13.9	2.3	10.5	10.6	13.4	17.5	18.9
12.5-13.5	50	15.0	2.0	10.8	12.1	14.9	18.8	21.0
13.5-14.5	40	15.5	1.8	11.3	11.8	15.4	18.4	19.2
14.5-15.5	39	15.7	1.8	11.9	12.9	15.5	18.9	19.6
15.5-16.5	40	15.5	1.7	12.5	12.7	15.2	18.3	20.1
16.5-17.5	38	15.8	1.9	11.9	13.2	15.5	19.2	20.0
17.5-19.0	24	15.9	2.0	12.9	13.0	15.0	19.6	20.0

TIBIALE HEIGHT

Subject stands erect with feet together, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to right tibiale.



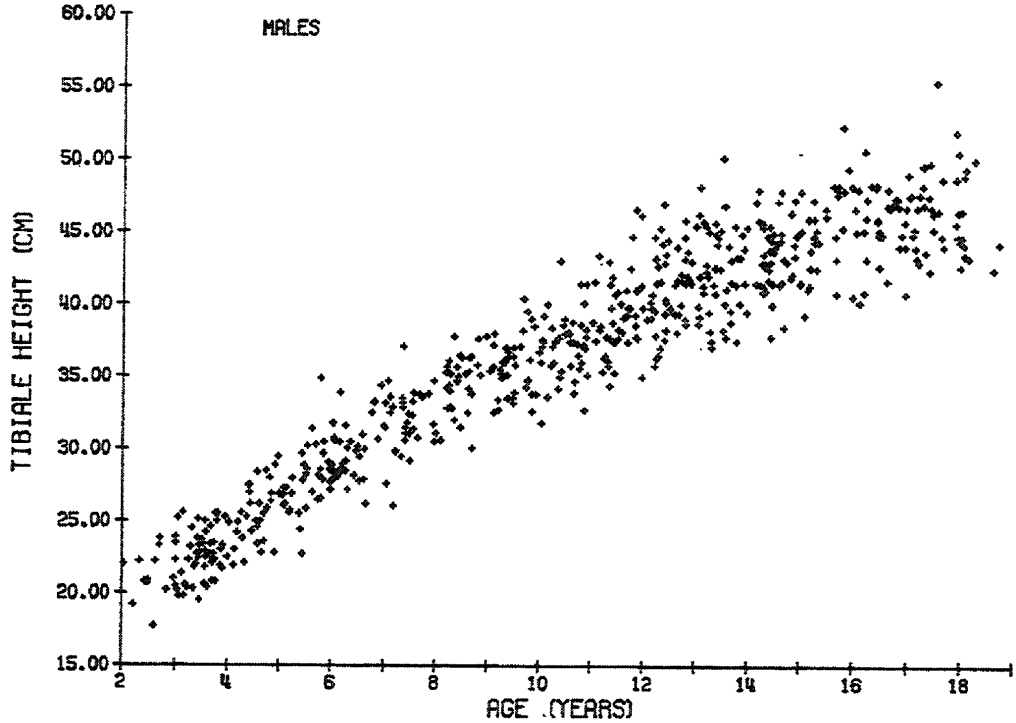


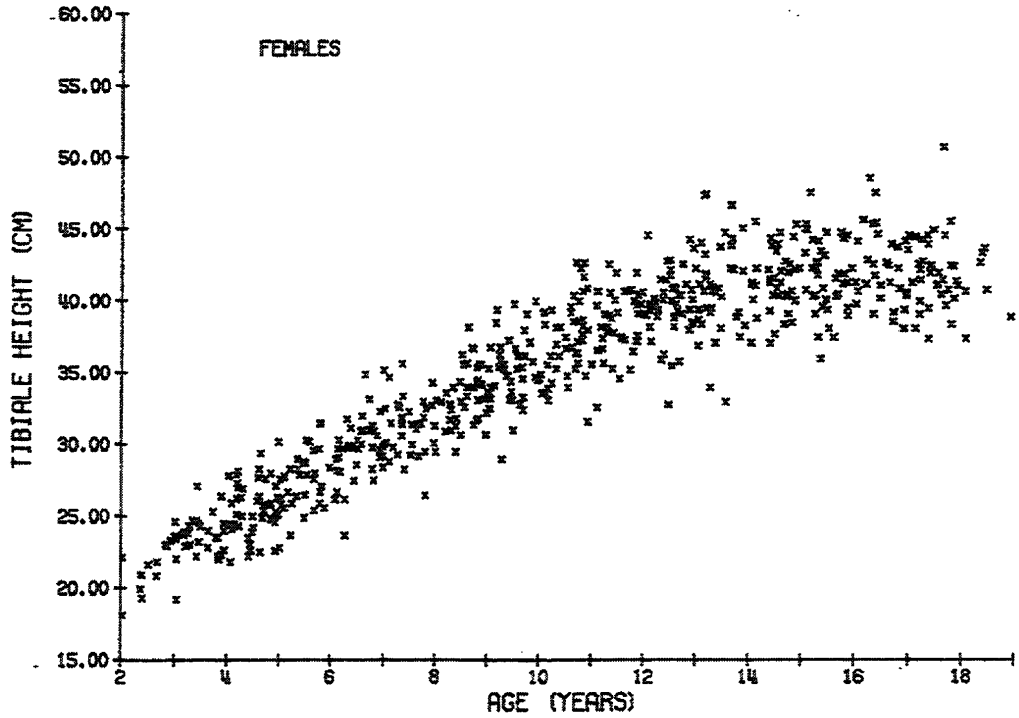


TIBIALE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	22.3	1.9	17.7	18.8	22.3	25.0	27.1
3.5-4.5	79	24.0	1.9	20.4	20.8	23.8	27.4	28.1
4.5-5.5	76	26.4	1.8	22.5	22.7	26.2	29.1	30.2
5.5-6.5	77	28.9	1.9	23.7	25.7	28.6	31.6	34.9
6.5-7.5	76	31.2	2.2	26.1	27.6	31.0	34.7	37.1
7.5-8.5	64	32.6	2.1	26.5	29.3	32.7	36.0	37.8
8.5-9.5	81	34.8	2.0	29.0	31.0	35.0	37.8	39.4
9.5-10.5	74	36.4	2.3	31.8	32.7	36.1	39.8	43.0
10.5-11.5	97	38.1	2.5	31.6	34.0	37.8	42.3	43.4
11.5-12.5	95	40.0	2.7	32.8	35.6	39.8	44.7	47.0
12.5-13.5	100	41.3	2.9	34.0	37.0	40.9	45.9	50.2
13.5-14.5	82	42.1	2.8	33.0	37.3	42.1	45.9	48.0
14.5-15.5	87	42.9	2.6	36.0	38.5	42.7	47.2	47.9
15.5-16.5	63	44.1	3.4	37.5	39.0	44.5	48.6	52.4
16.5-17.5	73	44.0	3.1	37.4	38.4	44.0	48.6	49.9
17.5-19.0	46	44.2	3.9	37.4	38.5	43.5	50.7	55.5

(79)


MALES
TIBIALE HEIGHT (CM)
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
TIBIALE HEIGHT (CM)
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

TIBIALE HEIGHT (cm)
(Males)

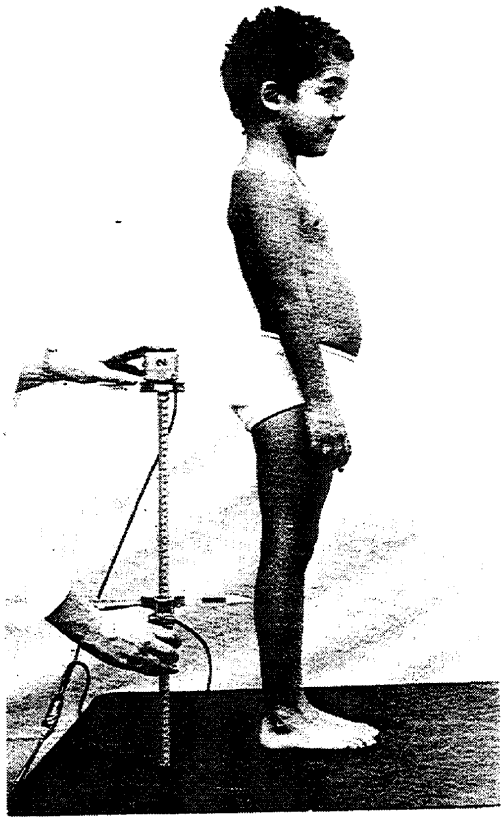
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	37	21.9	1.8	17.7	19.0	21.9	25.1	25.6
3.5-4.5	44	23.6	1.8	20.4	20.6	23.3	26.8	27.5
4.5-5.5	35	26.4	1.9	22.7	22.7	26.3	29.0	29.7
5.5-6.5	43	29.2	1.8	25.9	26.5	28.6	31.8	34.9
6.5-7.5	34	31.3	2.4	26.1	26.2	31.3	34.5	37.1
7.5-8.5	32	33.7	1.9	30.5	30.6	33.8	36.4	37.8
8.5-9.5	33	35.2	1.8	30.1	30.9	35.3	37.7	38.0
9.5-10.5	37	36.7	2.4	31.8	32.5	36.8	40.1	43.0
10.5-11.5	49	37.9	2.4	32.7	34.1	37.5	41.8	43.4
11.5-12.5	52	40.5	2.9	35.0	36.1	39.8	45.7	47.0
12.5-13.5	50	42.3	2.8	37.1	37.8	41.9	46.1	50.2
13.5-14.5	51	42.7	2.6	37.5	37.7	42.8	46.3	48.0
14.5-15.5	39	44.1	2.3	38.5	39.3	44.3	47.3	47.9
15.5-16.5	31	46.1	3.0	40.2	40.4	46.0	50.0	52.4
16.5-17.5	37	46.1	2.2	40.8	41.6	46.6	49.4	49.9
17.5-19.0	23	46.7	3.3	42.5	42.5	45.2	51.8	55.5

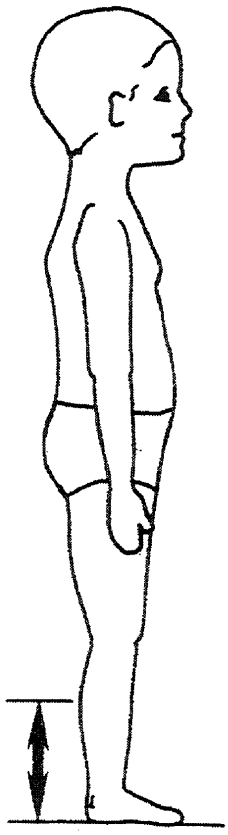
TIBIALE HEIGHT (cm)
(Females)

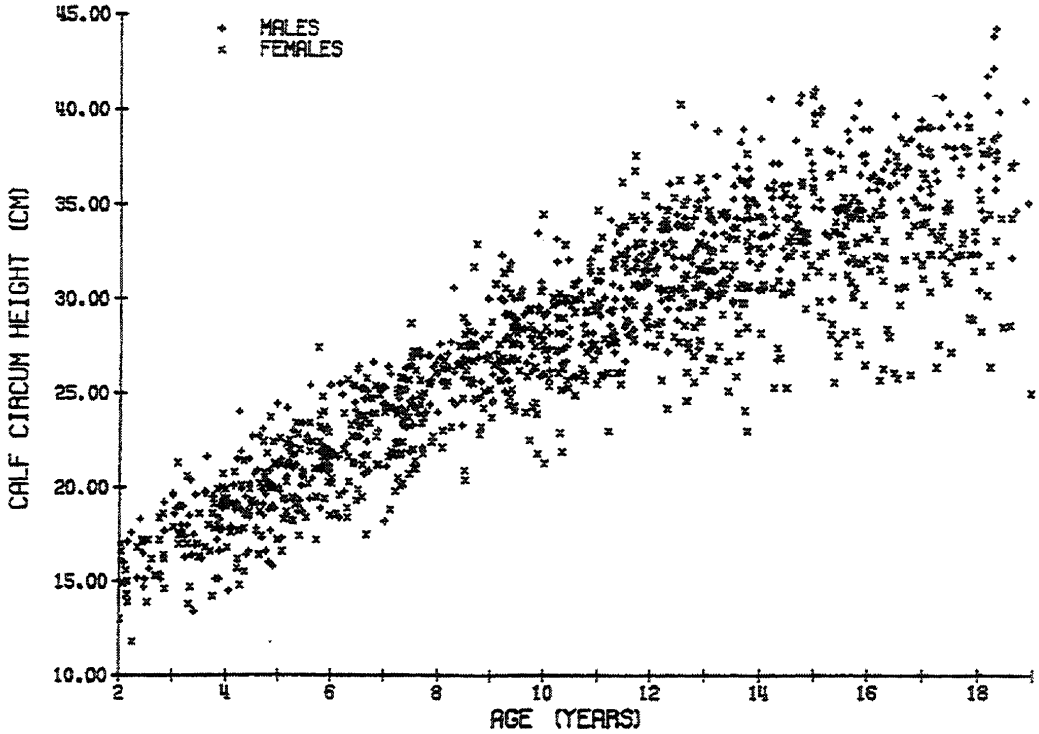
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	30	22.7	1.9	18.1	18.6	23.0	24.7	27.1
3.5-4.5	35	24.6	1.8	21.8	21.9	24.2	27.8	28.1
4.5-5.5	41	26.4	1.8	22.5	22.6	26.2	29.0	30.2
5.5-6.5	34	28.5	2.0	23.7	24.9	28.6	31.4	31.8
6.5-7.5	42	31.0	1.9	27.5	27.9	30.7	34.9	35.7
7.5-8.5	32	31.5	1.7	26.5	28.1	31.4	34.1	34.4
8.5-9.5	48	34.5	2.1	29.0	30.8	34.2	37.8	39.4
9.5-10.5	37	36.1	2.1	32.4	32.7	35.8	39.5	40.0
10.5-11.5	48	38.2	2.6	31.6	33.2	38.2	42.5	42.7
11.5-12.5	43	39.3	2.4	32.8	34.7	39.6	42.7	44.6
12.5-13.5	50	40.4	2.6	34.0	35.6	40.3	44.2	47.5
13.5-14.5	31	41.1	3.0	33.0	34.1	41.3	45.3	46.7
14.5-15.5	48	41.9	2.4	36.0	37.9	42.1	45.2	47.6
15.5-16.5	32	42.2	2.7	37.5	37.9	41.6	46.5	48.6
16.5-17.5	36	41.8	2.2	37.4	37.7	42.2	44.6	45.0
17.5-19.0	23	41.8	2.7	37.4	37.5	41.1	45.4	50.8

CALF CIRCUMFERENCE HEIGHT

Subject stands erect with feet together and weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the standing surface to the right calf at the level of the calf circumference measurement.



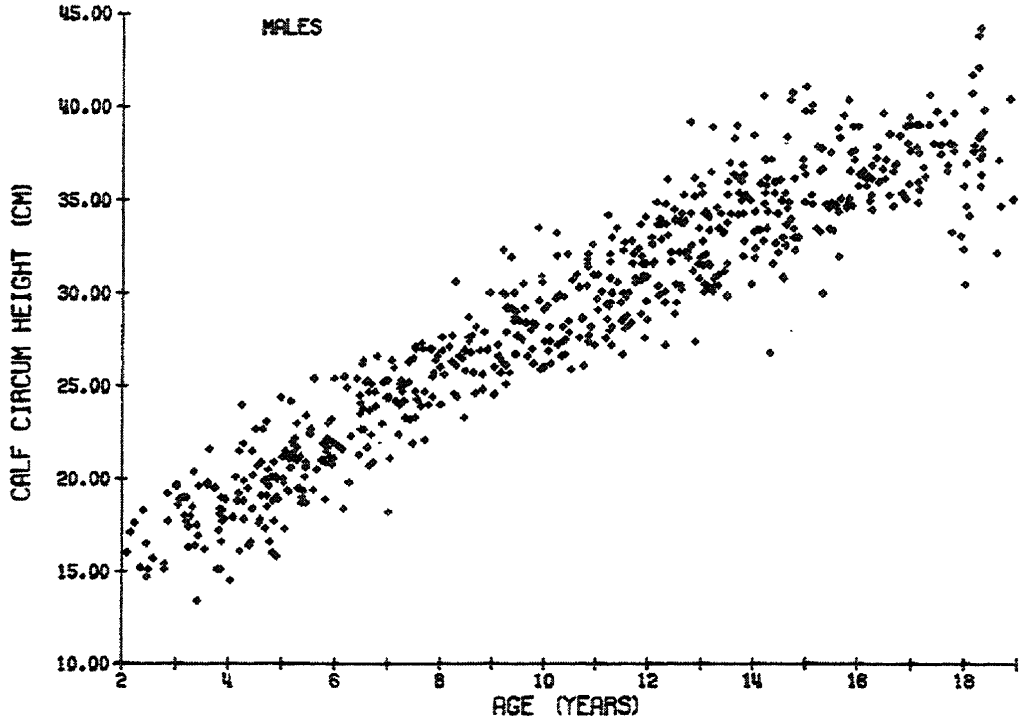




CALF CIRCUMFERENCE HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	65	16.8	1.9	11.8	13.5	17.0	19.7	21.3
3.5-4.5	77	18.6	1.9	14.2	14.9	18.8	21.5	24.0
4.5-5.5	92	20.2	2.0	15.8	16.6	20.1	23.3	24.4
5.5-6.5	79	21.9	2.1	17.2	18.4	21.8	25.4	27.4
6.5-7.5	87	23.4	2.2	17.5	19.6	23.8	26.4	28.7
7.5-8.5	68	25.2	2.1	20.9	21.2	25.5	27.7	30.6
8.5-9.5	91	27.3	2.3	20.4	23.9	27.0	31.5	32.9
9.5-10.5	85	27.8	2.6	21.3	22.6	27.9	32.1	34.5
10.5-11.5	86	29.5	2.6	23.0	25.6	29.4	33.7	36.2
11.5-12.5	97	31.4	2.7	24.2	27.6	31.5	35.4	40.3
12.5-13.5	108	31.7	2.9	24.6	26.4	31.6	36.1	39.2
13.5-14.5	89	32.9	3.5	23.0	25.6	33.3	37.5	40.6
14.5-15.5	81	34.2	3.3	25.6	28.1	33.7	40.1	41.1
15.5-16.5	79	34.0	3.4	25.7	26.5	34.5	39.0	40.4
16.5-17.5	67	34.5	3.5	25.8	26.7	34.7	39.1	40.7
17.5-19.0	63	35.4	4.1	25.0	28.3	35.7	41.6	44.3

(80)


MALES
CALF CIRCUM HEIGHT (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
4
6
8
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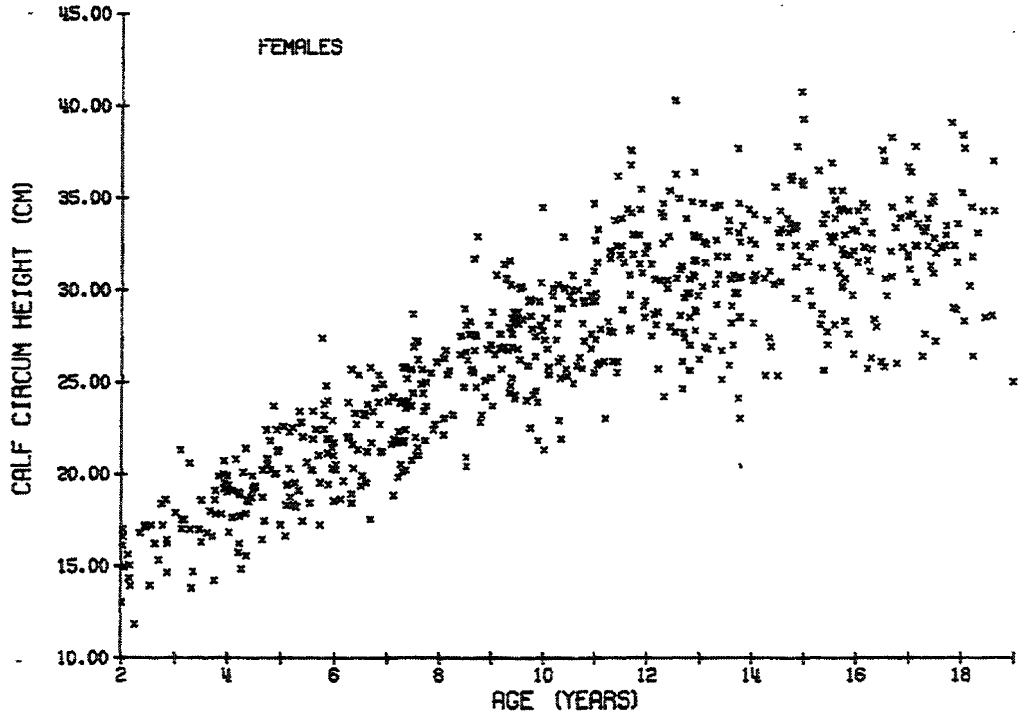
12
14
16
18
AGE (YEARS)


FEMALES
CALF CIRCUM HEIGHT (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
2
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16
18
AGE (YEARS)

CALF CIRCUMFERENCE HEIGHT (cm)
(Males)

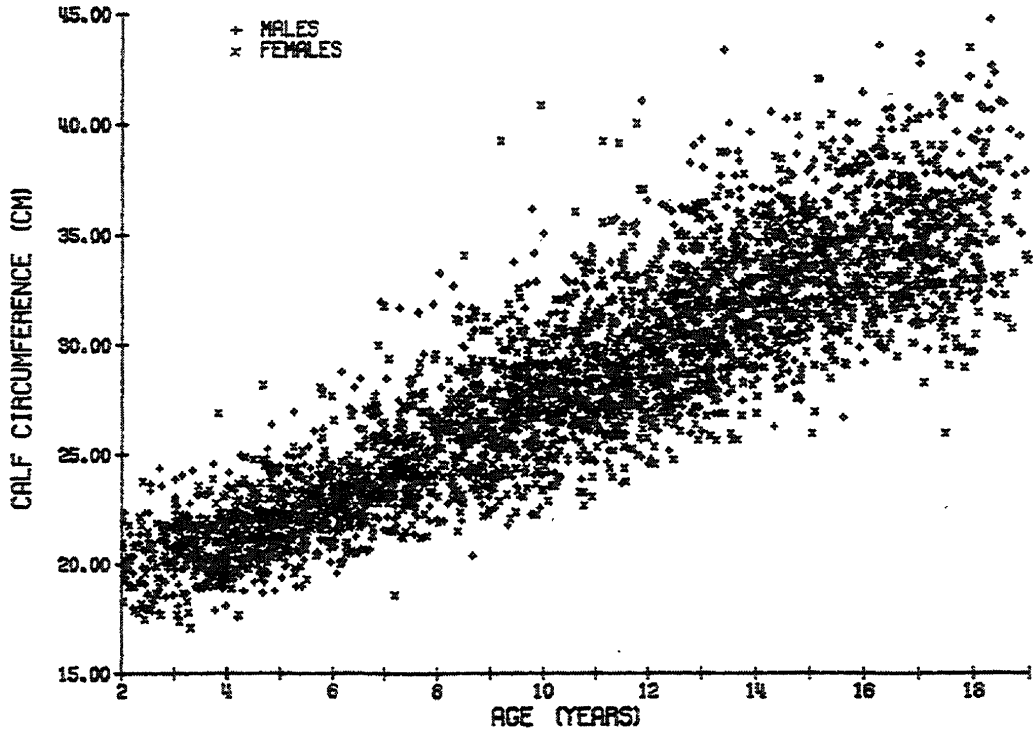
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	17.4	1.7	13.4	14.2	17.6	19.6	20.4
3.5-4.5	37	18.8	2.1	14.5	14.8	18.7	22.0	24.0
4.5-5.5	58	20.2	1.9	15.8	16.5	20.1	23.5	24.4
5.5-6.5	38	22.3	1.9	18.4	18.8	22.0	25.4	26.2
6.5-7.5	41	24.1	1.8	18.2	20.7	24.3	26.4	26.6
7.5-8.5	36	25.8	1.6	22.1	22.6	26.0	27.6	30.6
8.5-9.5	42	27.6	1.9	24.5	24.6	27.4	30.0	32.3
9.5-10.5	40	28.4	2.0	25.9	25.9	28.1	32.1	33.5
10.5-11.5	41	29.8	2.0	26.1	26.7	29.6	33.0	34.2
11.5-12.5	55	31.5	2.1	27.2	28.0	31.5	34.6	36.1
12.5-13.5	58	32.8	2.3	27.4	29.8	32.5	36.2	39.2
13.5-14.5	48	34.9	2.4	26.8	30.9	35.0	38.4	40.6
14.5-15.5	42	35.4	2.8	30.0	30.8	34.8	40.4	41.1
15.5-16.5	38	36.5	1.8	32.0	34.2	36.2	39.6	40.4
16.5-17.5	28	37.4	1.7	34.7	34.8	37.6	39.7	40.7
17.5-19.0	38	37.4	3.1	30.5	32.0	37.5	42.4	44.3

CALF CIRCUMFERENCE HEIGHT (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	33	16.3	2.0	11.8	12.6	16.5	19.3	21.3
3.5-4.5	40	18.4	1.7	14.2	14.8	18.7	20.7	21.4
4.5-5.5	34	20.2	2.0	16.4	16.5	20.1	23.0	23.7
5.5-6.5	41	21.5	2.2	17.2	17.8	21.5	25.4	27.4
6.5-7.5	46	22.9	2.3	17.5	19.0	23.2	25.8	28.7
7.5-8.5	32	24.6	2.3	20.9	20.9	24.9	27.7	29.0
8.5-9.5	49	27.0	2.5	20.4	23.0	26.8	31.5	32.9
9.5-10.5	45	27.2	2.9	21.3	21.8	27.4	30.4	34.5
10.5-11.5	45	29.1	3.0	23.0	25.0	29.0	33.9	36.2
11.5-12.5	42	31.4	3.3	24.2	25.9	30.9	36.7	40.3
12.5-13.5	50	30.4	3.0	24.6	25.3	30.4	34.9	36.4
13.5-14.5	41	30.6	3.3	23.0	24.1	30.6	34.7	37.7
14.5-15.5	39	32.9	3.3	25.6	26.9	33.0	37.9	40.8
15.5-16.5	41	31.7	3.0	25.7	26.1	32.0	35.4	37.6
16.5-17.5	39	32.4	3.0	25.8	26.0	32.4	36.8	38.3
17.5-19.0	25	32.4	3.7	25.0	25.3	32.4	38.2	39.1

CALF CIRCUMFERENCE

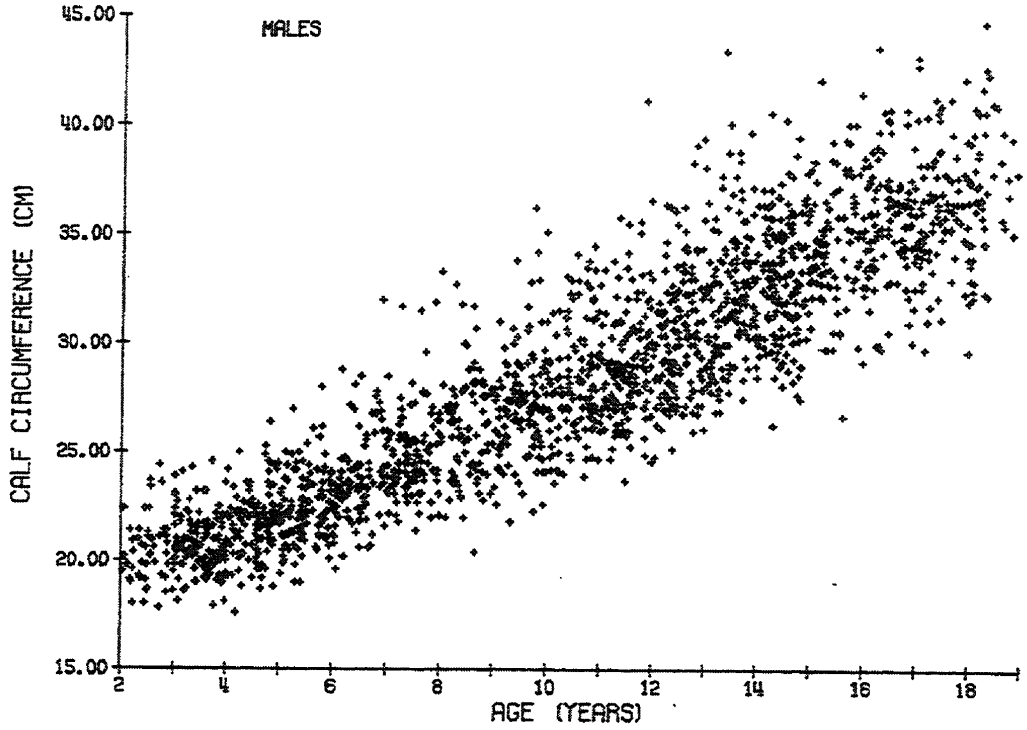
Subject stands erect with legs slightly separated, weight evenly distributed. With an automated tape device, measure the maximum horizontal circumference of the right calf.

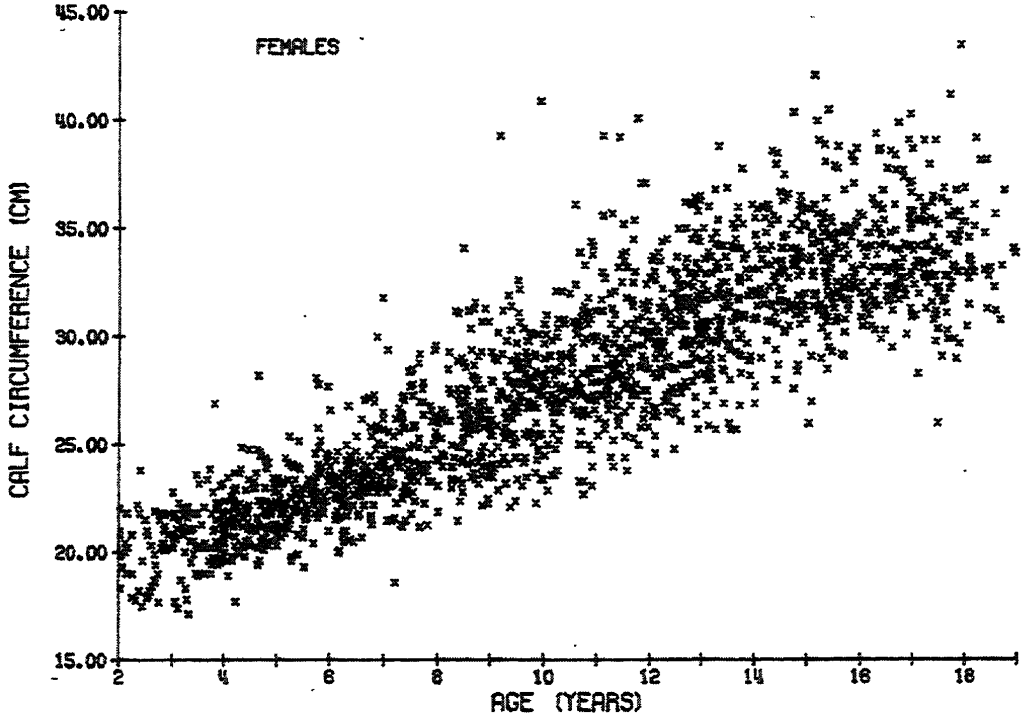


CALF CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	20.6	1.5	17.1	17.9	20.6	23.0	24.4
3.5-4.5	227	21.2	1.5	17.6	19.0	21.1	23.6	26.9
4.5-5.5	263	22.1	1.5	18.7	19.7	21.9	24.5	28.2
5.5-6.5	218	23.0	1.6	19.3	20.5	22.9	26.2	28.8
6.5-7.5	224	24.4	2.0	18.6	21.5	24.0	27.7	32.0
7.5-8.5	190	25.6	2.4	21.2	22.0	25.2	29.8	34.1
8.5-9.5	251	26.6	2.4	20.4	23.1	26.4	30.6	39.3
9.5-10.5	253	27.7	2.6	22.3	23.6	27.5	32.0	40.9
10.5-11.5	279	28.9	2.7	22.7	24.8	28.4	33.7	39.3
11.5-12.5	287	29.7	2.7	23.8	25.7	29.4	34.5	41.1
12.5-13.5	313	31.3	2.9	25.7	26.9	30.9	36.3	43.4
13.5-14.5	271	32.5	2.7	25.7	28.3	32.2	36.8	40.6
14.5-15.5	264	33.6	2.9	26.0	28.9	33.4	38.4	46.7
15.5-16.5	198	34.6	2.9	26.7	30.2	34.7	39.4	43.6
16.5-17.5	221	34.8	2.7	26.0	30.9	34.5	40.2	43.2
17.5-19.0	155	35.6	3.1	29.0	30.4	35.5	41.1	44.8

(81)


MALES
CALF CIRCUMFERENCE (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CALF CIRCUMFERENCE (CM)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

CALF CIRCUMFERENCE (cm)
(Males)

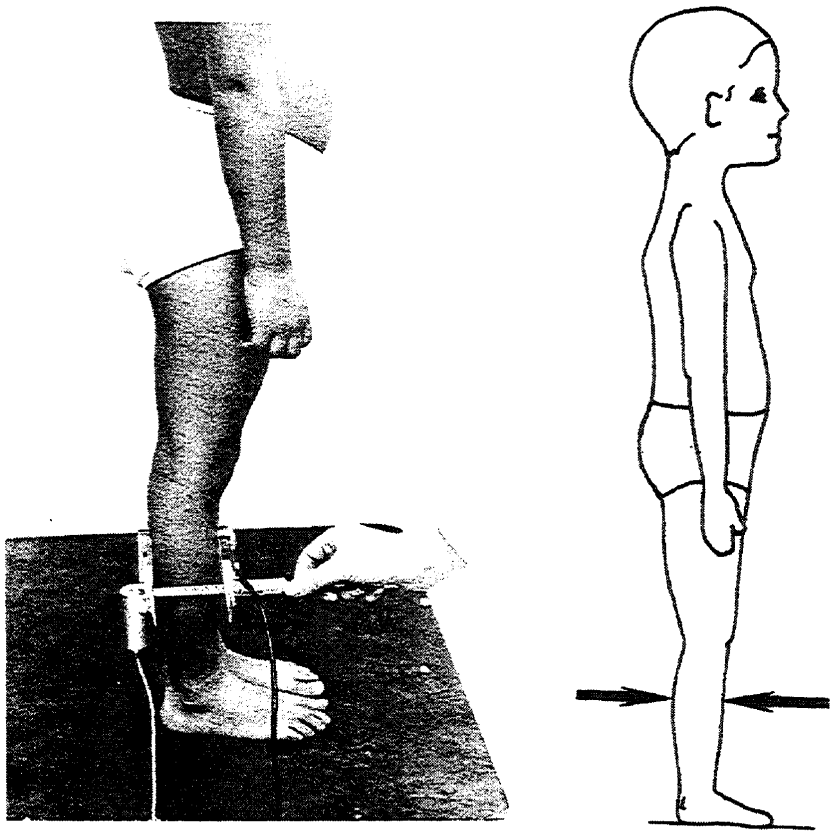
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	20.7	1.4	17.8	18.5	20.6	23.5	24.4
3.5-4.5	118	21.0	1.4	17.6	19.0	20.8	23.4	25.0
4.5-5.5	143	22.0	1.5	18.7	19.5	21.9	24.6	27.0
5.5-6.5	108	23.0	1.7	19.6	20.5	22.9	26.2	28.8
6.5-7.5	104	24.5	2.0	20.6	21.8	24.1	27.8	32.0
7.5-8.5	96	25.7	2.4	21.4	22.1	25.4	30.3	33.3
8.5-9.5	114	26.6	2.2	20.4	23.1	26.7	30.1	33.8
9.5-10.5	124	27.7	2.6	22.3	24.0	27.4	32.7	36.2
10.5-11.5	140	28.8	2.5	23.7	25.2	28.5	33.4	35.8
11.5-12.5	154	29.7	2.7	24.6	26.1	29.2	35.2	41.1
12.5-13.5	153	31.3	3.2	26.0	26.9	30.8	37.4	43.4
13.5-14.5	155	32.9	2.6	26.3	28.9	32.7	37.0	40.6
14.5-15.5	131	33.9	3.0	27.5	29.0	33.7	38.4	46.7
15.5-16.5	100	35.6	3.0	26.7	29.9	35.6	40.3	43.6
16.5-17.5	104	35.9	2.7	29.8	31.3	36.0	40.8	43.2
17.5-19.0	88	36.9	2.8	29.7	32.3	36.6	41.6	44.8

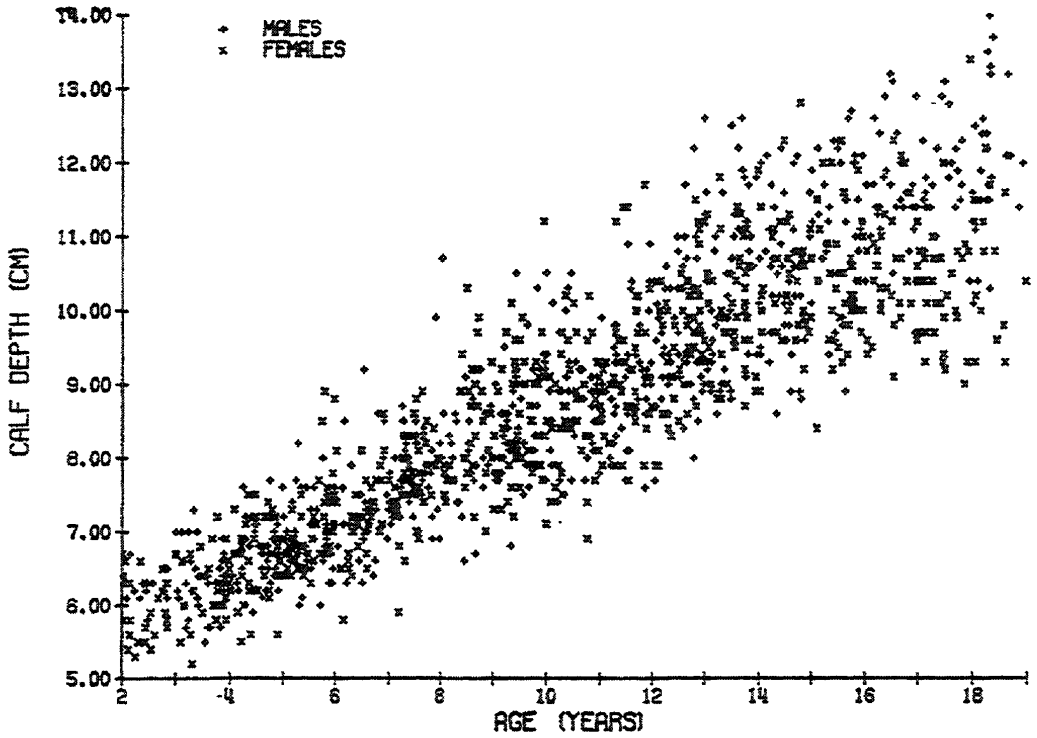
CALF CIRCUMFERENCE (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	20.4	1.5	17.1	17.7	20.7	22.2	23.8
3.5-4.5	109	21.3	1.5	17.7	19.1	21.2	23.7	26.9
4.5-5.5	120	22.2	1.4	19.4	20.1	21.9	24.4	28.2
5.5-6.5	110	23.0	1.6	19.3	20.5	22.9	25.6	28.1
6.5-7.5	120	24.3	2.0	18.6	21.4	23.9	27.3	31.8
7.5-8.5	94	25.5	2.4	21.2	21.9	25.0	29.3	34.1
8.5-9.5	137	26.6	2.5	22.1	23.0	26.2	31.0	39.3
9.5-10.5	129	27.7	2.5	22.3	23.4	27.6	31.1	40.9
10.5-11.5	139	28.9	3.0	22.7	24.4	28.3	34.2	39.3
11.5-12.5	133	29.7	2.8	23.8	25.3	29.6	34.1	40.1
12.5-13.5	160	31.2	2.6	25.7	26.9	31.0	36.0	38.8
13.5-14.5	116	32.1	2.7	25.7	27.5	31.9	36.1	38.6
14.5-15.5	133	33.3	2.7	26.0	28.9	33.2	38.0	42.1
15.5-16.5	98	33.6	2.4	29.1	30.2	33.2	38.4	39.4
16.5-17.5	117	33.9	2.5	26.0	30.4	33.4	38.6	40.3
17.5-19.0	67	33.9	2.7	29.0	29.7	33.5	38.0	43.5

CALF DEPTH

Subject stands erect with feet together and weight evenly distributed. With the paddle blades of an automated sliding caliper, measure the horizontal (anterior-posterior) depth of the right calf at the level of maximum circumference.

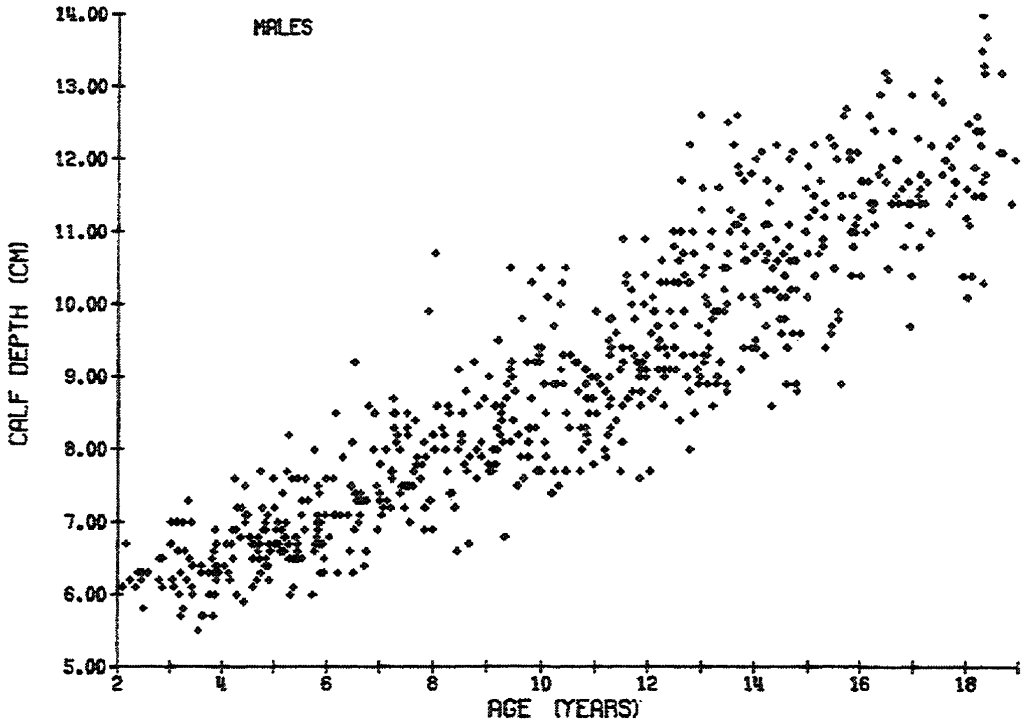


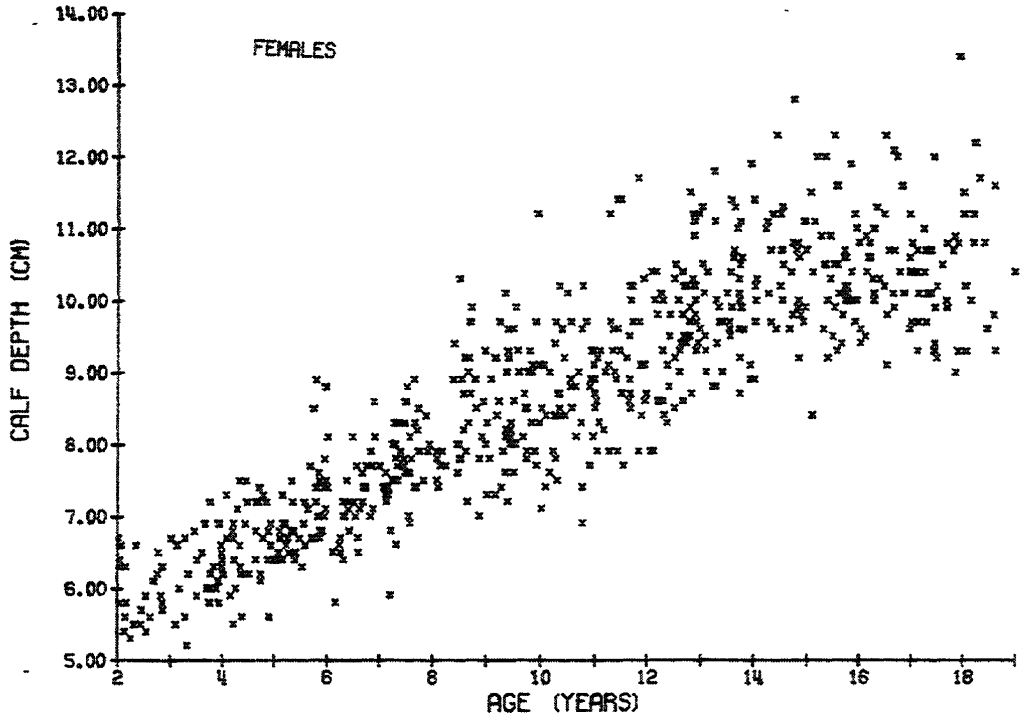


CALF DEPTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	6.2	0.5	5.2	5.4	6.2	6.9	7.3
3.5-4.5	77	6.5	0.5	5.5	5.6	6.3	7.3	7.6
4.5-5.5	92	6.8	0.4	5.6	6.1	6.7	7.6	8.2
5.5-6.5	80	7.1	0.6	5.8	6.1	7.0	8.1	8.9
6.5-7.5	86	7.6	0.6	5.9	6.6	7.4	8.5	9.2
7.5-8.5	68	8.0	0.7	6.6	6.8	7.8	9.3	10.7
8.5-9.5	91	8.4	0.7	6.7	7.2	8.3	9.6	10.5
9.5-10.5	85	8.7	0.9	7.1	7.4	8.5	10.2	11.2
10.5-11.5	86	8.9	0.8	6.9	7.6	8.8	9.9	11.4
11.5-12.5	97	9.4	0.8	7.6	7.8	9.2	10.6	11.7
12.5-13.5	108	10.0	0.9	8.0	8.6	9.8	11.6	12.6
13.5-14.5	89	10.5	0.9	8.6	8.9	10.5	12.1	12.6
14.5-15.5	81	10.6	0.9	8.4	8.9	10.5	12.1	12.8
15.5-16.5	79	11.0	1.0	8.9	9.4	10.9	12.6	13.2
16.5-17.5	67	10.9	1.0	9.1	9.3	10.7	12.4	13.1
17.5-19.0	63	11.4	1.2	9.0	9.2	11.5	13.4	14.0

(82)


MALES
CALF DEPTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
CALF DEPTH (CM)
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
2
4
6
8
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12
14
16
18
AGE (YEARS)

CALF DEPTH (cm)
(Males)

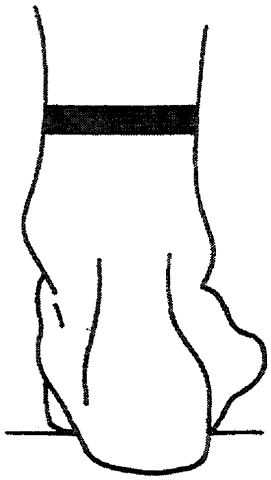
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	6.4	0.4	5.7	5.7	6.2	7.0	7.3
3.5-4.5	37	6.5	0.5	5.5	5.6	6.4	7.2	7.6
4.5-5.5	57	6.8	0.4	6.0	6.1	6.7	7.6	8.2
5.5-6.5	39	7.1	0.6	6.0	6.1	7.0	8.0	8.5
6.5-7.5	41	7.6	0.6	6.4	6.6	7.4	8.6	9.2
7.5-8.5	36	8.0	0.8	6.6	6.7	7.8	9.3	10.7
8.5-9.5	42	8.4	0.7	6.7	6.9	8.3	9.2	10.5
9.5-10.5	40	8.8	0.9	7.4	7.4	8.7	10.3	10.5
10.5-11.5	41	8.7	0.6	7.7	7.7	8.7	9.7	9.9
11.5-12.5	55	9.5	0.8	7.6	8.0	9.3	10.8	11.0
12.5-13.5	58	10.0	1.0	8.0	8.5	9.9	11.8	12.6
13.5-14.5	48	10.7	0.9	8.6	9.2	10.7	12.1	12.6
14.5-15.5	42	10.7	1.0	8.8	8.9	10.6	12.1	12.3
15.5-16.5	38	11.5	0.9	8.9	9.7	11.5	12.9	13.2
16.5-17.5	28	11.6	0.7	9.7	10.0	11.4	12.8	13.1
17.5-19.0	38	12.0	0.9	10.1	10.3	11.8	13.5	14.0

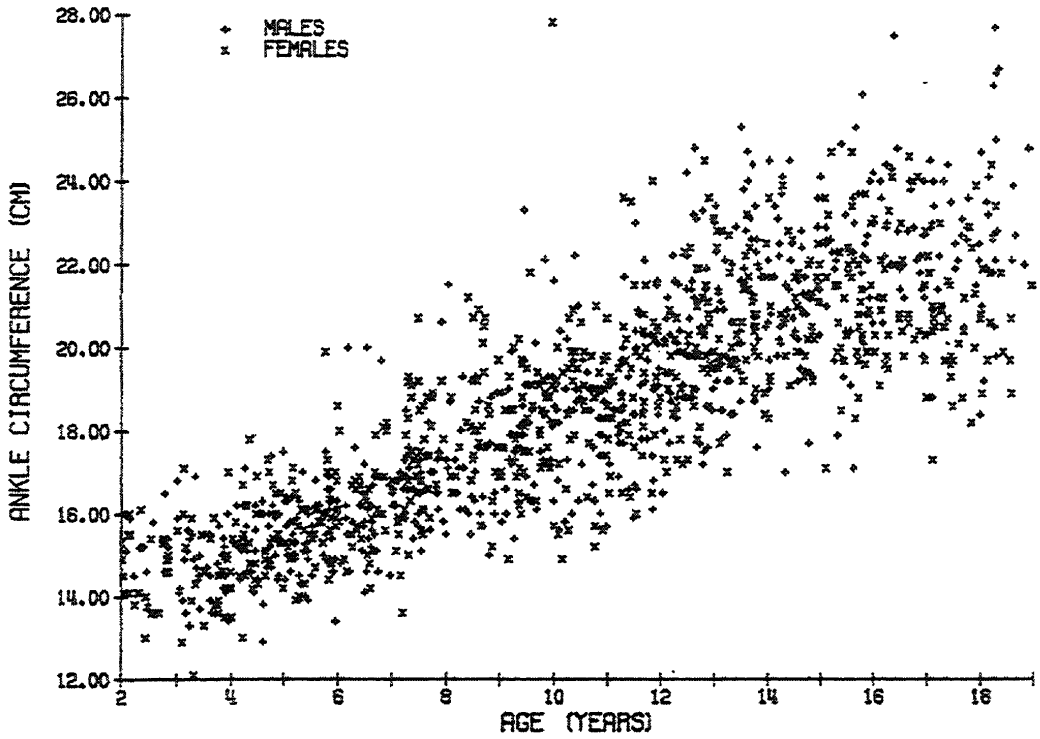
CALF DEPTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	6.0	0.5	5.2	5.3	5.9	6.7	6.8
3.5-4.5	40	6.4	0.5	5.5	5.6	6.3	7.3	7.5
4.5-5.5	35	6.7	0.4	5.6	6.0	6.7	7.3	7.5
5.5-6.5	41	7.2	0.6	5.8	6.3	7.0	8.5	8.9
6.5-7.5	45	7.6	0.6	5.9	6.5	7.5	8.4	8.6
7.5-8.5	32	8.0	0.7	6.9	7.0	7.8	9.1	10.3
8.5-9.5	49	8.5	0.8	7.0	7.1	8.3	9.7	10.1
9.5-10.5	45	8.7	0.8	7.1	7.4	8.5	10.0	11.2
10.5-11.5	45	9.0	0.9	6.9	7.5	8.9	10.9	11.4
11.5-12.5	42	9.2	0.9	7.7	7.8	9.0	10.3	11.7
12.5-13.5	50	9.9	0.8	8.6	8.7	9.7	11.2	11.8
13.5-14.5	41	10.3	0.8	8.7	8.8	10.1	11.4	12.3
14.5-15.5	39	10.5	0.9	8.4	8.8	10.4	12.0	12.8
15.5-16.5	41	10.4	0.7	9.3	9.4	10.3	11.6	12.3
16.5-17.5	39	10.3	0.7	9.1	9.2	10.2	11.8	12.1
17.5-19.0	25	10.6	1.0	9.0	9.0	10.6	12.1	13.4

ANKLE CIRCUMFERENCE

Subject stands erect with feet slightly separated, weight evenly distributed. With an automated tape device, measure the minimum horizontal circumference of the right ankle above the malleoli.

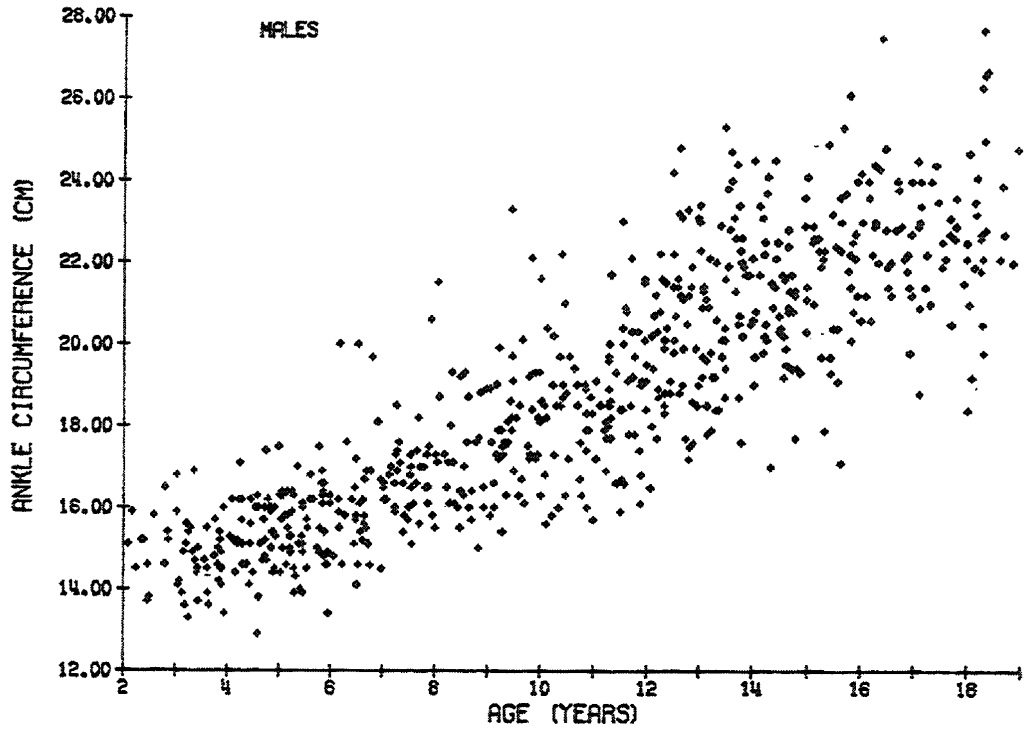


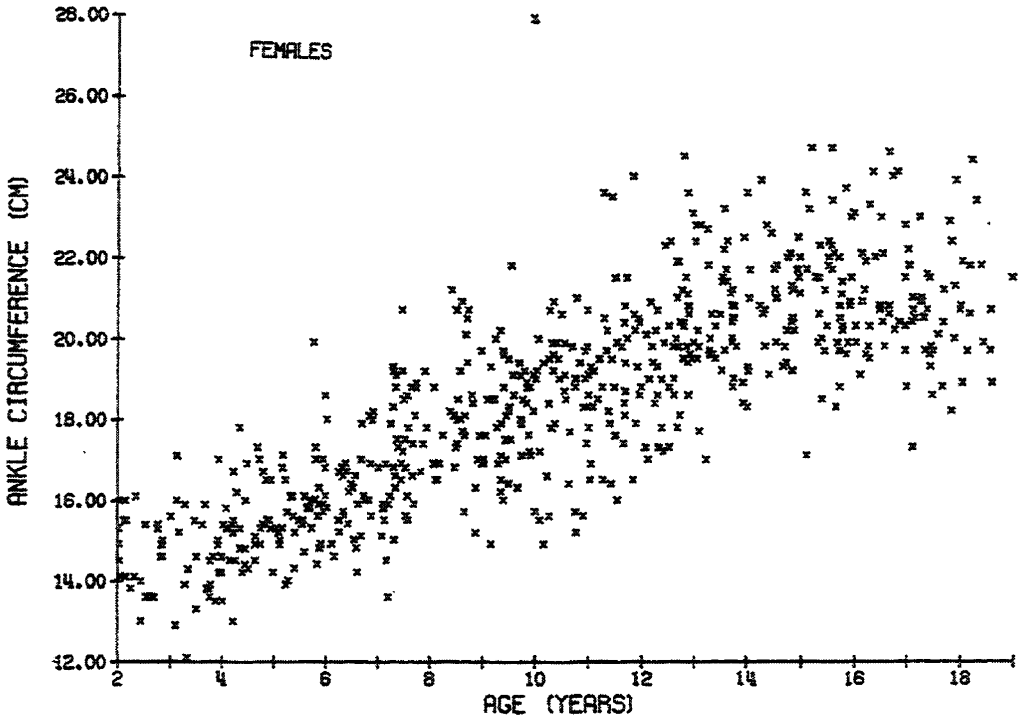


ANKLE CIRCUMFERENCE (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	67	14.8	1.0	12.1	13.1	14.8	16.4	17.1
3.5-4.5	77	14.9	0.9	13.0	13.4	14.8	16.7	17.8
4.5-5.5	93	15.5	0.9	12.9	13.9	15.3	17.0	17.5
5.5-6.5	80	16.0	1.1	13.4	14.5	15.8	17.6	20.0
6.5-7.5	86	16.6	1.4	13.6	14.5	16.5	19.2	20.7
7.5-8.5	68	17.3	1.4	15.1	15.4	17.0	20.1	21.5
8.5-9.5	91	17.9	1.5	14.9	15.5	17.7	20.1	23.3
9.5-10.5	85	18.5	1.9	14.9	15.6	18.5	21.4	27.8
10.5-11.5	85	18.5	1.6	15.2	15.7	18.5	20.9	23.6
11.5-12.5	97	19.5	1.6	16.0	16.6	19.4	22.2	24.2
12.5-13.5	108	20.4	1.7	17.0	17.7	20.1	23.3	25.3
13.5-14.5	90	21.3	1.7	17.0	18.5	21.1	24.0	24.7
14.5-15.5	81	21.1	1.5	17.1	18.5	21.2	23.4	24.9
15.5-16.5	79	21.8	1.9	17.1	18.9	21.8	24.7	27.5
16.5-17.5	67	21.5	1.6	17.3	18.7	21.1	24.1	24.6
17.5-19.0	63	22.1	2.0	18.2	18.8	22.0	26.1	27.7

(83)


MALES
ANKLE CIRCUMFERENCE (CM)
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ANKLE CIRCUMFERENCE (CM)
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ANKLE CIRCUMFERENCE (cm)
(Males)

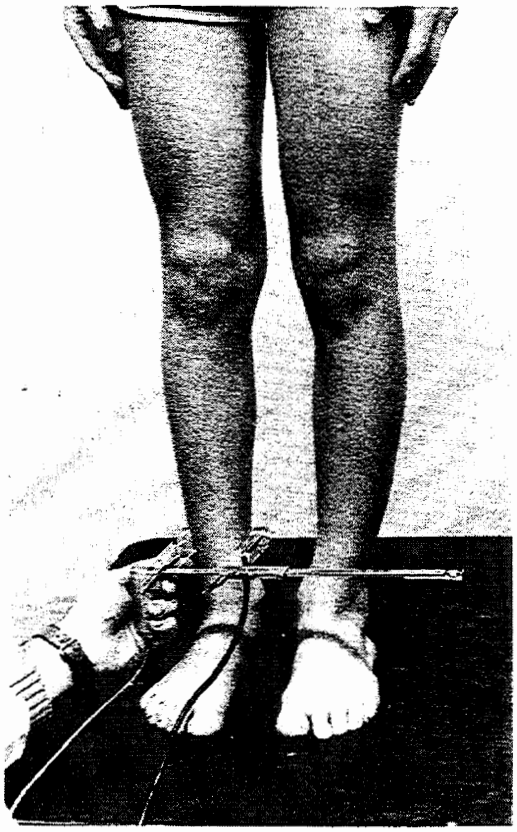
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	32	14.9	0.9	13.3	13.5	14.9	16.6	16.9
3.5-4.5	37	15.0	0.8	13.4	13.6	14.9	16.2	17.1
4.5-5.5	58	15.4	0.9	12.9	13.8	15.3	17.0	17.5
5.5-6.5	39	15.8	1.2	13.4	14.1	15.8	17.5	20.0
6.5-7.5	40	16.5	1.2	14.5	14.5	16.2	18.5	20.0
7.5-8.5	36	17.1	1.4	15.1	15.3	16.9	19.6	21.5
8.5-9.5	42	17.6	1.5	15.0	15.4	17.5	19.7	23.3
9.5-10.5	40	18.3	1.7	15.6	15.8	18.4	21.6	22.2
10.5-11.5	40	18.2	1.2	15.7	15.9	18.2	19.7	21.7
11.5-12.5	55	19.7	1.7	16.1	16.6	19.6	22.2	24.2
12.5-13.5	58	20.4	1.9	17.2	17.6	20.1	23.3	25.3
13.5-14.5	49	21.7	1.8	17.0	18.1	21.7	24.4	24.7
14.5-15.5	42	21.2	1.6	17.7	18.0	21.2	23.6	24.9
15.5-16.5	38	22.5	1.9	17.1	18.9	22.5	25.4	27.5
16.5-17.5	28	22.5	1.4	18.8	19.2	22.7	24.2	24.5
17.5-19.0	38	22.8	2.0	18.4	19.1	22.6	26.6	27.7

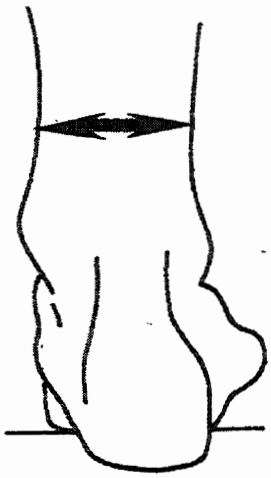
ANKLE CIRCUMFERENCE (cm)
(Females)

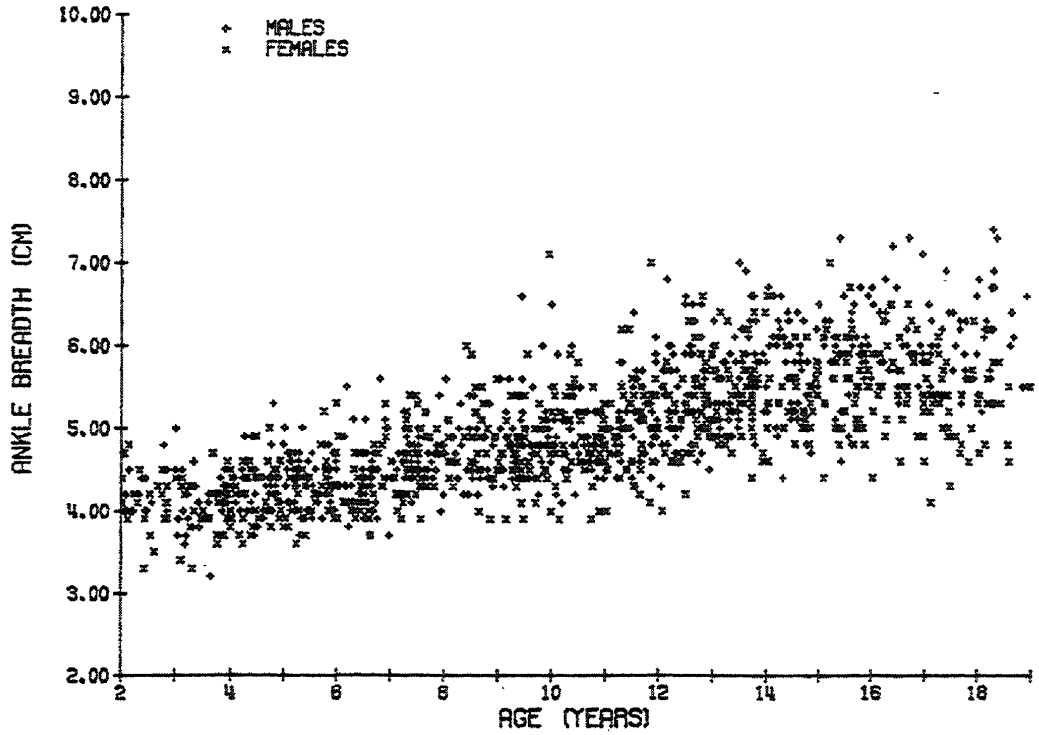
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	14.8	1.1	12.1	12.7	14.7	16.0	17.1
3.5-4.5	40	14.9	1.1	13.0	13.3	14.6	16.9	17.8
4.5-5.5	35	15.5	0.9	13.9	14.0	15.3	17.0	17.3
5.5-6.5	41	16.1	1.1	14.4	14.6	15.9	18.0	19.9
6.5-7.5	46	16.8	1.5	13.6	14.3	16.5	19.2	20.7
7.5-8.5	32	17.6	1.3	15.5	15.6	17.4	19.8	21.2
8.5-9.5	49	18.1	1.4	14.9	15.4	18.0	20.4	20.9
9.5-10.5	45	18.7	2.0	14.9	15.5	18.7	20.8	27.8
10.5-11.5	45	18.8	1.8	15.2	15.6	18.7	21.4	23.6
11.5-12.5	42	19.3	1.6	16.0	16.5	19.3	21.4	24.0
12.5-13.5	50	20.4	1.6	17.0	17.7	20.0	22.9	24.5
13.5-14.5	41	20.8	1.4	18.3	18.4	20.7	23.2	23.9
14.5-15.5	39	21.0	1.4	17.1	18.4	21.1	23.2	24.7
15.5-16.5	41	21.2	1.5	18.3	18.8	20.8	23.7	24.7
16.5-17.5	39	20.8	1.5	17.3	18.5	20.5	24.0	24.6
17.5-19.0	25	21.0	1.6	18.2	18.3	20.7	23.8	24.4

ANKLE BREADTH

Subject stands erect with feet apart, weight evenly distributed. With the paddle blades of an automated sliding caliper, measure the minimum horizontal breadth of the right ankle above the malleoli.



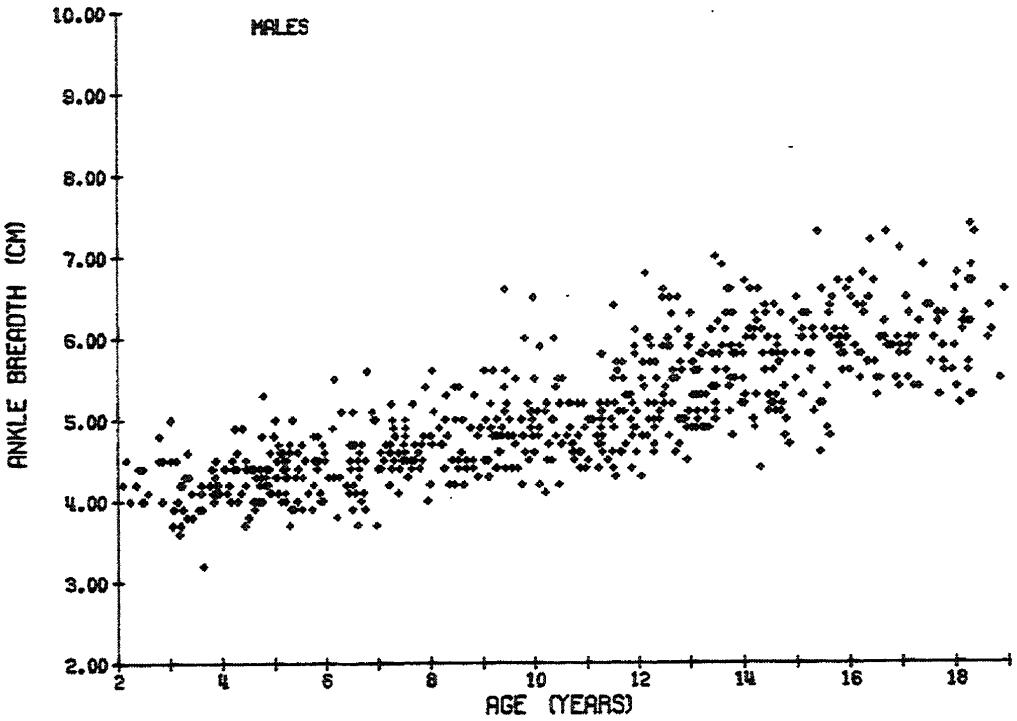


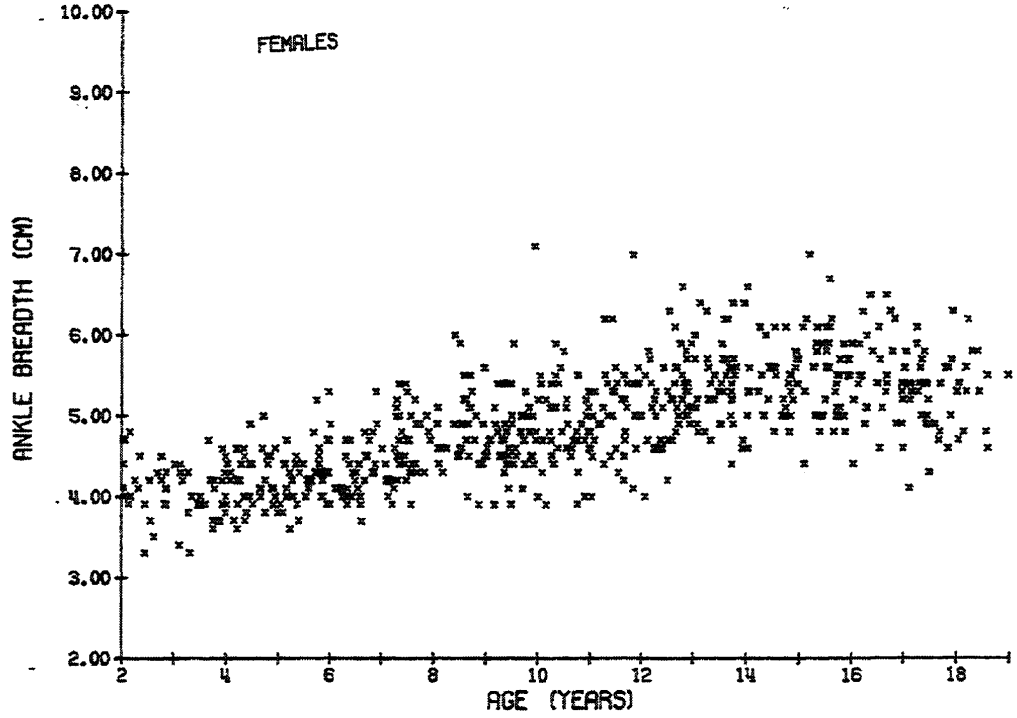


ANKLE BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	66	4.1	0.4	3.3	3.4	4.1	4.7	5.0
3.5-4.5	76	4.2	0.3	3.2	3.6	4.1	4.6	4.9
4.5-5.5	93	4.3	0.3	3.6	3.8	4.3	4.8	5.3
5.5-6.5	80	4.4	0.3	3.8	3.8	4.3	4.9	5.5
6.5-7.5	87	4.5	0.4	3.7	3.8	4.4	5.2	5.6
7.5-8.5	68	4.7	0.4	3.9	4.1	4.6	5.4	6.0
8.5-9.5	90	4.8	0.5	3.9	4.0	4.7	5.5	6.6
9.5-10.5	85	4.9	0.6	3.9	4.1	4.8	5.9	7.1
10.5-11.5	85	4.9	0.4	3.9	4.3	4.8	5.6	6.2
11.5-12.5	97	5.2	0.6	4.0	4.2	5.1	6.1	7.0
12.5-13.5	108	5.4	0.5	4.5	4.7	5.3	6.3	7.0
13.5-14.5	89	5.6	0.6	4.4	4.6	5.5	6.5	6.9
14.5-15.5	81	5.6	0.5	4.4	4.7	5.6	6.4	7.3
15.5-16.5	78	5.8	0.6	4.4	4.8	5.7	6.7	7.2
16.5-17.5	67	5.6	0.6	4.1	4.5	5.5	6.5	7.3
17.5-19.0	63	5.8	0.6	4.6	4.7	5.6	6.8	7.4

(84)


MALES
ANKLE BREADTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
ANKLE BREADTH (CM)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

ANKLE BREADTH (cm)
(Males)

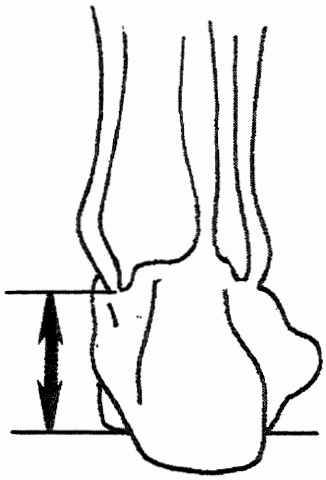
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	4.2	0.3	3.6	3.6	4.1	4.7	5.0
3.5-4.5	36	4.2	0.3	3.2	3.6	4.1	4.6	4.9
4.5-5.5	58	4.3	0.3	3.7	3.8	4.3	4.8	5.3
5.5-6.5	39	4.4	0.4	3.8	3.8	4.4	4.9	5.5
6.5-7.5	41	4.5	0.4	3.7	3.7	4.4	5.1	5.6
7.5-8.5	36	4.7	0.4	4.0	4.1	4.6	5.4	5.6
8.5-9.5	41	4.9	0.5	4.2	4.3	4.7	5.5	6.6
9.5-10.5	40	5.0	0.5	4.1	4.1	4.8	5.9	6.5
10.5-11.5	41	4.9	0.3	4.4	4.4	4.8	5.5	5.8
11.5-12.5	55	5.3	0.6	4.3	4.4	5.2	6.4	6.8
12.5-13.5	58	5.5	0.5	4.5	4.7	5.4	6.3	7.0
13.5-14.5	48	5.8	0.6	4.4	4.8	5.8	6.6	6.9
14.5-15.5	42	5.7	0.6	4.6	4.7	5.7	6.5	7.3
15.5-16.5	38	6.0	0.5	4.8	4.9	5.9	6.7	7.2
16.5-17.5	28	6.0	0.5	5.4	5.4	5.9	7.0	7.3
17.5-19.0	38	6.1	0.6	5.2	5.2	6.0	6.9	7.4

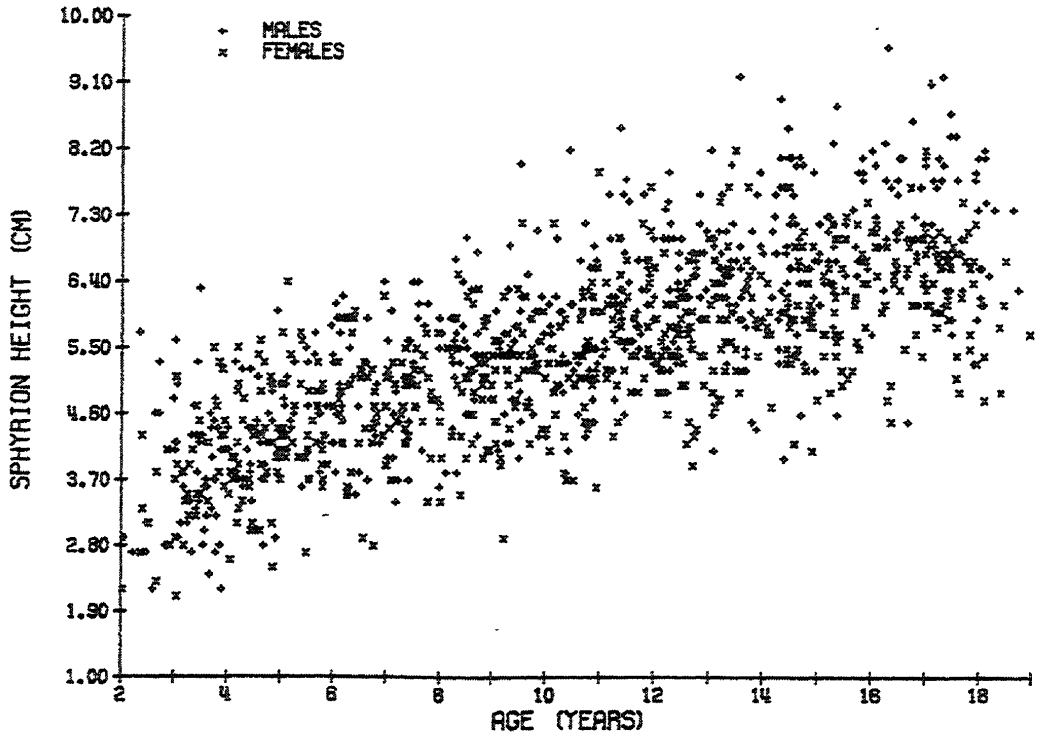
ANKLE BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	35	4.1	0.4	3.3	3.3	4.1	4.6	4.8
3.5-4.5	40	4.1	0.3	3.6	3.6	4.1	4.6	4.9
4.5-5.5	35	4.2	0.3	3.6	3.7	4.1	4.6	5.0
5.5-6.5	41	4.3	0.3	3.9	3.9	4.2	4.9	5.3
6.5-7.5	46	4.5	0.4	3.7	3.8	4.4	5.3	5.4
7.5-8.5	32	4.7	0.4	3.9	3.9	4.6	5.5	6.0
8.5-9.5	49	4.8	0.4	3.9	3.9	4.7	5.4	5.6
9.5-10.5	45	4.9	0.6	3.9	4.0	4.8	5.8	7.1
10.5-11.5	44	4.9	0.5	3.9	4.0	4.8	5.6	6.2
11.5-12.5	42	5.0	0.6	4.0	4.1	5.0	5.7	7.0
12.5-13.5	50	5.4	0.5	4.7	4.7	5.2	6.3	6.6
13.5-14.5	41	5.5	0.5	4.4	4.5	5.4	6.3	6.6
14.5-15.5	39	5.5	0.5	4.4	4.5	5.4	6.1	7.0
15.5-16.5	40	5.5	0.5	4.4	4.6	5.4	6.3	6.7
16.5-17.5	39	5.4	0.5	4.1	4.3	5.3	6.2	6.5
17.5-19.0	25	5.3	0.5	4.6	4.6	5.3	6.1	6.3

SPHYRION HEIGHT

Subject stands erect with feet apart, weight evenly distributed. With the pointed blade of an automated anthropometer, measure the vertical distance from the floor to right sphyrion. The constant height from the floor to the standing surface is subtracted to give the height from the standing surface to sphyrion.

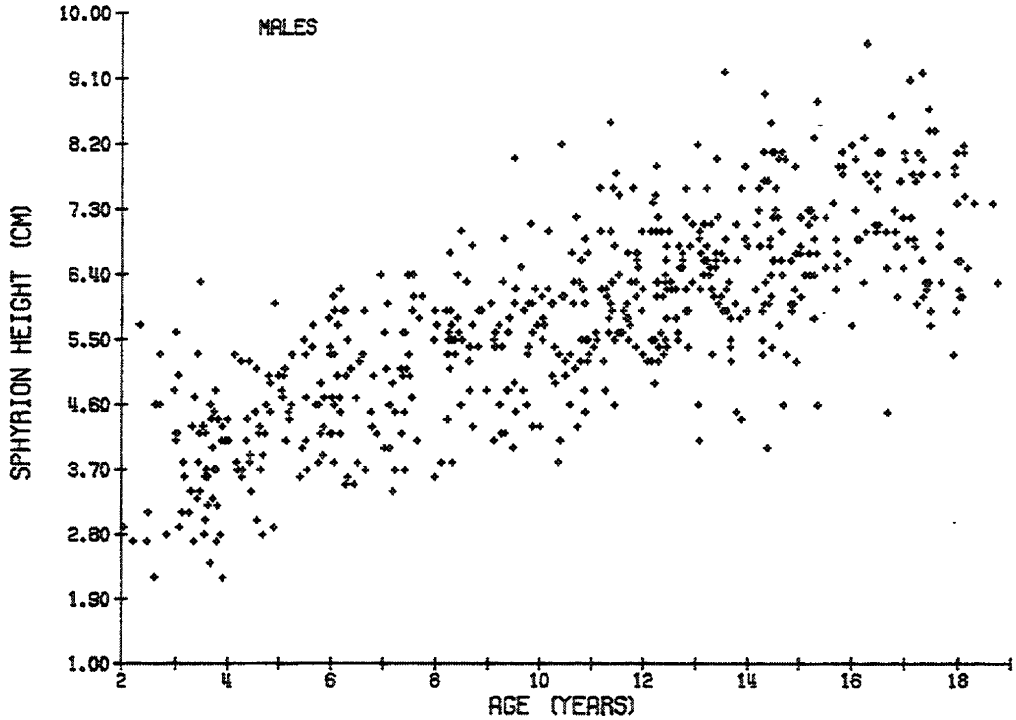


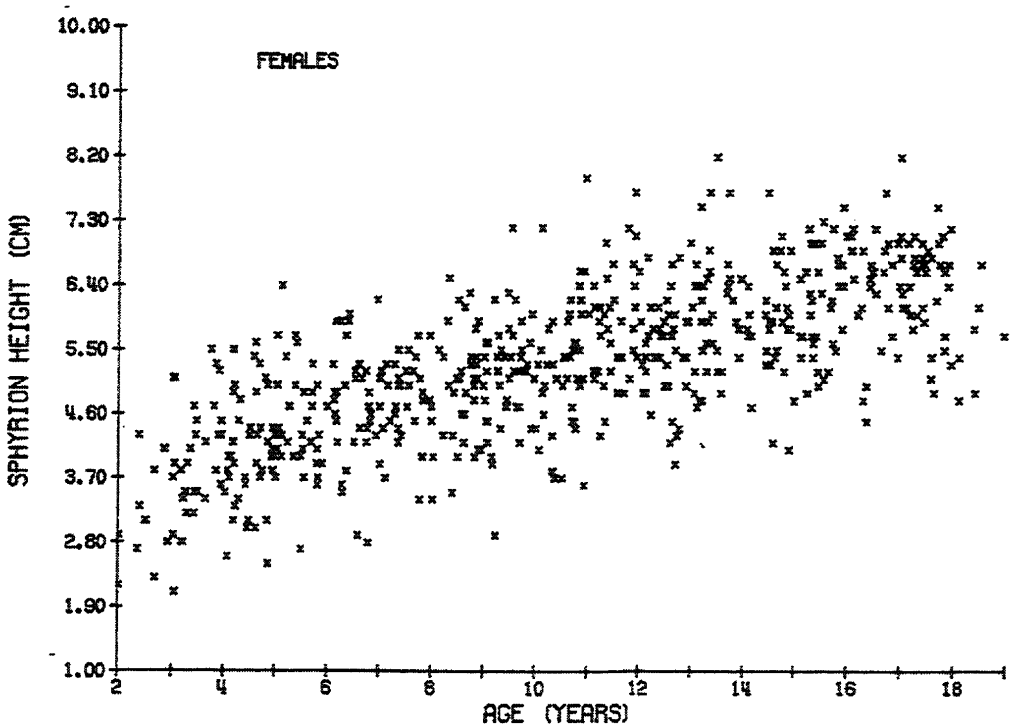


SPHYRION HEIGHT (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	60	3.8	1.0	2.1	2.2	3.6	5.3	6.3
3.5-4.5	72	4.0	0.7	2.2	2.7	3.9	5.2	5.5
4.5-5.5	69	4.4	0.8	2.5	2.8	4.3	5.6	6.4
5.5-6.5	75	4.7	0.8	3.5	3.5	4.6	5.9	6.2
6.5-7.5	72	4.8	0.7	2.8	3.4	4.9	5.9	6.4
7.5-8.5	61	5.2	0.9	3.4	3.5	5.3	6.4	7.0
8.5-9.5	81	5.2	0.8	2.9	4.0	5.2	6.3	8.0
9.5-10.5	74	5.4	0.9	3.7	3.8	5.3	7.0	8.2
10.5-11.5	95	5.8	0.9	3.6	4.4	5.7	7.5	8.5
11.5-12.5	92	6.0	0.7	4.6	4.8	5.8	7.3	7.9
12.5-13.5	95	6.2	1.0	3.9	4.4	6.2	7.6	9.2
13.5-14.5	76	6.3	1.0	4.0	4.7	6.2	8.0	8.9
14.5-15.5	83	6.3	0.9	4.1	4.6	6.3	7.9	8.8
15.5-16.5	60	6.8	1.0	4.5	5.0	6.8	8.1	9.6
16.5-17.5	69	6.9	0.9	4.5	5.5	6.7	8.5	9.2
17.5-19.0	46	6.5	1.0	4.8	4.9	6.5	8.1	8.4

(85)


MALES
SPHYRION HEIGHT (CM)
10.00
9.10
8.20
7.30
6.40
5.50
4.60
3.70
2.80
1.90
1.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
SPHYRION HEIGHT (CM)
10.00
9.10
8.20
7.30
6.40
5.50
4.60
3.70
2.80
1.90
1.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

SPHYRION HEIGHT (cm)
(Males)

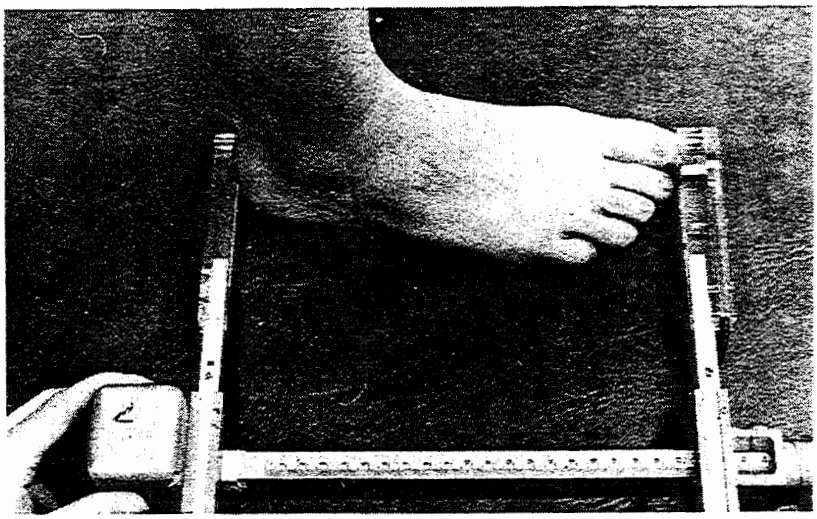
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	31	3.9	1.1	2.2	2.3	3.7	5.6	6.3
3.5-4.5	39	3.9	0.7	2.2	2.4	3.8	5.0	5.3
4.5-5.5	29	4.5	0.8	2.8	2.8	4.5	5.4	6.0
5.5-6.5	42	4.8	0.8	3.5	3.5	4.7	5.9	6.2
6.5-7.5	32	4.9	0.8	3.4	3.5	5.0	6.1	6.4
7.5-8.5	31	5.4	0.8	3.6	3.7	5.5	6.5	7.0
8.5-9.5	33	5.4	0.9	4.0	4.1	5.4	6.8	8.0
9.5-10.5	37	5.6	0.9	3.8	4.1	5.6	7.0	8.2
10.5-11.5	48	6.0	0.9	4.3	4.5	5.9	7.6	8.5
11.5-12.5	52	6.2	0.7	4.9	5.1	6.1	7.4	7.9
12.5-13.5	49	6.5	0.8	4.1	4.9	6.5	7.8	9.2
13.5-14.5	50	6.5	1.0	4.0	4.4	6.4	8.1	8.9
14.5-15.5	39	6.7	0.9	4.6	4.6	6.6	8.1	8.8
15.5-16.5	29	7.4	0.8	5.7	5.9	7.3	8.3	9.6
16.5-17.5	35	7.2	1.1	4.5	5.4	7.0	8.8	9.2
17.5-19.0	23	7.0	0.9	5.3	5.4	6.9	8.2	8.4

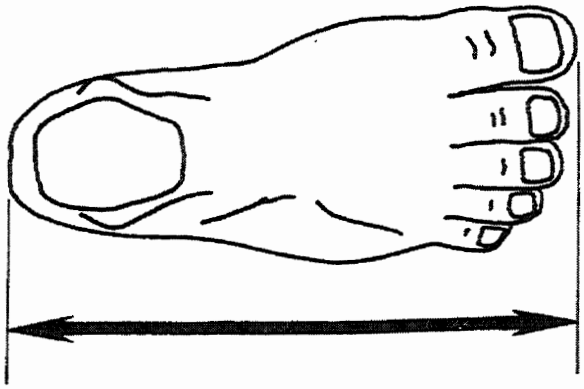
SPHYRION HEIGHT (cm)
(Females)

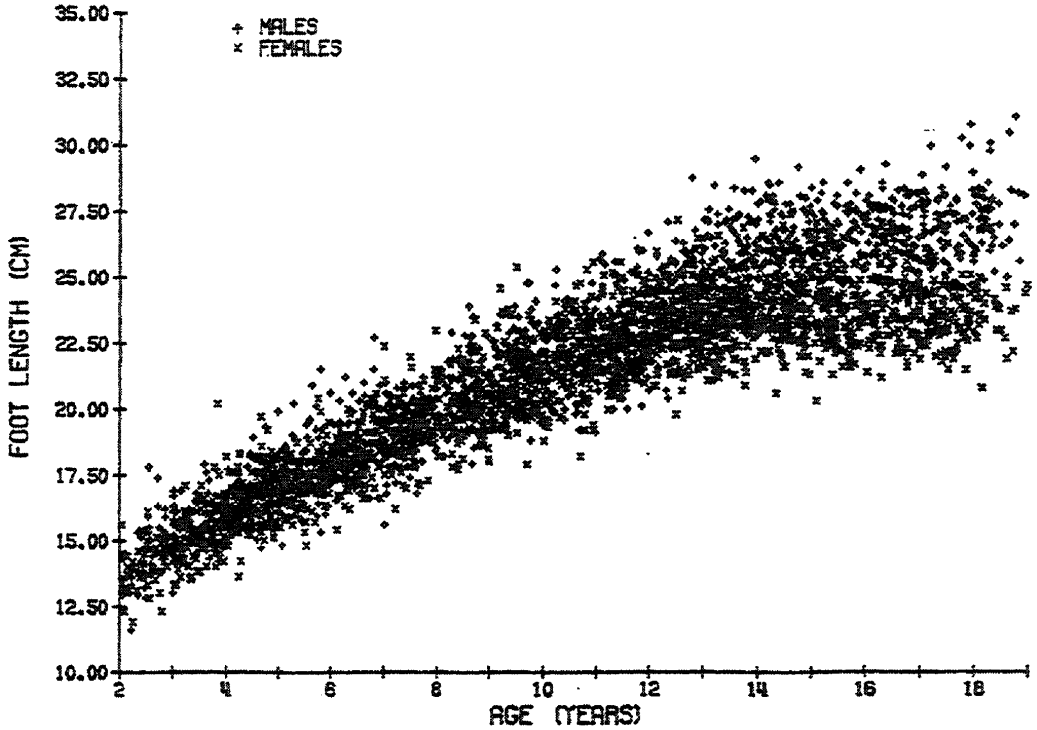
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	29	3.5	0.8	2.1	2.1	3.4	4.8	5.1
3.5-4.5	33	4.1	0.7	2.6	2.9	4.0	5.3	5.5
4.5-5.5	40	4.4	0.9	2.5	2.7	4.2	5.6	6.4
5.5-6.5	33	4.6	0.7	3.5	3.5	4.5	5.9	6.0
6.5-7.5	40	4.7	0.6	2.8	2.9	4.7	5.3	6.2
7.5-8.5	30	4.9	0.8	3.4	3.4	4.8	6.0	6.5
8.5-9.5	48	5.0	0.7	2.9	3.9	5.1	6.2	6.3
9.5-10.5	37	5.2	0.8	3.7	3.7	5.2	6.3	7.2
10.5-11.5	47	5.6	0.8	3.6	4.3	5.5	6.7	7.9
11.5-12.5	40	5.7	0.7	4.6	4.7	5.6	7.1	7.7
12.5-13.5	46	5.8	0.9	3.9	4.2	5.8	7.4	8.2
13.5-14.5	26	6.0	0.7	4.7	4.8	5.8	7.0	7.7
14.5-15.5	44	6.0	0.8	4.1	4.3	5.9	7.1	7.3
15.5-16.5	31	6.3	0.8	4.5	4.7	6.4	7.2	7.5
16.5-17.5	34	6.5	0.6	5.4	5.5	6.6	7.3	8.2
17.5-19.0	23	6.1	0.8	4.8	4.8	5.9	7.2	7.5

FOOT LENGTH

Subject stands with feet apart, weight evenly distributed. With the paddle blades of either the automated anthropometer or sliding caliper, measure the distance from the heel to the longest toe of the right foot parallel to the long axis of the foot.



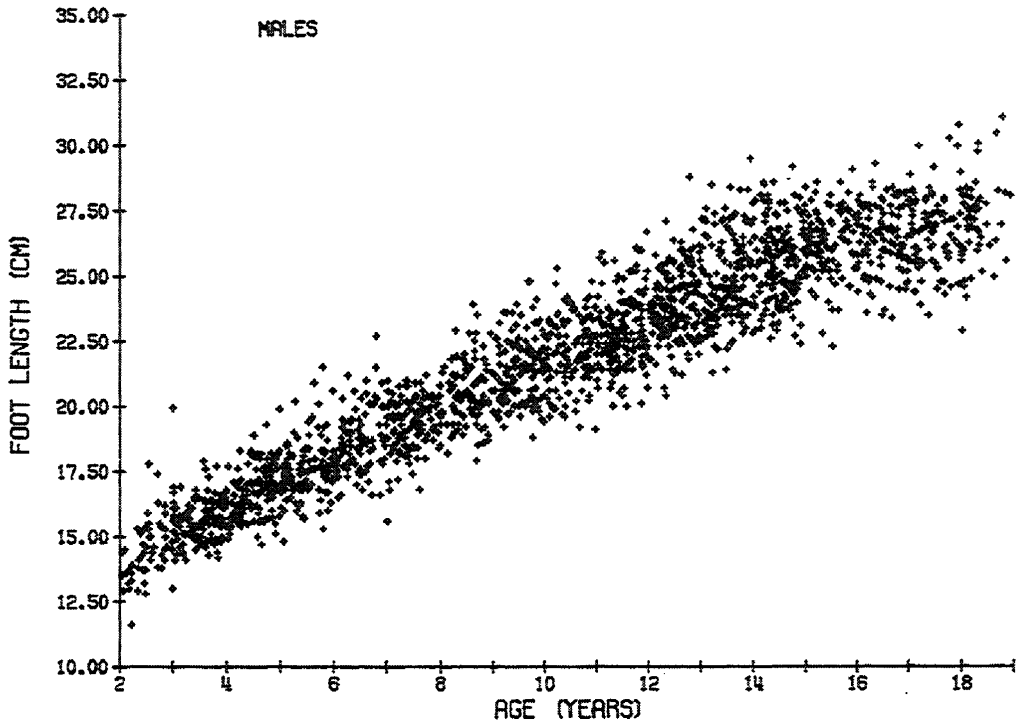


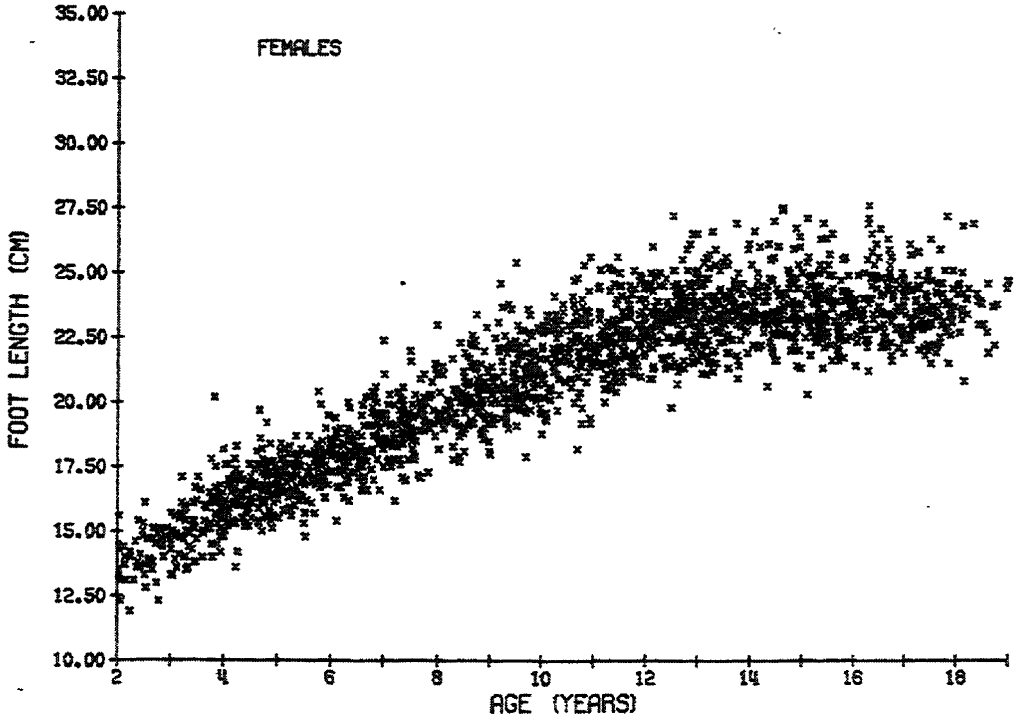


FOOT LENGTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	14.7	1.1	11.6	13.0	14.7	16.4	17.8
3.5-4.5	227	16.1	1.0	13.6	14.6	16.0	17.7	20.2
4.5-5.5	263	17.0	0.9	14.7	15.5	17.0	18.4	20.2
5.5-6.5	219	17.9	1.1	14.8	16.2	17.8	19.8	21.5
6.5-7.5	225	18.9	1.2	15.6	16.9	18.8	20.8	22.7
7.5-8.5	191	19.8	1.1	16.8	17.9	19.7	21.5	23.0
8.5-9.5	251	20.8	1.3	17.9	19.0	20.6	23.1	25.4
9.5-10.5	253	21.6	1.3	17.9	19.6	21.6	23.6	25.3
10.5-11.5	282	22.4	1.3	18.2	20.2	22.3	24.8	25.9
11.5-12.5	287	23.2	1.3	19.8	21.1	23.2	25.3	27.2
12.5-13.5	315	23.9	1.5	20.7	21.5	23.7	26.5	28.8
13.5-14.5	270	24.6	1.7	20.6	22.0	24.4	27.7	29.5
14.5-15.5	264	24.8	1.7	20.3	22.4	24.7	27.5	29.2
15.5-16.5	197	25.1	1.9	21.2	22.2	24.9	27.8	29.3
16.5-17.5	221	25.0	1.9	21.5	22.1	24.7	28.1	30.0
17.5-19.0	155	25.5	2.1	20.8	22.2	25.2	28.7	31.1

(86)


MALES
FOOT LENGTH (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FOOT LENGTH (CM)
35.00
32.50
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FOOT LENGTH (cm)
(Males)

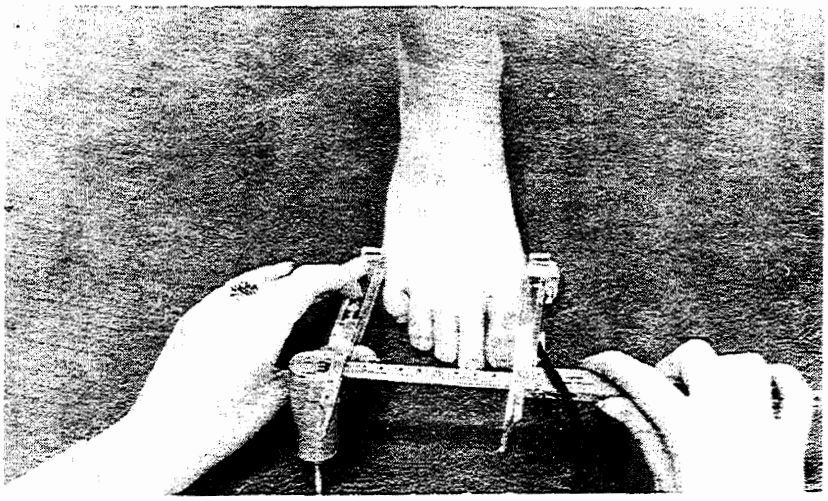
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	15.0	1.1	11.6	13.0	15.0	16.6	17.8
3.5-4.5	118	16.1	0.9	14.2	14.7	16.0	17.7	18.9
4.5-5.5	143	17.1	1.0	14.7	15.6	17.0	18.5	20.2
5.5-6.5	108	18.1	1.1	15.3	16.4	17.8	20.2	21.5
6.5-7.5	105	19.1	1.2	15.6	16.8	18.8	20.9	22.7
7.5-8.5	98	20.0	1.0	16.8	18.3	20.0	21.6	22.9
8.5-9.5	114	21.0	1.3	17.9	19.0	20.8	23.3	23.9
9.5-10.5	124	21.8	1.4	18.8	19.6	21.6	24.0	25.3
10.5-11.5	142	22.5	1.3	19.1	20.3	22.5	24.7	25.9
11.5-12.5	154	23.4	1.4	20.0	21.3	23.4	25.6	27.1
12.5-13.5	154	24.4	1.5	21.2	22.1	24.2	27.1	28.8
13.5-14.5	154	25.4	1.6	22.4	22.9	25.3	28.0	29.5
14.5-15.5	131	25.8	1.3	22.3	23.5	25.9	27.9	29.2
15.5-16.5	99	26.5	1.2	23.5	24.3	26.6	28.2	29.3
16.5-17.5	104	26.6	1.3	23.4	24.2	26.6	28.3	30.0
17.5-19.0	88	26.9	1.6	22.9	24.5	27.0	30.1	31.1

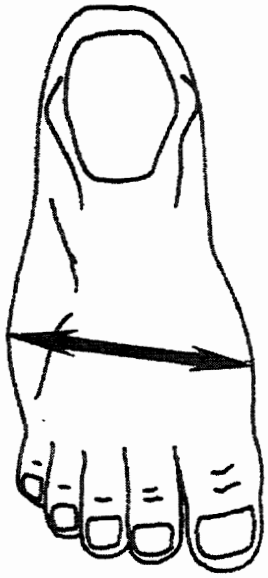
FOOT LENGTH (cm)
(Females)

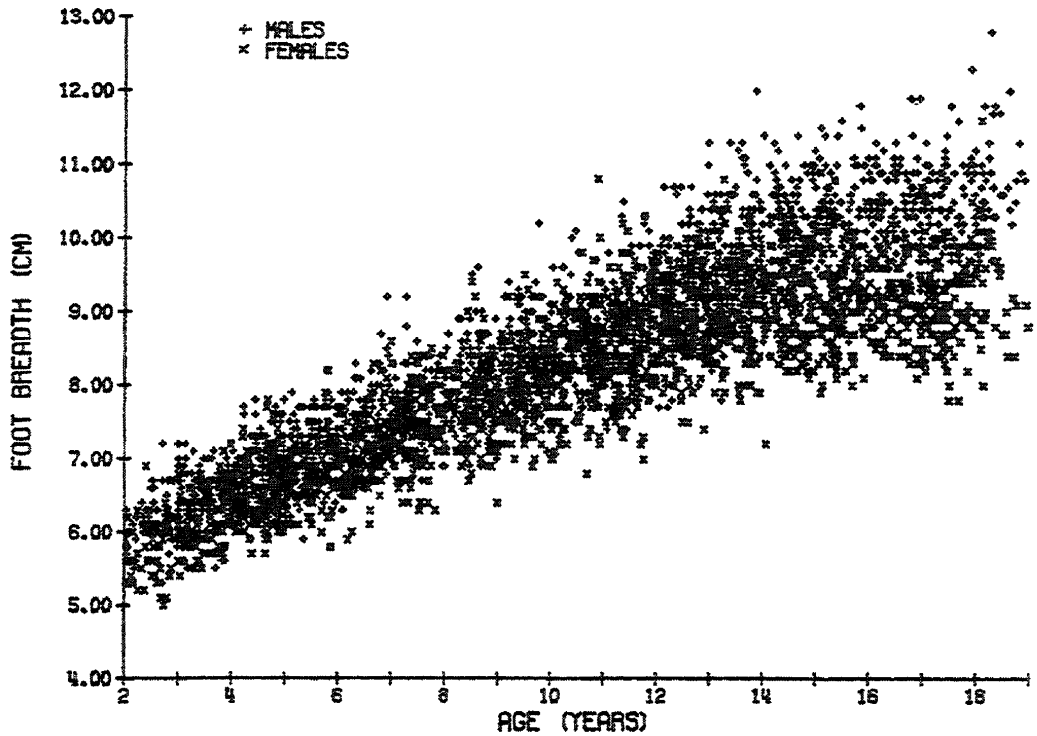
Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	14.5	1.0	11.9	13.0	14.5	16.0	17.1
3.5-4.5	109	16.1	1.0	13.6	14.3	16.0	17.6	20.2
4.5-5.5	120	16.9	0.9	15.0	15.4	16.8	18.3	19.7
5.5-6.5	111	17.8	1.0	14.8	16.1	17.8	19.2	20.4
6.5-7.5	120	18.8	1.1	16.2	16.9	18.8	20.4	22.4
7.5-8.5	93	19.6	1.1	17.1	17.7	19.5	21.4	23.0
8.5-9.5	137	20.7	1.3	18.0	18.9	20.5	22.9	25.4
9.5-10.5	129	21.5	1.2	17.9	19.6	21.4	23.3	24.1
10.5-11.5	140	22.3	1.4	18.2	20.0	22.2	24.8	25.6
11.5-12.5	133	23.0	1.2	19.8	21.1	23.0	24.9	27.2
12.5-13.5	161	23.4	1.2	20.7	21.4	23.4	25.5	26.6
13.5-14.5	116	23.6	1.2	20.6	21.5	23.4	25.9	27.0
14.5-15.5	133	23.8	1.3	20.3	21.9	23.6	26.2	27.5
15.5-16.5	98	23.8	1.3	21.2	21.7	23.6	26.3	27.6
16.5-17.5	117	23.6	1.1	21.5	21.9	23.4	25.7	26.3
17.5-19.0	67	23.7	1.2	20.8	21.8	23.7	25.6	27.2

FOOT BREADTH

Subject stands with feet apart, weight evenly distributed. With the paddle blades of an automated sliding caliper, measure the maximum width across the ball of the right foot.



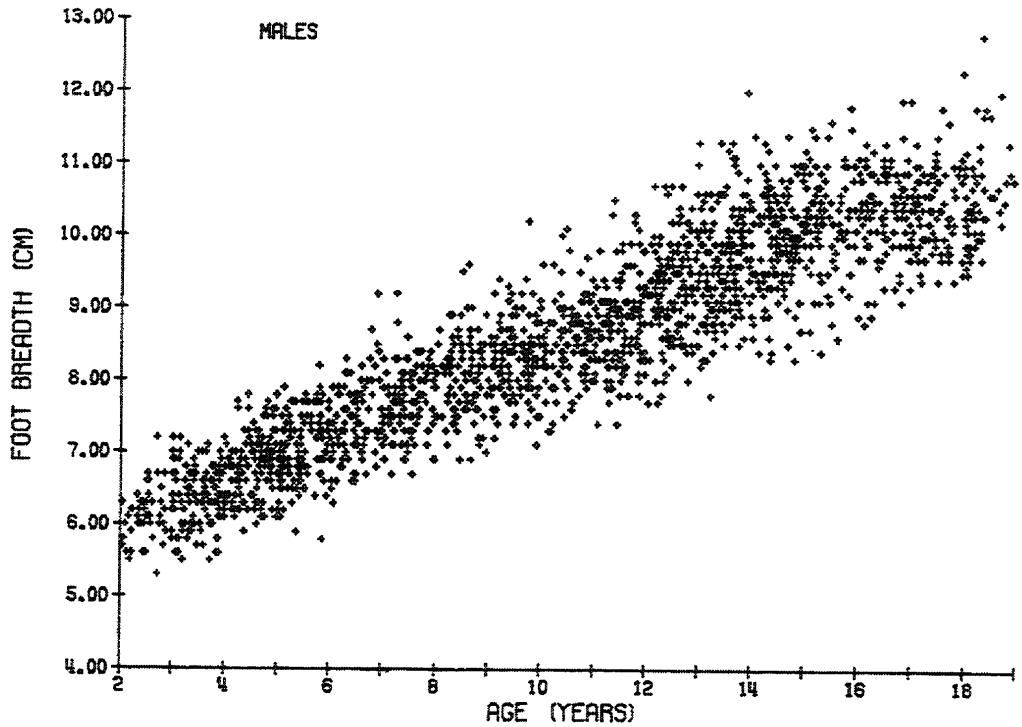


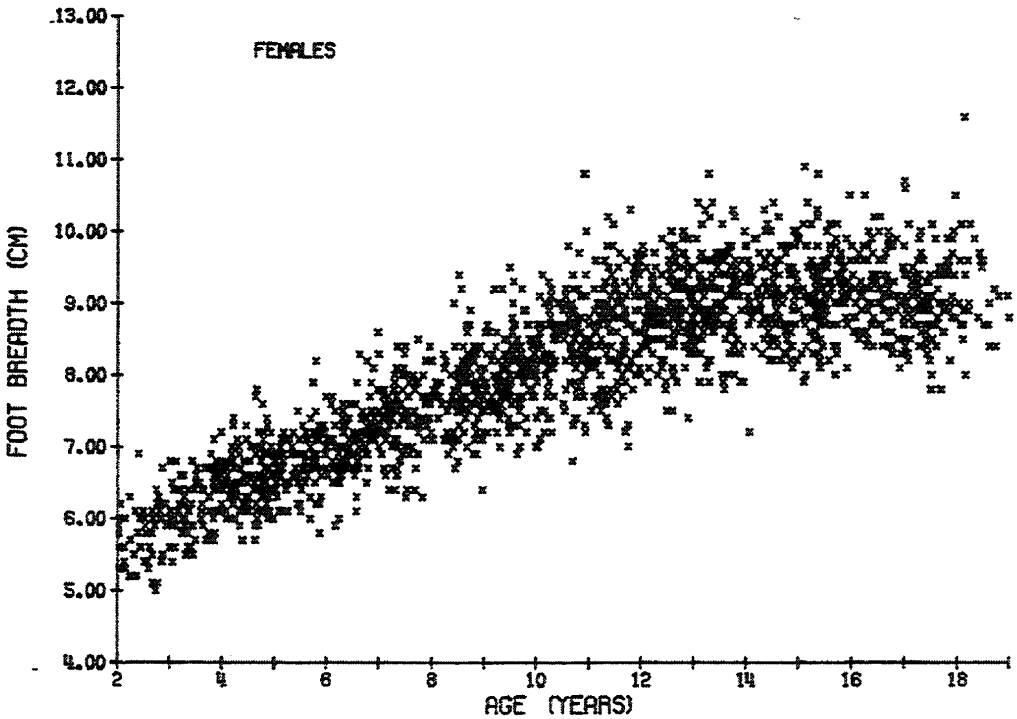


FOOT BREADTH (cm)
(Males and Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	212	6.1	0.5	5.0	5.3	6.0	6.8	7.2
3.5-4.5	226	6.5	0.4	5.5	5.8	6.4	7.1	7.8
4.5-5.5	263	6.8	0.4	5.7	6.0	6.8	7.5	7.9
5.5-6.5	219	7.1	0.5	5.8	6.3	7.0	7.8	8.3
6.5-7.5	226	7.5	0.5	6.1	6.6	7.4	8.3	9.2
7.5-8.5	191	7.7	0.5	6.3	6.8	7.7	8.5	9.5
8.5-9.5	251	8.0	0.5	6.4	7.1	7.9	8.9	9.6
9.5-10.5	252	8.3	0.6	6.9	7.3	8.3	9.1	10.2
10.5-11.5	281	8.6	0.6	6.8	7.5	8.6	9.7	10.8
11.5-12.5	287	8.9	0.7	7.0	7.8	8.8	9.9	10.7
12.5-13.5	315	9.2	0.7	7.4	8.2	9.1	10.4	11.3
13.5-14.5	269	9.5	0.8	7.2	8.3	9.5	10.8	12.0
14.5-15.5	264	9.6	0.8	7.9	8.3	9.5	10.9	11.6
15.5-16.5	198	9.8	0.8	8.0	8.4	9.7	11.0	11.8
16.5-17.5	221	9.7	0.9	7.8	8.3	9.6	11.0	11.9
17.5-19.0	155	9.9	0.9	7.8	8.5	9.9	11.6	12.8

(87)


MALES
FOOT BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)


FEMALES
FOOT BREADTH (CM)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
2
4
6
8
10
12
14
16
18
AGE (YEARS)

FOOT BREADTH (cm)
(Males)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	114	6.3	0.4	5.3	5.5	6.2	7.0	7.2
3.5-4.5	117	6.5	0.4	5.5	5.8	6.4	7.2	7.8
4.5-5.5	143	6.9	0.4	5.9	6.1	6.9	7.6	7.9
5.5-6.5	108	7.2	0.5	5.8	6.4	7.2	7.9	8.3
6.5-7.5	105	7.6	0.5	6.7	6.8	7.5	8.5	9.2
7.5-8.5	98	7.9	0.5	6.7	7.0	7.9	8.7	9.5
8.5-9.5	114	8.2	0.5	6.9	7.2	8.1	9.1	9.6
9.5-10.5	123	8.4	0.6	7.1	7.4	8.3	9.4	10.2
10.5-11.5	142	8.7	0.6	7.4	7.8	8.7	9.7	10.5
11.5-12.5	154	9.1	0.7	7.7	7.9	9.0	10.1	10.7
12.5-13.5	154	9.5	0.7	7.8	8.4	9.4	10.6	11.3
13.5-14.5	153	9.9	0.7	8.3	8.6	9.9	11.0	12.0
14.5-15.5	131	10.1	0.7	8.3	8.9	10.1	11.1	11.6
15.5-16.5	100	10.3	0.6	8.6	9.0	10.3	11.1	11.8
16.5-17.5	104	10.4	0.6	9.1	9.4	10.4	11.2	11.9
17.5-19.0	88	10.5	0.7	9.4	9.6	10.4	11.8	12.8

FOOT BREADTH (cm)
(Females)

Age (yrs)	N	Mean	s.d.	Min	5th	50th	95th	Max
2.0-3.5	98	5.9	0.4	5.0	5.2	5.9	6.6	6.9
3.5-4.5	109	6.4	0.4	5.7	5.7	6.4	7.1	7.4
4.5-5.5	120	6.7	0.4	5.7	6.0	6.6	7.2	7.8
5.5-6.5	111	6.9	0.4	5.8	6.2	6.9	7.6	8.2
6.5-7.5	121	7.3	0.5	6.1	6.5	7.3	8.2	8.6
7.5-8.5	93	7.5	0.5	6.3	6.5	7.5	8.3	9.4
8.5-9.5	137	7.9	0.5	6.4	7.1	7.8	8.7	9.5
9.5-10.5	129	8.2	0.6	6.9	7.1	8.2	9.1	9.4
10.5-11.5	139	8.5	0.7	6.8	7.4	8.4	9.7	10.8
11.5-12.5	133	8.7	0.6	7.0	7.7	8.7	9.6	10.3
12.5-13.5	161	9.0	0.6	7.4	8.1	8.9	9.9	10.8
13.5-14.5	116	9.1	0.6	7.2	7.9	9.0	10.0	10.4
14.5-15.5	133	9.1	0.6	7.9	8.2	9.0	10.1	10.9
15.5-16.5	98	9.2	0.5	8.0	8.3	9.2	10.1	10.5
16.5-17.5	117	9.0	0.5	7.8	8.2	9.0	9.9	10.7
17.5-19.0	67	9.2	0.6	7.8	8.2	9.0	10.0	11.6

C. Measurement Statistics by Body Region and Age Group for Subjects 2-18 Years.

This section is included to facilitate data retrieval for users who need information on several measurements of a similar type (e.g., hand measurements) and for a particular age group. Each table contains all the measurements in one of the four measurement groups (see Figure 22) for one of the sixteen age intervals. Tables for combined sexes, and males and females are given separately for a total of 192 tables in all. In order to facilitate the use of this section, tables for each of the four measurement groups are printed on colored paper corresponding to the colors used in Section B. All measurements are given in metric units. Weight is in kilograms, finger and thumb diameter and hand clearance are in millimeters, and all other dimensions are in centimeters (see page 43 for conversion to inches and pounds).

WEIGHT, STATURE, STANDING AND SITTING MEASUREMENTS

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	212	14.1	1.9	10.1	11.3	14.0	17.1	20.7
Stature	213	93.4	5.0	81.3	85.7	93.4	100.8	108.5
Vertical Grip Reach	61	107.3	7.0	96.8	97.5	105.9	121.8	124.6
Frontal Grip Reach	62	39.7	3.1	34.7	35.5	39.0	45.4	48.1
Lateral Grip Reach	60	52.9	3.4	46.7	48.0	52.8	57.6	64.5
Step Height	55	33.3	6.8	22.1	22.4	32.5	45.1	47.1
Supine Stature	20	97.3	5.0	90.2	**	97.8	**	106.8
Standing CG (from feet)	20	56.0	2.9	51.2	**	56.2	**	61.2
Standing CG (% Stature)	20	57.6	1.2	55.3	**	57.4	**	60.1
Erect Sitting Height	209	54.4	2.7	46.8	50.2	54.6	58.8	63.4
Eye Height (Sitting)	64	43.7	2.5	38.2	39.0	43.5	47.5	50.0
Max Hip Breadth (Seated)	210	19.1	1.3	16.1	17.1	19.0	21.3	23.5
Maximum Thigh Breadth	63	19.2	1.6	15.9	16.3	19.0	21.6	23.7
Thigh Clearence	67	8.1	1.2	4.7	5.7	8.1	9.7	11.0
Buttock-Knee Length	211	28.4	1.9	24.2	25.5	28.4	31.4	33.5
Knee Height	203	27.0	2.0	22.5	23.7	26.9	30.6	32.3
Supine Sitting Height	19	58.1	2.4	53.6	**	57.9	**	62.7
Seated CG (above seat)	19	20.1	1.1	18.9	**	19.6	**	22.4
Seated CG (% Sit Hgt)	19	34.6	1.8	31.8	**	34.2	**	38.3
Seated CG (from back)	15	13.1	1.7	10.6	**	13.1	**	17.8
Seated CG (% Butt-Knee)	15	43.7	5.8	34.6	**	43.7	**	56.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	228	16.2	2.1	11.4	13.1	16.0	19.6	23.8
Stature	228	101.4	4.5	90.9	93.9	101.4	109.1	114.1
Vertical Grip Reach	76	116.6	6.7	104.4	107.0	116.2	128.5	136.0
Frontal Grip Reach	77	43.1	3.6	36.3	37.8	42.5	49.7	52.9
Lateral Grip Reach	75	56.3	3.8	47.3	50.3	56.4	62.5	67.0
Step Height	74	39.6	6.4	26.9	30.5	39.3	51.7	55.5
Supine Stature	21	102.3	5.2	94.6	94.6	100.8	110.6	111.5
Standing CG (from feet)	21	59.4	2.7	54.9	54.9	59.0	63.3	64.0
Standing CG (% Stature)	21	58.1	1.1	56.2	56.2	58.2	59.9	60.7
Erect Sitting Height	224	57.6	2.5	50.5	53.7	57.5	61.5	65.4
Eye Height (Sitting)	75	46.8	2.8	38.5	41.9	46.6	51.6	52.9
Max Hip Breadth (Seated)	225	19.9	1.3	17.2	17.8	19.8	21.9	23.9
Maximum Thigh Breadth	67	19.9	1.6	16.5	17.1	19.9	22.5	23.9
Thigh Clearence	75	8.4	1.2	5.7	6.3	8.3	10.1	11.6
Buttock-Knee Length	225	31.4	2.0	26.9	28.5	31.2	35.0	38.8
Knee Height	206	29.9	2.0	22.0	26.7	29.8	33.1	35.8
Supine Sitting Height	21	59.8	2.7	55.2	55.2	59.5	63.9	66.1
Seated CG (above seat)	21	20.4	1.0	18.6	18.6	20.4	22.1	22.2
Seated CG (% Sit Hgt)	21	34.2	1.6	31.7	31.7	33.9	36.4	36.7
Seated CG (from back)	18	13.4	1.1	11.8	**	13.2	**	16.0
Seated CG (% Butt-Knee)	18	43.9	4.4	36.8	**	42.9	**	56.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	271	18.3	2.5	13.7	15.1	17.9	22.1	36.0
Stature	271	108.3	4.7	96.5	100.6	108.5	115.8	124.4
Vertical Grip Reach	73	126.1	7.0	108.9	113.1	126.2	136.9	141.1
Frontal Grip Reach	74	45.4	3.4	38.0	40.4	45.2	51.5	55.3
Lateral Grip Reach	72	59.7	3.9	51.9	52.5	59.2	66.0	72.1
Step Height	75	42.9	6.5	30.8	31.9	42.7	53.0	57.0
Supine Stature	26	112.5	3.9	105.5	105.9	112.1	119.1	119.5
Standing CG (from feet)	26	64.5	2.3	60.5	60.6	64.5	68.2	69.0
Standing CG (% Stature)	26	57.3	0.9	55.2	55.4	57.2	58.3	59.5
Erect Sitting Height	265	60.5	2.7	52.6	56.0	60.5	64.9	70.3
Eye Height (Sitting)	90	49.8	2.8	41.5	45.2	49.7	54.5	56.9
Max Hip Breadth (Seated)	257	20.7	1.3	17.3	18.6	20.5	23.0	24.6
Maximum Thigh Breadth	85	20.9	1.4	18.4	18.7	20.6	22.9	25.8
Thigh Clearence	89	8.9	1.1	6.0	6.7	9.0	10.4	11.3
Buttock-Knee Length	267	33.9	1.9	28.4	30.9	33.8	37.0	41.2
Knee Height	241	32.3	2.0	28.1	29.2	32.2	35.6	38.2
Supine Sitting Height	27	63.2	2.8	57.0	57.4	63.0	67.1	68.0
Seated CG (above seat)	27	20.6	1.0	19.2	19.2	20.3	22.1	22.4
Seated CG (% Sit Hgt)	27	32.6	1.8	29.9	29.9	32.2	35.1	38.5
Seated CG (from back)	25	14.8	2.1	12.0	12.1	14.4	18.6	21.1
Seated CG (% Butt-Knee)	25	43.0	5.5	33.3	33.8	42.2	54.2	55.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	243	20.5	3.0	13.1	16.1	20.0	25.6	32.5
Stature	242	114.6	5.1	96.5	105.8	114.5	123.7	128.7
Vertical Grip Reach	76	135.6	7.1	118.4	124.1	135.3	147.2	160.0
Frontal Grip Reach	76	48.5	2.9	41.6	44.2	48.1	53.3	57.4
Lateral Grip Reach	76	63.5	4.0	55.3	56.7	63.3	69.2	80.8
Step Height	74	50.4	6.0	35.4	40.3	50.2	59.8	69.4
Supine Stature	67	116.0	5.5	98.2	106.0	116.0	123.9	127.7
Standing CG (from feet)	67	66.2	3.1	56.5	60.5	65.9	71.2	73.4
Standing CG (% Stature)	67	57.1	1.0	53.5	55.4	57.0	58.6	59.2
Erect Sitting Height	241	63.4	2.8	53.2	58.1	63.3	67.7	71.7
Eye Height (Sitting)	79	51.9	2.9	43.2	46.6	52.2	56.6	60.2
Max Hip Breadth (Seated)	214	21.5	1.6	17.9	19.1	21.3	23.8	27.7
Maximum Thigh Breadth	76	21.7	1.8	18.5	18.7	21.5	24.0	27.2
Thigh Clearence	78	9.6	1.0	7.5	7.7	9.4	11.1	12.4
Buttock-Knee Length	241	36.1	2.2	27.5	32.1	35.8	39.4	42.3
Knee Height	214	34.9	2.0	29.6	31.5	34.7	38.3	40.6
Supine Sitting Height	65	64.5	3.2	55.2	59.4	64.2	69.6	73.5
Seated CG (above seat)	65	20.6	1.2	18.0	18.7	20.5	22.5	23.1
Seated CG (% Sit Hgt)	65	31.9	1.4	28.4	29.3	32.1	33.9	34.5
Seated CG (from back)	55	15.3	2.1	10.4	11.7	15.1	18.6	21.0
Seated CG (% Butt-Knee)	55	43.1	5.4	32.7	33.3	42.4	51.9	56.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	231	23.7	4.1	15.4	18.3	22.9	31.1	43.6
Stature	227	121.2	5.5	106.3	111.8	121.2	130.5	133.8
Vertical Grip Reach	71	144.6	8.3	127.5	129.5	144.0	158.5	164.2
Frontal Grip Reach	74	50.7	3.2	43.2	46.2	50.7	56.1	61.9
Lateral Grip Reach	73	67.0	4.1	58.4	60.4	67.1	73.5	75.5
Step Height	74	52.6	7.3	33.8	40.2	53.1	63.3	69.2
Supine Stature	47	122.9	6.0	109.7	112.3	122.8	133.3	135.3
Standing CG (from feet)	47	70.0	3.2	64.3	64.5	69.9	75.1	77.6
Standing CG (% Stature)	47	57.0	0.8	55.8	55.8	56.9	58.2	59.4
Erect Sitting Height	230	65.8	3.0	56.6	60.7	65.7	70.9	73.5
Eye Height (Sitting)	87	54.4	2.8	47.3	49.8	54.1	59.3	62.3
Max Hip Breadth (Seated)	225	22.7	2.1	18.2	19.8	22.3	26.6	30.8
Maximum Thigh Breadth	87	22.7	2.4	17.5	19.7	22.2	27.1	30.7
Thigh Clearence	84	10.1	1.2	7.2	8.3	10.0	12.1	14.0
Buttock-Knee Length	229	39.1	2.4	33.1	35.5	38.8	43.3	48.1
Knee Height	219	37.3	2.2	31.0	33.5	37.2	40.9	43.6
Supine Sitting Height	48	66.8	3.6	59.0	60.1	66.6	71.7	75.4
Seated CG (above seat)	48	20.4	1.3	17.1	18.2	20.1	22.3	23.0
Seated CG (% Sit Hgt)	48	30.5	1.6	27.9	28.0	30.4	33.1	34.2
Seated CG (from back)	42	16.2	1.9	12.8	13.0	15.8	19.4	20.6
Seated CG (% Butt-Knee)	42	41.8	4.6	33.6	33.8	41.1	50.4	51.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	197	26.6	5.2	17.6	20.4	25.5	36.9	54.2
Stature	198	126.9	5.6	111.5	118.2	126.4	136.9	140.6
Vertical Grip Reach	63	152.2	6.8	132.0	138.7	152.1	163.2	165.8
Frontal Grip Reach	64	52.9	2.7	46.5	47.8	53.1	56.8	59.3
Lateral Grip Reach	64	70.0	3.6	61.7	63.0	69.9	74.9	77.0
Step Height	63	54.9	7.4	40.7	42.0	54.4	64.9	75.7
Supine Stature	46	128.8	5.5	116.1	121.3	127.7	137.4	140.1
Standing CG (from feet)	46	72.8	3.1	66.9	67.9	72.2	77.4	78.4
Standing CG (% Stature)	46	56.6	0.9	55.0	55.1	56.5	57.8	58.9
Erect Sitting Height	197	68.2	2.8	59.7	63.8	68.0	73.0	75.6
Eye Height (Sitting)	67	57.1	2.9	51.5	52.0	57.1	62.0	63.3
Max Hip Breadth (Seated)	190	23.9	2.0	19.6	21.1	23.5	28.1	32.6
Maximum Thigh Breadth	65	24.3	2.6	19.2	20.4	23.8	28.5	34.5
Thigh Clearence	66	10.8	1.4	8.8	9.1	10.5	13.0	15.5
Buttock-Knee Length	196	41.3	2.4	35.3	37.7	41.0	45.7	48.2
Knee Height	188	39.4	2.3	33.1	35.7	39.3	43.3	46.4
Supine Sitting Height	44	70.1	3.2	64.4	65.1	69.4	75.4	76.7
Seated CG (above seat)	44	20.7	1.1	18.5	18.9	20.5	22.4	22.6
Seated CG (% Sit Hgt)	44	29.5	1.3	27.1	27.2	29.7	31.5	32.1
Seated CG (from back)	38	17.7	1.8	14.0	14.3	17.4	20.5	21.8
Seated CG (% Butt-Knee)	38	42.9	4.4	35.3	36.5	42.8	49.4	54.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	256	29.7	5.5	19.6	22.7	28.6	40.0	60.0
Stature	257	133.0	6.0	117.8	124.1	132.6	142.3	150.3
Vertical Grip Reach	81	160.8	8.5	141.2	146.1	161.0	173.8	178.9
Frontal Grip Reach	80	55.5	4.1	48.6	49.2	55.1	64.1	67.0
Lateral Grip Reach	79	73.6	4.5	64.1	66.3	73.7	79.9	86.9
Step Height	80	56.9	6.6	43.6	45.8	57.0	68.8	72.3
Supine Stature	57	134.8	6.2	123.0	125.1	134.4	143.5	151.4
Standing CG (from feet)	57	76.3	3.3	70.1	71.0	76.6	81.6	82.8
Standing CG (% Stature)	57	56.6	0.8	54.7	55.1	56.5	57.7	58.8
Erect Sitting Height	254	70.3	3.0	61.2	65.3	70.3	75.2	78.5
Eye Height (Sitting)	90	59.4	3.2	49.1	53.7	59.3	64.7	66.9
Max Hip Breadth (Seated)	249	24.9	2.3	19.6	21.6	24.6	29.2	34.0
Maximum Thigh Breadth	88	25.6	2.8	20.1	20.5	25.4	30.5	31.4
Thigh Clearence	87	11.5	1.3	7.7	9.3	11.3	13.5	15.7
Buttock-Knee Length	257	43.8	2.6	37.2	40.1	43.3	48.2	51.6
Knee Height	249	41.7	2.5	34.5	37.9	41.5	45.7	48.7
Supine Sitting Height	56	72.1	3.3	65.9	66.9	71.2	77.4	80.5
Seated CG (above seat)	57	20.7	1.2	18.2	18.8	20.4	22.8	23.5
Seated CG (% Sit Hgt)	56	28.7	1.3	25.9	26.5	28.7	30.7	32.0
Seated CG (from back)	51	18.1	2.0	14.4	14.7	17.7	21.3	22.4
Seated CG (% Butt-Knee)	51	41.1	3.8	33.5	34.4	41.2	46.6	53.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	258	33.1	6.6	22.2	24.8	31.9	45.5	69.0
Stature	258	137.7	6.3	120.1	127.1	137.6	148.3	159.0
Vertical Grip Reach	75	167.1	8.1	150.1	153.5	166.3	182.0	186.2
Frontal Grip Reach	74	57.7	3.3	52.5	52.8	56.8	64.0	66.0
Lateral Grip Reach	74	76.0	4.1	69.4	70.3	75.5	84.2	88.3
Step Height	75	58.5	7.1	39.8	46.4	58.8	70.4	74.7
Supine Stature	43	138.6	6.3	127.7	128.2	138.0	149.0	157.3
Standing CG (from feet)	43	78.1	3.5	72.2	72.6	77.6	84.1	87.2
Standing CG (% Stature)	43	56.3	0.8	54.3	54.8	56.2	57.6	57.9
Erect Sitting Height	255	72.1	3.1	64.5	66.7	72.1	76.9	81.6
Eye Height (Sitting)	84	60.5	3.0	54.3	55.2	60.6	64.8	67.3
Max Hip Breadth (Seated)	251	26.0	2.5	21.6	22.5	25.7	29.7	37.5
Maximum Thigh Breadth	84	26.4	3.3	20.5	22.2	26.1	31.4	38.9
Thigh Clearence	83	11.9	1.5	9.6	9.9	11.6	14.6	16.5
Buttock-Knee Length	257	45.9	2.8	39.3	41.5	45.7	51.1	54.3
Knee Height	250	43.6	2.6	37.6	39.4	43.5	48.1	53.4
Supine Sitting Height	42	73.3	3.5	67.1	67.7	72.6	79.7	81.3
Seated CG (above seat)	41	20.5	1.3	17.8	18.0	20.5	22.5	23.5
Seated CG (% Sit Hgt)	41	27.9	1.4	25.3	25.8	27.8	29.9	30.2
Seated CG (from back)	41	19.4	2.0	15.9	16.1	19.0	22.6	24.0
Seated CG (% Butt-Knee)	41	42.9	3.6	36.1	37.4	42.1	49.5	51.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	282	37.2	8.2	20.7	27.4	35.2	53.2	80.0
Stature	282	143.3	6.6	122.0	133.1	142.7	154.6	161.1
Vertical Grip Reach	93	174.7	10.2	153.6	156.0	173.8	190.3	196.6
Frontal Grip Reach	94	59.9	3.8	51.7	53.4	59.9	66.6	69.5
Lateral Grip Reach	93	79.3	5.3	68.2	71.3	78.2	88.2	92.8
Step Height	96	61.3	7.5	44.4	49.6	60.9	73.8	79.5
Supine Stature	53	145.3	6.3	132.8	134.7	146.4	154.8	160.0
Standing CG (from feet)	53	81.4	3.5	74.8	75.3	81.1	86.9	88.7
Standing CG (% Stature)	53	56.0	0.7	54.7	54.9	56.0	57.2	57.6
Erect Sitting Height	276	74.5	3.5	65.2	69.3	74.2	80.7	84.6
Eye Height (Sitting)	85	62.5	3.5	54.6	57.1	62.4	69.2	73.2
Max Hip Breadth (Seated)	276	27.2	3.0	21.5	23.2	26.8	32.8	44.6
Maximum Thigh Breadth	84	26.9	3.5	21.9	22.5	26.2	32.1	45.2
Thigh Clearence	85	12.1	1.3	9.2	10.1	11.9	13.9	17.6
Buttock-Knee Length	278	48.2	3.1	40.3	43.6	47.8	53.9	59.8
Knee Height	279	45.6	2.6	37.9	41.3	45.5	49.8	53.3
Supine Sitting Height	52	76.9	3.5	70.8	71.0	76.6	81.7	86.4
Seated CG (above seat)	53	21.0	1.3	18.0	18.4	20.7	23.3	23.4
Seated CG (% Sit Hgt)	52	27.2	1.6	23.4	24.7	27.1	29.8	32.0
Seated CG (from back)	52	20.5	1.9	17.1	17.3	20.6	23.1	24.9
Seated CG (% Butt-Knee)	52	42.3	3.1	36.5	36.9	42.2	47.1	49.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	287	40.3	8.1	26.1	29.3	39.1	54.7	77.8
Stature	287	148.8	7.2	132.8	137.5	148.6	160.4	172.4
Vertical Grip Reach	93	181.6	10.5	160.1	165.4	180.6	198.5	215.2
Frontal Grip Reach	91	62.1	3.8	52.1	56.3	61.5	67.7	74.2
Lateral Grip Reach	91	82.3	5.3	69.9	74.2	82.3	90.7	98.0
Step Height	91	62.1	8.6	45.1	47.5	61.6	76.5	79.5
Supine Stature	65	150.9	7.9	134.3	139.2	149.6	161.8	174.8
Standing CG (from feet)	65	84.6	4.2	75.1	78.4	83.6	90.9	99.1
Standing CG (% Stature)	65	56.1	0.8	54.3	54.6	56.0	57.3	58.1
Erect Sitting Height	284	76.7	3.7	67.1	71.2	76.3	83.2	87.7
Eye Height (Sitting)	97	65.0	3.2	58.7	60.1	64.8	69.9	76.7
Max Hip Breadth (Seated)	283	28.3	3.0	22.6	23.9	28.0	33.2	38.8
Maximum Thigh Breadth	93	28.3	3.3	23.2	23.5	27.9	34.4	40.2
Thigh Clearence	97	12.8	1.3	10.2	10.6	12.7	14.9	16.2
Buttock-Knee Length	286	50.3	3.2	41.7	45.3	50.0	55.4	60.8
Knee Height	277	47.5	2.7	40.9	43.3	47.3	52.3	59.3
Supine Sitting Height	64	79.5	4.8	68.4	71.5	78.6	88.2	91.3
Seated CG (above seat)	64	21.4	1.4	18.1	19.2	21.0	23.7	25.0
Seated CG (% Sit Hgt)	64	26.9	1.3	23.1	24.9	26.7	29.1	29.7
Seated CG (from back)	62	21.2	2.1	16.8	17.6	20.9	24.5	25.7
Seated CG (% Butt-Knee)	61	42.1	2.5	36.7	38.5	41.7	46.7	48.8

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	315	45.7	9.0	26.5	33.6	44.2	62.0	85.8
Stature	315	154.6	7.7	134.1	142.1	154.5	167.6	179.8
Vertical Grip Reach	98	190.5	10.6	166.0	174.3	188.9	208.4	220.0
Frontal Grip Reach	97	64.9	4.5	56.3	57.6	64.3	71.6	78.1
Lateral Grip Reach	97	86.5	5.4	75.3	78.9	86.1	96.0	102.8
Step Height	98	63.5	6.8	47.0	51.6	62.8	75.2	81.0
Supine Stature	66	157.2	8.1	141.5	143.3	156.0	170.7	180.9
Standing CG (from feet)	66	87.7	4.5	78.2	80.9	87.6	95.0	101.3
Standing CG (% Stature)	66	55.8	0.7	54.2	54.5	55.7	57.0	57.4
Erect Sitting Height	312	79.7	4.3	69.8	72.9	79.7	87.0	92.6
Eye Height (Sitting)	107	68.1	4.2	60.4	61.2	68.0	75.1	79.9
Max Hip Breadth (Seated)	311	29.9	3.1	22.6	25.1	29.4	35.0	41.7
Maximum Thigh Breadth	95	30.2	3.5	22.4	25.0	29.9	35.8	42.5
Thigh Clearence	105	13.1	1.5	8.9	10.9	12.8	15.5	16.8
Buttock-Knee Length	314	52.4	3.1	45.0	47.2	52.3	57.6	62.1
Knee Height	297	49.0	3.0	41.2	44.5	49.0	54.2	59.8
Supine Sitting Height	64	83.4	4.8	73.9	76.8	82.4	90.7	94.6
Seated CG (above seat)	65	22.0	1.6	19.5	19.6	22.0	24.4	27.9
Seated CG (% Sit Hgt)	64	26.4	1.3	22.8	23.9	26.4	28.0	30.7
Seated CG (from back)	64	21.8	2.1	17.8	19.0	21.5	25.8	27.8
Seated CG (% Butt-Knee)	64	41.3	2.9	34.3	36.0	41.1	46.0	49.4

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	271	50.8	9.2	29.8	37.7	50.0	67.8	77.3
Stature	271	160.1	8.2	135.4	147.0	159.4	173.6	183.2
Vertical Grip Reach	79	195.3	10.9	166.8	175.8	194.8	211.3	214.9
Frontal Grip Reach	80	67.0	4.3	57.4	59.4	66.6	74.1	77.0
Lateral Grip Reach	80	89.4	5.3	75.5	81.1	88.6	97.5	102.4
Step Height	78	65.8	6.1	51.2	54.0	65.4	75.8	82.2
Supine Stature	57	162.6	7.8	136.5	150.8	161.2	176.5	180.0
Standing CG (from feet)	57	90.5	4.4	75.1	85.0	90.1	97.1	100.6
Standing CG (% Stature)	57	55.7	0.8	53.9	54.4	55.7	56.9	57.6
Erect Sitting Height	270	82.4	4.4	70.8	74.8	82.3	90.0	93.4
Eye Height (Sitting)	89	71.1	4.1	59.0	64.0	71.6	77.6	80.4
Max Hip Breadth (Seated)	269	31.1	2.8	24.1	26.6	31.1	35.7	39.1
Maximum Thigh Breadth	80	31.6	3.2	24.8	26.2	31.3	36.9	39.4
Thigh Clearence	89	13.9	1.4	9.9	11.4	13.7	16.0	17.2
Buttock-Knee Length	270	54.3	3.2	45.1	49.0	54.3	59.5	62.5
Knee Height	252	50.7	3.3	42.1	45.6	50.5	56.5	60.3
Supine Sitting Height	57	86.2	4.5	73.6	77.4	86.0	94.0	95.1
Seated CG (above seat)	57	22.8	1.7	19.3	19.8	22.5	26.5	27.0
Seated CG (% Sit Hgt)	57	26.5	1.3	24.2	24.3	26.4	28.4	30.4
Seated CG (from back)	54	22.8	2.2	16.7	18.5	23.1	25.2	29.8
Seated CG (% Butt-Knee)	54	42.1	3.0	32.7	36.7	42.1	46.6	49.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	264	55.5	10.0	32.7	40.2	54.2	72.1	105.0
Stature	264	164.2	8.0	143.2	151.5	163.6	177.6	186.7
Vertical Grip Reach	87	199.8	9.5	180.9	183.2	199.7	215.4	220.3
Frontal Grip Reach	87	67.7	3.8	59.2	61.3	67.6	73.4	75.6
Lateral Grip Reach	87	91.5	4.6	80.0	84.1	90.6	99.1	101.7
Step Height	88	64.0	8.1	45.6	48.8	65.0	75.7	80.2
Supine Stature	59	166.0	7.3	151.3	153.1	165.4	176.6	180.1
Standing CG (from feet)	59	92.2	4.2	83.8	84.9	92.3	98.5	100.6
Standing CG (% Stature)	59	55.6	0.7	54.2	54.4	55.5	56.7	57.4
Erect Sitting Height	262	85.2	4.5	72.2	78.3	84.8	92.8	98.9
Eye Height (Sitting)	81	73.9	4.3	62.8	66.8	73.6	80.5	83.4
Max Hip Breadth (Seated)	259	32.7	2.9	25.4	27.7	32.6	37.1	44.8
Maximum Thigh Breadth	81	32.4	3.5	24.4	26.3	32.4	38.8	40.9
Thigh Clearence	81	13.9	1.6	10.0	11.1	13.9	16.9	17.7
Buttock-Knee Length	263	55.8	3.0	47.3	51.2	55.5	60.8	63.7
Knee Height	259	51.5	3.3	43.6	46.7	51.5	56.8	60.2
Supine Sitting Height	59	88.4	4.7	76.3	80.8	88.1	96.5	100.3
Seated CG (above seat)	59	23.2	1.8	17.5	20.5	23.2	26.1	29.4
Seated CG (% Sit Hgt)	59	26.2	1.1	22.9	24.5	26.1	28.0	29.3
Seated CG (from back)	60	23.3	2.0	17.6	19.9	23.1	26.9	27.6
Seated CG (% Butt-Knee)	60	41.6	2.8	33.4	36.6	40.9	46.8	47.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	198	60.7	11.5	33.0	44.7	58.9	80.1	106.6
Stature	198	168.4	9.3	147.1	153.5	168.5	183.4	188.3
Vertical Grip Reach	63	205.0	12.4	178.4	185.0	203.3	224.4	230.1
Frontal Grip Reach	63	69.6	5.1	58.8	60.9	68.9	76.4	80.2
Lateral Grip Reach	63	94.0	6.2	81.5	84.6	92.5	104.3	108.6
Step Height	62	66.7	9.2	48.9	51.6	66.0	80.7	90.2
Supine Stature	43	170.4	8.3	154.1	156.1	171.3	182.7	184.6
Standing CG (from feet)	43	95.0	4.9	86.0	86.9	95.4	103.0	103.6
Standing CG (% Stature)	43	55.8	0.8	54.1	54.3	55.7	57.1	57.8
Erect Sitting Height	196	87.7	4.7	71.4	80.2	87.6	95.1	98.7
Eye Height (Sitting)	77	76.0	4.4	61.0	69.2	75.9	83.3	85.8
Max Hip Breadth (Seated)	195	33.6	2.3	26.7	29.8	33.5	38.0	41.2
Maximum Thigh Breadth	76	33.5	2.7	28.2	29.3	33.1	38.1	41.7
Thigh Clearence	78	14.5	1.3	11.2	12.1	14.5	16.7	17.3
Buttock-Knee Length	196	56.9	3.4	48.6	51.6	57.1	62.1	66.6
Knee Height	185	52.4	3.9	44.3	46.5	52.5	58.9	61.6
Supine Sitting Height	42	91.2	4.6	82.7	84.3	90.8	98.1	99.7
Seated CG (above seat)	42	24.3	2.0	20.1	20.4	24.6	27.3	29.7
Seated CG (% Sit Hgt)	42	26.6	1.6	23.8	24.1	26.6	29.1	31.8
Seated CG (from back)	41	23.8	1.8	19.4	20.4	23.6	26.6	28.0
Seated CG (% Butt-Knee)	41	41.8	2.3	35.6	38.9	41.6	45.1	47.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	221	62.2	11.6	36.4	47.0	60.1	81.1	106.2
Stature	221	168.8	8.9	149.1	154.6	168.3	182.9	189.6
Vertical Grip Reach	72	205.6	11.1	181.6	186.3	205.5	224.5	226.0
Frontal Grip Reach	74	70.6	5.0	59.6	62.0	70.7	78.7	83.1
Lateral Grip Reach	74	95.3	6.2	81.9	84.7	94.9	106.1	108.4
Step Height	73	68.8	8.6	52.8	55.2	67.7	82.6	94.2
Supine Stature	45	170.5	7.2	157.0	159.2	169.0	182.0	182.7
Standing CG (from feet)	45	95.1	4.5	85.8	87.5	93.6	102.5	104.5
Standing CG (% Stature)	45	55.8	0.8	54.3	54.4	55.8	56.9	57.2
Erect Sitting Height	221	88.5	4.2	74.8	82.0	88.4	95.3	97.8
Eye Height (Sitting)	66	76.9	4.2	67.5	69.9	77.3	83.0	85.4
Max Hip Breadth (Seated)	220	34.2	2.6	26.7	30.5	33.9	39.3	43.8
Maximum Thigh Breadth	66	34.3	2.6	29.8	30.0	34.0	38.5	40.7
Thigh Clearence	67	14.7	1.7	10.8	12.0	14.5	17.7	19.1
Buttock-Knee Length	220	57.0	3.2	49.4	51.9	56.9	62.1	66.7
Knee Height	212	52.1	3.9	41.6	46.1	51.6	58.5	62.0
Supine Sitting Height	44	92.2	3.7	83.8	86.3	92.0	98.4	100.6
Seated CG (above seat)	44	25.1	1.6	22.1	22.2	25.1	28.3	29.4
Seated CG (% Sit Hgt)	44	27.2	1.1	24.7	25.0	27.2	29.0	29.3
Seated CG (from back)	43	23.9	2.0	20.8	21.4	23.7	27.9	29.8
Seated CG (% Butt-Knee)	43	41.8	2.5	37.3	37.8	41.8	45.9	48.7

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males and Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	156	65.7	13.1	41.4	45.6	65.4	86.5	112.3
Stature	156	170.9	9.5	149.9	156.4	171.8	185.7	194.4
Vertical Grip Reach	44	206.9	11.9	188.4	188.9	205.8	227.0	233.2
Frontal Grip Reach	44	70.7	5.4	62.8	63.0	70.2	80.9	82.1
Lateral Grip Reach	43	96.0	6.9	82.7	85.7	94.9	108.0	110.8
Step Height	44	68.1	6.9	53.4	55.9	67.8	77.9	80.5
Supine Stature	33	174.1	9.6	157.7	158.5	174.0	187.6	192.5
Standing CG (from feet)	33	97.2	6.0	87.2	87.5	97.1	106.4	107.5
Standing CG (% Stature)	33	55.8	0.7	54.2	54.4	55.7	56.8	57.9
Erect Sitting Height	156	89.4	4.4	78.9	81.8	89.3	96.5	99.6
Eye Height (Sitting)	63	77.9	4.3	67.8	70.0	78.7	83.4	85.5
Max Hip Breadth (Seated)	156	34.6	2.5	29.0	31.1	34.2	39.1	43.2
Maximum Thigh Breadth	63	34.8	3.4	27.5	30.0	33.8	41.0	42.8
Thigh Clearence	63	15.5	1.8	11.1	12.6	15.4	18.8	19.1
Buttock-Knee Length	156	57.7	3.5	49.4	52.2	57.7	62.8	69.7
Knee Height	151	53.0	4.0	44.4	47.2	52.8	60.0	62.8
Supine Sitting Height	32	92.5	4.4	83.8	84.9	92.3	99.0	102.6
Seated CG (above seat)	32	25.1	1.9	21.4	21.5	25.1	27.8	29.2
Seated CG (% Sit Hgt)	32	27.1	1.3	24.8	24.9	26.9	28.9	29.6
Seated CG (from back)	31	24.4	2.4	20.7	21.2	23.8	28.6	30.5
Seated CG (% Butt-Knee)	31	42.3	2.6	37.8	38.0	41.9	47.1	48.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	115	14.6	2.0	10.2	11.9	14.4	18.9	20.7
Stature	115	94.5	5.0	81.3	87.0	94.3	102.2	108.5
Vertical Grip Reach	33	107.6	7.7	96.8	97.1	105.8	122.2	124.3
Frontal Grip Reach	33	40.3	3.1	35.5	35.6	40.2	45.9	46.9
Lateral Grip Reach	31	53.3	3.9	47.3	47.7	53.4	59.0	64.5
Step Height	31	32.2	6.6	22.1	22.2	32.4	42.1	43.2
Supine Stature	9	98.0	5.2	90.8	**	96.8	**	106.1
Standing CG (from feet)	9	56.4	3.0	51.3	**	56.3	**	61.0
Standing CG (% Stature)	9	57.6	1.3	55.3	**	57.4	**	59.7
Erect Sitting Height	113	55.3	2.7	47.4	50.5	55.2	59.6	63.4
Eye Height (Sitting)	31	44.7	2.2	38.8	40.4	44.6	47.7	48.9
Max Hip Breadth (Seated)	112	19.3	1.2	16.3	17.5	19.0	21.3	23.5
Maximum Thigh Breadth	30	19.5	1.6	17.3	17.3	19.1	21.8	23.7
Thigh Clearence	32	8.4	1.0	5.5	6.3	8.4	9.8	11.0
Buttock-Knee Length	113	28.5	1.9	24.2	25.1	28.5	31.4	32.9
Knee Height	111	27.4	2.0	22.5	24.2	27.3	30.8	31.8
Supine Sitting Height	9	59.1	2.4	55.0	**	58.4	**	62.7
Seated CG (above seat)	9	20.9	1.2	19.2	**	20.5	**	22.4
Seated CG (% Sit Hgt)	9	35.4	2.1	33.4	**	34.5	**	38.3
Seated CG (from back)	6	14.0	2.0	11.8	**	13.4	**	17.8
Seated CG (% Butt-Knee)	6	47.2	5.6	40.4	**	45.2	**	56.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	118	16.2	2.1	12.3	13.1	15.8	19.7	22.7
Stature	118	101.3	4.5	90.9	93.8	100.8	109.0	113.3
Vertical Grip Reach	43	115.7	7.1	104.4	105.5	114.5	127.8	136.0
Frontal Grip Reach	43	42.6	3.7	36.3	36.8	42.2	48.4	52.9
Lateral Grip Reach	43	55.9	3.8	47.3	49.2	55.6	61.8	65.1
Step Height	42	39.3	6.0	26.9	30.4	39.8	49.7	55.5
Supine Stature	15	101.3	4.8	94.6	**	99.6	**	110.7
Standing CG (from feet)	15	59.1	2.6	54.9	**	58.4	**	63.3
Standing CG (% Stature)	15	58.3	1.2	56.2	**	58.3	**	60.7
Erect Sitting Height	116	57.9	2.3	53.2	53.7	57.6	61.4	64.5
Eye Height (Sitting)	35	47.1	2.5	42.3	42.9	46.7	51.3	52.8
Max Hip Breadth (Seated)	116	19.8	1.3	17.2	17.7	19.7	21.7	23.6
Maximum Thigh Breadth	33	19.9	1.8	16.5	16.7	19.5	23.0	23.9
Thigh Clearence	35	8.5	1.2	6.3	6.4	8.3	10.0	10.7
Buttock-Knee Length	117	31.0	1.9	26.9	28.4	30.8	34.3	37.2
Knee Height	109	29.7	2.0	22.0	26.7	29.7	33.0	35.8
Supine Sitting Height	15	59.6	2.8	55.5	**	58.7	**	66.1
Seated CG (above seat)	15	20.7	1.0	18.6	**	20.8	**	22.2
Seated CG (% Sit Hgt)	15	34.7	1.6	31.7	**	35.0	**	36.7
Seated CG (from back)	13	13.4	1.3	11.8	**	12.7	**	16.0
Seated CG (% Butt-Knee)	13	44.4	5.0	36.8	**	43.2	**	56.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	144	18.4	2.3	13.7	15.2	18.2	22.6	27.9
Stature	144	108.6	4.7	96.5	100.6	108.9	115.5	124.4
Vertical Grip Reach	34	127.0	7.1	108.9	112.4	126.8	136.2	138.3
Frontal Grip Reach	35	45.3	3.1	40.1	40.5	44.6	49.8	51.1
Lateral Grip Reach	34	59.6	4.2	51.9	52.2	59.2	66.0	68.2
Step Height	34	43.2	7.3	30.8	32.0	41.7	53.8	57.0
Supine Stature	10	112.7	3.5	105.5	**	112.9	**	117.9
Standing CG (from feet)	10	64.7	2.0	60.8	**	64.8	**	67.2
Standing CG (% Stature)	10	57.4	1.2	55.2	**	57.3	**	59.5
Erect Sitting Height	140	61.0	2.7	52.6	56.1	60.9	65.2	70.3
Eye Height (Sitting)	56	50.0	3.0	44.1	45.4	49.7	55.2	56.9
Max Hip Breadth (Seated)	139	20.5	1.3	17.8	18.6	20.3	22.7	24.6
Maximum Thigh Breadth	53	20.8	1.4	18.4	18.5	20.5	22.8	25.8
Thigh Clearence	55	9.0	1.1	6.5	7.0	8.9	10.5	11.3
Buttock-Knee Length	141	33.6	1.9	28.4	30.7	33.5	36.6	39.0
Knee Height	135	32.4	2.0	28.1	29.1	32.2	35.5	37.8
Supine Sitting Height	11	63.4	2.9	58.1	**	63.0	**	66.8
Seated CG (above seat)	11	20.9	1.0	19.5	**	20.6	**	22.4
Seated CG (% Sit Hgt)	11	33.0	2.4	29.9	**	32.4	**	38.5
Seated CG (from back)	10	15.1	2.7	12.0	**	14.3	**	21.1
Seated CG (% Butt-Knee)	10	43.9	6.4	35.2	**	41.6	**	54.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	117	20.8	3.1	14.8	16.8	20.1	26.6	32.5
Stature	117	115.1	5.2	102.9	106.1	114.6	124.7	128.4
Vertical Grip Reach	42	136.2	7.7	120.5	127.7	135.3	147.8	160.0
Frontal Grip Reach	42	49.0	2.7	44.6	44.6	48.6	53.2	57.4
Lateral Grip Reach	42	63.9	4.4	55.9	57.4	63.4	69.5	80.8
Step Height	42	51.5	6.3	35.4	40.7	50.9	60.4	69.4
Supine Stature	35	117.1	4.8	106.8	110.2	117.1	125.5	127.7
Standing CG (from feet)	35	67.2	2.8	61.3	62.0	67.0	71.8	73.4
Standing CG (% Stature)	35	57.4	0.8	55.9	55.9	57.1	58.8	59.2
Erect Sitting Height	116	63.6	2.7	56.0	58.4	63.4	68.2	70.7
Eye Height (Sitting)	38	51.8	2.6	46.5	46.6	52.1	56.4	56.8
Max Hip Breadth (Seated)	106	21.4	1.5	17.9	19.1	21.2	23.9	26.3
Maximum Thigh Breadth	38	21.2	1.6	18.5	18.6	21.1	23.6	27.1
Thigh Clearence	37	9.4	0.9	7.5	7.8	9.2	10.8	11.0
Buttock-Knee Length	117	36.1	2.2	31.1	32.8	35.8	39.6	42.1
Knee Height	107	35.3	2.2	30.3	31.4	35.2	38.8	40.6
Supine Sitting Height	34	65.0	3.1	60.4	60.7	64.4	70.3	73.5
Seated CG (above seat)	34	21.0	1.1	18.7	18.9	20.9	22.8	23.1
Seated CG (% Sit Hgt)	34	32.3	1.1	29.9	30.0	32.2	33.8	34.4
Seated CG (from back)	25	16.0	2.1	12.7	12.8	15.5	19.8	21.0
Seated CG (% Butt-Knee)	25	44.6	5.9	34.3	34.8	44.1	54.7	56.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	106	24.0	3.9	17.4	18.9	23.0	29.6	41.2
Stature	105	122.0	5.1	108.9	112.6	122.5	130.6	133.8
Vertical Grip Reach	33	145.0	8.4	127.5	128.1	144.2	158.0	163.5
Frontal Grip Reach	33	51.6	3.4	46.9	47.1	51.2	57.5	61.9
Lateral Grip Reach	33	67.6	4.1	58.4	59.9	67.7	74.2	74.8
Step Height	33	55.5	5.5	44.5	45.7	55.7	63.3	64.5
Supine Stature	21	125.0	6.2	109.7	110.1	125.6	133.7	133.9
Standing CG (from feet)	21	71.4	3.0	64.4	64.5	71.1	75.2	77.6
Standing CG (% Stature)	21	57.1	1.0	55.8	55.8	56.8	58.7	59.4
Erect Sitting Height	105	66.3	2.8	56.6	61.9	66.0	71.1	73.2
Eye Height (Sitting)	41	54.3	2.7	47.3	49.7	53.9	58.0	62.3
Max Hip Breadth (Seated)	104	22.4	2.1	18.6	19.6	22.1	25.9	30.8
Maximum Thigh Breadth	41	22.1	2.2	17.5	18.8	21.6	25.3	30.7
Thigh Clearence	40	10.2	1.3	7.5	8.3	10.1	12.4	14.0
Buttock-Knee Length	105	39.0	2.2	33.5	35.7	38.8	42.6	44.2
Knee Height	104	37.7	2.2	32.4	33.8	37.9	40.9	42.2
Supine Sitting Height	22	67.9	3.6	59.0	59.2	68.1	71.8	73.7
Seated CG (above seat)	22	20.9	1.2	18.7	18.8	20.6	22.7	23.0
Seated CG (% Sit Hgt)	22	30.8	1.6	28.0	28.0	30.7	33.8	34.2
Seated CG (from back)	18	17.4	1.8	13.7	**	17.5	**	20.6
Seated CG (% Butt-Knee)	18	44.6	4.9	34.9	**	45.3	**	51.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	104	26.9	5.0	18.2	20.9	25.7	35.3	49.9
Stature	104	127.8	5.6	111.9	119.9	126.7	137.7	140.0
Vertical Grip Reach	32	154.8	6.2	144.9	145.0	155.1	164.1	165.8
Frontal Grip Reach	32	53.6	2.6	47.7	48.4	53.3	58.1	59.3
Lateral Grip Reach	32	70.9	3.1	65.1	65.3	70.6	75.0	77.0
Step Height	32	59.0	6.6	47.2	48.0	59.4	68.1	75.7
Supine Stature	27	130.8	5.2	122.0	122.3	130.4	137.8	140.1
Standing CG (from feet)	27	73.9	3.1	68.4	68.6	73.6	77.7	78.4
Standing CG (% Stature)	27	56.5	0.7	55.1	55.1	56.3	57.8	57.9
Erect Sitting Height	103	68.7	2.9	62.2	64.1	68.5	73.2	75.0
Eye Height (Sitting)	35	57.0	2.7	51.5	51.7	57.0	61.2	62.6
Max Hip Breadth (Seated)	97	23.6	1.9	20.3	21.0	23.3	27.7	29.5
Maximum Thigh Breadth	35	23.5	2.3	19.2	19.8	22.9	27.2	30.8
Thigh Clearence	34	10.7	1.3	8.9	9.0	10.5	12.8	15.1
Buttock-Knee Length	102	41.2	2.5	35.3	37.7	40.9	45.9	47.1
Knee Height	96	39.9	2.4	33.1	36.6	39.5	44.1	45.7
Supine Sitting Height	26	71.1	3.2	65.6	65.7	71.6	75.5	76.7
Seated CG (above seat)	26	21.1	1.0	18.9	19.1	21.1	22.5	22.6
Seated CG (% Sit Hgt)	26	29.7	1.3	27.4	27.4	29.9	31.4	31.8
Seated CG (from back)	21	18.4	1.6	16.4	16.4	18.0	21.3	21.8
Seated CG (% Butt-Knee)	21	43.9	4.0	37.4	37.5	43.3	49.2	54.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	116	29.8	5.1	19.6	22.7	29.0	37.9	48.3
Stature	117	133.4	6.1	120.0	123.8	133.4	142.4	147.3
Vertical Grip Reach	33	161.7	8.5	141.2	144.3	163.5	172.0	174.3
Frontal Grip Reach	33	55.9	4.2	48.6	49.6	54.7	64.2	67.0
Lateral Grip Reach	33	73.7	4.7	64.1	64.8	73.7	80.3	81.5
Step Height	32	58.7	6.6	45.8	47.8	59.1	69.1	72.3
Supine Stature	27	137.2	5.4	123.4	125.5	138.5	144.6	145.9
Standing CG (from feet)	27	77.7	2.9	70.8	71.4	77.8	81.9	82.8
Standing CG (% Stature)	27	56.7	0.9	54.8	54.9	56.6	57.7	58.8
Erect Sitting Height	117	70.4	3.2	61.2	64.9	70.4	75.3	77.5
Eye Height (Sitting)	42	58.9	3.4	49.1	53.3	58.6	64.8	66.8
Max Hip Breadth (Seated)	112	24.5	2.1	20.0	21.5	24.2	27.5	31.0
Maximum Thigh Breadth	39	24.8	2.7	20.2	20.2	24.3	28.4	31.4
Thigh Clearence	38	11.3	1.5	7.7	9.2	11.2	13.6	15.7
Buttock-Knee Length	117	43.6	2.4	37.2	39.9	43.3	47.2	51.0
Knee Height	114	42.0	2.5	34.5	38.2	42.0	45.9	48.5
Supine Sitting Height	26	73.6	3.3	65.9	66.8	74.4	78.0	80.5
Seated CG (above seat)	27	21.3	1.2	19.3	19.3	21.3	22.8	23.5
Seated CG (% Sit Hgt)	26	28.8	1.4	26.7	26.7	28.7	31.2	32.0
Seated CG (from back)	23	18.8	1.9	14.9	15.0	18.9	21.7	22.4
Seated CG (% Butt-Knee)	23	42.1	4.1	35.3	35.3	41.5	49.5	53.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	124	33.5	6.7	23.3	25.1	32.0	47.9	54.3
Stature	124	137.9	6.3	125.2	127.0	137.6	149.2	155.9
Vertical Grip Reach	37	166.6	7.8	150.1	151.7	166.0	178.4	184.4
Frontal Grip Reach	37	57.8	2.9	53.3	53.3	56.9	62.4	64.3
Lateral Grip Reach	37	76.4	3.7	69.5	70.6	76.2	83.0	84.8
Step Height	37	60.0	6.0	46.7	49.9	59.6	68.9	74.7
Supine Stature	21	139.1	7.4	127.7	127.7	138.5	149.2	157.3
Standing CG (from feet)	21	78.8	3.8	72.2	72.2	78.3	84.2	87.2
Standing CG (% Stature)	21	56.7	0.7	55.5	55.5	56.5	57.7	57.9
Erect Sitting Height	121	72.3	3.0	64.5	67.1	72.1	77.0	78.5
Eye Height (Sitting)	39	60.3	3.0	54.3	54.5	60.2	64.2	67.3
Max Hip Breadth (Seated)	122	25.6	2.6	21.6	22.1	25.0	29.5	34.8
Maximum Thigh Breadth	39	26.0	3.3	20.5	21.5	25.3	31.3	36.2
Thigh Clearence	38	12.1	1.5	9.6	10.0	11.8	14.8	15.6
Buttock-Knee Length	123	45.7	2.7	40.0	41.3	45.4	50.1	54.3
Knee Height	122	43.8	2.8	37.7	39.1	43.6	48.8	53.4
Supine Sitting Height	21	73.2	3.8	67.1	67.2	72.4	79.7	81.3
Seated CG (above seat)	21	20.7	1.3	17.8	17.8	20.8	22.5	22.6
Seated CG (% Sit Hgt)	21	28.3	1.4	26.2	26.2	28.4	30.0	30.2
Seated CG (from back)	21	20.0	2.0	16.9	16.9	19.7	23.1	24.0
Seated CG (% Butt-Knee)	21	44.1	3.9	37.5	37.6	43.2	50.1	51.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	142	36.6	7.2	26.3	27.8	34.4	50.3	64.5
Stature	142	142.5	5.3	130.7	133.8	142.1	151.1	160.2
Vertical Grip Reach	47	172.0	8.5	153.7	155.0	171.1	185.3	189.8
Frontal Grip Reach	48	59.2	3.4	51.7	52.8	58.7	64.7	66.9
Lateral Grip Reach	47	77.9	4.5	68.2	70.7	77.3	84.5	87.3
Step Height	48	61.8	6.6	45.4	51.5	61.4	71.5	75.1
Supine Stature	26	143.8	5.2	132.8	134.1	143.8	151.1	154.8
Standing CG (from feet)	26	80.7	2.6	75.7	76.1	80.7	84.2	87.5
Standing CG (% Stature)	26	56.1	0.7	54.9	54.9	56.1	57.0	57.1
Erect Sitting Height	139	74.1	3.1	68.5	69.3	73.8	79.0	83.0
Eye Height (Sitting)	41	61.2	2.6	54.6	55.6	61.1	64.9	66.0
Max Hip Breadth (Seated)	137	26.6	2.7	21.5	23.2	26.2	31.6	36.5
Maximum Thigh Breadth	40	25.6	2.2	22.1	22.4	25.3	28.8	31.8
Thigh Clearence	41	11.8	1.0	10.0	10.1	11.5	13.3	13.7
Buttock-Knee Length	140	47.6	2.5	41.8	43.8	47.4	52.1	54.1
Knee Height	140	45.4	2.2	40.1	41.8	45.4	48.9	51.7
Supine Sitting Height	26	76.5	3.4	71.0	71.0	76.2	81.2	82.0
Seated CG (above seat)	26	21.1	1.3	18.3	18.3	21.1	23.1	23.4
Seated CG (% Sit Hgt)	26	27.6	1.4	25.3	25.4	27.3	29.9	30.1
Seated CG (from back)	26	20.3	1.6	17.4	17.4	20.7	22.8	23.2
Seated CG (% Butt-Knee)	26	42.7	2.9	37.6	37.7	42.9	48.0	49.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	154	40.0	7.9	27.8	30.3	38.1	54.7	77.8
Stature	154	148.4	7.4	132.8	138.1	147.4	161.3	172.4
Vertical Grip Reach	51	181.7	11.2	160.1	164.3	179.5	200.5	215.2
Frontal Grip Reach	52	62.3	3.9	56.0	56.3	61.4	68.1	74.2
Lateral Grip Reach	52	82.5	5.9	72.3	73.6	81.8	94.6	98.0
Step Height	50	63.5	8.9	46.1	47.7	62.1	77.6	79.5
Supine Stature	41	151.1	7.8	135.1	140.3	149.5	163.9	174.8
Standing CG (from feet)	41	84.8	4.1	77.8	79.4	83.3	91.8	99.1
Standing CG (% Stature)	41	56.2	0.8	54.3	54.7	56.0	57.6	58.1
Erect Sitting Height	152	76.3	3.5	67.1	71.6	75.9	82.6	87.7
Eye Height (Sitting)	55	64.7	3.0	59.1	60.0	64.6	68.7	74.8
Max Hip Breadth (Seated)	150	27.4	2.6	22.6	23.3	27.1	32.5	36.7
Maximum Thigh Breadth	53	27.7	2.8	23.2	23.4	27.6	33.1	34.7
Thigh Clearence	55	12.8	1.2	10.2	10.7	12.8	14.8	15.5
Buttock-Knee Length	153	49.8	3.1	41.7	45.0	49.5	54.5	60.7
Knee Height	144	47.8	2.8	40.9	43.8	47.3	52.7	59.3
Supine Sitting Height	40	79.3	4.8	68.4	70.7	78.5	89.2	91.3
Seated CG (above seat)	40	21.2	1.4	18.1	18.8	20.8	23.1	25.0
Seated CG (% Sit Hgt)	40	26.8	1.4	23.1	24.3	26.6	29.3	29.7
Seated CG (from back)	40	21.7	1.9	18.3	18.6	21.2	24.5	25.7
Seated CG (% Butt-Knee)	39	43.1	2.3	39.4	39.5	42.8	47.0	48.8

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	154	45.4	9.6	28.5	33.1	43.7	63.6	85.8
Stature	154	154.1	8.4	136.4	142.1	153.4	169.5	179.8
Vertical Grip Reach	50	190.4	11.1	166.0	174.7	188.5	208.5	220.0
Frontal Grip Reach	50	65.2	4.7	56.3	57.8	64.4	72.0	78.1
Lateral Grip Reach	50	86.8	5.8	78.2	79.0	86.3	97.1	102.8
Step Height	50	64.1	5.8	52.6	53.9	63.8	73.4	79.3
Supine Stature	35	157.4	8.5	142.3	144.7	155.5	170.9	180.9
Standing CG (from feet)	35	88.1	4.8	78.2	80.1	87.8	95.2	101.3
Standing CG (% Stature)	35	56.0	0.7	54.5	54.9	55.8	57.0	57.4
Erect Sitting Height	152	78.8	4.4	69.8	72.9	78.3	87.2	92.6
Eye Height (Sitting)	58	67.2	4.5	60.4	61.1	66.1	75.5	79.9
Max Hip Breadth (Seated)	152	28.7	2.7	22.6	24.6	28.3	33.7	36.8
Maximum Thigh Breadth	50	28.7	2.9	22.4	23.3	27.9	33.9	35.4
Thigh Clearence	56	12.9	1.4	8.9	10.8	12.8	15.1	16.5
Buttock-Knee Length	154	51.9	3.3	45.0	46.3	51.4	57.6	60.8
Knee Height	137	49.7	3.3	42.1	44.7	49.8	55.7	59.8
Supine Sitting Height	34	82.1	4.3	75.8	76.4	81.5	89.0	94.2
Seated CG (above seat)	34	21.5	1.4	19.5	19.5	21.0	24.0	24.8
Seated CG (% Sit Hgt)	34	26.2	1.3	22.8	23.1	26.1	28.1	28.7
Seated CG (from back)	34	21.9	2.1	17.8	18.6	21.5	25.3	26.7
Seated CG (% Butt-Knee)	34	41.6	2.6	36.3	37.2	41.1	45.4	48.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	155	51.8	9.6	29.8	38.0	50.9	69.6	77.3
Stature	155	161.3	8.7	138.8	147.3	160.6	175.5	183.2
Vertical Grip Reach	50	197.3	10.1	175.9	179.0	196.4	211.2	214.9
Frontal Grip Reach	51	68.0	4.3	58.6	60.5	68.3	74.4	77.0
Lateral Grip Reach	51	90.3	5.5	75.5	81.0	90.0	97.8	102.4
Step Height	51	66.3	5.9	53.9	56.2	65.4	75.5	82.2
Supine Stature	35	163.5	7.6	148.3	151.5	162.3	176.7	180.0
Standing CG (from feet)	35	91.3	4.2	83.4	85.0	90.5	98.2	100.6
Standing CG (% Stature)	35	55.9	0.8	53.9	54.1	55.8	57.1	57.6
Erect Sitting Height	154	82.3	4.8	70.8	74.6	82.0	90.5	93.4
Eye Height (Sitting)	48	71.1	4.3	59.0	64.0	71.7	77.9	80.4
Max Hip Breadth (Seated)	153	30.1	2.6	24.1	26.3	29.9	34.6	35.8
Maximum Thigh Breadth	41	30.4	2.7	25.1	25.7	29.9	35.4	36.9
Thigh Clearence	48	14.0	1.5	9.9	10.8	13.9	16.2	17.2
Buttock-Knee Length	154	54.5	3.3	45.1	48.7	54.4	59.7	61.9
Knee Height	137	51.8	3.3	45.2	46.9	51.6	57.4	60.3
Supine Sitting Height	36	86.5	4.5	76.0	78.2	86.3	94.7	95.1
Seated CG (above seat)	36	23.0	2.0	19.3	19.4	22.7	26.7	27.0
Seated CG (% Sit Hgt)	36	26.6	1.5	24.2	24.3	26.5	28.5	30.4
Seated CG (from back)	33	23.2	2.2	18.8	19.0	23.4	25.2	29.8
Seated CG (% Butt-Knee)	33	42.6	3.0	35.7	36.6	42.5	47.1	49.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	131	57.5	11.2	35.6	39.5	56.6	74.9	105.0
Stature	131	166.4	8.7	146.0	149.7	167.0	179.6	186.7
Vertical Grip Reach	39	202.9	9.4	184.2	184.3	203.2	218.5	220.1
Frontal Grip Reach	39	68.9	3.7	61.8	62.4	69.3	73.4	75.6
Lateral Grip Reach	39	92.9	4.9	82.1	84.0	93.5	99.3	101.7
Step Height	39	66.9	6.4	55.2	55.3	67.3	76.9	80.2
Supine Stature	32	167.7	7.3	151.3	154.1	167.6	177.8	180.1
Standing CG (from feet)	32	93.4	4.1	83.8	85.2	93.1	98.7	100.6
Standing CG (% Stature)	32	55.7	0.5	54.7	54.8	55.6	56.6	56.8
Erect Sitting Height	131	85.5	5.3	72.2	76.9	85.2	93.4	98.9
Eye Height (Sitting)	42	73.8	4.9	62.8	66.0	72.9	80.6	83.4
Max Hip Breadth (Seated)	128	31.7	2.8	25.4	27.2	31.7	35.9	42.7
Maximum Thigh Breadth	42	30.8	3.0	24.4	25.7	30.8	35.2	38.1
Thigh Clearence	42	13.9	1.6	10.0	11.1	13.8	17.0	17.7
Buttock-Knee Length	131	56.1	3.2	47.3	50.7	56.3	60.9	63.7
Knee Height	127	53.1	3.1	46.4	47.6	52.9	58.3	60.2
Supine Sitting Height	32	88.8	5.3	76.3	78.9	89.1	96.0	100.3
Seated CG (above seat)	32	23.3	2.3	17.5	19.2	23.5	26.5	29.4
Seated CG (% Sit Hgt)	32	26.2	1.3	22.9	23.9	26.3	27.8	29.3
Seated CG (from back)	33	23.7	2.0	17.6	19.8	23.7	27.2	27.6
Seated CG (% Butt-Knee)	33	42.1	3.1	33.4	35.2	41.5	47.3	47.6

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	100	66.1	11.9	33.0	46.2	66.1	85.0	106.6
Stature	100	174.5	7.8	147.3	161.1	174.6	185.2	188.3
Vertical Grip Reach	31	212.9	9.9	189.1	194.5	214.5	225.2	230.1
Frontal Grip Reach	31	72.6	4.2	64.6	64.8	73.3	79.6	80.2
Lateral Grip Reach	31	97.8	5.7	85.0	87.3	97.6	106.2	108.6
Step Height	31	68.8	10.2	48.9	49.2	67.9	83.5	90.2
Supine Stature	21	175.9	6.4	162.4	162.4	175.8	184.2	184.6
Standing CG (from feet)	21	98.2	3.8	90.1	90.2	98.5	103.1	103.6
Standing CG (% Stature)	21	55.8	0.7	54.5	54.5	55.8	56.9	57.1
Erect Sitting Height	98	90.1	4.8	71.4	81.7	90.5	96.3	98.7
Eye Height (Sitting)	36	78.5	4.5	61.0	69.8	78.5	84.2	85.8
Max Hip Breadth (Seated)	97	33.2	2.4	26.7	28.8	33.2	37.2	39.6
Maximum Thigh Breadth	36	32.5	2.3	28.2	28.9	31.9	37.2	39.8
Thigh Clearence	37	14.6	1.4	11.2	11.8	14.6	16.9	17.3
Buttock-Knee Length	99	58.5	3.1	49.2	52.6	58.7	62.8	66.6
Knee Height	87	55.2	3.0	46.2	49.9	55.2	59.7	61.6
Supine Sitting Height	20	94.1	4.0	85.6	**	94.6	**	99.7
Seated CG (above seat)	20	25.1	1.7	21.7	**	25.3	**	27.7
Seated CG (% Sit Hgt)	20	26.7	1.2	24.7	**	26.6	**	29.2
Seated CG (from back)	20	24.1	2.0	19.4	**	23.7	**	28.0
Seated CG (% Butt-Knee)	20	41.3	2.4	35.6	**	40.7	**	45.1

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	104	69.2	10.5	46.8	54.2	67.4	88.5	106.2
Stature	104	175.9	6.0	158.4	165.3	176.2	184.3	189.6
Vertical Grip Reach	36	213.1	8.9	191.6	197.3	213.6	225.0	226.0
Frontal Grip Reach	38	73.4	4.3	63.7	65.2	73.0	81.3	83.1
Lateral Grip Reach	38	99.4	5.1	88.5	89.3	98.5	106.8	108.4
Step Height	37	72.1	8.3	57.0	59.5	70.5	88.4	94.2
Supine Stature	26	174.8	6.0	160.2	161.4	176.0	182.4	182.7
Standing CG (from feet)	26	97.9	3.5	90.9	91.4	98.2	102.8	104.5
Standing CG (% Stature)	26	56.0	0.7	54.5	54.6	56.1	56.9	57.2
Erect Sitting Height	104	91.5	3.1	83.3	85.5	91.3	95.9	97.8
Eye Height (Sitting)	28	80.4	2.5	75.4	75.4	80.2	84.4	85.4
Max Hip Breadth (Seated)	104	33.6	2.3	30.0	30.2	33.4	37.6	41.4
Maximum Thigh Breadth	27	33.5	2.1	29.8	29.9	33.2	36.8	38.0
Thigh Clearence	28	15.4	1.6	11.5	12.1	15.5	17.6	18.7
Buttock-Knee Length	104	58.8	2.8	53.2	53.9	58.8	63.6	66.7
Knee Height	95	55.2	2.9	48.8	49.4	55.5	59.4	62.0
Supine Sitting Height	26	93.4	3.7	86.5	86.8	92.8	98.7	100.6
Seated CG (above seat)	26	25.5	1.8	22.6	22.7	25.4	28.5	29.4
Seated CG (% Sit Hgt)	26	27.3	1.3	24.9	25.1	27.2	29.1	29.3
Seated CG (from back)	26	24.6	2.1	21.5	21.6	24.3	28.0	29.8
Seated CG (% Butt-Knee)	26	42.4	2.6	37.7	38.0	42.6	46.2	48.7

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Males - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	88	73.2	11.0	43.9	55.2	72.2	91.1	112.3
Stature	88	177.1	6.8	157.1	166.2	176.9	187.4	194.4
Vertical Grip Reach	22	216.3	7.4	205.8	206.0	213.8	228.9	233.2
Frontal Grip Reach	22	74.3	4.6	63.6	64.3	73.6	81.2	82.1
Lateral Grip Reach	22	101.3	4.5	93.8	93.9	100.3	108.4	110.8
Step Height	23	71.3	5.8	58.3	58.7	71.0	79.0	80.5
Supine Stature	20	179.9	6.3	170.0	**	178.4	**	192.5
Standing CG (from feet)	20	100.8	3.8	95.2	**	99.5	**	107.5
Standing CG (% Stature)	20	56.1	0.4	55.5	**	55.8	**	57.1
Erect Sitting Height	88	91.9	3.6	79.6	85.5	92.5	97.3	99.6
Eye Height (Sitting)	38	79.8	3.6	67.8	72.3	80.0	84.8	85.5
Max Hip Breadth (Seated)	88	34.3	2.3	29.0	30.5	34.1	37.5	43.0
Maximum Thigh Breadth	38	33.9	3.0	27.5	27.5	33.2	37.8	40.7
Thigh Clearence	38	16.1	1.7	12.8	13.2	16.0	18.9	19.1
Buttock-Knee Length	88	59.5	3.0	52.2	54.2	59.4	64.4	69.7
Knee Height	83	55.6	3.0	48.1	51.0	55.3	60.6	62.8
Supine Sitting Height	19	94.9	3.3	89.5	**	94.5	**	102.6
Seated CG (above seat)	19	26.0	1.5	23.2	**	26.0	**	29.2
Seated CG (% Sit Hgt)	19	27.4	1.1	25.0	**	27.3	**	29.6
Seated CG (from back)	18	25.5	2.4	22.0	**	25.0	**	30.5
Seated CG (% Butt-Knee)	18	42.9	2.9	37.8	**	42.3	**	48.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	97	13.6	1.7	10.1	10.8	13.7	16.3	17.5
Stature	98	92.1	4.7	83.8	85.1	92.0	99.4	105.9
Vertical Grip Reach	28	106.9	6.3	97.5	98.2	105.6	115.9	124.6
Frontal Grip Reach	29	39.0	2.9	34.7	34.8	38.4	42.8	48.1
Lateral Grip Reach	29	52.5	2.6	46.7	47.6	52.4	56.5	60.0
Step Height	24	34.8	6.9	23.2	23.7	32.6	46.7	47.1
Supine Stature	11	96.8	5.0	90.2	**	97.0	**	106.8
Standing CG (from feet)	11	55.7	2.9	51.2	**	55.5	**	61.2
Standing CG (% Stature)	11	57.6	1.1	55.9	**	57.4	**	60.1
Erect Sitting Height	96	53.4	2.4	46.8	49.6	53.2	56.9	59.3
Eye Height (Sitting)	33	42.8	2.4	38.2	38.6	42.3	45.9	50.0
Max Hip Breadth (Seated)	98	19.0	1.4	16.1	16.8	18.9	21.3	22.5
Maximum Thigh Breadth	33	18.9	1.6	15.9	16.0	18.7	21.4	21.8
Thigh Clearence	35	7.8	1.2	4.7	5.4	7.8	9.3	10.1
Buttock-Knee Length	98	28.4	1.9	24.6	25.6	28.4	31.4	33.5
Knee Height	92	26.6	1.9	22.5	23.4	26.4	29.5	32.3
Supine Sitting Height	10	57.2	2.2	53.6	**	56.9	**	60.9
Seated CG (above seat)	10	19.4	0.5	18.9	**	19.1	**	20.3
Seated CG (% Sit Hgt)	10	33.9	1.3	31.8	**	33.7	**	36.2
Seated CG (from back)	9	12.5	1.2	10.6	**	12.2	**	14.1
Seated CG (% Butt-Knee)	9	41.3	4.8	34.6	**	40.6	**	47.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	110	16.2	2.2	11.4	13.0	16.0	19.4	23.8
Stature	110	101.6	4.6	91.1	93.9	101.7	108.7	114.1
Vertical Grip Reach	33	117.8	6.0	108.6	108.9	118.1	127.6	129.5
Frontal Grip Reach	34	43.7	3.5	38.9	39.0	43.1	49.8	51.4
Lateral Grip Reach	32	56.7	3.8	50.6	50.7	56.8	62.4	67.0
Step Height	32	39.9	7.0	30.5	31.0	38.0	52.8	54.1
Supine Stature	6	104.8	5.6	94.8	**	104.5	**	111.5
Standing CG (from feet)	6	60.2	3.2	54.9	**	60.0	**	64.0
Standing CG (% Stature)	6	57.5	0.6	56.7	**	57.4	**	58.4
Erect Sitting Height	108	57.3	2.6	50.5	53.3	57.2	61.4	65.4
Eye Height (Sitting)	40	46.4	3.1	38.5	39.8	46.0	51.5	52.9
Max Hip Breadth (Seated)	109	20.0	1.3	17.2	17.9	19.9	22.2	23.9
Maximum Thigh Breadth	34	19.9	1.3	17.0	17.3	20.0	21.7	22.3
Thigh Clearence	40	8.4	1.2	5.7	6.2	8.3	10.1	11.6
Buttock-Knee Length	108	31.9	2.1	28.4	28.8	31.7	35.5	38.8
Knee Height	97	30.0	2.0	25.5	26.7	30.0	33.0	35.2
Supine Sitting Height	6	60.3	2.9	55.2	**	60.9	**	64.0
Seated CG (above seat)	6	19.7	0.7	18.8	**	19.7	**	20.7
Seated CG (% Sit Hgt)	6	32.8	0.7	32.1	**	32.4	**	34.1
Seated CG (from back)	5	13.6	0.3	13.2	**	13.4	**	13.9
Seated CG (% Butt-Knee)	5	42.6	2.6	39.7	**	41.6	**	46.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	127	18.2	2.6	14.0	14.9	17.7	21.6	36.0
Stature	127	108.0	4.6	98.2	100.5	108.0	116.0	118.6
Vertical Grip Reach	39	125.4	6.9	110.2	111.7	125.6	137.0	141.1
Frontal Grip Reach	39	45.5	3.7	38.0	39.6	45.2	53.1	55.3
Lateral Grip Reach	38	59.7	3.6	52.3	52.6	59.3	64.3	72.1
Step Height	41	42.7	5.8	31.3	31.8	42.8	52.0	53.7
Supine Stature	16	112.4	4.3	106.7	**	112.0	**	119.5
Standing CG (from feet)	16	64.3	2.4	60.5	**	63.9	**	69.0
Standing CG (% Stature)	16	57.2	0.7	55.9	**	57.0	**	58.3
Erect Sitting Height	125	60.0	2.6	53.8	55.7	59.8	63.9	65.9
Eye Height (Sitting)	34	49.4	2.6	41.5	43.9	49.9	52.9	53.1
Max Hip Breadth (Seated)	118	20.9	1.3	17.3	18.5	20.7	23.2	24.5
Maximum Thigh Breadth	32	21.0	1.3	18.9	19.0	20.7	23.0	24.8
Thigh Clearence	34	8.8	1.2	6.0	6.1	8.9	10.2	11.3
Buttock-Knee Length	126	34.2	1.9	29.7	31.2	34.1	37.1	41.2
Knee Height	106	32.3	2.0	28.2	29.1	32.2	35.7	38.2
Supine Sitting Height	16	63.1	2.7	57.0	**	63.0	**	68.0
Seated CG (above seat)	16	20.4	0.9	19.2	**	20.2	**	22.2
Seated CG (% Sit Hgt)	16	32.3	1.2	29.9	**	32.1	**	34.3
Seated CG (from back)	15	14.6	1.7	12.5	**	14.4	**	19.1
Seated CG (% Butt-Knee)	15	42.4	4.9	33.3	**	42.2	**	55.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	126	20.2	2.9	13.1	15.7	19.9	24.6	29.9
Stature	125	114.2	5.1	96.5	104.9	114.3	121.7	128.7
Vertical Grip Reach	34	134.8	6.4	118.4	122.2	134.5	144.3	148.9
Frontal Grip Reach	34	47.9	3.0	41.6	42.1	47.5	52.3	55.1
Lateral Grip Reach	34	62.9	3.3	55.3	56.1	63.3	67.2	68.5
Step Height	32	49.0	5.3	39.6	39.7	49.0	56.7	59.9
Supine Stature	32	114.8	6.0	98.2	102.2	115.3	122.6	122.8
Standing CG (from feet)	32	65.1	3.1	56.5	58.7	65.3	69.3	69.5
Standing CG (% Stature)	32	56.7	1.0	53.5	54.5	56.6	57.9	58.1
Erect Sitting Height	125	63.2	2.8	53.2	57.9	63.2	67.4	71.7
Eye Height (Sitting)	41	52.1	3.2	43.2	45.2	52.2	56.8	60.2
Max Hip Breadth (Seated)	108	21.6	1.6	18.2	18.9	21.3	23.7	27.7
Maximum Thigh Breadth	38	22.1	1.9	18.6	18.6	22.0	24.2	27.2
Thigh Clearence	41	9.7	1.1	7.6	7.7	9.5	11.4	12.4
Buttock-Knee Length	124	36.1	2.3	27.5	31.8	36.0	39.0	42.3
Knee Height	107	34.6	1.9	29.6	31.6	34.4	37.7	39.2
Supine Sitting Height	31	63.9	3.3	55.2	57.3	63.7	68.5	69.6
Seated CG (above seat)	31	20.1	1.1	18.0	18.3	20.0	21.8	22.8
Seated CG (% Sit Hgt)	31	31.6	1.7	28.4	28.6	31.4	34.1	34.5
Seated CG (from back)	30	14.7	1.9	10.4	10.5	14.8	17.8	18.2
Seated CG (% Butt-Knee)	30	41.8	4.7	32.7	32.7	41.0	47.8	52.4

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	125	23.4	4.3	15.4	17.5	22.8	31.2	43.6
Stature	122	120.5	5.7	106.3	110.5	120.4	129.6	133.6
Vertical Grip Reach	38	144.3	8.3	128.3	130.2	143.7	159.0	164.2
Frontal Grip Reach	41	50.1	2.9	43.2	44.7	50.0	55.1	56.0
Lateral Grip Reach	40	66.4	4.1	60.1	60.3	66.1	73.2	75.5
Step Height	41	50.3	7.7	33.8	36.2	48.9	61.4	69.2
Supine Stature	26	121.2	5.4	111.7	112.2	119.7	129.4	135.3
Standing CG (from feet)	26	69.0	2.9	64.3	64.4	68.2	73.1	76.3
Standing CG (% Stature)	26	56.9	0.7	55.8	55.8	56.9	57.9	58.2
Erect Sitting Height	125	65.4	3.1	59.1	60.1	65.4	70.7	73.5
Eye Height (Sitting)	46	54.4	2.9	49.7	49.8	54.1	60.6	62.2
Max Hip Breadth (Seated)	121	22.9	2.1	18.2	20.0	22.5	26.6	30.2
Maximum Thigh Breadth	46	23.3	2.4	18.0	20.0	22.6	28.0	30.2
Thigh Clearence	44	10.0	1.1	7.2	8.1	9.9	11.7	12.7
Buttock-Knee Length	124	39.2	2.6	33.1	34.8	38.8	43.6	48.1
Knee Height	115	36.9	2.2	31.0	33.1	36.6	40.7	43.6
Supine Sitting Height	26	65.9	3.4	59.8	60.0	65.8	71.1	75.4
Seated CG (above seat)	26	19.9	1.2	17.1	17.4	19.7	21.6	22.3
Seated CG (% Sit Hgt)	26	30.2	1.5	27.9	27.9	30.2	32.7	33.2
Seated CG (from back)	24	15.3	1.5	12.8	12.8	15.2	17.7	18.8
Seated CG (% Butt-Knee)	24	39.8	3.1	33.6	33.6	39.3	43.5	47.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	93	26.2	5.5	17.6	19.4	25.1	37.0	54.2
Stature	94	125.9	5.5	111.5	116.4	125.8	134.5	140.6
Vertical Grip Reach	31	149.6	6.6	132.0	134.9	150.1	157.2	163.4
Frontal Grip Reach	32	52.2	2.6	46.5	47.3	52.5	55.4	56.5
Lateral Grip Reach	32	69.1	3.9	61.7	62.1	69.0	74.2	75.4
Step Height	31	50.6	5.6	40.7	41.2	51.4	57.8	64.6
Supine Stature	19	125.8	4.6	116.1	**	125.2	**	137.5
Standing CG (from feet)	19	71.4	2.4	66.9	**	71.0	**	77.0
Standing CG (% Stature)	19	56.7	1.0	55.0	**	56.7	**	58.9
Erect Sitting Height	94	67.7	2.7	59.7	63.1	67.6	72.1	75.6
Eye Height (Sitting)	32	57.3	3.1	51.6	51.9	57.0	62.4	63.3
Max Hip Breadth (Seated)	93	24.3	2.2	19.6	21.6	23.9	28.1	32.6
Maximum Thigh Breadth	30	25.2	2.7	21.2	21.5	24.4	30.0	34.5
Thigh Clearence	32	10.9	1.4	8.8	9.2	10.5	12.9	15.5
Buttock-Knee Length	94	41.3	2.4	35.7	37.4	41.0	45.3	48.2
Knee Height	92	38.8	2.2	34.7	35.3	38.8	42.4	46.4
Supine Sitting Height	18	68.5	2.6	64.4	**	68.5	**	75.4
Seated CG (above seat)	18	20.1	0.8	18.5	**	20.1	**	21.6
Seated CG (% Sit Hgt)	18	29.3	1.4	27.1	**	29.3	**	32.1
Seated CG (from back)	17	16.9	1.6	14.0	**	16.7	**	19.6
Seated CG (% Butt-Knee)	17	41.7	4.6	35.3	**	40.1	**	51.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	140	29.6	5.9	20.0	22.5	28.2	40.4	60.0
Stature	140	132.7	5.9	117.8	124.1	132.3	142.2	150.3
Vertical Grip Reach	48	160.2	8.5	141.4	146.2	160.2	174.0	178.9
Frontal Grip Reach	47	55.2	4.0	49.0	49.1	55.6	61.6	65.9
Lateral Grip Reach	46	73.6	4.3	66.3	66.9	73.7	79.4	86.9
Step Height	48	55.7	6.4	43.6	44.4	56.1	66.3	69.9
Supine Stature	30	132.6	6.0	123.0	124.2	130.1	140.9	151.4
Standing CG (from feet)	30	74.9	3.2	70.1	70.5	73.5	79.7	82.8
Standing CG (% Stature)	30	56.5	0.7	54.7	54.9	56.4	57.6	57.9
Erect Sitting Height	137	70.2	2.8	63.6	65.6	70.2	74.9	78.5
Eye Height (Sitting)	48	59.8	3.0	53.1	54.1	60.0	64.7	65.9
Max Hip Breadth (Seated)	137	25.3	2.3	19.6	21.7	24.9	29.4	34.0
Maximum Thigh Breadth	49	26.2	2.7	20.1	21.3	25.7	30.6	31.0
Thigh Clearence	49	11.6	1.2	8.8	9.2	11.3	13.5	13.8
Buttock-Knee Length	140	44.0	2.6	39.7	40.2	43.3	48.9	51.6
Knee Height	135	41.5	2.4	36.3	37.8	41.1	45.5	48.7
Supine Sitting Height	30	70.8	2.9	66.0	66.5	70.1	75.4	79.2
Seated CG (above seat)	30	20.3	1.0	18.2	18.4	20.2	21.4	23.3
Seated CG (% Sit Hgt)	30	28.7	1.2	25.9	26.1	28.7	30.3	30.9
Seated CG (from back)	28	17.5	2.0	14.4	14.5	17.3	21.0	21.7
Seated CG (% Butt-Knee)	28	40.2	3.5	33.5	33.8	40.5	45.0	47.4

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	134	32.6	6.5	22.2	24.2	31.9	42.2	69.0
Stature	134	137.5	6.2	120.1	127.0	137.3	147.8	159.0
Vertical Grip Reach	38	167.6	8.4	152.1	153.8	167.2	182.2	186.2
Frontal Grip Reach	37	57.6	3.6	52.5	52.5	56.5	64.2	66.0
Lateral Grip Reach	37	75.7	4.6	69.4	70.1	74.7	84.4	88.3
Step Height	38	57.0	7.9	39.8	43.9	56.2	71.3	73.0
Supine Stature	22	138.2	5.2	128.8	129.1	137.3	146.8	149.0
Standing CG (from feet)	22	77.4	3.2	72.9	72.9	76.6	82.2	85.4
Standing CG (% Stature)	22	56.0	0.8	54.3	54.3	56.0	57.3	57.5
Erect Sitting Height	134	71.9	3.1	65.1	66.6	71.9	76.4	81.6
Eye Height (Sitting)	45	60.7	3.0	55.0	55.2	60.8	65.0	67.1
Max Hip Breadth (Seated)	129	26.4	2.5	21.8	22.7	26.3	29.7	37.5
Maximum Thigh Breadth	45	26.8	3.4	22.0	22.4	26.8	31.2	38.9
Thigh Clearence	45	11.8	1.5	9.6	9.8	11.4	14.2	16.5
Buttock-Knee Length	134	46.1	2.9	39.3	41.6	46.0	51.2	53.4
Knee Height	128	43.3	2.4	37.6	39.5	43.3	47.6	51.1
Supine Sitting Height	21	73.3	3.3	67.6	67.7	72.4	79.2	80.0
Seated CG (above seat)	20	20.2	1.3	18.0	**	20.2	**	23.5
Seated CG (% Sit Hgt)	20	27.6	1.2	25.3	**	27.7	**	29.7
Seated CG (from back)	20	18.8	1.8	15.9	**	18.4	**	22.6
Seated CG (% Butt-Knee)	20	41.5	2.7	36.1	**	40.7	**	46.5

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	140	37.7	9.1	20.7	26.5	35.5	55.0	80.0
Stature	140	144.2	7.6	122.0	133.0	144.0	156.3	161.1
Vertical Grip Reach	46	177.4	11.0	153.6	156.4	177.6	194.7	196.6
Frontal Grip Reach	46	60.7	4.1	52.8	54.4	60.7	67.1	69.5
Lateral Grip Reach	46	80.7	5.6	69.0	72.5	80.2	88.7	92.8
Step Height	48	60.7	8.3	44.4	46.8	60.0	74.9	79.5
Supine Stature	27	146.7	7.0	134.3	134.5	147.2	155.5	160.0
Standing CG (from feet)	27	82.0	4.2	74.8	74.8	83.0	87.7	88.7
Standing CG (% Stature)	27	55.9	0.8	54.7	54.8	55.8	57.3	57.6
Erect Sitting Height	137	74.8	3.8	65.2	69.3	74.8	81.1	84.6
Eye Height (Sitting)	44	63.8	3.8	57.1	57.7	63.2	69.9	73.2
Max Hip Breadth (Seated)	139	27.8	3.2	22.1	23.1	27.2	33.3	44.6
Maximum Thigh Breadth	44	28.1	4.1	21.9	22.5	27.5	32.4	45.2
Thigh Clearence	44	12.3	1.6	9.2	10.0	12.1	14.1	17.6
Buttock-Knee Length	138	48.8	3.5	40.3	43.2	48.5	54.8	59.8
Knee Height	139	45.7	3.0	37.9	41.2	45.5	50.6	53.3
Supine Sitting Height	26	77.3	3.6	70.8	71.2	77.5	82.3	86.4
Seated CG (above seat)	27	20.9	1.3	18.0	18.2	20.4	23.3	23.4
Seated CG (% Sit Hgt)	26	26.9	1.8	23.4	23.8	26.9	28.8	32.0
Seated CG (from back)	26	20.7	2.1	17.1	17.1	20.4	23.7	24.9
Seated CG (% Butt-Knee)	26	41.9	3.4	36.5	36.5	41.2	46.9	47.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	133	40.8	8.2	26.1	28.3	40.0	54.6	65.5
Stature	133	149.3	7.0	133.3	137.3	149.3	159.9	169.0
Vertical Grip Reach	42	181.5	9.6	162.3	165.2	183.2	196.6	200.8
Frontal Grip Reach	39	61.8	3.7	52.1	55.4	61.7	67.0	67.7
Lateral Grip Reach	39	82.1	4.5	69.9	73.8	82.5	88.3	89.9
Step Height	41	60.5	8.0	45.1	46.1	59.0	73.3	79.1
Supine Stature	24	150.6	8.3	134.3	135.3	151.1	161.6	161.8
Standing CG (from feet)	24	84.3	4.4	75.1	75.5	84.0	90.7	90.9
Standing CG (% Stature)	24	56.0	0.6	54.5	54.5	56.0	56.6	56.8
Erect Sitting Height	132	77.1	3.8	68.0	71.1	77.2	83.5	87.1
Eye Height (Sitting)	42	65.4	3.5	58.7	59.9	64.9	70.2	76.7
Max Hip Breadth (Seated)	133	29.2	3.1	23.9	24.3	28.8	34.4	38.8
Maximum Thigh Breadth	40	29.2	3.7	23.8	23.8	28.6	34.7	40.2
Thigh Clearence	42	12.7	1.4	10.5	10.6	12.5	15.4	16.2
Buttock-Knee Length	133	50.8	3.3	43.6	45.5	51.0	55.9	60.8
Knee Height	133	47.2	2.6	41.8	43.1	47.2	51.3	56.7
Supine Sitting Height	24	80.0	4.9	70.4	70.6	79.2	87.9	88.3
Seated CG (above seat)	24	21.6	1.4	19.2	19.4	21.3	24.1	24.7
Seated CG (% Sit Hgt)	24	27.1	1.1	24.8	24.9	26.8	28.9	29.1
Seated CG (from back)	22	20.3	2.1	16.8	16.8	19.9	23.3	25.1
Seated CG (% Butt-Knee)	22	40.5	1.9	36.7	36.7	40.4	43.2	44.9

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	161	46.1	8.5	26.5	34.1	44.8	59.7	77.8
Stature	161	155.1	7.0	134.1	142.0	155.6	165.7	169.6
Vertical Grip Reach	48	190.6	10.2	170.2	172.7	188.7	208.0	217.5
Frontal Grip Reach	47	64.5	4.2	56.9	57.3	64.0	70.8	74.2
Lateral Grip Reach	47	86.3	5.1	75.3	78.2	85.7	94.7	98.9
Step Height	48	62.8	7.6	47.0	49.8	61.8	75.3	81.0
Supine Stature	31	157.1	7.7	141.5	141.7	156.2	169.1	173.4
Standing CG (from feet)	31	87.1	4.1	79.0	80.2	87.2	93.9	96.1
Standing CG (% Stature)	31	55.5	0.7	54.2	54.3	55.4	56.5	57.3
Erect Sitting Height	160	80.6	4.1	70.1	72.5	80.9	86.6	90.9
Eye Height (Sitting)	49	69.2	3.6	60.7	61.7	69.6	74.8	75.5
Max Hip Breadth (Seated)	159	31.0	3.1	24.6	26.5	30.6	36.0	41.7
Maximum Thigh Breadth	45	31.8	3.5	26.1	26.5	31.5	37.9	42.5
Thigh Clearence	49	13.2	1.6	10.8	10.9	12.8	15.7	16.8
Buttock-Knee Length	160	52.9	3.0	45.6	48.0	52.6	57.6	62.1
Knee Height	160	48.5	2.5	41.2	44.4	48.4	52.4	54.8
Supine Sitting Height	30	84.8	5.0	73.9	75.5	85.2	91.5	94.6
Seated CG (above seat)	31	22.5	1.7	19.7	19.8	22.2	24.7	27.9
Seated CG (% Sit Hgt)	30	26.6	1.3	23.7	23.9	26.7	27.9	30.7
Seated CG (from back)	30	21.7	2.1	18.2	18.7	21.4	25.3	27.8
Seated CG (% Butt-Knee)	30	41.0	3.3	34.3	34.9	40.9	46.5	49.4

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	116	49.5	8.5	34.9	36.8	49.0	66.0	71.0
Stature	116	158.4	7.0	135.4	146.8	158.2	169.0	174.3
Vertical Grip Reach	29	191.9	11.6	166.8	167.9	191.1	211.0	212.8
Frontal Grip Reach	29	65.1	3.7	57.4	57.9	64.7	72.1	73.2
Lateral Grip Reach	29	87.7	4.5	78.7	79.8	87.4	94.8	95.9
Step Height	27	65.1	6.6	51.2	52.1	65.4	75.5	75.9
Supine Stature	22	161.1	8.2	136.5	138.0	161.0	171.4	177.0
Standing CG (from feet)	22	89.2	4.5	75.1	76.1	88.7	95.3	96.7
Standing CG (% Stature)	22	55.4	0.7	54.5	54.5	55.0	56.4	56.5
Erect Sitting Height	116	82.5	3.8	72.6	75.9	82.4	88.3	91.0
Eye Height (Sitting)	41	71.1	3.8	63.7	63.7	71.1	77.2	78.0
Max Hip Breadth (Seated)	116	32.4	2.6	26.7	28.4	32.3	36.7	39.1
Maximum Thigh Breadth	39	32.9	3.3	24.8	26.8	32.8	38.8	39.4
Thigh Clearence	41	13.8	1.2	11.1	11.6	13.6	15.4	16.8
Buttock-Knee Length	116	54.1	3.0	46.5	49.3	53.8	59.0	62.5
Knee Height	115	49.3	2.7	42.1	44.9	49.5	53.6	56.3
Supine Sitting Height	21	85.8	4.7	73.6	73.8	85.4	92.3	93.9
Seated CG (above seat)	21	22.5	1.1	19.9	19.9	22.4	24.1	24.7
Seated CG (% Sit Hgt)	21	26.3	0.9	24.3	24.3	26.3	27.4	28.0
Seated CG (from back)	21	22.2	2.1	16.7	16.8	22.3	24.5	25.6
Seated CG (% Butt-Knee)	21	41.1	2.8	32.7	33.0	41.2	45.2	45.7

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	133	53.5	8.2	32.7	40.5	52.7	67.2	91.0
Stature	133	162.0	6.4	143.2	152.3	161.3	172.4	181.6
Vertical Grip Reach	48	197.3	8.9	180.9	182.4	196.8	211.9	220.3
Frontal Grip Reach	48	66.7	3.7	59.2	60.6	67.0	72.6	74.6
Lateral Grip Reach	48	90.3	4.0	80.0	84.3	89.5	97.3	99.6
Step Height	49	61.6	8.6	45.6	47.8	62.9	73.4	77.1
Supine Stature	27	163.9	6.8	152.2	152.5	163.0	174.6	176.5
Standing CG (from feet)	27	90.8	3.9	84.0	84.3	89.9	97.6	99.2
Standing CG (% Stature)	27	55.4	0.8	54.2	54.3	55.3	56.9	57.4
Erect Sitting Height	131	84.8	3.6	75.5	79.1	84.6	90.0	93.7
Eye Height (Sitting)	39	74.0	3.7	66.1	67.9	73.9	79.6	82.3
Max Hip Breadth (Seated)	131	33.6	2.7	26.6	29.8	33.4	37.9	44.8
Maximum Thigh Breadth	39	34.2	3.2	26.3	28.4	33.8	39.5	40.9
Thigh Clearence	39	14.0	1.6	10.6	11.1	14.1	16.6	17.0
Buttock-Knee Length	132	55.5	2.8	48.9	51.5	55.1	60.7	63.0
Knee Height	132	50.0	2.7	43.6	45.9	49.6	55.0	57.3
Supine Sitting Height	27	88.0	4.0	82.4	82.4	87.1	95.4	97.0
Seated CG (above seat)	27	23.1	1.2	20.8	20.8	23.2	25.2	25.7
Seated CG (% Sit Hgt)	27	26.3	1.0	24.1	24.3	26.0	28.1	28.3
Seated CG (from back)	27	22.8	1.9	19.7	19.8	22.7	26.0	26.4
Seated CG (% Butt-Knee)	27	40.9	2.3	36.5	36.5	40.6	44.7	45.0

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	98	55.1	7.9	41.4	43.0	53.3	70.7	74.8
Stature	98	162.1	6.1	147.1	153.2	161.2	172.6	179.5
Vertical Grip Reach	32	197.3	9.5	178.4	180.7	194.5	211.7	221.3
Frontal Grip Reach	32	66.8	4.3	58.8	59.7	66.1	74.4	75.3
Lateral Grip Reach	32	90.3	4.0	81.5	83.2	90.8	96.8	99.0
Step Height	31	64.5	7.5	51.6	51.8	64.3	77.5	79.3
Supine Stature	22	165.1	6.3	154.1	154.2	163.8	174.3	176.2
Standing CG (from feet)	22	91.9	3.7	86.0	86.1	90.9	97.5	97.6
Standing CG (% Stature)	22	55.7	1.0	54.1	54.1	55.5	57.3	57.8
Erect Sitting Height	98	85.4	3.2	77.2	79.1	86.0	89.8	91.7
Eye Height (Sitting)	41	73.9	3.0	66.3	67.7	74.4	77.9	79.0
Max Hip Breadth (Seated)	98	34.1	2.3	29.6	30.6	33.8	38.5	41.2
Maximum Thigh Breadth	40	34.3	2.7	28.9	29.4	33.9	39.3	41.7
Thigh Clearence	41	14.4	1.2	11.9	12.3	14.0	16.5	17.2
Buttock-Knee Length	97	55.2	2.7	48.6	51.1	54.5	59.8	61.0
Knee Height	98	49.8	2.6	44.3	46.0	49.3	54.6	56.8
Supine Sitting Height	22	88.6	3.3	82.7	82.9	87.5	93.8	94.7
Seated CG (above seat)	22	23.6	2.0	20.1	20.1	23.2	26.0	29.7
Seated CG (% Sit Hgt)	22	26.6	1.9	23.8	23.8	26.4	29.6	31.8
Seated CG (from back)	21	23.6	1.5	21.4	21.4	23.4	25.5	26.8
Seated CG (% Butt-Knee)	21	42.2	2.1	39.0	39.0	41.9	45.7	47.3

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	117	55.9	8.6	36.4	41.9	54.2	73.6	84.1
Stature	117	162.5	5.9	149.1	152.3	162.6	171.6	177.7
Vertical Grip Reach	36	198.1	7.3	181.6	184.4	197.3	207.9	212.0
Frontal Grip Reach	36	67.6	3.8	59.6	60.8	67.7	73.4	75.5
Lateral Grip Reach	36	91.1	3.9	81.9	83.9	91.2	96.4	96.5
Step Height	36	65.5	7.6	52.8	53.0	64.5	78.3	82.0
Supine Stature	19	164.7	4.0	157.0	**	164.4	**	175.2
Standing CG (from feet)	19	91.3	2.5	85.8	**	91.7	**	95.8
Standing CG (% Stature)	19	55.4	0.8	54.3	**	55.2	**	57.0
Erect Sitting Height	117	85.9	3.3	74.8	80.7	85.5	91.3	93.4
Eye Height (Sitting)	38	74.3	3.2	67.5	68.3	73.6	79.0	79.5
Max Hip Breadth (Seated)	116	34.7	2.7	26.7	30.6	34.4	39.8	43.8
Maximum Thigh Breadth	39	34.8	2.7	30.0	30.3	34.5	39.4	40.7
Thigh Clearence	39	14.2	1.6	10.8	11.8	13.7	17.4	19.1
Buttock-Knee Length	116	55.3	2.6	49.4	50.9	55.1	59.6	61.8
Knee Height	117	49.6	2.6	41.6	45.1	49.6	53.8	55.2
Supine Sitting Height	18	90.5	3.0	83.8	**	90.9	**	95.5
Seated CG (above seat)	18	24.5	1.2	22.1	**	25.0	**	25.8
Seated CG (% Sit Hgt)	18	27.1	0.9	24.7	**	27.1	**	28.2
Seated CG (from back)	17	22.8	1.2	20.8	**	22.3	**	25.0
Seated CG (% Butt-Knee)	17	40.9	1.9	37.3	**	40.5	**	45.4

WEIGHT, STATURE, STANDING, AND SITTING MEASUREMENTS
(Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	68	55.9	8.4	41.4	43.8	53.9	72.7	77.3
Stature	68	163.0	5.9	149.9	153.0	163.0	172.7	181.3
Vertical Grip Reach	22	197.5	7.1	188.4	188.4	196.4	205.6	218.6
Frontal Grip Reach	22	67.0	3.3	62.8	62.8	66.5	73.4	75.2
Lateral Grip Reach	21	90.4	3.7	82.7	82.8	90.6	96.7	98.0
Step Height	21	64.6	6.6	53.4	53.5	65.5	74.8	75.4
Supine Stature	13	165.2	6.6	157.7	**	163.1	**	183.6
Standing CG (from feet)	13	91.6	4.2	87.2	**	90.0	**	101.7
Standing CG (% Stature)	13	55.5	0.9	54.2	**	55.3	**	57.9
Erect Sitting Height	68	86.3	3.1	78.9	80.7	86.5	91.0	93.0
Eye Height (Sitting)	25	74.8	3.4	67.9	68.4	75.4	79.8	80.1
Max Hip Breadth (Seated)	68	34.9	2.8	31.0	31.8	34.3	40.3	43.2
Maximum Thigh Breadth	25	36.2	3.7	31.4	31.5	34.8	42.3	42.8
Thigh Clearence	25	14.5	1.5	11.1	11.4	14.4	16.6	17.2
Buttock-Knee Length	68	55.4	2.6	49.4	51.3	55.0	59.9	61.8
Knee Height	68	49.8	2.4	44.4	46.1	49.5	53.8	56.5
Supine Sitting Height	13	88.9	3.4	83.8	**	88.0	**	96.3
Seated CG (above seat)	13	23.8	1.7	21.4	**	23.3	**	26.7
Seated CG (% Sit Hgt)	13	26.8	1.5	24.8	**	26.3	**	29.3
Seated CG (from back)	13	22.9	1.2	20.7	**	22.6	**	24.7
Seated CG (% Butt-Knee)	13	41.3	1.9	38.2	**	40.9	**	44.7

HEAD, FACE, AND NECK MEASUREMENTS

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	211	49.5	1.7	45.2	46.5	49.5	52.2	53.9
Head Breadth	210	13.4	0.6	11.9	12.5	13.4	14.4	15.0
Head Length	67	17.5	0.7	15.8	16.1	17.4	18.4	19.0
Bizygomatic Breadth	77	10.8	0.5	9.8	9.9	10.7	11.7	12.0
Frontal Breadth	77	8.3	0.6	6.8	7.3	8.1	9.2	9.6
Lower Face Height	76	8.1	0.5	6.9	7.3	8.1	8.9	9.2
Face Height	75	14.2	0.8	11.8	12.6	14.2	15.4	16.1
Head Height	73	17.3	1.0	14.8	15.7	17.3	19.0	19.7
Tragion to Back of Head	76	9.2	1.0	6.2	7.6	9.2	10.8	11.4
Tragion to Top of Head	75	11.4	0.7	9.9	10.2	11.1	12.8	13.0
Ear-Sellion Depth	74	8.0	0.7	6.3	6.7	8.0	9.0	9.5
Bitragion Breadth	71	10.4	0.5	9.5	9.5	10.3	11.2	11.4
Mouth Breadth	75	3.3	0.4	2.6	2.7	3.2	3.8	4.0
Nose Length	77	2.9	0.3	2.2	2.3	2.9	3.3	3.7
Neck Circumference	66	23.8	1.2	20.0	21.5	23.9	25.5	25.9
Lateral Neck Breadth	66	7.1	0.6	5.7	6.1	7.0	8.0	8.3

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	226	50.2	1.4	46.2	47.7	50.1	52.7	54.4
Head Breadth	225	13.7	0.6	12.4	12.8	13.6	14.5	17.9
Head Length	75	17.9	0.6	16.4	16.8	17.9	18.9	19.7
Bizygomatic Breadth	71	11.2	0.6	9.5	10.2	11.1	12.1	12.6
Frontal Breadth	71	8.5	0.8	6.2	6.9	8.4	9.5	10.0
Lower Face Height	70	8.5	0.5	7.5	7.7	8.5	9.2	10.0
Face Height	71	14.7	0.9	12.5	13.1	14.6	16.0	16.9
Head Height	70	17.9	0.9	16.2	16.5	17.7	19.3	20.4
Tragion to Back of Head	71	8.9	1.0	6.5	7.1	8.8	10.5	11.3
Tragion to Top of Head	70	11.7	0.6	10.3	10.5	11.6	12.7	13.0
Ear-Sellion Depth	71	8.4	0.7	7.0	7.2	8.3	9.7	9.9
Bitragion Breadth	71	10.7	0.4	9.6	10.0	10.6	11.4	11.7
Mouth Breadth	71	3.4	0.4	2.5	2.8	3.4	3.9	4.2
Nose Length	71	3.2	0.3	2.4	2.7	3.1	3.7	3.9
Neck Circumference	78	24.3	1.4	21.3	21.8	24.2	26.3	27.2
Lateral Neck Breadth	76	7.5	0.5	6.5	6.6	7.5	8.3	8.6

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	262	50.7	1.5	46.6	48.2	50.7	53.4	55.2
Head Breadth	257	13.8	0.5	12.5	13.1	13.7	14.7	15.6
Head Length	90	18.1	0.8	15.2	16.6	18.1	19.2	19.9
Bizygomatic Breadth	94	11.3	0.6	9.5	10.4	11.2	12.4	13.3
Frontal Breadth	94	8.6	0.8	6.6	7.0	8.6	9.7	10.5
Lower Face Height	93	8.7	0.5	7.5	7.9	8.6	9.6	9.8
Face Height	93	14.7	1.0	12.6	13.1	14.5	16.1	17.5
Head Height	93	17.9	0.8	16.4	16.6	17.8	19.0	20.2
Tragion to Back of Head	93	9.0	0.9	7.0	7.6	8.9	10.4	11.4
Tragion to Top of Head	93	11.6	0.8	9.6	10.4	11.5	12.9	13.6
Ear-Sellion Depth	93	8.6	0.7	6.3	7.5	8.6	9.6	10.3
Bitragion Breadth	94	10.9	0.5	10.0	10.1	10.8	11.8	12.9
Mouth Breadth	94	3.6	0.4	2.6	3.0	3.5	4.1	4.5
Nose Length	94	3.4	0.3	2.5	2.7	3.3	3.8	3.9
Neck Circumference	93	25.0	1.4	20.3	22.8	24.8	27.1	28.9
Lateral Neck Breadth	91	7.7	0.6	6.2	6.6	7.7	8.8	9.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	219	51.1	1.6	47.1	48.5	51.0	53.7	57.2
Head Breadth	219	13.9	0.5	12.7	13.1	13.9	14.8	15.9
Head Length	80	18.2	0.7	16.6	16.7	18.1	19.0	20.4
Bizygomatic Breadth	62	11.6	0.6	10.3	10.4	11.5	12.3	12.6
Frontal Breadth	62	8.8	0.7	6.9	7.5	8.8	9.7	10.5
Lower Face Height	62	8.9	0.5	7.7	8.0	8.9	9.6	10.1
Face Height	61	15.1	0.9	13.0	13.3	15.1	16.5	16.7
Head Height	62	18.4	1.0	15.9	16.5	18.4	19.7	21.2
Tragion to Back of Head	62	9.0	0.9	6.3	7.3	9.0	10.3	11.0
Tragion to Top of Head	62	11.6	0.8	9.9	10.2	11.6	12.9	13.4
Ear-Sellion Depth	62	8.8	0.7	7.4	7.6	8.6	9.8	10.9
Bitragion Breadth	61	11.1	0.5	10.2	10.3	11.1	11.8	12.3
Mouth Breadth	62	3.7	0.4	2.8	3.0	3.6	4.3	4.5
Nose Length	61	3.5	0.4	2.7	2.8	3.4	4.0	4.2
Neck Circumference	80	25.7	1.4	23.0	23.4	25.6	27.9	30.2
Lateral Neck Breadth	79	7.9	0.7	6.5	6.6	7.8	8.9	9.5

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	224	51.5	1.6	47.5	48.7	51.3	53.9	56.5
Head Breadth	222	14.1	0.5	12.7	13.3	14.0	15.0	15.7
Head Length	87	18.2	0.7	16.2	17.0	18.1	19.3	20.3
Bizygomatic Breadth	63	11.9	0.6	10.0	10.9	11.9	12.8	13.3
Frontal Breadth	63	9.1	0.7	7.2	7.8	9.1	10.2	10.5
Lower Face Height	63	9.2	0.6	8.1	8.3	9.1	10.2	10.4
Face Height	63	15.6	0.9	13.7	14.0	15.5	17.0	17.6
Head Height	63	18.7	1.0	15.9	17.1	18.7	19.9	21.4
Tragion to Back of Head	63	9.3	0.9	7.1	7.6	9.3	10.5	11.8
Tragion to Top of Head	63	11.9	0.8	10.3	10.5	11.8	12.9	15.0
Ear-Sellion Depth	63	8.8	0.8	6.9	7.4	8.9	10.1	10.5
Bitragion Breadth	63	11.5	0.6	10.3	10.4	11.4	12.4	13.1
Mouth Breadth	63	3.8	0.4	3.0	3.1	3.8	4.4	4.5
Nose Length	63	3.7	0.4	3.2	3.2	3.5	4.4	4.6
Neck Circumference	84	26.1	1.5	22.7	23.8	26.0	27.9	32.5
Lateral Neck Breadth	86	7.9	0.7	6.5	6.7	8.0	9.2	9.9

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	188	52.2	1.6	47.8	49.5	52.1	54.8	56.8
Head Breadth	190	14.2	0.5	13.1	13.4	14.1	14.9	16.2
Head Length	67	18.6	0.5	17.7	17.8	18.4	19.6	19.9
Bizygomatic Breadth	60	11.9	0.5	10.9	11.0	11.8	12.9	13.9
Frontal Breadth	60	9.0	0.6	7.3	7.5	9.0	9.9	10.3
Lower Face Height	60	9.3	0.5	8.4	8.4	9.3	10.1	10.4
Face Height	60	15.6	0.9	13.5	13.6	15.7	16.8	18.3
Head Height	60	18.8	1.0	16.2	17.2	18.9	20.5	21.3
Tragion to Back of Head	59	9.3	0.8	7.1	7.7	9.2	10.5	11.0
Tragion to Top of Head	59	11.7	0.9	9.2	10.2	11.7	13.1	13.9
Ear-Sellion Depth	60	8.9	0.7	7.2	7.7	8.8	10.0	10.3
Bitragion Breadth	60	11.5	0.5	10.5	10.7	11.4	12.3	12.7
Mouth Breadth	60	3.9	0.4	2.8	3.3	3.9	4.4	4.9
Nose Length	60	3.7	0.3	2.8	3.0	3.7	4.2	4.5
Neck Circumference	68	27.1	1.8	23.2	24.3	26.8	29.7	33.6
Lateral Neck Breadth	68	8.3	0.6	7.0	7.1	8.1	9.3	10.2

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	250	52.3	1.6	48.0	49.4	52.4	54.5	58.2
Head Breadth	248	14.2	0.5	13.0	13.2	14.2	15.1	15.8
Head Length	90	18.6	0.7	16.0	17.2	18.6	19.4	20.1
Bizygomatic Breadth	79	12.1	0.5	10.8	11.1	12.0	12.9	13.4
Frontal Breadth	79	9.3	0.7	7.6	7.9	9.3	10.4	11.3
Lower Face Height	79	9.7	0.6	8.1	8.7	9.6	10.6	11.5
Face Height	79	15.9	1.1	13.4	14.0	15.8	17.5	19.0
Head Height	79	19.0	0.9	16.9	17.5	19.0	20.8	21.3
Tragion to Back of Head	79	9.2	0.9	6.7	7.9	9.2	10.6	13.1
Tragion to Top of Head	76	11.9	0.8	10.1	10.6	11.7	13.1	14.7
Ear-Sellion Depth	78	9.0	0.6	7.3	7.8	8.9	9.9	10.6
Bitragion Breadth	79	11.6	0.5	10.3	10.7	11.5	12.5	12.9
Mouth Breadth	79	4.0	0.4	3.3	3.4	3.9	4.7	4.9
Nose Length	79	4.0	0.3	3.4	3.4	3.9	4.5	4.9
Neck Circumference	91	27.7	1.7	23.7	25.4	27.5	30.4	32.6
Lateral Neck Breadth	91	8.3	0.7	6.7	7.2	8.3	9.2	10.3

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	249	52.8	1.6	48.8	49.8	52.8	55.2	57.2
Head Breadth	247	14.4	0.5	12.7	13.5	14.3	15.1	15.8
Head Length	82	18.6	0.6	17.4	17.6	18.5	19.6	20.0
Bizygomatic Breadth	92	12.2	0.5	11.1	11.3	12.1	13.0	13.8
Frontal Breadth	92	9.3	0.7	7.2	7.7	9.3	10.3	11.1
Lower Face Height	93	9.8	0.5	8.7	9.0	9.7	10.7	11.2
Face Height	93	16.2	0.8	14.6	15.1	16.1	17.7	18.0
Head Height	91	19.5	0.9	17.0	18.0	19.5	21.0	21.9
Tragion to Back of Head	92	9.3	0.8	7.7	7.9	9.3	10.6	12.6
Tragion to Top of Head	91	12.1	0.8	10.1	10.7	12.0	13.6	14.3
Ear-Sellion Depth	93	9.3	0.8	7.3	7.8	9.3	10.5	11.6
Bitragion Breadth	93	11.8	0.5	10.8	10.9	11.7	12.5	13.3
Mouth Breadth	93	4.0	0.4	3.1	3.3	3.9	4.7	5.2
Nose Length	93	4.1	0.3	3.3	3.6	4.0	4.6	5.1
Neck Circumference	85	27.9	1.9	23.8	24.7	27.8	31.4	33.0
Lateral Neck Breadth	84	8.4	0.7	7.0	7.3	8.4	9.6	9.8

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	280	53.2	1.7	48.6	50.3	53.0	56.2	58.2
Head Breadth	277	14.5	0.5	13.2	13.7	14.4	15.4	16.6
Head Length	84	18.6	0.6	17.2	17.5	18.6	19.7	20.8
Bizygomatic Breadth	98	12.4	0.6	10.9	11.3	12.4	13.3	14.4
Frontal Breadth	99	9.4	0.8	7.5	7.9	9.3	10.7	11.6
Lower Face Height	99	10.1	0.6	8.5	9.0	10.0	11.1	11.4
Face Height	99	16.5	0.9	14.1	14.9	16.5	18.0	18.6
Head Height	98	19.9	1.0	18.0	18.4	19.8	21.8	22.9
Tragion to Back of Head	97	9.3	0.9	6.9	7.8	9.3	10.7	12.4
Tragion to Top of Head	97	12.2	0.9	9.3	10.7	12.2	13.6	15.2
Ear-Sellion Depth	98	9.5	0.9	7.3	8.0	9.6	10.8	11.3
Bitragion Breadth	99	12.0	0.6	10.8	11.0	11.9	13.0	13.6
Mouth Breadth	99	4.1	0.5	3.3	3.4	4.1	4.9	5.6
Nose Length	98	4.2	0.4	3.4	3.6	4.2	4.9	5.3
Neck Circumference	83	28.3	1.8	25.1	25.9	28.0	30.8	36.1
Lateral Neck Breadth	85	8.7	0.8	7.1	7.3	8.6	9.8	11.5

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	285	53.5	1.7	48.5	50.7	53.3	56.2	59.1
Head Breadth	283	14.6	0.5	13.3	13.7	14.5	15.3	16.0
Head Length	95	18.8	0.7	16.8	17.4	18.8	19.7	19.9
Bizygomatic Breadth	94	12.6	0.6	11.2	11.7	12.4	13.6	14.0
Frontal Breadth	94	9.5	0.7	8.1	8.3	9.5	10.5	11.2
Lower Face Height	94	10.2	0.6	9.0	9.3	10.1	11.1	11.5
Face Height	94	16.7	0.9	14.9	15.3	16.6	18.3	18.8
Head Height	93	20.0	1.0	17.8	18.4	19.9	21.7	22.6
Tragion to Back of Head	93	9.2	1.0	7.1	7.5	9.1	10.6	12.7
Tragion to Top of Head	94	12.1	0.9	9.0	10.3	12.2	13.3	13.7
Ear-Sellion Depth	94	9.4	0.7	7.6	8.0	9.3	10.5	11.2
Bitragion Breadth	92	12.1	0.5	10.6	11.1	12.1	12.9	13.3
Mouth Breadth	94	4.2	0.4	2.9	3.6	4.1	4.9	5.5
Nose Length	94	4.3	0.4	3.4	3.7	4.3	4.8	5.3
Neck Circumference	97	29.4	1.7	25.9	26.9	29.2	32.1	33.5
Lateral Neck Breadth	97	8.8	0.8	7.1	7.4	8.7	10.0	11.2

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	311	54.0	1.7	48.1	51.1	53.9	57.0	60.0
Head Breadth	308	14.7	0.5	13.4	13.8	14.7	15.5	16.3
Head Length	107	18.9	0.7	15.7	17.7	18.8	20.0	20.7
Bizygomatic Breadth	107	12.7	0.6	11.4	11.8	12.7	13.7	14.2
Frontal Breadth	107	9.7	0.6	8.1	8.5	9.6	10.6	11.2
Lower Face Height	107	10.5	0.6	9.1	9.5	10.4	11.6	12.1
Face Height	107	17.0	0.9	14.8	15.3	16.9	18.4	18.9
Head Height	107	20.3	1.0	17.5	18.3	20.2	22.0	22.7
Tragion to Back of Head	107	9.3	0.8	6.1	7.7	9.4	10.4	10.8
Tragion to Top of Head	107	12.2	0.7	10.4	10.9	12.2	13.3	14.0
Ear-Sellion Depth	107	9.6	0.7	8.0	8.2	9.6	10.8	11.3
Bitragion Breadth	107	12.3	0.5	10.9	11.5	12.3	13.2	14.2
Mouth Breadth	107	4.2	0.4	3.2	3.5	4.1	4.9	5.3
Nose Length	106	4.4	0.3	3.5	3.9	4.4	4.9	5.2
Neck Circumference	108	30.0	1.7	26.6	27.7	29.7	33.1	34.8
Lateral Neck Breadth	104	9.1	0.8	7.4	7.7	9.1	10.2	11.0

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	271	54.5	1.8	50.2	51.7	54.3	57.6	60.7
Head Breadth	270	14.8	0.5	13.2	13.9	14.8	15.7	16.6
Head Length	89	19.1	0.7	17.7	18.0	19.1	20.3	20.7
Bizygomatic Breadth	98	13.0	0.6	11.5	11.8	13.0	13.8	14.3
Frontal Breadth	98	9.8	0.6	8.5	8.7	9.7	10.7	11.0
Lower Face Height	98	10.8	0.6	9.5	9.8	10.8	11.8	12.2
Face Height	96	17.3	1.0	15.2	15.5	17.2	18.7	19.6
Head Height	99	20.6	1.0	17.6	19.1	20.4	22.3	23.0
Tragion to Back of Head	98	9.2	0.9	6.1	7.4	9.2	10.4	12.6
Tragion to Top of Head	99	12.3	0.7	10.2	11.1	12.2	13.5	14.1
Ear-Sellion Depth	99	9.8	0.8	7.2	8.5	9.8	10.9	11.9
Bitragion Breadth	99	12.5	0.6	11.3	11.6	12.5	13.4	14.4
Mouth Breadth	99	4.4	0.5	3.4	3.6	4.3	5.2	6.3
Nose Length	98	4.7	0.4	3.8	3.9	4.6	5.3	6.0
Neck Circumference	90	31.3	2.1	26.5	28.1	31.2	34.8	35.6
Lateral Neck Breadth	88	9.4	0.9	7.5	7.8	9.3	10.8	12.9

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	261	54.9	1.8	50.5	52.1	54.8	57.9	60.7
Head Breadth	260	14.9	0.6	13.1	13.9	14.8	15.8	16.2
Head Length	80	19.2	0.7	17.7	18.0	19.2	20.1	20.6
Bizygomatic Breadth	95	13.1	0.5	11.6	12.3	13.0	14.0	14.5
Frontal Breadth	95	10.0	0.6	8.4	8.9	10.0	11.0	11.5
Lower Face Height	95	10.9	0.7	9.5	9.8	10.9	12.1	12.8
Face Height	94	17.3	1.1	14.1	15.3	17.2	19.1	19.9
Head Height	95	20.8	1.2	18.2	19.1	20.7	22.8	24.0
Tragion to Back of Head	94	9.3	0.9	7.5	8.0	9.3	10.7	11.8
Tragion to Top of Head	95	12.5	0.8	9.9	11.1	12.3	13.7	15.0
Ear-Sellion Depth	95	9.9	0.8	7.5	8.5	9.8	11.2	11.9
Bitragion Breadth	95	12.6	0.5	11.2	11.7	12.5	13.5	13.9
Mouth Breadth	95	4.5	0.4	3.2	3.8	4.5	5.0	5.3
Nose Length	95	4.8	0.4	3.8	3.9	4.7	5.5	5.7
Neck Circumference	81	31.8	2.0	28.2	28.5	31.7	35.4	36.3
Lateral Neck Breadth	80	9.4	0.8	7.7	8.1	9.2	10.6	11.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	196	55.4	2.1	50.7	52.3	55.4	58.7	60.9
Head Breadth	194	15.1	0.6	13.5	14.0	15.0	16.0	17.1
Head Length	78	19.2	0.8	17.3	18.1	19.3	20.6	21.0
Bizygomatic Breadth	56	13.4	0.6	12.2	12.4	13.3	14.3	15.3
Frontal Breadth	56	10.2	0.6	9.1	9.1	10.1	11.3	11.7
Lower Face Height	56	11.2	0.6	9.6	9.9	11.2	12.0	12.2
Face Height	56	17.7	0.9	15.8	16.2	17.8	19.3	19.4
Head Height	56	21.3	1.2	18.9	19.4	21.2	23.0	23.6
Tragion to Back of Head	56	9.3	0.9	7.8	7.9	9.0	11.1	11.4
Tragion to Top of Head	56	12.5	1.0	9.5	11.0	12.5	13.9	14.9
Ear-Sellion Depth	56	10.0	0.9	8.3	8.5	9.8	11.5	12.3
Bitragion Breadth	56	12.8	0.5	11.4	11.9	12.7	13.6	14.1
Mouth Breadth	56	4.6	0.5	3.5	3.8	4.5	5.4	6.9
Nose Length	56	4.8	0.5	3.7	4.1	4.7	5.5	5.9
Neck Circumference	79	32.9	3.0	27.7	28.6	32.5	38.5	40.1
Lateral Neck Breadth	77	9.7	1.2	7.4	7.9	9.3	11.5	12.6

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	220	55.6	1.9	50.6	52.2	55.6	58.5	61.2
Head Breadth	221	15.1	0.6	13.6	14.2	15.0	16.0	16.7
Head Length	67	19.2	0.8	16.9	17.7	19.1	20.3	20.5
Bizygomatic Breadth	80	13.4	0.6	11.7	12.4	13.3	14.3	14.8
Frontal Breadth	80	10.3	0.6	8.9	9.2	10.2	11.2	11.5
Lower Face Height	80	11.0	0.7	9.2	10.0	11.0	12.2	12.6
Face Height	80	17.6	1.0	15.5	15.8	17.5	19.2	19.6
Head Height	80	21.2	1.1	19.0	19.2	21.0	23.0	23.4
Tragion to Back of Head	80	9.7	0.9	8.1	8.3	9.4	11.3	12.8
Tragion to Top of Head	80	12.6	0.9	10.2	11.3	12.4	14.0	15.2
Ear-Sellion Depth	79	9.9	0.9	8.3	8.4	9.8	11.4	11.7
Bitragion Breadth	80	12.8	0.5	11.7	11.8	12.7	13.7	14.2
Mouth Breadth	80	4.6	0.4	3.7	3.8	4.5	5.1	5.4
Nose Length	80	4.7	0.4	3.2	4.0	4.6	5.4	5.9
Neck Circumference	67	33.2	2.8	28.4	29.6	32.4	37.7	40.8
Lateral Neck Breadth	67	9.9	1.1	7.9	8.2	9.7	11.7	13.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males and Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	154	56.0	2.1	51.2	52.7	55.8	59.1	61.3
Head Breadth	155	15.2	0.6	13.6	14.2	15.1	16.3	17.2
Head Length	62	19.5	1.0	17.4	17.6	19.4	20.8	21.8
Bizygomatic Breadth	46	13.6	0.6	12.3	12.4	13.6	14.5	14.7
Frontal Breadth	47	10.4	0.7	8.5	9.3	10.3	11.2	12.2
Lower Face Height	47	11.4	0.9	9.7	9.9	11.3	12.8	13.6
Face Height	47	17.8	1.2	15.3	15.6	17.8	19.6	20.2
Head Height	45	21.4	1.4	18.6	19.0	21.3	23.7	24.4
Tragion to Back of Head	46	9.6	0.8	8.2	8.3	9.5	11.1	11.6
Tragion to Top of Head	47	12.7	0.9	11.0	11.2	12.7	14.2	14.3
Ear-Sellion Depth	47	10.2	1.0	8.2	8.4	10.1	11.8	12.1
Bitragion Breadth	47	12.8	0.5	11.9	11.9	12.8	13.7	13.9
Mouth Breadth	47	4.7	0.4	3.9	4.0	4.7	5.4	5.7
Nose Length	46	5.0	0.4	4.1	4.2	5.0	5.5	5.6
Neck Circumference	63	34.5	3.3	28.8	29.7	34.3	40.2	42.2
Lateral Neck Breadth	62	10.2	1.2	7.7	8.1	9.9	12.1	13.1

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	114	50.2	1.6	45.8	47.7	50.0	52.7	53.9
Head Breadth	113	13.6	0.6	12.0	12.7	13.5	14.7	15.0
Head Length	32	17.8	0.7	16.2	16.4	17.8	18.9	19.0
Bizygomatic Breadth	44	10.9	0.5	9.8	9.9	10.8	11.7	11.9
Frontal Breadth	44	8.2	0.6	6.8	7.0	8.1	9.2	9.4
Lower Face Height	44	8.2	0.5	7.3	7.4	8.2	9.1	9.2
Face Height	44	14.4	0.8	11.8	12.5	14.3	15.4	16.1
Head Height	42	17.6	1.1	14.8	16.0	17.6	19.1	19.7
Tragion to Back of Head	44	9.3	1.1	6.9	7.5	9.1	11.0	11.4
Tragion to Top of Head	43	11.5	0.8	10.3	10.4	11.2	12.9	13.0
Ear-Sellion Depth	42	8.2	0.7	6.6	6.9	8.2	9.0	9.5
Bitragion Breadth	40	10.5	0.4	9.5	9.6	10.4	11.2	11.4
Mouth Breadth	43	3.3	0.4	2.6	2.6	3.2	3.8	3.9
Nose Length	44	2.9	0.3	2.2	2.3	2.9	3.4	3.7
Neck Circumference	32	24.2	1.1	21.4	21.9	24.3	25.7	25.9
Lateral Neck Breadth	32	7.3	0.6	5.7	5.9	7.2	8.1	8.3

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	118	50.7	1.3	46.5	48.7	50.4	52.9	54.4
Head Breadth	116	13.8	0.6	12.8	13.0	13.7	14.7	17.9
Head Length	35	18.2	0.5	17.1	17.2	18.1	19.0	19.7
Bizygomatic Breadth	37	11.3	0.6	9.9	10.1	11.2	12.1	12.3
Frontal Breadth	37	8.6	0.7	6.3	7.2	8.5	9.6	10.0
Lower Face Height	36	8.5	0.5	7.5	7.6	8.5	9.1	9.3
Face Height	37	14.6	0.9	12.5	12.9	14.5	15.7	16.1
Head Height	36	18.1	1.0	16.2	16.5	17.9	19.4	20.4
Tragion to Back of Head	37	9.1	0.9	7.2	7.6	9.2	10.5	11.0
Tragion to Top of Head	36	11.7	0.7	10.3	10.6	11.5	12.8	13.0
Ear-Sellion Depth	37	8.6	0.7	7.4	7.5	8.5	9.7	9.9
Bitragion Breadth	37	10.7	0.4	9.8	9.9	10.7	11.5	11.7
Mouth Breadth	37	3.4	0.4	2.5	2.8	3.4	4.0	4.2
Nose Length	37	3.2	0.3	2.4	2.5	3.1	3.7	3.9
Neck Circumference	37	24.6	1.3	21.3	21.5	24.6	26.2	27.2
Lateral Neck Breadth	36	7.7	0.6	6.6	6.6	7.7	8.4	8.5

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	142	51.2	1.3	48.1	48.6	50.9	53.6	55.2
Head Breadth	139	14.0	0.5	13.0	13.2	13.9	14.7	15.6
Head Length	56	18.3	0.7	16.2	16.9	18.2	19.3	19.9
Bizygomatic Breadth	50	11.3	0.7	9.5	10.4	11.2	12.4	13.3
Frontal Breadth	50	8.5	0.9	6.6	6.8	8.5	9.8	10.5
Lower Face Height	50	8.8	0.5	7.9	8.0	8.7	9.6	9.7
Face Height	49	14.8	0.9	13.0	13.1	14.6	16.1	16.3
Head Height	50	18.1	0.7	16.4	16.6	18.1	19.1	20.2
Tragion to Back of Head	50	9.0	0.9	7.0	7.3	9.0	10.2	10.8
Tragion to Top of Head	50	11.7	0.8	10.4	10.4	11.6	13.0	13.6
Ear-Sellion Depth	50	8.8	0.6	7.5	7.7	8.7	9.9	10.3
Bitragion Breadth	50	11.1	0.6	10.0	10.1	11.0	11.9	12.9
Mouth Breadth	50	3.5	0.4	2.6	2.7	3.5	4.1	4.5
Nose Length	50	3.4	0.3	2.7	2.8	3.4	3.8	3.9
Neck Circumference	58	25.3	1.3	20.3	23.6	25.3	27.1	28.9
Lateral Neck Breadth	57	7.9	0.6	6.6	6.9	7.8	8.9	9.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics						
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	108	51.6	1.6	47.1	48.7	51.7	53.9	57.2
Head Breadth	108	14.1	0.5	12.8	13.3	14.0	14.9	15.9
Head Length	39	18.4	0.7	16.8	16.8	18.3	19.2	20.4
Bizygomatic Breadth	26	11.7	0.6	10.4	10.4	11.7	12.3	12.6
Frontal Breadth	26	8.5	0.7	6.9	6.9	8.5	9.4	9.7
Lower Face Height	26	9.0	0.5	8.1	8.1	9.0	9.6	9.8
Face Height	25	15.3	0.8	13.2	13.4	15.3	16.4	16.6
Head Height	26	18.7	1.0	16.6	16.7	18.5	20.4	21.2
Tragion to Back of Head	26	8.9	1.1	6.3	6.6	8.9	10.3	11.0
Tragion to Top of Head	26	11.8	0.7	10.6	10.6	11.8	12.9	13.4
Ear-Sellion Depth	26	9.1	0.7	7.9	8.0	9.0	9.9	10.9
Bitragion Breadth	26	11.3	0.5	10.2	10.2	11.2	12.0	12.3
Mouth Breadth	26	3.7	0.4	2.9	2.9	3.7	4.3	4.4
Nose Length	25	3.5	0.4	2.7	2.7	3.4	4.0	4.2
Neck Circumference	39	25.8	1.3	23.3	23.4	25.8	28.0	28.2
Lateral Neck Breadth	39	8.0	0.7	6.5	6.6	7.9	9.1	9.5

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics						
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	104	51.9	1.6	48.4	48.9	51.9	54.5	56.5
Head Breadth	104	14.2	0.5	13.0	13.5	14.1	14.9	15.3
Head Length	41	18.4	0.7	17.0	17.1	18.2	19.7	20.3
Bizygomatic Breadth	30	12.0	0.7	10.0	10.3	12.1	12.7	13.3
Frontal Breadth	30	8.9	0.7	7.2	7.4	9.0	9.8	10.4
Lower Face Height	30	9.3	0.5	8.5	8.5	9.2	10.2	10.4
Face Height	30	15.6	0.9	13.7	14.0	15.4	16.9	17.3
Head Height	30	18.9	1.1	15.9	16.6	18.8	20.7	21.4
Tragion to Back of Head	30	9.5	1.1	7.1	7.5	9.6	11.1	11.8
Tragion to Top of Head	30	12.1	1.0	10.3	10.6	12.1	13.8	15.0
Ear-Sellion Depth	30	9.0	0.9	6.9	7.1	9.1	10.2	10.5
Bitragion Breadth	30	11.6	0.6	10.4	10.6	11.5	12.3	13.1
Mouth Breadth	30	3.8	0.4	3.0	3.0	3.8	4.4	4.5
Nose Length	30	3.6	0.4	3.3	3.3	3.7	4.4	4.6
Neck Circumference	40	26.2	1.4	22.7	23.4	26.1	27.8	30.6
Lateral Neck Breadth	41	8.0	0.6	6.5	6.7	8.1	8.9	9.3

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics						
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	95	52.6	1.5	49.4	49.9	52.5	54.9	56.8
Head Breadth	97	14.3	0.5	13.2	13.7	14.2	15.0	16.2
Head Length	35	18.8	0.6	17.9	17.9	18.7	19.8	19.9
Bizygomatic Breadth	30	11.9	0.6	11.0	11.1	11.7	12.9	13.9
Frontal Breadth	30	8.7	0.6	7.3	7.4	8.8	9.5	9.8
Lower Face Height	30	9.3	0.5	8.4	8.4	9.2	10.0	10.3
Face Height	30	15.7	0.9	13.8	14.0	15.8	16.8	18.3
Head Height	30	19.1	1.0	17.3	17.3	19.1	21.0	21.3
Tragion to Back of Head	30	9.2	0.8	7.4	7.7	9.2	10.4	11.0
Tragion to Top of Head	30	11.9	0.9	10.1	10.2	11.9	13.2	13.9
Ear-Sellion Depth	30	9.0	0.8	7.2	7.3	9.0	9.9	10.3
Bitragion Breadth	30	11.6	0.5	10.5	10.6	11.4	12.5	12.7
Mouth Breadth	30	3.8	0.4	2.8	3.0	3.8	4.4	4.6
Nose Length	30	3.7	0.3	2.8	3.0	3.7	4.1	4.3
Neck Circumference	36	27.1	1.7	24.3	24.4	26.8	29.0	33.4
Lateral Neck Breadth	36	8.4	0.6	7.5	7.6	8.3	9.1	10.2

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	114	52.6	1.7	48.0	49.7	52.8	54.9	58.2
Head Breadth	114	14.3	0.5	13.2	13.3	14.2	15.1	15.8
Head Length	42	18.7	0.8	16.0	17.4	18.7	19.6	20.1
Bizygomatic Breadth	39	12.0	0.5	10.8	11.0	12.0	12.9	13.1
Frontal Breadth	39	9.0	0.7	7.6	7.7	8.9	10.0	11.0
Lower Face Height	39	9.8	0.6	8.7	8.7	9.7	10.7	11.5
Face Height	39	16.0	1.1	14.1	14.1	15.8	17.7	19.0
Head Height	39	19.3	0.9	17.6	17.7	19.1	21.0	21.3
Tragion to Back of Head	39	9.1	1.0	6.7	7.3	9.1	10.5	10.8
Tragion to Top of Head	38	12.1	0.8	10.6	10.6	12.0	13.2	13.6
Ear-Sellion Depth	39	9.1	0.7	7.5	7.8	9.2	10.0	10.6
Bitragion Breadth	39	11.6	0.5	10.3	10.5	11.6	12.4	12.6
Mouth Breadth	39	4.0	0.4	3.3	3.4	4.0	4.7	4.9
Nose Length	39	4.0	0.3	3.5	3.5	3.9	4.6	4.9
Neck Circumference	42	27.8	1.9	23.8	24.2	27.6	31.1	32.6
Lateral Neck Breadth	42	8.4	0.7	7.3	7.3	8.4	9.2	10.3

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	124	52.9	1.4	49.1	50.5	52.8	55.1	56.8
Head Breadth	123	14.5	0.4	13.5	13.7	14.4	15.1	15.8
Head Length	39	18.8	0.5	17.8	17.8	18.7	19.6	20.0
Bizygomatic Breadth	47	12.3	0.5	11.3	11.4	12.2	13.1	13.8
Frontal Breadth	46	9.0	0.7	7.2	7.3	9.1	9.9	10.1
Lower Face Height	47	9.9	0.5	9.1	9.2	9.9	10.8	11.2
Face Height	47	16.2	0.8	14.8	15.0	16.1	17.6	17.9
Head Height	46	19.6	0.9	17.1	18.1	19.4	20.9	21.9
Tragion to Back of Head	47	9.2	0.8	7.7	7.7	9.3	10.6	10.7
Tragion to Top of Head	47	12.3	0.9	10.6	10.8	12.1	13.6	14.3
Ear-Sellion Depth	47	9.5	0.8	7.8	8.0	9.5	10.7	11.6
Bitragion Breadth	47	11.9	0.5	10.8	11.0	11.8	12.8	13.3
Mouth Breadth	47	4.0	0.4	3.3	3.3	3.9	4.6	4.8
Nose Length	47	4.2	0.3	3.3	3.6	4.1	4.6	5.1
Neck Circumference	40	28.1	1.6	25.2	25.4	28.2	30.9	31.5
Lateral Neck Breadth	39	8.7	0.8	7.0	7.1	8.6	9.7	9.8

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	141	53.6	1.5	50.4	51.1	53.4	55.9	57.5
Head Breadth	141	14.6	0.5	13.3	13.8	14.5	15.4	16.6
Head Length	41	18.7	0.6	17.6	17.7	18.7	19.7	20.8
Bizygomatic Breadth	52	12.5	0.6	11.2	11.4	12.4	13.3	14.4
Frontal Breadth	52	9.0	0.7	7.5	7.7	9.1	10.1	10.8
Lower Face Height	52	10.1	0.6	8.5	8.7	10.1	11.2	11.4
Face Height	52	16.4	0.8	14.1	14.9	16.3	17.8	18.2
Head Height	51	20.1	1.0	18.5	18.6	19.9	22.0	22.9
Tragion to Back of Head	52	9.3	0.8	7.3	7.9	9.3	10.5	11.6
Tragion to Top of Head	52	12.5	0.8	10.7	11.0	12.4	13.7	15.2
Ear-Sellion Depth	52	9.9	0.7	8.3	8.5	9.9	10.8	11.2
Bitragion Breadth	52	12.0	0.5	10.9	11.0	12.0	12.7	13.3
Mouth Breadth	52	4.0	0.4	3.3	3.3	4.0	4.6	5.0
Nose Length	52	4.3	0.4	3.5	3.5	4.3	5.0	5.3
Neck Circumference	40	28.1	1.2	25.9	26.0	28.1	30.1	30.3
Lateral Neck Breadth	41	8.7	0.6	7.5	7.7	8.8	9.7	9.9

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	154	53.8	1.7	49.7	51.1	53.6	56.6	59.1
Head Breadth	154	14.7	0.5	13.3	13.8	14.6	15.5	16.0
Head Length	55	18.9	0.7	17.3	17.4	19.0	19.6	19.7
Bizygomatic Breadth	46	12.6	0.5	11.6	11.7	12.5	13.5	14.0
Frontal Breadth	46	9.2	0.7	8.1	8.2	9.0	10.4	10.5
Lower Face Height	46	10.2	0.5	9.2	9.3	10.1	10.9	11.3
Face Height	46	16.6	0.9	14.9	15.0	16.5	18.0	18.6
Head Height	46	20.2	0.8	18.8	19.0	19.9	21.6	22.6
Tragion to Back of Head	46	9.2	1.1	7.1	7.3	9.2	11.1	12.7
Tragion to Top of Head	46	12.6	0.6	10.9	11.6	12.6	13.3	13.5
Ear-Sellion Depth	46	9.6	0.8	7.9	8.0	9.5	10.8	11.2
Bitragion Breadth	45	12.2	0.5	11.2	11.3	12.2	12.9	13.0
Mouth Breadth	46	4.1	0.3	3.4	3.5	4.0	4.6	4.6
Nose Length	46	4.3	0.4	3.4	3.6	4.3	4.8	5.2
Neck Circumference	55	29.5	1.6	26.9	27.1	29.4	31.9	32.6
Lateral Neck Breadth	55	8.9	0.7	7.3	7.6	8.7	10.1	10.6

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	154	54.3	1.7	49.9	51.8	54.2	57.3	58.3
Head Breadth	153	14.8	0.5	13.4	13.8	14.7	15.6	16.3
Head Length	58	19.0	0.8	15.7	17.7	19.0	20.3	20.7
Bizygomatic Breadth	46	12.7	0.6	11.4	11.9	12.5	13.7	14.2
Frontal Breadth	46	9.3	0.6	8.1	8.1	9.3	10.4	10.8
Lower Face Height	46	10.5	0.6	9.4	9.5	10.4	11.8	12.1
Face Height	46	16.9	0.9	14.8	15.2	16.9	18.4	18.9
Head Height	46	20.4	1.1	18.2	18.3	20.3	22.3	22.7
Tragion to Back of Head	46	9.4	0.8	7.7	7.9	9.4	10.5	10.7
Tragion to Top of Head	46	12.4	0.7	10.7	11.0	12.4	13.5	14.0
Ear-Sellion Depth	46	10.0	0.7	8.0	8.6	10.0	10.9	11.3
Bitragion Breadth	46	12.2	0.6	10.9	11.2	12.2	13.2	14.2
Mouth Breadth	46	4.2	0.4	3.3	3.4	4.1	4.9	5.3
Nose Length	46	4.4	0.3	3.5	3.7	4.4	4.9	5.2
Neck Circumference	58	30.3	1.8	26.6	27.6	30.0	33.3	34.8
Lateral Neck Breadth	57	9.2	0.9	7.4	7.7	9.3	10.3	11.0

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	155	54.8	1.9	50.4	51.9	54.7	58.0	60.7
Head Breadth	154	14.9	0.5	13.3	13.9	14.9	15.7	16.6
Head Length	48	19.3	0.6	18.1	18.2	19.2	20.5	20.7
Bizygomatic Breadth	54	12.9	0.6	11.5	11.7	13.0	13.7	14.0
Frontal Breadth	54	9.6	0.6	8.5	8.6	9.5	10.5	11.0
Lower Face Height	54	11.0	0.6	9.5	9.7	11.0	11.9	12.2
Face Height	53	17.4	1.0	15.2	15.4	17.4	18.7	19.6
Head Height	55	20.8	1.1	18.8	19.1	20.7	22.5	23.0
Tragion to Back of Head	55	9.1	1.0	6.1	7.1	9.3	10.3	10.9
Tragion to Top of Head	55	12.4	0.8	10.7	11.0	12.4	13.6	14.1
Ear-Sellion Depth	55	10.1	0.6	8.2	9.0	10.1	10.9	11.9
Bitragion Breadth	55	12.5	0.5	11.7	11.7	12.6	13.2	13.5
Mouth Breadth	55	4.3	0.4	3.4	3.5	4.3	5.1	5.5
Nose Length	54	4.8	0.5	3.9	4.0	4.6	5.7	6.0
Neck Circumference	49	32.2	1.9	26.5	29.1	32.3	35.1	35.5
Lateral Neck Breadth	47	9.6	1.0	7.7	7.9	9.5	11.2	12.9

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	131	55.4	1.7	51.7	52.4	55.4	57.9	60.7
Head Breadth	130	15.1	0.6	13.3	14.0	15.1	15.8	16.2
Head Length	42	19.3	0.6	18.0	18.1	19.3	20.1	20.4
Bizygomatic Breadth	50	13.3	0.6	11.6	12.3	13.2	14.1	14.5
Frontal Breadth	50	9.9	0.7	8.4	8.5	9.9	10.8	11.5
Lower Face Height	50	11.1	0.7	9.7	10.0	11.0	12.3	12.8
Face Height	49	17.5	1.1	15.0	15.4	17.4	19.4	19.9
Head Height	50	21.3	1.2	18.3	19.4	21.1	23.3	24.0
Tragion to Back of Head	50	9.3	0.9	7.6	7.7	9.2	10.7	11.3
Tragion to Top of Head	50	12.9	0.8	10.2	11.5	12.8	14.1	15.0
Ear-Sellion Depth	50	10.4	0.7	8.4	9.3	10.3	11.3	11.9
Bitragion Breadth	50	12.8	0.6	11.2	11.6	12.6	13.6	13.9
Mouth Breadth	50	4.5	0.4	3.8	3.8	4.5	5.0	5.3
Nose Length	50	5.0	0.4	3.8	4.2	4.9	5.6	5.7
Neck Circumference	42	32.8	1.9	29.4	29.4	32.9	35.7	36.3
Lateral Neck Breadth	41	9.8	0.8	8.1	8.3	9.7	11.1	11.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	100	56.5	1.9	51.5	52.6	56.6	59.6	60.9
Head Breadth	98	15.3	0.6	13.8	14.4	15.2	16.2	17.1
Head Length	37	19.7	0.6	18.1	18.4	19.8	20.6	20.7
Bizygomatic Breadth	31	13.5	0.6	12.3	12.4	13.4	14.5	15.3
Frontal Breadth	31	10.3	0.5	9.4	9.5	10.1	11.3	11.4
Lower Face Height	31	11.4	0.5	9.9	10.1	11.4	12.0	12.2
Face Height	31	18.0	0.8	16.4	16.5	17.9	19.2	19.4
Head Height	31	21.9	1.1	19.8	19.8	22.0	23.2	23.6
Tragion to Back of Head	31	9.2	0.9	7.8	7.9	8.9	10.7	11.4
Tragion to Top of Head	31	12.8	0.8	11.0	11.1	12.9	13.9	14.2
Ear-Sellion Depth	31	10.4	1.0	8.3	8.4	10.5	11.6	12.3
Bitragion Breadth	31	13.0	0.5	11.9	12.0	12.9	13.7	14.1
Mouth Breadth	31	4.6	0.4	3.7	3.8	4.5	5.3	5.6
Nose Length	31	5.0	0.4	4.2	4.2	4.8	5.6	5.9
Neck Circumference	38	35.2	2.7	27.7	30.7	34.9	39.6	40.1
Lateral Neck Breadth	37	10.5	1.0	8.7	8.7	10.6	11.7	12.6

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	104	56.7	1.7	51.2	53.5	56.7	59.3	61.2
Head Breadth	104	15.4	0.5	14.3	14.5	15.3	16.3	16.7
Head Length	28	19.6	0.6	18.1	18.3	19.6	20.3	20.4
Bizygomatic Breadth	38	13.7	0.6	11.7	12.1	13.6	14.6	14.8
Frontal Breadth	38	10.2	0.7	8.9	9.2	10.1	11.3	11.5
Lower Face Height	38	11.4	0.6	10.2	10.3	11.3	12.3	12.6
Face Height	38	18.0	0.8	16.4	16.9	17.7	19.3	19.6
Head Height	38	21.8	0.9	19.4	19.8	21.9	23.2	23.4
Tragion to Back of Head	38	9.7	0.9	8.1	8.2	9.5	11.3	11.5
Tragion to Top of Head	38	12.8	0.8	11.6	11.6	12.6	14.1	14.7
Ear-Sellion Depth	38	10.5	0.7	9.4	9.4	10.5	11.5	11.7
Bitragion Breadth	38	13.0	0.5	11.8	11.8	13.0	13.9	14.2
Mouth Breadth	38	4.6	0.4	3.7	3.7	4.6	5.1	5.3
Nose Length	38	5.0	0.4	4.3	4.4	4.9	5.6	5.9
Neck Circumference	28	35.8	2.0	31.2	31.6	36.0	38.1	40.8
Lateral Neck Breadth	28	10.8	0.9	9.1	9.2	10.7	12.3	13.4

HEAD, FACE, AND NECK MEASUREMENTS
(Males - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	88	57.2	1.6	53.0	54.5	57.1	59.4	61.3
Head Breadth	88	15.4	0.6	14.1	14.5	15.4	16.4	16.9
Head Length	38	20.0	0.7	18.4	18.6	20.0	21.0	21.8
Bizygomatic Breadth	27	13.9	0.5	12.7	12.9	13.8	14.6	14.7
Frontal Breadth	27	10.6	0.7	8.5	8.7	10.6	11.4	12.2
Lower Face Height	27	11.9	0.7	10.8	10.8	11.8	13.1	13.6
Face Height	27	18.3	1.1	15.7	16.1	18.2	19.8	20.2
Head Height	26	22.1	1.2	19.2	19.6	21.9	24.1	24.4
Tragion to Back of Head	27	9.7	0.8	8,2	8.2	9.5	11.1	11.6
Tragion to Top of Head	27	13.1	0.8	11.0	11.2	13.1	14.2	14.3
Bar-Sellion Depth	27	10.7	0.8	8.5	8.9	10.7	11.9	12.1
Bitragion Breadth	27	13.1	0.4	12.3	12.3	13.0	13.8	13.9
Mouth Breadth	27	4.8	0.4	4.0	4.0	4.7	5.6	5.7
Nose Length	26	5.2	0.3	4.6	4.6	5.1	5.5	5.6
Neck Circumference	38	36.6	2.5	30.3	32.3	36.6	40.5	42.2
Lateral Neck Breadth	38	10.9	1.1	8.9	9.3	10.9	12.4	13.1

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	97	48.7	1.5	45.2	46.4	48.7	51.1	51.7
Head Breadth	97	13.2	0.5	11.9	12.5	13.2	13.9	14.9
Head Length	35	17.2	0.6	15.8	15.9	17.2	18.0	18.3
Bizygomatic Breadth	33	10.8	0.6	9.9	9.9	10.6	11.8	12.0
Frontal Breadth	33	8.3	0.5	7.3	7.5	8.2	9.2	9.6
Lower Face Height	32	8.0	0.4	6.9	7.0	8.0	8.7	8.8
Face Height	31	13.9	0.8	12.4	12.5	13.9	15.2	15.6
Head Height	31	17.0	0.8	15.5	15.6	16.8	18.2	18.6
Tragion to Back of Head	32	9.1	1.0	6.2	7.1	9.2	10.3	10.8
Tragion to Top of Head	32	11.2	0.6	9.9	10.0	11.1	12.2	12.7
Ear-Sellion Depth	32	7.8	0.7	6.3	6.5	7.7	9.0	9.4
Bitragion Breadth	31	10.2	0.5	9.5	9.5	10.2	11.1	11.3
Mouth Breadth	32	3.3	0.4	2.7	2.7	3.2	3.9	4.0
Nose Length	33	2.9	0.3	2.3	2.3	2.8	3.2	3.5
Neck Circumference	34	23.4	1.1	20.0	20.8	23.4	24.7	25.4
Lateral Neck Breadth	34	7.0	0.5	6.0	6.1	6.9	7.8	8.1

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	108	49.7	1.4	46.2	47.3	49.6	51.9	53.1
Head Breadth	109	13.6	0.5	12.4	12.6	13.5	14.4	15.0
Head Length	40	17.7	0.6	16.4	16.5	17.6	18.8	19.0
Bizygomatic Breadth	34	11.2	0.5	9.5	10.3	11.0	11.9	12.6
Frontal Breadth	34	8.3	0.8	6.2	6.6	8.4	9.4	9.6
Lower Face Height	34	8.6	0.5	7.7	7.7	8.5	9.4	10.0
Face Height	34	14.8	0.9	12.7	13.1	14.6	16.0	16.9
Head Height	34	17.7	0.7	16.3	16.4	17.6	18.8	18.9
Tragion to Back of Head	34	8.7	1.1	6.5	6.6	8.6	10.3	11.3
Tragion to Top of Head	34	11.6	0.6	10.4	10.5	11.7	12.5	13.0
Ear-Sellion Depth	34	8.2	0.7	7.0	7.0	8.1	9.5	9.9
Bitragion Breadth	34	10.7	0.4	9.6	9.8	10.6	11.4	11.5
Mouth Breadth	34	3.4	0.4	2.7	2.7	3.4	3.9	4.0
Nose Length	34	3.2	0.3	2.6	2.7	3.1	3.5	3.8
Neck Circumference	41	24.0	1.3	21.6	22.0	23.9	26.3	27.2
Lateral Neck Breadth	40	7.4	0.5	6.5	6.6	7.3	8.2	8.6

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	120	50.2	1.5	46.6	47.5	50.2	52.5	54.3
Head Breadth	118	13.7	0.5	12.5	12.8	13.6	14.5	15.3
Head Length	34	17.7	0.8	15.2	15.5	17.8	18.6	18.7
Bizygomatic Breadth	44	11.3	0.6	10.0	10.1	11.1	12.4	12.6
Frontal Breadth	44	8.7	0.7	7.1	7.4	8.7	9.5	9.8
Lower Face Height	43	8.6	0.5	7.5	7.6	8.5	9.6	9.8
Face Height	44	14.6	1.1	12.6	12.8	14.3	16.1	17.5
Head Height	43	17.7	0.7	16.4	16.5	17.7	18.9	19.1
Tragion to Back of Head	43	9.1	0.9	7.7	7.8	8.9	10.5	11.4
Tragion to Top of Head	43	11.5	0.7	9.6	10.0	11.4	12.6	13.2
Ear-Sellion Depth	43	8.3	0.7	6.3	6.8	8.1	9.4	9.6
Bitragion Breadth	44	10.7	0.5	10.0	10.0	10.6	11.4	12.1
Mouth Breadth	44	3.6	0.3	3.0	3.0	3.5	4.1	4.2
Nose Length	44	3.3	0.4	2.5	2.6	3.2	3.8	3.9
Neck Circumference	35	24.5	1.4	22.0	22.2	24.3	26.6	27.6
Lateral Neck Breadth	34	7.3	0.5	6.2	6.3	7.2	8.2	8.4

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	111	50.5	1.4	48.0	48.4	50.4	52.9	53.8
Head Breadth	111	13.8	0.4	12.7	13.0	13.6	14.4	15.0
Head Length	41	18.0	0.7	16.6	16.7	18.0	18.9	19.0
Bizygomatic Breadth	36	11.5	0.5	10.3	10.4	11.4	12.4	12.6
Frontal Breadth	36	9.1	0.6	7.5	7.8	8.9	9.7	10.5
Lower Face Height	36	8.9	0.5	7.7	8.0	8.9	9.6	10.1
Face Height	36	14.9	0.9	13.0	13.2	14.7	16.4	16.7
Head Height	36	18.1	0.9	15.9	16.1	18.2	19.2	19.3
Tragion to Back of Head	36	9.1	0.7	7.3	7.5	9.1	10.2	10.5
Tragion to Top of Head	36	11.5	0.8	9.9	10.0	11.5	12.5	13.2
Ear-Sellion Depth	36	8.5	0.6	7.4	7.5	8.4	9.5	9.8
Bitragion Breadth	35	11.1	0.4	10.3	10.3	11.0	11.6	11.9
Mouth Breadth	36	3.6	0.4	2.8	2.8	3.6	4.1	4.5
Nose Length	36	3.5	0.4	2.7	2.9	3.4	4.0	4.2
Neck Circumference	41	25.7	1.5	23.0	23.2	25.3	27.8	30.2
Lateral Neck Breadth	40	7.8	0.6	6.6	6.6	7.7	8.8	8.9

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	120	51.1	1.5	47.5	48.6	51.0	53.5	54.8
Head Breadth	118	14.0	0.6	12.7	13.2	13.9	15.0	15.7
Head Length	46	18.0	0.7	16.2	16.8	18.0	19.1	19.2
Bizygomatic Breadth	33	11.9	0.5	10.9	11.0	11.7	12.8	13.3
Frontal Breadth	33	9.3	0.6	8.1	8.2	9.2	10.4	10.5
Lower Face Height	33	9.2	0.6	8.1	8.2	9.1	10.1	10.3
Face Height	33	15.6	0.9	14.1	14.1	15.6	17.0	17.6
Head Height	33	18.6	0.8	16.9	17.0	18.6	19.5	19.9
Tragion to Back of Head	33	9.2	0.8	7.4	7.5	9.1	10.3	10.5
Tragion to Top of Head	33	11.6	0.6	10.3	10.4	11.6	12.4	12.5
Ear-Sellion Depth	33	8.6	0.6	7.2	7.5	8.7	9.4	9.5
Bitragion Breadth	33	11.4	0.6	10.3	10.3	11.3	12.2	12.8
Mouth Breadth	33	3.8	0.3	3.1	3.2	3.8	4.3	4.5
Nose Length	33	3.6	0.4	3.2	3.2	3.5	4.3	4.6
Neck Circumference	44	26.0	1.7	23.0	23.8	25.9	28.4	32.5
Lateral Neck Breadth	45	7.8	0.8	6.6	6.6	7.6	9.3	9.9

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	93	51.8	1.6	47.8	49.0	51.7	54.1	56.2
Head Breadth	93	14.0	0.4	13.1	13.3	14.0	14.7	15.2
Head Length	32	18.4	0.4	17.7	17.7	18.3	19.0	19.4
Bizygomatic Breadth	30	11.9	0.5	10.9	10.9	11.8	12.5	13.0
Frontal Breadth	30	9.2	0.5	8.1	8.1	9.3	10.0	10.3
Lower Face Height	30	9.3	0.5	8.5	8.5	9.4	10.1	10.4
Face Height	30	15.6	0.9	13.5	13.5	15.6	16.8	17.3
Head Height	30	18.6	1.0	16.2	16.5	18.8	19.6	20.1
Tragion to Back of Head	29	9.3	0.9	7.1	7.4	9.2	10.6	10.9
Tragion to Top of Head	29	11.6	0.8	9.2	9.6	11.5	12.7	13.1
Ear-Sellion Depth	30	8.8	0.6	7.9	7.9	8.7	9.9	10.2
Bitragion Breadth	30	11.4	0.5	10.6	10.6	11.3	12.2	12.3
Mouth Breadth	30	3.9	0.3	3.3	3.3	3.9	4.3	4.9
Nose Length	30	3.8	0.3	3.3	3.3	3.7	4.3	4.5
Neck Circumference	32	27.0	1.9	23.2	23.7	26.7	29.6	33.6
Lateral Neck Breadth	32	8.1	0.7	7.0	7.0	8.0	9.2	9.8

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	136	52.0	1.6	48.5	49.3	52.0	54.3	55.5
Head Breadth	134	14.2	0.5	13.0	13.1	14.1	15.0	15.5
Head Length	48	18.4	0.6	17.2	17.2	18.4	19.3	19.5
Bizygomatic Breadth	40	12.1	0.5	10.9	11.2	12.0	12.9	13.4
Frontal Breadth	40	9.6	0.6	8.1	8.6	9.6	10.6	11.3
Lower Face Height	40	9.5	0.5	8.1	8.5	9.5	10.4	11.0
Face Height	40	15.8	1.1	13.4	13.8	15.7	17.4	17.8
Head Height	40	18.8	0.9	16.9	17.2	18.9	20.1	20.8
Tragion to Back of Head	40	9.3	1.0	8.0	8.1	9.1	10.8	13.1
Tragion to Top of Head	38	11.7	0.8	10.1	10.5	11.6	12.6	14.7
Ear-Sellion Depth	39	8.8	0.5	7.3	7.9	8.8	9.3	9.6
Bitragion Breadth	40	11.6	0.5	10.7	10.8	11.5	12.5	12.9
Mouth Breadth	40	4.0	0.4	3.4	3.4	3.9	4.7	4.9
Nose Length	40	4.0	0.3	3.4	3.4	3.9	4.4	4.8
Neck Circumference	49	27.5	1.6	23.7	25.5	27.3	29.8	30.5
Lateral Neck Breadth	49	8.3	0.7	6.7	7.0	8.3	9.3	9.4

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	125	52.7	1.7	48.8	49.4	52.6	55.4	57.2
Head Breadth	124	14.2	0.5	12.7	13.4	14.2	15.1	15.6
Head Length	43	18.4	0.6	17.4	17.5	18.2	19.3	20.0
Bizygomatic Breadth	45	12.1	0.5	11.1	11.1	12.1	12.8	13.1
Frontal Breadth	46	9.7	0.6	8.2	8.6	9.5	10.5	11.1
Lower Face Height	46	9.7	0.6	8.7	8.8	9.6	10.6	11.2
Face Height	46	16.3	0.7	14.6	15.0	16.1	17.4	18.0
Head Height	45	19.5	1.0	17.0	17.5	19.5	21.0	21.5
Tragion to Back of Head	45	9.4	0.8	7.9	8.0	9.3	10.6	12.6
Tragion to Top of Head	44	12.0	0.8	10.1	10.3	11.9	13.0	13.9
Ear-Sellion Depth	46	9.0	0.7	7.3	7.6	9.1	9.8	10.1
Bitragion Breadth	46	11.7	0.4	10.8	10.9	11.6	12.2	12.7
Mouth Breadth	46	4.1	0.4	3.1	3.2	3.9	4.8	5.2
Nose Length	46	4.1	0.3	3.3	3.5	4.0	4.6	4.8
Neck Circumference	45	27.6	2.2	23.8	24.2	27.6	32.0	33.0
Lateral Neck Breadth	45	8.2	0.6	7.0	7.2	8.2	9.2	9.6

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	139	52.8	1.9	48.6	49.8	52.8	56.2	58.2
Head Breadth	136	14.4	0.5	13.2	13.5	14.3	15.3	15.6
Head Length	43	18.5	0.7	17.2	17.4	18.4	19.5	19.8
Bizygomatic Breadth	46	12.4	0.6	10.9	11.2	12.3	13.3	13.6
Frontal Breadth	47	9.8	0.7	8.7	8.8	9.7	11.0	11.6
Lower Face Height	47	10.1	0.6	8.8	9.1	9.9	11.0	11.4
Face Height	47	16.6	1.0	14.5	15.0	16.6	18.3	18.6
Head Height	47	19.8	1.0	18.0	18.1	19.7	21.4	22.1
Tragion to Back of Head	45	9.3	1.1	6.9	7.2	9.2	10.5	12.4
Tragion to Top of Head	45	11.8	0.9	9.3	10.5	11.9	13.1	14.2
Ear-Sellion Depth	46	9.1	0.9	7.3	7.5	9.2	10.6	11.3
Bitragion Breadth	47	12.0	0.7	10.8	10.9	11.7	13.2	13.6
Mouth Breadth	47	4.2	0.5	3.4	3.4	4.1	5.2	5.6
Nose Length	46	4.2	0.4	3.4	3.6	4.1	4.8	5.0
Neck Circumference	43	28.5	2.2	25.1	25.5	28.0	31.9	36.1
Lateral Neck Breadth	44	8.6	0.9	7.1	7.2	8.5	9.9	11.5

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	131	53.1	1.6	48.5	50.4	53.1	55.6	57.0
Head Breadth	129	14.4	0.5	13.3	13.6	14.4	15.1	15.9
Head Length	40	18.6	0.7	16.8	17.4	18.5	19.7	19.9
Bizygomatic Breadth	48	12.5	0.6	11.2	11.6	12.3	13.6	13.7
Frontal Breadth	48	9.8	0.6	8.3	8.7	9.9	10.7	11.2
Lower Face Height	48	10.2	0.7	9.0	9.1	10.1	11.2	11.5
Face Height	48	16.8	0.9	15.3	15.4	16.6	18.4	18.8
Head Height	47	19.8	1.1	17.8	17.9	19.8	21.6	22.3
Tragion to Back of Head	47	9.2	0.9	7.4	7.6	9.0	10.6	11.4
Tragion to Top of Head	48	11.7	0.9	9.0	10.1	11.7	13.0	13.7
Ear-Sellion Depth	48	9.1	0.6	7.6	7.9	9.0	10.2	10.8
Bitragion Breadth	47	12.0	0.6	10.6	10.9	11.9	12.9	13.3
Mouth Breadth	48	4.3	0.5	2.9	3.5	4.2	5.1	5.5
Nose Length	48	4.4	0.4	3.7	3.7	4.4	5.0	5.3
Neck Circumference	42	29.3	1.8	25.9	26.4	29.0	32.4	33.5
Lateral Neck Breadth	42	8.7	0.9	7.1	7.2	8.6	10.0	11.2

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	157	53.7	1.8	48.1	50.7	53.6	56.3	60.0
Head Breadth	155	14.6	0.5	13.5	13.8	14.6	15.3	16.1
Head Length	49	18.7	0.6	17.4	17.7	18.6	19.8	20.0
Bizygomatic Breadth	61	12.7	0.6	11.5	11.7	12.7	13.6	14.0
Frontal Breadth	61	9.9	0.5	9.0	9.1	9.7	10.6	11.2
Lower Face Height	61	10.5	0.6	9.1	9.5	10.4	11.4	11.8
Face Height	61	17.0	0.9	15.1	15.5	16.9	18.4	18.7
Head Height	61	20.2	1.0	17.5	18.2	20.1	21.7	22.3
Tragion to Back of Head	61	9.3	0.9	6.1	7.0	9.4	10.3	10.8
Tragion to Top of Head	61	12.0	0.7	10.4	10.8	11.9	13.0	13.7
Ear-Sellion Depth	61	9.3	0.6	8.1	8.2	9.4	10.3	10.8
Bitragion Breadth	61	12.4	0.5	11.5	11.6	12.3	13.3	13.5
Mouth Breadth	61	4.2	0.4	3.2	3.5	4.1	4.8	5.2
Nose Length	60	4.4	0.3	3.7	3.9	4.4	4.9	5.0
Neck Circumference	50	29.7	1.6	27.4	27.5	29.4	32.5	33.5
Lateral Neck Breadth	47	9.0	0.6	7.7	7.8	8.9	10.0	10.5

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	116	54.0	1.5	50.2	51.5	53.8	56.6	57.8
Head Breadth	116	14.7	0.5	13.2	13.9	14.6	15.5	16.2
Head Length	41	18.9	0.6	17.7	17.8	18.8	20.0	20.2
Bizygomatic Breadth	44	13.0	0.6	11.8	11.9	12.9	14.1	14.3
Frontal Breadth	44	10.0	0.5	9.0	9.0	10.0	10.8	11.0
Lower Face Height	44	10.7	0.5	9.8	9.8	10.5	11.5	11.9
Face Height	43	17.1	0.9	15.6	15.6	17.0	18.7	19.2
Head Height	44	20.3	0.8	17.6	18.5	20.2	21.6	22.3
Tragion to Back of Head	43	9.3	0.9	7.7	8.0	9.2	10.8	12.6
Tragion to Top of Head	44	12.1	0.7	10.2	10.9	12.0	13.1	13.2
Ear-Sellion Depth	44	9.4	0.7	7.2	8.0	9.2	10.4	11.3
Bitragion Breadth	44	12.5	0.7	11.3	11.3	12.3	13.9	14.4
Mouth Breadth	44	4.4	0.5	3.6	3.6	4.2	5.4	6.3
Nose Length	44	4.5	0.4	3.8	3.9	4.5	5.1	5.3
Neck Circumference	41	30.2	1.8	27.3	27.7	29.8	33.3	35.6
Lateral Neck Breadth	41	9.1	0.8	7.5	7.7	9.1	10.3	10.9

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	130	54.3	1.8	50.5	51.7	54.1	57.7	60.5
Head Breadth	130	14.7	0.5	13.1	13.8	14.6	15.5	16.1
Head Length	38	19.1	0.7	17.7	17.8	19.1	20.1	20.6
Bizygomatic Breadth	45	13.0	0.4	11.8	12.2	12.9	13.8	14.1
Frontal Breadth	45	10.2	0.5	9.2	9.3	10.0	11.1	11.5
Lower Face Height	45	10.7	0.6	9.5	9.6	10.6	11.6	12.1
Face Height	45	17.1	1.1	14.1	14.9	16.9	18.8	19.4
Head Height	45	20.3	0.9	18.2	18.8	20.2	21.8	22.7
Tragion to Back of Head	44	9.4	0.8	7.5	8.2	9.3	10.7	11.8
Tragion to Top of Head	45	12.0	0.6	9.9	10.7	12.1	12.8	13.5
Ear-Sellion Depth	45	9.4	0.7	7.5	8.1	9.3	10.5	10.9
Bitragion Breadth	45	12.5	0.4	11.6	11.7	12.4	13.2	13.5
Mouth Breadth	45	4.5	0.4	3.2	3.5	4.5	5.1	5.2
Nose Length	45	4.5	0.4	3.8	3.9	4.5	5.0	5.3
Neck Circumference	39	30.8	1.4	28.2	28.2	30.8	32.9	33.6
Lateral Neck Breadth	39	9.0	0.6	7.7	7.8	9.0	9.9	10.6

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	96	54.2	1.6	50.7	52.0	54.1	56.8	57.7
Head Breadth	96	14.8	0.5	13.5	13.8	14.8	15.7	16.0
Head Length	41	18.7	0.7	17.3	17.5	18.5	19.8	21.0
Bizygomatic Breadth	25	13.2	0.5	12.2	12.2	13.0	13.9	14.0
Frontal Breadth	25	10.2	0.7	9.1	9.1	10.0	11.3	11.7
Lower Face Height	25	10.9	0.6	9.6	9.6	10.9	11.8	12.0
Face Height	25	17.5	1.0	15.8	15.9	17.3	19.3	19.4
Head Height	25	20.6	0.9	18.9	19.0	20.4	22.1	22.5
Tragion to Back of Head	25	9.3	0.9	7.9	8.0	9.0	11.1	11.2
Tragion to Top of Head	25	12.0	1.0	9.5	9.8	12.0	13.1	14.9
Ear-Sellion Depth	25	9.5	0.4	8.3	8.4	9.4	10.0	10.1
Bitragion Breadth	25	12.6	0.5	11.4	11.5	12.7	13.3	13.4
Mouth Breadth	25	4.6	0.6	3.5	3.6	4.4	5.3	6.3
Nose Length	25	4.5	0.4	3.7	3.7	4.4	5.1	5.2
Neck Circumference	41	30.8	1.5	27.7	28.4	30.7	33.7	34.4
Lateral Neck Breadth	40	8.9	0.7	7.4	7.7	8.8	9.9	10.4

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	116	54.6	1.6	50.6	51.8	54.5	57.3	60.2
Head Breadth	117	14.8	0.5	13.6	14.0	14.7	15.6	15.8
Head Length	39	18.9	0.8	16.9	17.6	18.8	19.9	20.5
Bizygomatic Breadth	42	13.1	0.5	11.7	12.2	13.1	13.8	14.2
Frontal Breadth	42	10.3	0.5	9.1	9.4	10.2	11.1	11.4
Lower Face Height	42	10.7	0.6	9.2	9.5	10.6	11.4	12.5
Face Height	42	17.3	0.9	15.5	15.5	17.2	18.6	19.3
Head Height	42	20.6	0.9	19.0	19.1	20.5	22.0	22.9
Tragion to Back of Head	42	9.6	0.9	8.2	8.3	9.4	11.2	12.8
Tragion to Top of Head	42	12.4	0.8	10.2	11.2	12.3	13.6	15.2
Ear-Sellion Depth	41	9.3	0.6	8.3	8.3	9.3	10.1	10.6
Bitragion Breadth	42	12.6	0.4	11.7	11.8	12.6	13.2	13.6
Mouth Breadth	42	4.5	0.4	3.7	3.8	4.5	5.1	5.4
Nose Length	42	4.5	0.4	3.2	3.8	4.5	5.0	5.3
Neck Circumference	39	31.4	1.6	28.4	28.8	31.0	33.7	37.5
Lateral Neck Breadth	39	9.3	0.7	7.9	8.0	9.2	10.5	10.7

HEAD, FACE, AND NECK MEASUREMENTS
(Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Head Circumference	66	54.3	1.4	51.2	51.9	54.3	56.4	58.2
Head Breadth	67	14.9	0.6	13.6	13.9	14.8	15.7	17.2
Head Length	24	18.6	0.7	17.4	17.4	18.8	19.6	19.8
Bizygomatic Breadth	19	13.2	0.6	12.3	**	13.0	**	14.4
Frontal Breadth	20	10.2	0.5	9.2	**	10.1	**	11.1
Lower Face Height	20	10.7	0.6	9.7	**	10.5	**	11.7
Face Height	20	17.1	1.0	15.3	**	17.2	**	18.4
Head Height	19	20.3	0.9	18.6	**	20.1	**	21.7
Tragion to Back of Head	19	9.4	0.7	8.5	**	9.3	**	11.1
Tragion to Top of Head	20	12.2	0.6	11.2	**	12.2	**	13.2
Ear-Sellion Depth	20	9.4	0.6	8.2	**	9.4	**	10.9
Bitragion Breadth	20	12.5	0.5	11.9	**	12.4	**	13.7
Mouth Breadth	20	4.6	0.4	3.9	**	4.6	**	5.3
Nose Length	20	4.7	0.3	4.1	**	4.6	**	5.2
Neck Circumference	25	31.4	1.7	28.8	28.9	31.2	34.2	35.5
Lateral Neck Breadth	24	9.2	0.7	7.7	7.7	9.2	10.2	10.5

SHOULDER, ARM, AND HAND MEASUREMENTS

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	67	10.8	0.9	8.9	9.2	10.7	12.3	12.5
Shoulder Breadth	211	24.4	1.5	19.3	22.0	24.3	26.9	28.9
Biacromial Breadth	66	21.9	1.4	18.9	19.7	21.7	24.1	24.9
Shoulder-Elbow Length	211	18.5	1.4	15.0	16.3	18.5	20.9	22.3
Acromion-Radiale Length	67	16.7	1.0	14.8	15.0	16.7	18.1	19.8
Upper Arm Circumference	212	15.8	1.3	12.6	13.6	15.8	17.8	20.2
Upper Arm Depth	65	4.7	0.6	3.2	3.6	4.6	5.8	6.2
Elbow-Hand Length	210	24.4	1.6	20.5	21.8	24.4	27.3	28.9
Radiale-Stylion Length	67	13.5	1.1	11.3	11.6	13.4	15.5	16.0
Forearm Circumference	212	15.7	1.0	13.1	13.9	15.7	17.4	18.9
Forearm Breadth	66	4.7	0.4	3.9	3.9	4.5	5.4	5.7
Wrist Circumference	66	11.3	0.8	9.4	9.9	11.2	12.7	13.0
Wrist Breadth	66	2.9	0.3	2.3	2.4	2.9	3.5	3.7
Hand Length	212	10.5	0.7	8.6	9.3	10.5	11.7	12.6
Hand Breadth	212	5.1	0.4	4.0	4.4	5.0	5.8	6.1
Minimum Hand Clearance	77	43.6	2.9	38.1	38.1	42.0	47.0	50.8
Thumb Crotch-Mid Finq L	54	7.4	0.6	6.2	6.4	7.2	8.5	8.8
Thumb Length	75	3.6	0.4	2.6	3.0	3.5	4.1	4.6
Thumb Diameter	77	12.4	0.9	10.3	10.5	11.9	13.5	14.3
Index Finger Length	74	4.1	0.4	3.3	3.4	4.0	4.7	5.0
Index Finger Diameter	76	9.6	0.6	8.3	8.4	9.3	10.2	10.3
Middle Finger Length	74	4.4	0.4	3.5	3.8	4.3	5.2	5.5
Middle Finger Diameter	77	9.9	0.6	8.3	8.7	9.4	10.8	11.1
Mid Finger-Thumb Grip L	64	6.0	0.8	4.3	4.5	5.9	7.2	7.9
Maximum Fist Circ	74	16.2	1.1	13.7	14.2	16.2	18.1	18.7
Maximum Fist Breadth	74	5.8	0.5	4.9	4.9	5.8	6.6	7.2
Maximum Fist Depth	74	4.4	0.6	3.0	3.4	4.2	5.4	5.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	77	11.2	0.9	9.1	9.8	11.1	12.6	13.9
Shoulder Breadth	228	25.7	1.6	21.6	23.0	25.6	28.2	30.9
Biacromial Breadth	79	23.0	1.3	20.0	20.7	22.8	25.2	25.8
Shoulder-Elbow Length	228	20.3	1.2	17.7	18.4	20.1	22.3	23.6
Acromion-Radiale Length	78	17.9	1.1	15.6	16.3	17.9	19.7	20.2
Upper Arm Circumference	227	16.2	1.3	13.4	14.2	16.0	18.4	20.9
Upper Arm Depth	73	5.0	0.8	3.4	3.8	4.9	6.2	6.5
Elbow-Hand Length	228	26.7	1.6	23.1	24.4	26.5	29.5	31.8
Radiale-Stylion Length	79	14.6	1.2	12.3	12.6	14.5	16.5	16.8
Forearm Circumference	227	16.0	1.0	13.2	14.3	15.8	17.7	19.2
Forearm Breadth	72	4.8	0.5	3.5	3.9	4.8	5.5	5.8
Wrist Circumference	77	11.5	0.9	9.2	10.2	11.4	13.0	13.4
Wrist Breadth	76	2.9	0.3	2.1	2.4	2.9	3.4	3.6
Hand Length	227	11.4	0.7	9.4	10.2	11.3	12.5	13.9
Hand Breadth	227	5.4	0.3	4.5	4.8	5.4	6.0	6.5
Minimum Hand Clearance	70	45.8	2.8	38.1	39.1	44.2	49.2	54.1
Thumb Crotch-Mid Finq L	62	7.9	0.7	5.9	6.5	8.0	8.8	9.7
Thumb Length	71	3.8	0.4	2.8	3.1	3.8	4.4	4.6
Thumb Diameter	70	13.1	0.9	11.1	11.1	12.6	14.1	15.8
Index Finger Length	71	4.4	0.4	3.5	3.8	4.3	5.0	5.3
Index Finger Diameter	70	10.1	0.6	8.7	8.9	9.7	10.9	11.1
Middle Finger Length	71	4.8	0.4	3.9	4.2	4.8	5.5	5.7
Middle Finger Diameter	71	10.4	0.7	9.1	9.1	10.0	11.2	11.9
Mid Finger-Thumb Grip L	63	6.2	1.0	3.9	4.1	6.3	7.7	8.5
Maximum Fist Circ	71	17.0	1.3	13.6	14.8	17.2	18.6	20.0
Maximum Fist Breadth	71	6.1	0.6	5.0	5.2	6.0	6.9	8.8
Maximum Fist Depth	71	4.8	0.5	3.7	3.9	4.8	5.5	5.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	76	12.0	0.8	9.9	10.6	12.0	13.2	13.6
Shoulder Breadth	262	26.8	1.4	22.7	24.7	26.8	29.1	31.4
Biacromial Breadth	76	24.4	1.2	21.4	22.0	24.4	26.0	26.4
Shoulder-Elbow Length	263	21.9	1.3	18.5	19.7	21.8	23.9	27.1
Acromion-Radiale Length	76	19.3	1.1	15.8	17.3	19.2	20.6	23.2
Upper Arm Circumference	263	16.7	1.4	13.5	14.8	16.5	19.0	24.2
Upper Arm Depth	91	5.0	0.6	3.7	4.0	5.0	6.0	6.3
Elbow-Hand Length	263	28.5	1.5	24.7	26.2	28.4	31.0	32.7
Radiale-Stylion Length	76	15.7	1.2	12.6	14.0	15.6	17.6	18.0
Forearm Circumference	263	16.6	1.1	14.4	15.0	16.4	18.5	22.1
Forearm Breadth	91	5.0	0.4	4.1	4.3	4.9	5.7	6.0
Wrist Circumference	93	11.8	0.8	10.0	10.5	11.6	13.2	14.1
Wrist Breadth	91	3.0	0.2	2.5	2.5	2.9	3.3	3.7
Hand Length	260	12.0	0.8	5.5	10.8	11.9	13.1	13.8
Hand Breadth	260	5.6	0.4	4.8	5.0	5.5	6.2	6.7
Minimum Hand Clearance	92	47.8	3.1	41.3	41.6	46.0	52.4	57.2
Thumb Crotch-Mid Fing L	83	8.2	0.7	6.7	6.8	8.1	9.2	9.5
Thumb Length	94	4.1	0.4	3.1	3.4	4.1	4.8	5.0
Thumb Diameter	93	13.6	0.9	11.9	11.9	13.2	14.7	15.8
Index Finger Length	94	4.6	0.4	3.9	4.0	4.5	5.2	5.4
Index Finger Diameter	93	10.6	0.8	9.1	9.2	10.1	11.7	12.7
Middle Finger Length	94	5.1	0.4	4.4	4.4	5.0	5.6	6.0
Middle Finger Diameter	93	10.8	0.8	9.5	9.5	10.4	11.7	12.7
Mid Finger-Thumb Grip L	90	6.4	0.8	3.6	4.7	6.5	7.5	8.0
Maximum Fist Circ	94	17.8	1.2	15.5	15.9	17.8	19.6	20.8
Maximum Fist Breadth	94	6.2	0.5	5.2	5.3	6.1	7.0	7.3
Maximum Fist Depth	94	5.2	0.5	3.7	4.1	5.2	5.9	6.3

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	76	12.6	0.8	10.5	11.2	12.4	14.0	15.2
Shoulder Breadth	216	28.1	1.8	23.1	25.4	27.8	31.3	34.6
Biacromial Breadth	76	25.8	1.4	21.9	23.5	25.6	28.5	29.8
Shoulder-Elbow Length	217	23.3	1.3	18.8	21.1	23.2	25.5	27.1
Acromion-Radiale Length	77	20.7	1.3	17.8	18.5	20.5	23.0	24.5
Upper Arm Circumference	219	17.2	1.5	13.7	14.9	17.0	19.7	23.4
Upper Arm Depth	78	5.3	0.8	3.6	4.0	5.2	6.3	8.3
Elbow-Hand Length	217	30.2	1.8	25.4	27.6	30.0	33.3	36.5
Radiale-Stylion Length	77	16.8	1.3	14.1	14.6	16.7	18.8	19.9
Forearm Circumference	219	17.0	1.2	14.2	15.1	16.9	19.1	20.8
Forearm Breadth	79	5.3	0.6	4.1	4.3	5.2	6.1	6.8
Wrist Circumference	80	12.2	0.8	10.3	10.9	12.1	13.3	14.3
Wrist Breadth	80	3.1	0.3	2.2	2.4	3.0	3.5	4.0
Hand Length	219	12.7	0.8	10.8	11.5	12.6	14.1	15.4
Hand Breadth	219	5.9	0.4	5.1	5.3	5.9	6.5	7.1
Minimum Hand Clearance	62	49.2	3.6	44.5	44.5	47.1	53.6	63.5
Thumb Crotch-Mid Fing L	59	8.7	0.8	7.1	7.5	8.5	10.2	10.9
Thumb Length	62	4.4	0.4	3.6	3.7	4.3	5.1	5.5
Thumb Diameter	62	14.1	0.8	11.9	12.2	13.7	15.0	15.8
Index Finger Length	62	4.9	0.4	4.1	4.2	4.9	5.5	5.8
Index Finger Diameter	61	11.0	0.7	9.5	9.5	10.6	11.8	12.7
Middle Finger Length	62	5.4	0.4	4.5	4.6	5.3	6.2	6.5
Middle Finger Diameter	62	11.3	0.7	9.5	9.6	10.9	12.1	12.7
Mid Finger-Thumb Grip L	61	7.0	1.0	4.4	5.0	7.0	8.4	9.0
Maximum Fist Circ	61	18.8	1.3	15.5	15.9	18.5	20.7	21.2
Maximum Fist Breadth	62	6.3	0.5	5.2	5.5	6.2	7.2	7.6
Maximum Fist Depth	62	5.5	0.5	4.0	4.5	5.4	6.4	6.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	76	13.2	1.0	10.8	11.2	13.1	14.7	15.5
Shoulder Breadth	225	29.5	2.2	23.5	26.5	29.1	33.1	38.5
Biacromial Breadth	76	27.1	1.5	23.6	24.2	27.0	29.5	30.8
Shoulder-Elbow Length	226	24.7	1.4	20.7	22.3	24.5	26.9	28.6
Acromion-Radiale Length	76	22.3	1.6	19.0	19.6	22.3	24.8	26.2
Upper Arm Circumference	224	18.1	2.0	14.3	15.6	17.7	21.8	29.9
Upper Arm Depth	87	5.4	0.8	3.7	4.1	5.2	6.8	7.7
Elbow-Hand Length	225	31.9	1.9	28.1	29.0	31.7	35.3	37.0
Radiale-Stylion Length	76	17.7	1.5	14.5	15.1	17.3	20.4	22.2
Forearm Circumference	225	17.7	1.4	13.9	15.8	17.6	20.0	24.7
Forearm Breadth	87	5.5	0.6	4.4	4.6	5.4	6.5	7.4
Wrist Circumference	86	12.4	1.0	10.4	10.9	12.3	14.2	14.7
Wrist Breadth	87	3.2	0.3	2.6	2.7	3.1	3.5	4.1
Hand Length	224	13.3	0.8	11.1	11.9	13.2	14.6	15.9
Hand Breadth	225	6.2	0.4	5.2	5.5	6.1	6.7	7.4
Minimum Hand Clearance	62	51.8	3.7	44.5	44.9	49.9	56.3	66.7
Thumb Crotch-Mid Fing L	62	9.4	0.8	7.8	8.2	9.3	10.7	11.4
Thumb Length	63	4.7	0.4	3.8	4.1	4.6	5.2	5.6
Thumb Diameter	62	15.0	1.0	13.5	13.5	14.6	16.5	18.1
Index Finger Length	63	5.2	0.3	4.5	4.6	5.2	5.8	6.0
Index Finger Diameter	62	11.7	0.8	10.3	10.3	11.3	12.7	13.5
Middle Finger Length	63	5.8	0.4	4.7	5.1	5.8	6.3	6.7
Middle Finger Diameter	63	12.0	0.9	10.3	10.3	11.5	13.5	14.3
Mid Finger-Thumb Grip L	62	7.5	1.0	4.4	4.9	7.6	8.6	8.9
Maximum Fist Circ	63	20.0	1.2	17.7	18.0	19.9	21.8	22.7
Maximum Fist Breadth	63	6.7	0.5	5.5	5.9	6.6	7.6	8.2
Maximum Fist Depth	63	5.8	0.6	4.5	4.6	5.9	6.7	7.1

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	64	13.7	1.0	12.0	12.2	13.6	15.4	15.9
Shoulder Breadth	192	30.7	2.2	26.0	27.7	30.4	34.1	41.4
Biacromial Breadth	64	27.9	1.3	24.5	25.3	27.8	30.0	30.9
Shoulder-Elbow Length	192	26.0	1.4	22.1	23.8	25.9	28.4	31.0
Acromion-Radiale Length	64	23.0	1.5	19.6	20.3	22.8	25.4	26.4
Upper Arm Circumference	189	18.9	2.2	14.6	15.6	18.5	22.8	27.1
Upper Arm Depth	67	5.9	0.9	4.0	4.7	5.7	7.2	9.5
Elbow-Hand Length	192	33.4	1.8	28.4	30.7	33.3	36.0	38.9
Radiale-Stylion Length	64	18.6	1.5	15.1	16.0	18.6	21.1	21.9
Forearm Circumference	189	18.5	1.5	15.1	16.1	18.2	21.0	24.5
Forearm Breadth	68	5.8	0.6	4.8	4.9	5.7	6.7	7.7
Wrist Circumference	68	12.8	1.0	11.0	11.3	12.7	14.6	16.0
Wrist Breadth	68	3.3	0.3	2.7	2.7	3.2	4.0	4.5
Hand Length	192	13.8	0.8	11.5	12.6	13.7	15.1	16.1
Hand Breadth	192	6.4	0.4	5.1	5.7	6.3	7.0	7.6
Minimum Hand Clearance	60	53.1	3.5	47.6	47.6	51.2	58.2	63.5
Thumb Crotch-Mid Fing L	60	9.5	0.8	8.0	8.1	9.4	10.8	11.5
Thumb Length	60	4.8	0.4	3.9	4.0	4.8	5.2	5.3
Thumb Diameter	59	15.4	0.9	12.7	13.0	14.9	16.5	17.4
Index Finger Length	60	5.3	0.3	4.5	4.7	5.3	5.8	6.2
Index Finger Diameter	60	11.9	0.8	10.3	10.3	11.5	12.7	14.3
Middle Finger Length	60	5.9	0.4	5.0	5.1	5.8	6.5	6.6
Middle Finger Diameter	60	12.2	0.7	11.1	11.1	11.8	13.2	14.3
Mid Finger-Thumb Grip L	59	7.6	1.1	5.2	5.4	7.8	9.1	9.7
Maximum Fist Circ	59	20.4	1.3	17.5	18.4	20.2	22.8	23.3
Maximum Fist Breadth	60	6.9	0.5	5.9	5.9	6.9	7.6	8.1
Maximum Fist Depth	60	6.0	0.5	4.2	5.0	6.0	6.6	6.9

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	81	14.4	1.0	12.4	12.8	14.3	15.8	17.0
Shoulder Breadth	251	32.1	2.2	27.1	28.7	31.9	35.7	40.4
Biacromial Breadth	81	29.2	1.6	25.5	26.5	29.1	31.7	33.6
Shoulder-Elbow Length	250	27.5	1.5	23.8	25.2	27.2	29.7	31.5
Acromion-Radiale Length	81	24.5	1.7	20.4	22.0	24.3	27.3	28.5
Upper Arm Circumference	251	19.6	2.2	15.2	16.4	19.4	23.5	29.2
Upper Arm Depth	91	6.1	1.0	4.3	4.6	6.0	7.9	8.5
Elbow-Hand Length	251	35.2	2.0	30.6	32.2	34.8	38.6	41.6
Radiale-Stylion Length	81	19.3	1.5	16.5	16.9	19.3	21.9	23.5
Forearm Circumference	250	19.1	1.6	16.0	16.7	19.0	21.5	27.8
Forearm Breadth	91	6.0	0.6	4.9	5.0	5.9	7.0	7.5
Wrist Circumference	91	13.2	1.1	10.8	11.5	13.1	14.8	17.1
Wrist Breadth	91	3.3	0.3	2.7	2.8	3.2	3.8	4.5
Hand Length	251	14.4	0.9	11.8	13.0	14.3	15.9	18.1
Hand Breadth	251	6.6	0.4	5.7	5.9	6.5	7.3	7.9
Minimum Hand Clearance	78	53.9	3.1	44.5	47.9	52.2	58.3	60.3
Thumb Crotch-Mid Fing L	79	10.0	0.8	8.2	8.8	9.9	11.3	12.0
Thumb Length	79	5.0	0.4	4.0	4.1	4.9	5.7	6.0
Thumb Diameter	79	15.7	0.8	13.5	13.8	15.3	16.5	17.4
Index Finger Length	79	5.6	0.4	4.5	4.8	5.6	6.1	6.6
Index Finger Diameter	79	12.2	0.7	10.3	10.6	11.8	13.1	14.3
Middle Finger Length	79	6.2	0.4	5.5	5.6	6.1	7.0	7.2
Middle Finger Diameter	79	12.6	0.7	10.3	11.2	12.2	13.4	14.3
Mid Finger-Thumb Grip L	78	8.1	0.9	4.9	6.5	8.1	9.5	9.7
Maximum Fist Circ	79	21.0	1.1	18.1	18.8	20.8	23.1	23.5
Maximum Fist Breadth	79	7.1	0.5	6.1	6.3	6.9	7.9	8.4
Maximum Fist Depth	79	6.2	0.5	5.0	5.2	6.2	6.9	7.2

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	75	14.9	1.0	12.9	13.2	14.7	16.5	17.3
Shoulder Breadth	253	33.1	2.6	27.9	29.0	32.9	37.9	42.4
Biacromial Breadth	75	30.3	1.6	27.5	27.7	30.1	32.9	35.1
Shoulder-Elbow Length	252	28.6	1.6	24.6	26.2	28.5	31.6	33.9
Acromion-Radiale Length	75	25.6	1.9	21.8	22.4	25.8	28.3	29.9
Upper Arm Circumference	253	20.4	2.6	15.4	17.1	19.9	24.8	31.2
Upper Arm Depth	84	6.4	1.1	4.2	4.6	6.3	8.1	9.3
Elbow-Hand Length	252	36.7	2.1	31.9	33.2	36.5	40.4	44.4
Radiale-Stylion Length	75	20.3	1.5	15.8	17.7	20.2	22.6	23.8
Forearm Circumference	253	19.6	1.7	16.2	17.4	19.4	22.7	28.5
Forearm Breadth	84	6.3	0.8	4.9	5.1	6.1	7.5	8.7
Wrist Circumference	85	13.5	1.4	10.8	11.6	13.3	16.1	19.0
Wrist Breadth	85	3.4	0.4	2.5	2.8	3.3	4.0	4.6
Hand Length	251	15.0	0.9	12.6	13.6	14.9	16.4	17.4
Hand Breadth	251	6.8	0.4	5.6	6.1	6.8	7.4	7.9
Minimum Hand Clearance	93	56.2	3.3	47.6	48.3	55.0	59.9	63.5
Thumb Crotch-Mid Fing L	92	10.6	0.9	8.6	9.1	10.5	12.0	12.3
Thumb Length	93	5.3	0.5	4.2	4.5	5.3	6.0	6.4
Thumb Diameter	90	15.9	1.0	13.5	13.9	15.5	17.3	18.1
Index Finger Length	93	5.9	0.5	4.6	5.1	5.8	6.6	7.2
Index Finger Diameter	92	12.6	0.8	11.1	11.1	12.2	13.5	14.3
Middle Finger Length	93	6.5	0.5	5.1	5.8	6.4	7.2	8.0
Middle Finger Diameter	92	12.9	0.8	11.1	11.2	12.4	14.0	14.3
Mid Finger-Thumb Grip L	92	8.5	1.1	6.0	6.4	8.4	10.1	11.1
Maximum Fist Circ	92	21.7	1.4	17.8	19.5	21.5	23.9	25.2
Maximum Fist Breadth	93	7.3	0.6	6.2	6.3	7.2	8.2	8.7
Maximum Fist Depth	93	6.5	0.5	4.5	5.5	6.4	7.2	7.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	96	15.5	1.2	12.3	13.9	15.2	17.5	18.2
Shoulder Breadth	282	34.4	3.0	27.4	30.5	33.9	39.9	47.2
Biacromial Breadth	97	31.3	2.0	26.5	28.1	31.1	35.2	36.2
Shoulder-Elbow Length	280	29.8	1.6	24.8	26.9	29.7	32.3	35.7
Acromion-Radiale Length	97	26.6	1.8	22.2	23.4	26.8	29.2	31.0
Upper Arm Circumference	281	21.3	2.9	15.9	17.7	20.6	26.6	33.5
Upper Arm Depth	86	6.3	1.1	4.4	4.7	6.1	8.0	10.5
Elbow-Hand Length	280	38.2	2.3	32.2	34.7	38.0	42.3	45.9
Radiale-Stylion Length	97	21.0	1.7	16.3	18.2	21.0	23.5	25.3
Forearm Circumference	281	20.5	1.9	16.1	17.9	20.0	24.1	28.0
Forearm Breadth	86	6.2	0.7	5.0	5.1	6.1	7.5	8.5
Wrist Circumference	85	13.5	1.2	11.4	11.6	13.3	15.6	16.9
Wrist Breadth	86	3.4	0.3	2.8	2.9	3.4	3.9	4.4
Hand Length	281	15.6	1.0	13.2	14.0	15.5	17.3	18.8
Hand Breadth	281	7.1	0.5	5.9	6.2	7.0	7.8	8.6
Minimum Hand Clearance	98	58.5	4.4	44.5	49.4	56.8	64.9	69.9
Thumb Crotch-Mid Fing L	98	11.0	0.8	9.2	9.7	10.8	12.5	13.1
Thumb Length	98	5.5	0.5	4.5	4.8	5.4	6.5	6.7
Thumb Diameter	99	16.5	1.2	12.7	14.3	16.2	17.9	19.9
Index Finger Length	98	6.1	0.5	4.8	5.2	6.0	6.9	7.7
Index Finger Diameter	99	13.0	0.8	10.3	11.2	12.6	14.0	15.0
Middle Finger Length	98	6.7	0.5	5.2	5.9	6.6	7.7	7.9
Middle Finger Diameter	99	13.2	0.9	10.3	11.4	12.9	14.3	15.0
Mid Finger-Thumb Grip L	98	8.9	1.1	5.8	6.6	8.9	10.6	11.7
Maximum Fist Circ	99	22.8	1.6	18.6	20.0	22.6	25.0	27.2
Maximum Fist Breadth	99	7.6	0.7	5.7	6.4	7.6	8.6	9.6
Maximum Fist Depth	99	6.8	0.5	5.1	6.0	6.7	7.5	9.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	96	15.8	1.2	13.6	13.9	15.8	17.7	18.7
Shoulder Breadth	287	35.3	2.6	29.6	31.2	35.1	39.9	45.0
Biacromial Breadth	96	32.3	1.9	27.0	28.6	32.3	34.8	35.7
Shoulder-Elbow Length	287	31.0	1.8	26.0	28.5	30.9	33.8	36.7
Acromion-Radiale Length	96	27.8	2.0	22.2	24.5	27.9	31.5	34.2
Upper Arm Circumference	287	21.9	2.6	16.0	18.2	21.5	27.0	32.1
Upper Arm Depth	97	6.7	1.0	4.5	5.3	6.5	8.6	9.6
Elbow-Hand Length	287	40.0	2.4	34.6	36.2	39.7	44.0	48.6
Radiale-Stylion Length	96	22.4	1.8	18.7	19.5	22.0	25.4	27.6
Forearm Circumference	286	21.0	1.8	16.8	18.4	20.8	24.4	27.0
Forearm Breadth	97	6.7	0.6	5.4	5.7	6.6	7.7	8.7
Wrist Circumference	97	14.2	1.2	12.1	12.5	14.1	16.1	17.6
Wrist Breadth	96	3.6	0.4	2.8	3.0	3.5	4.2	4.4
Hand Length	287	16.3	1.0	13.7	14.5	16.1	17.8	20.0
Hand Breadth	286	7.3	0.5	6.0	6.5	7.3	8.1	9.0
Minimum Hand Clearance	94	59.4	4.2	50.8	51.4	57.3	65.6	73.0
Thumb Crotch-Mid Fing L	94	11.3	1.0	9.4	9.7	11.2	12.9	13.9
Thumb Length	94	5.7	0.4	4.7	4.9	5.7	6.4	6.7
Thumb Diameter	91	17.0	1.1	15.0	15.0	16.5	18.4	21.4
Index Finger Length	94	6.4	0.5	5.2	5.4	6.4	7.1	7.6
Index Finger Diameter	94	13.2	0.9	11.9	11.9	12.8	14.3	15.8
Middle Finger Length	94	7.0	0.5	5.6	6.0	7.0	7.8	8.3
Middle Finger Diameter	94	13.5	0.8	11.9	11.9	13.1	14.4	15.8
Mid Finger-Thumb Grip L	94	9.1	1.1	5.1	6.9	9.2	10.7	11.3
Maximum Fist Circ	93	23.1	1.5	19.6	20.6	23.0	25.5	26.9
Maximum Fist Breadth	94	7.7	0.7	6.3	6.7	7.6	9.0	9.4
Maximum Fist Depth	94	6.9	0.5	5.4	6.1	6.8	7.6	8.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	100	16.5	1.3	13.5	14.2	16.4	18.9	20.2
Shoulder Breadth	312	36.9	2.5	30.5	33.1	36.6	41.2	46.4
Biacromial Breadth	100	33.6	2.2	28.9	30.2	33.2	36.9	40.2
Shoulder-Elbow Length	314	32.4	1.8	27.9	29.3	32.2	35.5	38.8
Acromion-Radiale Length	100	29.2	1.9	24.9	26.2	29.1	32.1	35.6
Upper Arm Circumference	312	23.0	2.7	16.8	19.3	22.6	28.1	36.9
Upper Arm Depth	107	7.0	1.2	4.7	5.2	6.8	9.1	11.2
Elbow-Hand Length	313	41.5	2.5	34.9	37.7	41.4	46.2	49.8
Radiale-Stylion Length	100	23.0	2.0	19.2	19.9	23.1	26.4	28.8
Forearm Circumference	313	21.9	1.8	17.7	19.3	21.7	24.8	32.1
Forearm Breadth	108	7.0	0.7	5.3	5.8	7.0	8.3	9.9
Wrist Circumference	107	14.6	1.2	12.3	12.9	14.3	16.7	17.5
Wrist Breadth	107	3.7	0.3	3.0	3.2	3.7	4.3	4.7
Hand Length	312	16.9	1.0	14.5	15.1	16.8	18.6	20.1
Hand Breadth	311	7.6	0.5	6.3	6.8	7.5	8.5	9.3
Minimum Hand Clearance	107	61.3	4.0	54.1	54.2	59.8	65.9	79.4
Thumb Crotch-Mid Fing L	107	11.7	0.8	9.8	10.2	11.6	13.1	13.9
Thumb Length	107	5.9	0.5	4.6	5.1	5.8	6.6	7.5
Thumb Diameter	106	17.5	1.1	15.0	15.4	17.0	19.0	21.4
Index Finger Length	107	6.6	0.5	5.5	5.7	6.5	7.5	7.9
Index Finger Diameter	106	13.8	0.9	11.9	11.9	13.3	14.8	16.6
Middle Finger Length	107	7.3	0.5	6.0	6.4	7.2	8.2	8.9
Middle Finger Diameter	106	14.0	0.9	11.9	12.0	13.5	15.1	16.6
Mid Finger-Thumb Grip L	107	9.5	1.0	6.5	7.6	9.5	11.2	11.9
Maximum Fist Circ	106	24.3	1.7	20.6	21.3	24.1	27.1	29.3
Maximum Fist Breadth	107	8.1	0.8	6.6	6.9	7.9	9.2	10.3
Maximum Fist Depth	107	7.2	0.6	5.5	6.0	7.2	8.1	8.8

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	82	17.1	1.3	14.2	15.1	16.8	19.1	20.7
Shoulder Breadth	270	38.6	2.8	33.3	34.4	38.3	43.3	47.7
Biacromial Breadth	82	34.7	2.2	30.9	31.2	34.4	37.9	40.4
Shoulder-Elbow Length	271	33.5	2.0	28.6	30.2	33.5	36.7	38.5
Acromion-Radiale Length	82	30.2	2.0	24.3	26.8	30.1	33.3	34.6
Upper Arm Circumference	271	24.1	2.6	18.0	19.8	23.7	28.6	31.2
Upper Arm Depth	89	7.4	1.0	5.5	5.7	7.2	9.0	9.8
Elbow-Hand Length	270	43.3	2.7	37.4	39.0	42.7	47.9	51.7
Radiale-Stylion Length	82	24.1	2.1	19.0	21.4	23.6	27.7	32.1
Forearm Circumference	271	22.9	2.0	17.8	19.6	22.8	26.4	28.2
Forearm Breadth	89	7.3	0.7	5.6	6.2	7.2	8.6	9.3
Wrist Circumference	90	15.3	1.2	12.2	13.6	15.1	17.1	17.8
Wrist Breadth	89	4.0	0.4	3.0	3.3	3.9	4.6	5.1
Hand Length	269	17.5	1.1	14.6	15.7	17.2	19.3	21.7
Hand Breadth	270	7.9	0.6	6.6	6.9	7.9	9.0	9.7
Minimum Hand Clearance	98	64.0	4.9	54.1	55.1	61.9	72.0	79.4
Thumb Crotch-Mid Fing L	97	12.0	1.1	9.5	10.2	12.0	13.8	15.2
Thumb Length	98	6.1	0.6	4.8	5.1	6.0	7.1	8.1
Thumb Diameter	98	18.1	1.5	15.8	15.8	17.4	20.3	21.4
Index Finger Length	98	6.8	0.5	6.0	6.1	6.6	8.0	8.4
Index Finger Diameter	98	14.1	1.1	11.9	12.1	13.7	15.8	17.4
Middle Finger Length	98	7.5	0.6	6.3	6.6	7.4	8.6	9.4
Middle Finger Diameter	98	14.4	1.1	11.9	12.3	13.9	16.1	17.4
Mid Finger-Thumb Grip L	97	9.4	1.2	5.8	7.1	9.5	11.2	12.7
Maximum Fist Circ	98	25.1	2.1	20.9	21.7	24.7	28.5	31.5
Maximum Fist Breadth	99	8.4	0.9	6.8	7.1	8.3	9.8	11.6
Maximum Fist Depth	99	7.4	0.7	6.0	6.4	7.3	8.5	9.9

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	86	17.7	1.2	15.4	15.6	17.5	19.6	20.0
Shoulder Breadth	262	39.9	2.7	33.7	35.7	39.7	44.8	47.4
Biacromial Breadth	87	35.8	1.9	31.2	33.0	35.4	39.2	40.7
Shoulder-Elbow Length	262	34.5	1.9	30.3	31.6	34.5	37.6	39.8
Acromion-Radiale Length	87	30.6	1.8	26.1	27.2	30.6	33.2	34.1
Upper Arm Circumference	264	25.1	2.9	19.2	20.6	24.6	30.2	34.4
Upper Arm Depth	81	7.5	1.1	5.6	5.8	7.4	9.1	10.6
Elbow-Hand Length	262	44.2	2.8	37.3	39.9	44.1	48.7	50.7
Radiale-Stylion Length	87	24.2	1.9	19.6	21.4	23.9	27.0	27.9
Forearm Circumference	264	23.7	2.1	18.8	20.5	23.4	27.5	30.3
Forearm Breadth	81	7.5	0.7	5.8	6.3	7.4	8.6	8.9
Wrist Circumference	80	15.4	1.1	12.5	13.5	15.2	17.0	17.8
Wrist Breadth	80	3.9	0.4	3.1	3.2	3.9	4.5	4.7
Hand Length	262	17.8	1.1	15.2	16.0	17.7	19.5	20.4
Hand Breadth	263	8.0	0.7	6.6	7.0	7.8	9.1	9.8
Minimum Hand Clearance	94	65.2	5.5	54.1	55.8	63.3	73.5	82.6
Thumb Crotch-Mid Fing L	95	12.5	1.1	9.7	10.7	12.3	14.2	14.8
Thumb Length	95	6.4	0.5	5.4	5.5	6.3	7.1	7.8
Thumb Diameter	95	18.7	1.5	15.8	16.1	18.1	20.9	23.0
Index Finger Length	95	7.1	0.5	5.8	6.2	7.0	8.0	8.4
Index Finger Diameter	94	14.6	1.1	12.7	12.7	14.2	16.3	17.4
Middle Finger Length	95	7.8	0.6	6.7	6.7	7.7	8.6	9.2
Middle Finger Diameter	95	15.0	1.1	12.7	12.7	14.5	16.5	18.1
Mid Finger-Thumb Grip L	95	10.2	1.0	6.5	8.4	10.2	11.9	12.8
Maximum Fist Circ	94	26.2	2.2	20.9	22.5	25.9	29.4	31.5
Maximum Fist Breadth	95	8.7	1.1	6.6	7.0	8.6	10.3	11.7
Maximum Fist Depth	95	7.7	0.8	5.7	6.4	7.6	8.7	9.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	63	18.2	1.5	14.9	16.1	18.2	20.3	22.8
Shoulder Breadth	198	41.4	3.3	34.7	36.4	41.0	47.3	51.8
Biacromial Breadth	63	36.8	2.6	32.0	32.7	36.3	41.0	43.8
Shoulder-Elbow Length	197	35.1	2.3	29.8	31.7	35.2	38.5	41.9
Acromion-Radiale Length	63	31.4	2.4	27.2	28.0	31.1	35.1	36.5
Upper Arm Circumference	198	26.2	3.0	20.0	21.1	25.7	31.6	36.8
Upper Arm Depth	78	7.9	1.3	4.8	6.0	7.8	10.2	11.6
Elbow-Hand Length	198	45.0	3.2	38.1	40.0	45.0	50.3	52.7
Radiale-Stylion Length	63	24.9	2.2	20.5	20.9	25.2	28.0	30.6
Forearm Circumference	198	24.6	2.5	20.1	20.9	24.1	28.7	31.6
Forearm Breadth	78	7.8	0.9	5.9	6.3	7.7	9.3	10.7
Wrist Circumference	79	16.0	1.4	12.5	13.3	16.0	18.2	19.5
Wrist Breadth	77	4.1	0.4	3.0	3.3	4.0	4.8	5.3
Hand Length	197	18.0	1.3	15.1	16.0	17.9	20.0	21.6
Hand Breadth	197	8.2	0.8	6.6	6.9	8.1	9.4	10.0
Minimum Hand Clearance	56	67.9	5.9	54.1	57.7	66.3	77.5	82.6
Thumb Crotch-Mid Fing L	55	12.7	1.3	8.7	10.5	12.6	14.4	15.2
Thumb Length	56	6.4	0.5	5.1	5.5	6.4	7.1	7.2
Thumb Diameter	55	19.4	1.7	15.8	16.5	19.0	21.5	23.0
Index Finger Length	56	7.1	0.5	5.7	6.3	7.1	7.9	8.1
Index Finger Diameter	56	15.0	1.2	12.7	12.7	14.6	16.7	18.1
Middle Finger Length	56	7.9	0.6	6.5	6.9	7.8	8.8	9.1
Middle Finger Diameter	56	15.3	1.3	12.7	12.7	14.8	17.2	18.1
Mid Finger-Thumb Grip L	56	10.1	1.1	6.3	8.3	10.1	11.5	12.0
Maximum Fist Circ	56	26.6	2.5	21.8	22.0	26.7	30.0	32.5
Maximum Fist Breadth	56	8.9	1.1	6.4	7.1	8.7	10.7	12.2
Maximum Fist Depth	56	7.9	0.8	6.2	6.6	7.8	9.1	9.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	74	18.4	1.3	14.0	16.1	18.3	20.5	21.6
Shoulder Breadth	221	42.0	3.4	34.3	37.3	41.8	48.0	51.7
Biacromial Breadth	74	37.3	2.3	32.4	33.2	37.3	41.1	42.6
Shoulder-Elbow Length	221	35.2	2.4	29.8	31.6	35.0	39.0	40.9
Acromion-Radiale Length	74	31.8	2.3	26.7	28.2	31.6	35.8	37.1
Upper Arm Circumference	221	26.6	3.3	20.0	21.9	26.4	32.7	38.9
Upper Arm Depth	66	8.0	1.2	5.6	5.9	7.7	10.0	10.6
Elbow-Hand Length	221	45.1	3.2	38.4	40.1	44.8	50.4	54.1
Radiale-Stylion Length	74	25.0	2.2	20.8	21.4	25.3	28.3	29.0
Forearm Circumference	220	24.8	2.5	19.7	21.0	24.6	28.8	32.3
Forearm Breadth	67	7.8	0.8	5.8	6.3	7.8	8.9	9.6
Wrist Circumference	67	15.7	1.5	11.8	13.3	15.7	17.8	18.8
Wrist Breadth	67	4.0	0.5	2.6	3.1	3.9	4.8	5.0
Hand Length	221	17.9	1.3	14.4	15.8	17.9	19.9	21.7
Hand Breadth	221	8.1	0.8	6.7	6.9	8.1	9.3	9.9
Minimum Hand Clearance	80	66.7	6.8	54.1	54.6	65.6	76.2	85.7
Thumb Crotch-Mid Fing L	80	12.4	1.4	8.1	10.1	12.4	14.7	15.4
Thumb Length	80	6.4	0.7	5.1	5.4	6.3	7.4	9.7
Thumb Diameter	80	18.9	1.8	15.8	15.8	18.5	21.2	24.6
Index Finger Length	80	7.0	0.6	5.8	5.9	7.0	7.8	8.6
Index Finger Diameter	80	14.8	1.4	11.9	12.1	14.5	16.5	19.0
Middle Finger Length	80	7.8	0.6	6.2	6.6	7.8	8.6	9.3
Middle Finger Diameter	80	15.1	1.4	11.9	12.2	14.7	17.0	19.0
Mid Finger-Thumb Grip L	80	10.0	1.2	5.0	7.6	10.0	11.6	12.3
Maximum Fist Circ	80	26.3	2.5	21.6	21.8	26.1	30.0	31.2
Maximum Fist Breadth	80	8.9	1.2	7.0	7.0	8.9	10.7	11.5
Maximum Fist Depth	80	7.7	0.9	5.6	6.1	7.7	9.1	9.4

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males and Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	46	18.9	1.5	15.9	16.4	18.7	21.5	22.6
Shoulder Breadth	154	43.2	3.7	36.1	37.5	43.4	49.5	51.2
Biacromial Breadth	46	37.8	2.5	34.0	34.5	37.3	41.3	43.3
Shoulder-Elbow Length	156	35.8	2.6	31.3	32.3	35.5	39.6	48.4
Acromion-Radiale Length	46	31.8	2.7	27.4	27.8	31.8	36.0	37.1
Upper Arm Circumference	156	27.5	3.4	19.1	22.1	27.7	32.9	36.6
Upper Arm Depth	63	8.6	1.5	4.9	6.4	8.4	11.5	11.9
Elbow-Hand Length	156	45.9	3.4	37.2	40.9	46.1	51.9	53.2
Radiale-Stylion Length	46	25.1	2.7	20.0	20.9	24.6	29.5	29.8
Forearm Circumference	155	25.7	2.9	19.6	21.2	26.2	29.8	31.7
Forearm Breadth	61	8.4	1.1	6.0	6.4	8.4	10.0	11.5
Wrist Circumference	63	16.3	1.8	12.1	13.1	16.4	19.3	21.0
Wrist Breadth	63	4.2	0.5	3.2	3.4	4.1	5.0	5.6
Hand Length	156	18.4	1.3	15.5	16.2	18.4	20.2	21.6
Hand Breadth	156	8.4	0.8	6.6	7.0	8.5	9.6	10.2
Minimum Hand Clearance	46	69.6	7.8	57.2	57.3	69.9	79.3	82.6
Thumb Crotch-Mid Fing L	46	13.0	1.6	8.4	10.3	12.9	15.4	16.3
Thumb Length	46	6.6	0.5	5.7	5.7	6.5	7.4	8.2
Thumb Diameter	46	19.5	1.8	15.8	16.1	19.2	21.4	23.0
Index Finger Length	46	7.3	0.6	6.2	6.3	7.3	8.0	8.4
Index Finger Diameter	46	15.4	1.4	12.7	12.7	15.2	17.1	17.4
Middle Finger Length	46	8.1	0.6	6.8	7.0	8.1	9.0	9.1
Middle Finger Diameter	46	15.8	1.5	12.7	12.9	15.4	18.0	19.0
Mid Finger-Thumb Grip L	45	10.3	1.1	5.9	8.5	10.2	11.7	11.9
Maximum Fist Circ	47	27.6	2.9	21.2	23.0	27.7	31.9	32.6
Maximum Fist Breadth	46	9.2	1.3	7.2	7.2	9.3	11.2	11.6
Maximum Fist Depth	46	7.9	1.0	5.9	6.0	8.0	9.4	9.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	37	10.8	0.9	8.9	9.1	10.8	12.2	12.4
Shoulder Breadth	114	24.7	1.5	21.1	22.5	24.5	27.2	28.9
Biacromial Breadth	36	22.1	1.5	18.9	19.7	21.8	24.2	24.9
Shoulder-Elbow Length	114	18.8	1.4	15.0	16.6	18.7	21.1	22.3
Acromion-Radiale Length	37	16.9	1.0	15.1	15.4	16.8	18.2	19.8
Upper Arm Circumference	114	15.9	1.2	13.2	13.9	15.8	18.1	20.2
Upper Arm Depth	31	4.8	0.6	3.6	3.7	4.6	5.8	6.2
Elbow-Hand Length	114	24.8	1.7	20.5	21.7	24.8	27.7	28.9
Radiale-Stylion Length	37	13.7	1.2	11.6	11.9	13.6	15.6	16.0
Forearm Circumference	114	15.8	1.1	13.5	14.2	15.7	17.7	18.9
Forearm Breadth	31	4.8	0.5	3.9	4.0	4.7	5.6	5.7
Wrist Circumference	31	11.4	0.8	9.7	10.0	11.4	12.7	13.0
Wrist Breadth	31	3.0	0.3	2.5	2.6	2.9	3.5	3.7
Hand Length	114	10.7	0.8	8.6	9.3	10.7	11.9	12.6
Hand Breadth	114	5.2	0.4	4.2	4.4	5.1	5.9	6.1
Minimum Hand Clearance	44	44.3	2.9	38.1	38.2	42.8	47.3	50.8
Thumb Crotch-Mid Fing L	30	7.4	0.6	6.4	6.4	7.3	8.4	8.7
Thumb Length	43	3.7	0.4	2.9	3.0	3.6	4.3	4.6
Thumb Diameter	44	12.7	0.9	11.1	11.1	12.2	13.9	14.3
Index Finger Length	42	4.1	0.4	3.3	3.4	4.0	4.7	5.0
Index Finger Diameter	44	9.7	0.5	8.7	8.7	9.4	10.2	10.3
Middle Finger Length	42	4.5	0.5	3.5	3.5	4.3	5.3	5.5
Middle Finger Diameter	44	10.1	0.6	9.1	9.1	9.6	10.9	11.1
Mid Finger-Thumb Grip L	36	5.8	0.8	4.3	4.4	5.6	7.3	7.9
Maximum Fist Circ	42	16.5	1.0	14.6	14.7	16.3	18.3	18.7
Maximum Fist Breadth	42	6.0	0.6	4.9	4.9	6.0	6.8	7.2
Maximum Fist Depth	42	4.5	0.6	3.7	3.8	4.4	5.6	5.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	42	11.2	0.8	9.8	9.9	11.0	12.6	12.9
Shoulder Breadth	118	25.7	1.6	22.0	23.1	25.4	28.4	29.4
Biacromial Breadth	44	22.9	1.3	20.6	20.9	22.7	25.2	25.8
Shoulder-Elbow Length	118	20.2	1.2	17.8	18.4	20.0	22.2	23.6
Acromion-Radiale Length	44	17.8	1.2	15.9	16.2	17.8	19.9	20.2
Upper Arm Circumference	118	16.1	1.3	13.4	14.2	16.0	18.0	19.6
Upper Arm Depth	35	5.0	0.8	3.4	3.6	4.9	6.2	6.4
Elbow-Hand Length	118	26.6	1.5	23.4	24.4	26.4	29.6	31.1
Radiale-Stylion Length	44	14.5	1.1	12.3	12.4	14.4	16.3	16.8
Forearm Circumference	118	16.1	1.1	13.4	14.2	16.0	17.6	18.7
Forearm Breadth	35	4.9	0.5	3.8	4.0	4.8	5.5	5.6
Wrist Circumference	37	11.6	0.9	10.1	10.2	11.4	13.0	13.4
Wrist Breadth	36	3.0	0.3	2.5	2.5	2.9	3.4	3.6
Hand Length	118	11.4	0.7	9.7	10.3	11.3	12.5	13.9
Hand Breadth	118	5.4	0.3	4.7	4.9	5.4	6.1	6.5
Minimum Hand Clearance	36	45.9	2.5	38.1	39.4	44.5	47.9	50.8
Thumb Crotch-Mid Fing L	32	8.0	0.5	6.5	6.7	8.0	8.6	9.0
Thumb Length	37	3.9	0.4	3.1	3.1	3.8	4.4	4.6
Thumb Diameter	36	13.3	0.7	11.1	11.7	12.9	14.1	14.3
Index Finger Length	37	4.4	0.3	3.7	3.9	4.3	4.8	5.1
Index Finger Diameter	36	10.1	0.6	8.7	9.0	9.8	10.8	11.1
Middle Finger Length	37	4.8	0.3	4.3	4.3	4.7	5.2	5.5
Middle Finger Diameter	37	10.5	0.7	9.1	9.2	10.1	11.4	11.9
Mid Finger-Thumb Grip L	32	6.1	1.1	3.9	4.0	6.2	7.9	8.5
Maximum Fist Circ	37	17.1	1.3	13.6	14.5	17.3	18.6	20.0
Maximum Fist Breadth	37	6.1	0.7	5.0	5.1	5.9	7.1	8.8
Maximum Fist Depth	37	4.8	0.5	3.8	3.9	4.8	5.6	5.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	35	12.0	0.8	10.5	10.5	12.0	13.3	13.6
Shoulder Breadth	143	26.9	1.3	23.9	24.8	26.8	29.1	31.4
Biacromial Breadth	35	24.3	1.3	21.4	21.5	24.4	26.0	26.4
Shoulder-Elbow Length	143	22.0	1.3	18.8	20.0	21.7	24.3	27.1
Acromion-Radiale Length	35	19.5	1.3	16.3	16.7	19.5	21.1	23.2
Upper Arm Circumference	143	16.6	1.3	13.5	14.6	16.4	18.7	21.8
Upper Arm Depth	57	5.0	0.6	3.8	3.9	5.0	6.0	6.3
Elbow-Hand Length	143	28.7	1.4	25.1	26.4	28.7	31.0	32.7
Radiale-Stylion Length	35	15.7	1.3	12.6	13.4	15.5	17.6	18.0
Forearm Circumference	143	16.6	1.1	14.5	15.1	16.5	18.5	20.2
Forearm Breadth	57	5.1	0.4	4.3	4.3	5.0	5.8	6.0
Wrist Circumference	58	11.8	0.8	10.3	10.6	11.6	13.1	14.1
Wrist Breadth	57	3.0	0.2	2.5	2.5	3.0	3.4	3.7
Hand Length	142	12.0	0.9	5.5	10.9	12.0	13.0	13.8
Hand Breadth	142	5.7	0.4	4.9	5.1	5.6	6.3	6.6
Minimum Hand Clearance	49	48.4	2.9	44.5	44.5	46.4	52.8	54.1
Thumb Crotch-Mid Fing L	46	8.4	0.7	6.8	6.9	8.2	9.3	9.5
Thumb Length	50	4.2	0.4	3.1	3.2	4.1	4.8	5.0
Thumb Diameter	50	13.9	0.8	12.7	12.7	13.6	14.8	15.8
Index Finger Length	50	4.6	0.3	3.9	4.0	4.5	5.0	5.2
Index Finger Diameter	50	10.8	0.8	9.5	9.5	10.4	11.8	12.7
Middle Finger Length	50	5.1	0.3	4.4	4.5	5.0	5.6	5.8
Middle Finger Diameter	50	11.0	0.7	9.5	9.5	10.7	11.8	12.7
Mid Finger-Thumb Grip L	50	6.4	0.8	3.6	4.6	6.5	7.4	7.9
Maximum Fist Circ	50	18.1	1.1	15.5	15.9	18.0	19.6	20.8
Maximum Fist Breadth	50	6.3	0.4	5.5	5.6	6.2	7.0	7.3
Maximum Fist Depth	50	5.2	0.5	3.7	4.1	5.2	5.9	6.3

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	43	12.7	0.9	11.0	11.1	12.5	14.1	15.2
Shoulder Breadth	108	28.3	1.9	23.1	25.5	28.0	31.7	34.6
Biacromial Breadth	43	26.0	1.6	22.4	23.7	25.5	29.1	29.8
Shoulder-Elbow Length	108	23.5	1.4	20.3	21.0	23.4	25.8	27.1
Acromion-Radiale Length	43	21.2	1.3	18.9	19.2	21.1	23.4	24.5
Upper Arm Circumference	108	17.2	1.5	14.4	15.0	16.9	19.9	23.4
Upper Arm Depth	39	5.2	0.7	3.6	3.7	5.2	6.2	7.1
Elbow-Hand Length	108	30.6	1.8	26.9	27.7	30.4	33.6	36.5
Radiale-Stylion Length	43	17.3	1.1	15.0	15.6	17.2	19.0	19.9
Forearm Circumference	108	17.2	1.2	14.9	15.2	17.0	19.7	20.8
Forearm Breadth	39	5.3	0.5	4.1	4.2	5.2	6.1	6.5
Wrist Circumference	39	12.2	0.8	10.3	10.5	12.1	13.4	14.1
Wrist Breadth	39	3.1	0.2	2.5	2.5	3.1	3.4	3.6
Hand Length	108	12.9	0.8	11.0	11.6	12.8	14.4	15.4
Hand Breadth	108	6.0	0.4	5.2	5.3	6.0	6.6	7.1
Minimum Hand Clearance	26	50.1	4.4	44.5	44.5	47.6	56.3	63.5
Thumb Crotch-Mid Fing L	24	8.9	1.1	7.1	7.2	8.7	10.7	10.9
Thumb Length	26	4.4	0.5	3.6	3.6	4.3	5.2	5.5
Thumb Diameter	26	14.4	0.8	13.5	13.5	14.1	15.5	15.8
Index Finger Length	26	4.9	0.5	4.1	4.1	5.0	5.5	5.7
Index Finger Diameter	26	11.2	0.7	10.3	10.3	10.8	11.9	12.7
Middle Finger Length	26	5.4	0.5	4.5	4.5	5.4	6.3	6.5
Middle Finger Diameter	26	11.4	0.8	10.3	10.3	11.2	12.4	12.7
Mid Finger-Thumb Grip L	25	6.6	1.0	4.4	4.4	6.4	7.9	8.1
Maximum Fist Circ	26	19.0	1.5	15.5	15.6	19.0	20.6	21.2
Maximum Fist Breadth	26	6.5	0.6	5.2	5.3	6.4	7.4	7.6
Maximum Fist Depth	26	5.7	0.6	4.0	4.2	5.7	6.5	6.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	34	13.3	1.1	10.8	11.1	13.2	14.8	15.5
Shoulder Breadth	105	29.7	2.1	26.0	26.8	29.3	32.9	38.3
Biacromial Breadth	34	27.2	1.6	23.6	23.7	27.2	29.3	29.9
Shoulder-Elbow Length	105	25.0	1.4	22.3	22.7	24.9	27.4	28.6
Acromion-Radiale Length	34	23.0	1.4	20.2	20.2	22.8	25.4	26.2
Upper Arm Circumference	104	18.0	2.0	15.2	15.7	17.6	21.7	29.9
Upper Arm Depth	41	5.3	0.7	3.9	3.9	5.1	6.2	7.5
Elbow-Hand Length	105	32.2	1.9	28.1	28.9	32.1	35.3	36.9
Radiale-Stylion Length	34	18.4	1.5	14.9	15.7	18.1	20.5	22.2
Forearm Circumference	104	17.9	1.3	15.3	16.1	17.8	19.7	23.9
Forearm Breadth	41	5.5	0.5	4.4	4.5	5.4	6.3	6.8
Wrist Circumference	40	12.4	0.8	10.9	11.0	12.3	13.9	14.4
Wrist Breadth	41	3.1	0.2	2.6	2.7	3.1	3.4	3.6
Hand Length	104	13.4	0.9	11.1	11.8	13.3	14.8	15.9
Hand Breadth	104	6.3	0.4	5.4	5.6	6.2	7.0	7.4
Minimum Hand Clearance	29	52.7	4.0	47.6	47.6	50.9	56.7	66.7
Thumb Crotch-Mid Fing L	29	9.7	0.8	8.0	8.2	9.4	11.0	11.4
Thumb Length	30	4.7	0.3	3.8	3.9	4.6	5.1	5.2
Thumb Diameter	30	15.5	1.0	13.5	13.6	14.9	17.0	18.1
Index Finger Length	30	5.3	0.3	4.6	4.6	5.2	5.6	6.0
Index Finger Diameter	30	12.1	0.8	10.3	10.4	11.6	13.1	13.5
Middle Finger Length	30	5.8	0.4	4.7	4.9	5.8	6.2	6.3
Middle Finger Diameter	30	12.3	0.9	10.3	10.4	11.9	13.7	14.3
Mid Finger-Thumb Grip L	29	7.2	1.1	4.4	4.6	7.3	8.7	8.9
Maximum Fist Circ	30	20.2	1.2	17.7	17.8	20.1	22.0	22.7
Maximum Fist Breadth	30	6.9	0.6	5.5	5.8	6.7	7.9	8.2
Maximum Fist Depth	30	6.1	0.5	4.8	5.1	6.0	6.8	7.1

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	32	13.9	0.9	12.0	12.2	14.0	15.3	15.5
Shoulder Breadth	98	30.8	2.1	26.0	27.8	30.5	33.5	41.4
Biacromial Breadth	32	28.3	1.2	25.6	26.1	28.2	30.2	30.5
Shoulder-Elbow Length	98	26.3	1.4	22.1	24.1	26.2	28.5	31.0
Acromion-Radiale Length	32	23.8	1.2	21.7	21.9	23.7	25.9	26.4
Upper Arm Circumference	95	18.9	2.3	14.9	15.5	18.5	23.5	27.1
Upper Arm Depth	35	5.8	0.8	4.0	4.1	5.6	7.0	7.9
Elbow-Hand Length	98	33.8	1.7	28.4	31.4	33.5	36.3	38.9
Radiale-Stylion Length	32	19.4	1.3	16.5	16.5	19.2	21.3	21.9
Forearm Circumference	95	18.6	1.6	15.7	16.3	18.4	21.3	23.6
Forearm Breadth	36	5.8	0.4	5.0	5.1	5.7	6.5	7.2
Wrist Circumference	36	12.7	1.0	11.0	11.1	12.5	14.4	16.0
Wrist Breadth	36	3.3	0.3	2.7	2.7	3.2	3.8	4.2
Hand Length	98	13.9	0.8	11.5	12.6	13.8	15.2	16.1
Hand Breadth	98	6.5	0.4	5.6	5.9	6.5	7.2	7.6
Minimum Hand Clearance	30	52.8	3.2	47.6	47.6	50.6	58.0	60.3
Thumb Crotch-Mid Fing L	30	9.6	0.8	8.0	8.0	9.5	10.9	11.5
Thumb Length	30	4.7	0.4	3.9	3.9	4.7	5.2	5.3
Thumb Diameter	29	15.5	0.9	14.3	14.3	15.0	16.8	17.4
Index Finger Length	30	5.3	0.4	4.5	4.6	5.3	5.8	6.0
Index Finger Diameter	30	12.0	0.7	11.1	11.1	11.5	13.1	14.3
Middle Finger Length	30	5.9	0.4	5.0	5.0	5.8	6.5	6.6
Middle Finger Diameter	30	12.3	0.8	11.1	11.1	11.8	13.4	14.3
Mid Finger-Thumb Grip L	29	7.4	1.1	5.2	5.2	7.6	8.9	9.7
Maximum Fist Circ	29	20.6	1.3	18.5	18.8	20.4	23.0	23.3
Maximum Fist Breadth	30	7.1	0.5	6.1	6.1	7.1	7.7	8.1
Maximum Fist Depth	30	6.2	0.3	5.6	5.6	6.2	6.7	6.9

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	33	14.3	0.9	12.6	12.9	14.3	15.7	16.3
Shoulder Breadth	114	32.2	2.0	28.3	28.9	32.1	35.3	38.8
Biacromial Breadth	33	29.4	1.4	26.5	26.8	29.4	31.5	32.1
Shoulder-Elbow Length	114	27.8	1.5	24.0	25.3	27.6	30.1	31.5
Acromion-Radiale Length	33	25.2	1.5	23.0	23.0	24.9	27.5	28.1
Upper Arm Circumference	114	19.5	2.2	16.2	16.5	19.2	23.1	29.2
Upper Arm Depth	42	5.9	0.8	4.6	4.6	5.8	7.7	8.2
Elbow-Hand Length	114	35.6	2.0	30.6	32.9	35.2	39.2	40.7
Radiale-Stylion Length	33	20.0	1.5	17.5	17.5	19.7	22.4	23.5
Forearm Circumference	113	19.2	1.5	16.2	16.9	19.1	22.2	24.7
Forearm Breadth	42	5.9	0.6	4.9	5.0	5.8	6.9	7.5
Wrist Circumference	42	13.1	1.1	10.8	11.5	13.1	14.7	17.1
Wrist Breadth	42	3.4	0.3	2.7	2.9	3.2	3.8	4.5
Hand Length	114	14.5	0.9	12.8	13.0	14.3	15.9	16.9
Hand Breadth	114	6.7	0.4	5.7	6.1	6.7	7.4	7.9
Minimum Hand Clearance	38	53.6	3.1	44.5	47.3	52.1	57.4	60.3
Thumb Crotch-Mid Fing L	39	10.3	0.7	8.5	9.1	10.2	11.3	11.8
Thumb Length	39	5.0	0.4	4.2	4.2	5.0	5.7	6.0
Thumb Diameter	39	15.8	0.8	13.5	14.3	15.4	16.6	17.4
Index Finger Length	39	5.6	0.4	4.5	4.7	5.5	6.2	6.6
Index Finger Diameter	39	12.3	0.7	10.3	10.7	11.8	13.1	13.5
Middle Finger Length	39	6.2	0.4	5.7	5.7	6.0	7.1	7.2
Middle Finger Diameter	39	12.6	0.8	10.3	10.4	12.2	13.4	14.3
Mid Finger-Thumb Grip L	39	8.0	0.9	5.8	6.4	8.0	9.3	9.6
Maximum Fist Circ	39	21.1	1.1	18.5	18.8	21.0	23.1	23.3
Maximum Fist Breadth	39	7.2	0.5	6.4	6.4	7.1	7.9	8.4
Maximum Fist Depth	39	6.4	0.4	5.6	5.7	6.3	7.0	7.2

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	37	14.9	1.0	13.1	13.2	14.7	16.4	17.2
Shoulder Breadth	124	33.5	2.5	28.3	29.8	32.8	37.9	40.4
Biacromial Breadth	37	30.3	1.5	27.5	27.6	30.4	32.3	33.6
Shoulder-Elbow Length	124	28.7	1.6	25.1	26.2	28.5	31.6	33.7
Acromion-Radiale Length	37	26.2	1.9	22.5	23.0	26.5	28.3	29.9
Upper Arm Circumference	124	20.4	2.8	15.8	16.7	19.9	25.9	29.0
Upper Arm Depth	39	6.4	1.1	4.5	4.7	6.3	8.1	9.3
Elbow-Hand Length	124	36.8	2.1	32.2	33.1	36.7	40.5	42.0
Radiale-Stylion Length	37	20.7	1.1	19.2	19.2	20.7	22.5	22.8
Forearm Circumference	124	19.8	1.7	16.7	17.5	19.4	23.2	24.5
Forearm Breadth	39	6.3	0.7	5.0	5.1	6.2	7.5	7.6
Wrist Circumference	40	13.5	1.2	11.7	11.8	13.3	15.3	17.1
Wrist Breadth	40	3.4	0.3	2.9	2.9	3.3	4.0	4.3
Hand Length	123	15.1	0.9	12.9	13.6	14.9	16.4	17.1
Hand Breadth	123	7.0	0.4	6.1	6.3	6.9	7.6	7.9
Minimum Hand Clearance	47	56.3	3.1	50.8	50.8	55.1	59.8	63.5
Thumb Crotch-Mid Fing L	46	10.8	0.8	9.2	9.3	10.9	12.2	12.3
Thumb Length	47	5.3	0.5	4.4	4.4	5.2	6.0	6.1
Thumb Diameter	44	16.2	1.0	13.5	14.3	15.7	17.6	18.1
Index Finger Length	47	5.9	0.5	5.0	5.1	5.8	6.7	7.2
Index Finger Diameter	46	12.8	0.8	11.1	11.1	12.4	13.8	14.3
Middle Finger Length	47	6.5	0.5	5.6	5.7	6.4	7.2	7.6
Middle Finger Diameter	46	13.1	0.9	11.1	11.2	12.6	14.1	14.3
Mid Finger-Thumb Grip L	47	8.2	1.0	6.3	6.3	8.3	9.5	10.5
Maximum Fist Circ	47	21.9	1.3	19.4	19.8	21.7	24.1	24.5
Maximum Fist Breadth	47	7.4	0.5	6.4	6.5	7.3	8.2	8.4
Maximum Fist Depth	47	6.7	0.4	5.7	5.9	6.6	7.3	7.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	49	15.3	1.1	12.3	13.8	15.1	17.3	17.6
Shoulder Breadth	142	34.4	2.7	29.0	30.6	34.0	39.4	43.3
Biacromial Breadth	49	30.9	2.0	26.5	27.6	30.7	34.1	35.8
Shoulder-Elbow Length	140	29.7	1.4	26.0	27.1	29.6	31.8	33.8
Acromion-Radiale Length	49	26.9	1.7	23.4	23.5	26.9	29.2	31.0
Upper Arm Circumference	141	21.4	2.7	17.2	17.8	20.6	26.0	29.4
Upper Arm Depth	41	6.0	0.8	4.5	4.6	5.9	7.1	8.2
Elbow-Hand Length	140	38.2	2.0	33.1	34.9	38.1	41.5	43.8
Radiale-Stylion Length	49	21.4	1.3	18.1	18.4	21.3	23.3	24.2
Forearm Circumference	141	20.7	1.7	16.9	18.2	20.4	23.7	25.9
Forearm Breadth	41	6.2	0.5	5.1	5.1	6.1	6.7	7.8
Wrist Circumference	40	13.4	0.9	11.4	11.6	13.4	14.7	15.7
Wrist Breadth	41	3.4	0.2	2.8	2.9	3.3	3.7	3.9
Hand Length	141	15.5	0.9	13.5	14.0	15.4	17.0	18.1
Hand Breadth	141	7.2	0.4	6.1	6.5	7.1	7.8	8.2
Minimum Hand Clearance	52	58.8	4.0	50.8	51.0	57.4	64.6	66.7
Thumb Crotch-Mid Fing L	52	11.2	0.9	9.2	9.9	11.0	12.7	13.1
Thumb Length	52	5.5	0.5	4.5	4.7	5.3	6.2	6.7
Thumb Diameter	52	16.8	1.0	14.3	14.6	16.4	18.0	19.0
Index Finger Length	52	6.0	0.5	4.8	5.1	6.0	6.7	7.1
Index Finger Diameter	52	13.2	0.8	11.1	11.4	12.8	14.1	15.0
Middle Finger Length	52	6.7	0.5	5.2	5.5	6.7	7.6	7.7
Middle Finger Diameter	52	13.4	0.8	11.9	11.9	13.0	14.3	15.0
Mid Finger-Thumb Grip L	52	8.6	0.9	6.1	6.5	8.5	9.7	10.1
Maximum Fist Circ	52	23.1	1.3	20.2	20.3	23.0	24.9	26.1
Maximum Fist Breadth	52	7.9	0.5	6.9	7.0	7.8	8.6	9.6
Maximum Fist Depth	52	6.8	0.4	6.0	6.1	6.7	7.4	7.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	53	15.6	1.2	13.6	13.6	15.6	18.0	18.7
Shoulder Breadth	154	35.3	2.4	30.0	31.3	35.1	39.7	42.1
Biacromial Breadth	53	32.2	1.9	27.0	28.1	32.2	34.8	35.5
Shoulder-Elbow Length	154	31.0	1.7	26.0	28.6	30.7	33.8	36.5
Acromion-Radiale Length	53	28.5	2.0	24.5	25.7	28.1	32.0	34.2
Upper Arm Circumference	154	22.0	2.7	17.4	18.4	21.4	27.2	32.1
Upper Arm Depth	55	6.7	0.9	5.2	5.4	6.5	8.5	9.6
Elbow-Hand Length	154	40.0	2.3	34.6	36.6	39.6	44.0	47.0
Radiale-Stylion Length	53	22.8	1.7	19.5	20.6	22.4	25.7	27.6
Forearm Circumference	153	21.2	1.7	18.3	18.9	20.9	24.8	27.0
Forearm Breadth	55	6.6	0.6	5.4	5.5	6.5	7.7	8.1
Wrist Circumference	55	14.3	1.2	12.2	12.4	14.1	16.1	17.2
Wrist Breadth	54	3.6	0.4	2.8	3.0	3.6	4.2	4.4
Hand Length	154	16.2	1.0	13.7	14.5	16.0	17.8	20.0
Hand Breadth	154	7.4	0.5	6.4	6.7	7.3	8.4	9.0
Minimum Hand Clearance	46	59.5	4.2	50.8	51.7	57.2	65.9	73.0
Thumb Crotch-Mid Fing L	46	11.4	1.0	9.5	9.7	11.2	13.0	13.4
Thumb Length	46	5.7	0.4	4.9	5.0	5.6	6.3	6.7
Thumb Diameter	44	17.2	1.2	15.0	15.0	16.8	18.6	21.4
Index Finger Length	46	6.3	0.5	5.2	5.3	6.3	7.0	7.5
Index Finger Diameter	46	13.5	0.9	11.9	11.9	13.1	14.5	15.8
Middle Finger Length	46	6.9	0.6	5.6	5.8	6.9	7.7	7.9
Middle Finger Diameter	46	13.7	0.8	11.9	11.9	13.2	14.7	15.8
Mid Finger-Thumb Grip L	46	8.9	1.2	5.1	6.0	9.1	10.4	10.8
Maximum Fist Circ	46	23.2	1.7	19.6	20.4	23.2	26.1	26.9
Maximum Fist Breadth	46	7.9	0.7	6.5	6.7	7.8	9.0	9.4
Maximum Fist Depth	46	7.0	0.5	6.1	6.2	6.9	7.9	8.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	50	16.4	1.4	13.6	14.0	16.3	18.9	20.2
Shoulder Breadth	153	36.9	2.7	31.0	33.0	36.4	41.8	46.4
Biacromial Breadth	50	33.7	2.4	28.9	29.9	33.1	38.1	40.2
Shoulder-Elbow Length	153	32.4	2.0	28.3	29.0	32.1	35.8	38.8
Acromion-Radiale Length	50	29.8	1.9	24.9	26.6	29.6	32.4	35.6
Upper Arm Circumference	154	23.1	2.8	18.1	19.3	22.8	27.9	36.9
Upper Arm Depth	58	7.0	1.1	4.7	5.6	6.8	8.9	9.7
Elbow-Hand Length	152	41.7	2.7	35.9	37.5	41.3	46.4	49.8
Radiale-Stylion Length	50	23.5	1.9	19.8	20.5	23.4	26.8	28.8
Forearm Circumference	154	22.3	2.0	18.3	19.5	22.1	25.5	32.1
Forearm Breadth	58	7.0	0.8	5.3	5.7	6.9	8.2	9.1
Wrist Circumference	57	14.7	1.2	12.3	12.7	14.4	16.6	17.5
Wrist Breadth	57	3.7	0.3	3.0	3.1	3.7	4.2	4.4
Hand Length	152	16.9	1.1	14.5	15.1	16.7	18.7	19.6
Hand Breadth	151	7.8	0.5	6.8	7.0	7.6	8.8	9.3
Minimum Hand Clearance	46	61.8	4.7	54.1	54.4	60.5	66.6	79.4
Thumb Crotch-Mid Fing L	46	11.9	0.8	10.1	10.2	11.9	13.2	13.9
Thumb Length	46	6.0	0.5	5.1	5.2	5.8	6.6	7.5
Thumb Diameter	45	18.0	1.2	15.8	15.9	17.5	19.8	21.4
Index Finger Length	46	6.5	0.5	5.5	5.6	6.5	7.5	7.9
Index Finger Diameter	45	14.0	1.0	11.9	11.9	13.5	15.0	16.6
Middle Finger Length	46	7.3	0.5	6.2	6.3	7.3	8.2	8.8
Middle Finger Diameter	45	14.2	1.0	11.9	12.4	13.7	15.7	16.6
Mid Finger-Thumb Grip L	46	9.4	0.9	6.5	7.4	9.4	10.4	11.8
Maximum Fist Circ	46	24.6	1.8	21.2	21.4	24.6	27.2	29.3
Maximum Fist Breadth	46	8.4	0.8	6.7	6.9	8.2	9.6	10.3
Maximum Fist Depth	46	7.4	0.5	6.3	6.6	7.4	8.2	8.8

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	51	17.1	1.4	14.2	14.8	16.9	19.0	19.4
Shoulder Breadth	155	39.1	2.8	33.3	34.8	38.8	44.1	47.7
Biacromial Breadth	51	34.9	2.2	31.1	31.4	34.7	37.8	40.4
Shoulder-Elbow Length	155	33.9	2.1	29.2	30.4	33.8	36.9	38.5
Acromion-Radiale Length	51	30.7	1.9	26.8	27.2	30.7	33.9	34.6
Upper Arm Circumference	155	24.6	2.6	18.7	20.7	24.2	29.3	31.2
Upper Arm Depth	48	7.6	1.0	5.7	6.0	7.5	9.3	9.8
Elbow-Hand Length	154	44.2	2.8	37.9	39.6	43.9	48.5	51.7
Radiale-Stylion Length	51	24.8	2.1	21.4	21.8	24.4	27.7	32.1
Forearm Circumference	155	23.7	1.8	19.3	20.7	23.5	27.0	28.2
Forearm Breadth	48	7.5	0.7	5.6	6.4	7.4	8.6	8.8
Wrist Circumference	49	15.7	1.2	12.2	13.8	15.5	17.4	17.8
Wrist Breadth	48	4.1	0.4	3.0	3.4	4.1	4.7	5.1
Hand Length	153	17.8	1.2	14.9	15.9	17.7	19.4	21.7
Hand Breadth	154	8.3	0.6	6.7	7.1	8.2	9.1	9.7
Minimum Hand Clearance	54	65.5	5.5	54.1	55.4	63.5	73.5	79.4
Thumb Crotch-Mid Fing L	53	12.3	1.1	9.5	10.2	12.2	14.4	15.2
Thumb Length	54	6.2	0.6	5.1	5.1	6.1	7.2	8.1
Thumb Diameter	54	18.8	1.5	15.8	16.3	18.4	20.8	21.4
Index Finger Length	54	6.9	0.6	6.0	6.0	6.7	8.1	8.4
Index Finger Diameter	54	14.5	1.2	11.9	12.6	14.0	16.3	17.4
Middle Finger Length	54	7.6	0.7	6.6	6.6	7.4	8.7	9.4
Middle Finger Diameter	54	14.7	1.2	11.9	12.1	14.4	16.4	17.4
Mid Finger-Thumb Grip L	53	9.4	1.0	7.0	7.2	9.4	10.8	12.3
Maximum Fist Circ	55	25.9	2.1	21.7	22.5	25.6	29.8	31.5
Maximum Fist Breadth	55	8.8	1.0	6.9	7.3	8.6	10.7	11.6
Maximum Fist Depth	55	7.7	0.7	6.5	6.6	7.6	8.7	9.9

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	38	17.9	1.3	15.4	15.4	18.0	19.7	20.0
Shoulder Breadth	131	40.7	2.9	34.8	35.8	40.4	45.2	47.3
Biacromial Breadth	39	36.3	2.0	33.2	33.2	36.4	39.3	40.7
Shoulder-Elbow Length	130	35.1	2.0	30.3	31.6	35.1	37.8	39.4
Acromion-Radiale Length	39	31.5	1.5	27.5	27.8	31.7	33.3	33.8
Upper Arm Circumference	131	25.9	3.1	20.3	20.8	25.6	30.8	34.1
Upper Arm Depth	42	7.6	1.1	5.7	5.9	7.5	9.3	10.6
Elbow-Hand Length	130	45.5	2.7	37.5	40.5	45.5	49.1	50.7
Radiale-Stylion Length	39	25.3	1.6	22.2	22.4	25.8	27.3	27.9
Forearm Circumference	131	24.7	2.1	20.4	21.0	24.5	28.3	30.3
Forearm Breadth	42	7.6	0.7	6.2	6.3	7.6	8.6	8.9
Wrist Circumference	42	15.7	1.1	13.3	13.5	15.8	17.1	17.8
Wrist Breadth	42	4.1	0.3	3.4	3.4	4.0	4.5	4.7
Hand Length	130	18.2	1.0	15.6	16.3	18.2	19.7	20.4
Hand Breadth	131	8.5	0.5	7.3	7.5	8.5	9.3	9.8
Minimum Hand Clearance	49	68.4	4.9	60.3	60.3	66.3	77.1	82.6
Thumb Crotch-Mid Fing L	50	13.0	1.0	10.4	11.3	13.1	14.3	14.8
Thumb Length	50	6.6	0.4	5.5	5.8	6.5	7.2	7.8
Thumb Diameter	50	19.7	1.3	17.4	17.4	19.1	21.3	23.0
Index Finger Length	50	7.2	0.5	6.2	6.3	7.1	8.0	8.4
Index Finger Diameter	49	15.3	1.0	13.5	13.5	14.8	16.7	17.4
Middle Finger Length	50	8.0	0.6	6.8	7.0	8.0	8.3	9.2
Middle Finger Diameter	50	15.6	1.0	13.5	13.6	15.1	17.2	18.1
Mid Finger-Thumb Grip L	50	10.3	1.0	8.0	8.4	10.4	12.0	12.4
Maximum Fist Circ	50	27.5	1.7	23.1	24.1	27.6	30.0	31.5
Maximum Fist Breadth	50	9.5	0.8	8.0	8.1	9.4	10.7	11.7
Maximum Fist Depth	50	8.1	0.5	6.9	7.0	8.2	8.8	9.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	31	18.8	1.4	16.5	16.6	18.8	21.3	22.8
Shoulder Breadth	100	43.2	3.1	35.5	38.2	43.5	48.0	51.8
Biacromial Breadth	31	38.1	2.6	34.2	34.4	37.9	42.0	43.8
Shoulder-Elbow Length	99	36.6	1.8	30.3	33.1	36.9	38.9	41.9
Acromion-Radiale Length	31	32.9	2.0	29.0	29.0	33.2	35.6	36.5
Upper Arm Circumference	100	27.4	3.1	20.0	21.8	27.7	32.3	36.8
Upper Arm Depth	37	8.6	1.2	6.2	6.3	8.4	10.4	11.6
Elbow-Hand Length	100	47.3	2.3	41.0	43.4	47.2	50.7	52.7
Radiale-Stylion Length	31	26.4	1.5	22.3	23.3	26.2	28.2	30.6
Forearm Circumference	100	26.1	2.3	20.3	21.9	26.2	30.2	31.6
Forearm Breadth	37	8.4	0.9	6.4	6.8	8.3	9.6	10.7
Wrist Circumference	38	16.7	1.4	12.5	14.1	16.8	18.8	19.5
Wrist Breadth	37	4.3	0.5	3.0	3.4	4.3	5.1	5.3
Hand Length	99	18.9	1.0	15.1	17.3	18.9	20.4	21.6
Hand Breadth	99	8.8	0.5	7.0	7.7	8.8	9.5	10.0
Minimum Hand Clearance	31	71.2	5.2	60.3	61.2	68.9	78.8	82.6
Thumb Crotch-Mid Fing L	31	13.5	0.9	10.8	11.3	13.5	14.8	15.2
Thumb Length	31	6.6	0.4	5.7	5.9	6.6	7.1	7.2
Thumb Diameter	31	20.4	1.3	17.4	17.5	19.6	22.2	23.0
Index Finger Length	31	7.3	0.4	6.4	6.5	7.2	8.0	8.1
Index Finger Diameter	31	15.7	1.0	14.3	14.3	15.0	17.2	18.1
Middle Finger Length	31	8.2	0.5	7.1	7.2	8.0	8.8	9.1
Middle Finger Diameter	31	16.0	1.0	14.3	14.3	15.5	17.6	18.1
Mid Finger-Thumb Grip L	31	10.3	1.0	8.2	8.3	10.3	11.6	12.0
Maximum Fist Circ	31	28.1	2.0	22.0	23.3	28.0	30.8	32.5
Maximum Fist Breadth	31	9.6	0.9	8.4	8.4	9.4	10.9	12.2
Maximum Fist Depth	31	8.5	0.5	7.5	7.5	8.4	9.3	9.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	38	19.0	1.2	15.9	16.3	19.0	20.9	21.6
Shoulder Breadth	104	44.3	2.7	37.6	39.3	44.2	48.8	51.7
Biacromial Breadth	38	38.5	2.1	32.8	33.1	38.7	41.2	42.6
Shoulder-Elbow Length	104	36.9	1.8	32.8	33.9	36.8	39.6	40.9
Acromion-Radiale Length	38	33.3	1.9	29.6	30.6	32.7	36.3	37.1
Upper Arm Circumference	104	28.5	2.9	22.1	22.9	28.2	33.3	38.9
Upper Arm Depth	28	8.8	0.9	6.9	7.1	8.9	10.2	10.6
Elbow-Hand Length	104	47.7	2.1	42.6	44.4	47.6	50.8	54.1
Radiale-Stylion Length	38	26.7	1.2	24.3	24.6	26.3	28.6	29.0
Forearm Circumference	104	26.7	1.9	22.1	23.0	26.6	29.4	32.3
Forearm Breadth	28	8.5	0.6	6.7	7.1	8.5	9.4	9.6
Wrist Circumference	28	16.6	1.3	13.1	13.4	16.7	18.1	18.8
Wrist Breadth	28	4.3	0.4	3.7	3.7	4.3	4.9	5.0
Hand Length	104	18.9	0.9	16.5	17.2	18.8	20.1	21.7
Hand Breadth	104	8.8	0.4	7.8	8.2	8.8	9.5	9.9
Minimum Hand Clearance	38	72.2	4.2	66.7	66.7	69.7	78.4	85.7
Thumb Crotch-Mid Fing L	38	13.3	1.0	10.6	11.1	13.2	14.9	15.4
Thumb Length	38	6.8	0.7	5.5	5.8	6.7	7.6	9.7
Thumb Diameter	38	20.4	1.2	19.0	19.0	19.6	22.3	24.6
Index Finger Length	38	7.4	0.5	6.3	6.3	7.3	8.4	8.6
Index Finger Diameter	38	15.8	1.1	13.5	13.7	15.4	17.4	19.0
Middle Finger Length	38	8.1	0.5	6.9	7.0	8.0	9.0	9.3
Middle Finger Diameter	38	16.2	1.1	14.3	14.3	15.7	17.5	19.0
Mid Finger-Thumb Grip L	38	10.3	1.1	7.6	7.8	10.3	11.8	12.3
Maximum Fist Circ	38	28.5	1.4	25.6	25.8	28.4	30.6	31.2
Maximum Fist Breadth	38	9.9	0.7	7.8	8.6	9.8	10.9	11.5
Maximum Fist Depth	38	8.5	0.4	7.6	7.7	8.4	9.2	9.4

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Males - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	23	19.8	1.2	18.2	18.2	19.4	21.6	22.6
Shoulder Breadth	88	45.6	2.6	39.3	40.5	45.2	50.3	51.2
Biacromial Breadth	23	39.7	1.9	35.6	35.6	39.6	42.5	43.3
Shoulder-Elbow Length	88	37.4	2.2	33.7	34.3	37.1	40.1	48.4
Acromion-Radiale Length	23	34.0	1.7	31.0	31.1	33.6	36.6	37.1
Upper Arm Circumference	88	29.5	2.5	21.7	24.8	29.4	33.7	36.6
Upper Arm Depth	38	9.3	1.3	6.7	7.3	9.3	11.8	11.9
Elbow-Hand Length	88	48.3	2.3	43.1	44.4	47.8	52.7	53.2
Radiale-Stylion Length	23	27.2	1.8	23.2	23.3	27.3	29.7	29.8
Forearm Circumference	88	27.7	1.8	21.6	23.6	27.9	30.5	31.7
Forearm Breadth	38	8.9	0.9	7.2	7.3	8.8	10.1	11.5
Wrist Circumference	38	17.2	1.5	13.3	14.8	16.8	19.8	21.0
Wrist Breadth	38	4.4	0.4	3.7	3.8	4.3	5.1	5.6
Hand Length	88	19.2	0.9	17.0	17.4	19.1	20.5	21.6
Hand Breadth	88	9.0	0.5	7.6	8.2	8.9	9.8	10.2
Minimum Hand Clearance	27	75.4	4.3	66.7	66.7	73.8	80.4	82.6
Thumb Crotch-Mid Fing L	27	14.0	1.0	12.3	12.3	13.9	15.6	16.3
Thumb Length	27	6.9	0.4	6.2	6.2	6.8	7.5	8.2
Thumb Diameter	27	20.8	1.0	19.0	19.0	20.0	21.9	23.0
Index Finger Length	27	7.6	0.4	6.4	6.6	7.6	8.1	8.4
Index Finger Diameter	27	16.4	0.7	15.0	15.0	15.8	17.2	17.4
Middle Finger Length	27	8.5	0.5	7.2	7.3	8.4	9.1	9.1
Middle Finger Diameter	27	16.9	1.0	15.0	15.0	16.4	18.4	19.0
Mid Finger-Thumb Grip L	26	10.5	0.9	8.7	8.9	10.3	11.7	11.9
Maximum Fist Circ	27	29.8	1.6	27.2	27.2	29.2	32.1	32.6
Maximum Fist Breadth	27	10.2	0.7	8.8	8.9	10.1	11.3	11.6
Maximum Fist Depth	27	8.6	0.6	7.6	7.7	8.4	9.5	9.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	30	10.7	0.8	9.7	9.7	10.5	12.2	12.5
Shoulder Breadth	97	24.1	1.5	19.3	21.3	24.0	26.1	27.3
Biacromial Breadth	30	21.8	1.2	19.2	19.5	21.6	23.8	24.5
Shoulder-Elbow Length	97	18.2	1.3	15.5	15.9	18.1	20.2	22.0
Acromion-Radiale Length	30	16.5	1.0	14.8	14.8	16.5	18.0	18.2
Upper Arm Circumference	98	15.7	1.3	12.6	13.4	15.7	17.4	19.1
Upper Arm Depth	34	4.6	0.6	3.2	3.5	4.5	5.6	6.0
Elbow-Hand Length	96	24.0	1.5	21.0	21.8	23.6	26.4	28.3
Radiale-Stylion Length	30	13.2	1.0	11.3	11.4	13.0	14.5	15.5
Forearm Circumference	98	15.5	1.0	13.1	13.7	15.6	17.0	18.2
Forearm Breadth	35	4.5	0.4	3.9	3.9	4.4	5.1	5.4
Wrist Circumference	35	11.2	0.9	9.4	9.6	11.0	12.6	12.9
Wrist Breadth	35	2.9	0.3	2.3	2.3	2.8	3.4	3.6
Hand Length	98	10.3	0.6	9.0	9.3	10.2	11.4	11.8
Hand Breadth	98	5.0	0.3	4.0	4.4	4.9	5.5	5.8
Minimum Hand Clearance	33	42.6	2.6	38.1	38.1	41.0	45.9	47.6
Thumb Crotch-Mid Fing L	24	7.4	0.7	6.2	6.2	7.2	8.6	8.8
Thumb Length	32	3.5	0.3	2.6	2.7	3.4	4.0	4.1
Thumb Diameter	33	11.9	0.8	10.3	10.4	11.5	12.7	13.5
Index Finger Length	32	4.1	0.3	3.4	3.5	4.1	4.5	4.7
Index Finger Diameter	32	9.3	0.5	8.3	8.3	9.2	10.0	10.3
Middle Finger Length	32	4.4	0.3	4.0	4.0	4.4	4.9	5.4
Middle Finger Diameter	33	9.6	0.6	8.3	8.4	9.3	10.2	11.1
Mid Finger-Thumb Grip L	28	6.2	0.7	4.5	4.7	6.3	7.1	7.2
Maximum Fist Circ	32	15.7	1.0	13.7	13.8	15.7	17.2	18.2
Maximum Fist Breadth	32	5.6	0.4	4.9	4.9	5.6	6.3	6.6
Maximum Fist Depth	32	4.2	0.5	3.0	3.1	4.1	5.0	5.2

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	35	11.2	0.9	9.1	9.5	11.3	12.7	13.9
Shoulder Breadth	110	25.8	1.5	21.6	22.7	25.8	28.0	30.9
Biacromial Breadth	35	23.1	1.4	20.0	20.2	23.0	25.0	25.5
Shoulder-Elbow Length	110	20.3	1.2	17.7	18.4	20.1	22.3	23.1
Acromion-Radiale Length	34	18.1	1.1	15.6	16.2	18.2	19.6	20.2
Upper Arm Circumference	109	16.2	1.3	13.7	14.2	16.0	18.5	20.9
Upper Arm Depth	38	4.9	0.7	3.5	3.7	4.9	6.0	6.5
Elbow-Hand Length	110	26.8	1.6	23.1	24.3	26.6	29.4	31.8
Radiale-Stylion Length	35	14.7	1.2	12.7	12.8	14.6	16.6	16.8
Forearm Circumference	109	16.0	1.0	13.2	14.4	15.7	17.7	19.2
Forearm Breadth	37	4.8	0.5	3.5	3.8	4.8	5.4	5.8
Wrist Circumference	40	11.4	0.9	9.2	10.1	11.4	12.9	13.4
Wrist Breadth	40	2.9	0.3	2.1	2.2	2.9	3.3	3.4
Hand Length	109	11.5	0.8	9.4	10.2	11.4	12.7	13.9
Hand Breadth	109	5.4	0.4	4.5	4.6	5.3	5.9	6.3
Minimum Hand Clearance	34	45.7	3.1	41.3	41.3	43.8	50.1	54.1
Thumb Crotch-Mid Fing L	30	7.9	0.9	5.9	6.1	8.0	8.9	9.7
Thumb Length	34	3.8	0.4	2.8	2.9	3.8	4.4	4.5
Thumb Diameter	34	12.9	1.0	11.1	11.1	12.3	14.2	15.8
Index Finger Length	34	4.4	0.4	3.5	3.5	4.4	5.0	5.3
Index Finger Diameter	34	10.0	0.7	8.7	8.8	9.6	10.9	11.1
Middle Finger Length	34	4.9	0.4	3.9	4.0	4.9	5.6	5.7
Middle Finger Diameter	34	10.2	0.7	9.1	9.1	9.8	11.0	11.9
Mid Finger-Thumb Grip L	31	6.2	1.0	4.1	4.3	6.3	7.6	7.8
Maximum Fist Circ	34	16.8	1.2	14.5	14.7	16.4	18.7	19.3
Maximum Fist Breadth	34	6.1	0.5	5.3	5.3	6.0	6.7	7.2
Maximum Fist Depth	34	4.8	0.5	3.7	3.8	4.8	5.4	5.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	41	12.0	0.8	9.9	10.3	11.8	13.1	13.3
Shoulder Breadth	119	26.8	1.4	22.7	24.4	26.8	29.1	30.3
Biacromial Breadth	41	24.4	1.1	21.9	22.2	24.3	25.9	26.4
Shoulder-Elbow Length	120	21.7	1.2	18.5	19.4	21.8	23.6	25.1
Acromion-Radiale Length	41	19.2	1.0	15.8	17.8	19.0	20.5	20.7
Upper Arm Circumference	120	16.9	1.5	14.5	14.7	16.7	19.1	24.2
Upper Arm Depth	34	5.0	0.6	3.7	4.0	5.0	5.9	6.0
Elbow-Hand Length	120	28.3	1.5	24.7	26.1	28.2	31.0	32.3
Radiale-Stylion Length	41	15.8	1.1	13.8	14.1	15.5	17.6	18.0
Forearm Circumference	120	16.5	1.1	14.4	14.9	16.3	18.5	22.1
Forearm Breadth	34	4.9	0.4	4.1	4.2	4.9	5.5	5.6
Wrist Circumference	35	11.7	0.9	10.0	10.3	11.6	13.2	13.3
Wrist Breadth	34	2.9	0.2	2.5	2.5	2.9	3.2	3.4
Hand Length	118	12.0	0.7	10.3	10.7	11.9	13.0	13.6
Hand Breadth	118	5.5	0.3	4.8	4.9	5.5	6.1	6.7
Minimum Hand Clearance	43	47.3	3.2	41.3	41.3	45.5	50.7	57.2
Thumb Crotch-Mid Fing L	37	8.1	0.7	6.7	6.8	8.0	9.1	9.2
Thumb Length	44	4.1	0.4	3.4	3.5	4.0	4.8	4.9
Thumb Diameter	43	13.2	0.9	11.9	11.9	12.6	14.3	15.0
Index Finger Length	44	4.6	0.4	4.0	4.0	4.5	5.3	5.4
Index Finger Diameter	43	10.4	0.7	9.1	9.1	9.9	11.3	11.9
Middle Finger Length	44	5.0	0.4	4.4	4.4	5.0	5.8	6.0
Middle Finger Diameter	43	10.6	0.7	9.5	9.5	10.1	11.6	11.9
Mid Finger-Thumb Grip L	40	6.4	0.9	4.8	4.8	6.4	7.4	8.0
Maximum Fist Circ	44	17.5	1.2	15.7	15.8	17.2	19.5	20.8
Maximum Fist Breadth	44	6.0	0.5	5.2	5.2	5.9	6.9	7.1
Maximum Fist Depth	44	5.1	0.5	4.0	4.1	5.0	5.9	6.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	33	12.5	0.7	10.5	11.1	12.4	13.6	14.1
Shoulder Breadth	108	27.8	1.6	24.5	25.3	27.7	30.2	33.1
Biacromial Breadth	33	25.6	1.1	21.9	23.0	25.6	27.2	27.5
Shoulder-Elbow Length	109	23.1	1.2	18.8	21.1	23.0	24.9	26.3
Acromion-Radiale Length	34	20.1	1.1	17.8	17.9	19.9	21.6	23.0
Upper Arm Circumference	111	17.1	1.5	13.7	14.9	17.0	19.5	22.6
Upper Arm Depth	39	5.4	0.8	4.0	4.0	5.4	6.5	8.3
Elbow-Hand Length	109	29.9	1.6	25.4	27.2	29.8	32.5	34.5
Radiale-Stylion Length	34	16.1	1.3	14.1	14.2	15.8	18.4	18.8
Forearm Circumference	111	16.8	1.1	14.2	15.0	16.7	18.4	20.3
Forearm Breadth	40	5.3	0.6	4.1	4.3	5.1	6.0	6.8
Wrist Circumference	41	12.2	0.8	10.9	11.0	12.1	13.2	14.3
Wrist Breadth	41	3.0	0.4	2.2	2.3	3.0	3.6	4.0
Hand Length	111	12.6	0.7	10.8	11.4	12.5	13.8	14.2
Hand Breadth	111	5.8	0.4	5.1	5.2	5.8	6.4	7.0
Minimum Hand Clearance	36	48.6	2.7	44.5	44.5	46.8	52.1	54.1
Thumb Crotch-Mid Fing L	35	8.6	0.6	7.5	7.6	8.4	9.6	10.0
Thumb Length	36	4.3	0.4	3.8	3.8	4.3	4.9	5.1
Thumb Diameter	36	13.8	0.8	11.9	11.9	13.5	14.7	15.0
Index Finger Length	36	4.9	0.3	4.3	4.3	4.8	5.5	5.8
Index Finger Diameter	35	10.9	0.7	9.5	9.5	10.5	11.7	12.7
Middle Finger Length	36	5.4	0.4	4.7	4.7	5.3	5.9	6.4
Middle Finger Diameter	36	11.2	0.7	9.5	9.5	10.8	11.8	12.7
Mid Finger-Thumb Grip L	36	7.3	0.9	5.2	5.2	7.2	8.7	9.0
Maximum Fist Circ	35	18.6	1.1	15.9	16.6	18.4	20.7	21.0
Maximum Fist Breadth	36	6.2	0.4	5.5	5.6	6.0	7.0	7.3
Maximum Fist Depth	36	5.3	0.4	4.4	4.6	5.3	6.0	6.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	42	13.2	1.0	11.0	11.2	13.1	14.7	15.5
Shoulder Breadth	120	29.4	2.3	23.5	26.3	29.0	33.2	38.5
Biacromial Breadth	42	27.1	1.5	23.8	24.4	26.8	29.5	30.8
Shoulder-Elbow Length	121	24.4	1.4	20.7	22.1	24.3	26.7	28.4
Acromion-Radiale Length	42	21.7	1.6	19.0	19.1	21.8	24.1	25.1
Upper Arm Circumference	120	18.1	2.1	14.3	15.4	17.9	21.8	28.4
Upper Arm Depth	46	5.4	0.9	3.7	4.2	5.3	7.0	7.7
Elbow-Hand Length	120	31.5	1.8	28.2	28.9	31.2	35.2	37.0
Radiale-Stylion Length	42	17.2	1.4	14.5	14.8	16.9	20.3	20.6
Forearm Circumference	121	17.6	1.5	13.9	15.5	17.4	20.1	24.7
Forearm Breadth	46	5.5	0.6	4.5	4.6	5.4	6.5	7.4
Wrist Circumference	46	12.4	1.1	10.4	10.5	12.3	14.3	14.7
Wrist Breadth	46	3.2	0.3	2.6	2.7	3.1	3.6	4.1
Hand Length	120	13.1	0.8	11.5	11.8	13.1	14.5	15.0
Hand Breadth	121	6.0	0.4	5.2	5.4	6.0	6.6	6.9
Minimum Hand Clearance	33	50.9	3.4	44.5	44.7	49.1	55.2	60.3
Thumb Crotch-Mid Fing L	33	9.2	0.7	7.8	8.1	9.2	10.4	10.7
Thumb Length	33	4.7	0.4	4.1	4.1	4.6	5.3	5.6
Thumb Diameter	32	14.6	0.8	13.5	13.5	14.2	15.6	16.6
Index Finger Length	33	5.2	0.4	4.5	4.6	5.1	5.8	6.0
Index Finger Diameter	32	11.3	0.7	10.3	10.3	10.8	12.4	12.7
Middle Finger Length	33	5.8	0.4	4.8	5.0	5.7	6.4	6.7
Middle Finger Diameter	33	11.7	0.9	10.3	10.3	11.2	13.0	14.3
Mid Finger-Thumb Grip L	33	7.6	0.8	4.6	5.7	7.7	8.5	8.9
Maximum Fist Circ	33	19.8	1.1	17.9	18.1	19.7	21.5	21.8
Maximum Fist Breadth	33	6.6	0.4	5.5	5.8	6.5	7.3	7.4
Maximum Fist Depth	33	5.6	0.6	4.5	4.5	5.6	6.4	6.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	32	13.5	1.1	12.0	12.1	13.2	15.3	15.9
Shoulder Breadth	94	30.6	2.3	26.3	27.6	30.0	35.3	40.9
Biacromial Breadth	32	27.5	1.3	24.5	24.8	27.3	29.6	30.9
Shoulder-Elbow Length	94	25.7	1.4	23.2	23.5	25.7	28.0	30.5
Acromion-Radiale Length	32	22.2	1.4	19.6	19.9	21.7	24.7	25.2
Upper Arm Circumference	94	19.0	2.2	14.6	15.7	18.5	22.2	26.7
Upper Arm Depth	32	6.1	1.0	4.7	4.7	6.1	7.5	9.5
Elbow-Hand Length	94	32.9	1.7	29.2	30.2	32.9	35.6	38.3
Radiale-Stylion Length	32	17.8	1.3	15.1	15.6	17.7	20.0	20.5
Forearm Circumference	94	18.3	1.5	15.1	15.9	18.1	20.6	24.5
Forearm Breadth	32	5.9	0.7	4.8	4.8	5.9	7.0	7.7
Wrist Circumference	32	13.0	1.0	11.3	11.4	12.8	14.8	15.6
Wrist Breadth	32	3.3	0.4	2.7	2.7	3.2	4.0	4.5
Hand Length	94	13.7	0.7	12.2	12.6	13.6	14.8	15.2
Hand Breadth	94	6.3	0.4	5.1	5.6	6.2	6.8	7.6
Minimum Hand Clearance	30	53.3	3.8	47.6	47.6	51.8	58.7	63.5
Thumb Crotch-Mid Fing L	30	9.4	0.7	8.1	8.2	9.1	10.7	10.9
Thumb Length	30	4.8	0.3	4.0	4.0	4.8	5.2	5.3
Thumb Diameter	30	15.2	0.9	12.7	12.8	14.8	16.4	16.6
Index Finger Length	30	5.4	0.3	4.8	4.8	5.3	5.7	6.2
Index Finger Diameter	30	11.8	0.8	10.3	10.3	11.4	12.6	13.5
Middle Finger Length	30	5.9	0.4	5.1	5.1	5.9	6.4	6.6
Middle Finger Diameter	30	12.1	0.7	11.1	11.1	11.7	12.9	13.5
Mid Finger-Thumb Grip L	30	7.9	0.9	5.4	5.5	7.8	9.1	9.6
Maximum Fist Circ	30	20.2	1.3	17.5	17.9	20.1	22.2	22.8
Maximum Fist Breadth	30	6.7	0.5	5.9	5.9	6.7	7.3	7.4
Maximum Fist Depth	30	5.8	0.6	4.2	4.5	5.8	6.5	6.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	48	14.4	1.1	12.4	12.7	14.3	16.0	17.0
Shoulder Breadth	137	32.0	2.3	27.1	28.5	31.5	36.1	40.4
Biacromial Breadth	48	29.1	1.7	25.5	26.4	28.9	31.9	33.6
Shoulder-Elbow Length	136	27.2	1.4	23.8	25.1	27.0	29.4	31.0
Acromion-Radiale Length	48	24.0	1.6	20.4	21.2	23.7	26.5	28.5
Upper Arm Circumference	137	19.7	2.3	15.2	16.3	19.5	23.7	28.1
Upper Arm Depth	49	6.2	1.0	4.3	4.4	6.1	8.0	8.5
Elbow-Hand Length	137	34.9	2.0	30.6	32.0	34.6	38.2	41.6
Radiale-Stylion Length	48	18.8	1.4	16.5	16.8	18.4	21.0	22.6
Forearm Circumference	137	19.0	1.6	16.0	16.7	18.8	21.3	27.8
Forearm Breadth	49	6.0	0.6	5.0	5.1	5.9	7.1	7.3
Wrist Circumference	49	13.3	1.1	11.0	11.2	13.2	14.7	15.8
Wrist Breadth	49	3.3	0.4	2.7	2.7	3.2	3.9	4.2
Hand Length	137	14.4	0.9	11.8	12.9	14.2	15.9	18.1
Hand Breadth	137	6.5	0.4	5.7	5.8	6.4	7.1	7.8
Minimum Hand Clearance	40	54.2	3.0	50.8	50.8	52.2	58.7	60.3
Thumb Crotch-Mid Fing L	40	9.8	0.8	8.2	8.4	9.6	11.2	12.0
Thumb Length	40	5.0	0.4	4.0	4.1	4.9	5.6	5.9
Thumb Diameter	40	15.5	0.8	14.3	14.3	15.1	16.4	16.6
Index Finger Length	40	5.6	0.4	4.7	4.7	5.6	6.1	6.2
Index Finger Diameter	40	12.2	0.7	11.1	11.1	11.7	13.1	14.3
Middle Finger Length	40	6.2	0.4	5.5	5.5	6.2	6.8	7.1
Middle Finger Diameter	40	12.6	0.7	11.1	11.1	12.1	13.4	14.3
Mid Finger-Thumb Grip L	39	8.2	0.9	4.9	6.7	8.2	9.5	9.7
Maximum Fist Circ	40	20.9	1.2	18.1	18.7	20.7	22.6	23.5
Maximum Fist Breadth	40	6.9	0.4	6.1	6.3	6.7	7.7	7.9
Maximum Fist Depth	40	6.0	0.5	5.0	5.0	6.0	6.6	6.7

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	38	14.8	1.0	12.9	13.0	14.7	16.5	17.3
Shoulder Breadth	129	32.8	2.7	27.9	28.6	32.9	37.9	42.4
Biacromial Breadth	38	30.3	1.7	27.8	27.9	30.1	33.5	35.1
Shoulder-Elbow Length	128	28.5	1.6	24.6	26.1	28.3	31.4	33.9
Acromion-Radiale Length	38	25.0	1.8	21.8	22.2	24.8	28.0	28.8
Upper Arm Circumference	129	20.3	2.4	15.4	17.3	19.9	24.2	31.2
Upper Arm Depth	45	6.4	1.2	4.2	4.4	6.4	8.0	9.3
Elbow-Hand Length	128	36.6	2.2	31.9	33.4	36.3	40.3	44.4
Radiale-Stylion Length	38	19.9	1.7	15.8	17.3	19.7	22.7	23.8
Forearm Circumference	129	19.5	1.6	16.2	17.0	19.3	22.0	28.5
Forearm Breadth	45	6.3	0.8	4.9	5.0	6.0	7.8	8.7
Wrist Circumference	45	13.5	1.5	10.8	11.1	13.3	16.1	19.0
Wrist Breadth	45	3.4	0.4	2.5	2.6	3.3	3.9	4.6
Hand Length	128	15.0	0.9	12.6	13.5	14.9	16.5	17.4
Hand Breadth	128	6.7	0.4	5.6	5.9	6.6	7.3	7.5
Minimum Hand Clearance	46	56.0	3.6	47.6	47.8	55.0	60.1	63.5
Thumb Crotch-Mid Fing L	46	10.3	0.9	8.6	8.9	10.2	11.6	12.1
Thumb Length	46	5.4	0.5	4.2	4.6	5.3	6.2	6.4
Thumb Diameter	46	15.7	0.9	13.5	13.8	15.3	17.1	17.4
Index Finger Length	46	5.9	0.5	4.6	4.8	5.8	6.5	7.2
Index Finger Diameter	46	12.4	0.7	11.1	11.1	12.0	13.3	13.5
Middle Finger Length	46	6.5	0.5	5.1	5.7	6.5	7.2	8.0
Middle Finger Diameter	46	12.7	0.7	11.1	11.1	12.3	13.5	14.3
Mid Finger-Thumb Grip L	45	8.7	1.1	6.0	6.4	8.8	10.2	11.1
Maximum Fist Circ	45	21.5	1.4	17.8	18.5	21.3	23.5	25.2
Maximum Fist Breadth	46	7.1	0.6	6.2	6.2	7.0	8.2	8.7
Maximum Fist Depth	46	6.3	0.6	4.5	5.4	6.1	7.1	7.3

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	47	15.6	1.2	13.3	13.7	15.5	17.6	18.2
Shoulder Breadth	140	34.5	3.3	27.4	30.4	33.9	41.7	47.2
Biacromial Breadth	48	31.7	2.0	27.2	28.7	31.5	35.4	36.2
Shoulder-Elbow Length	140	29.9	1.9	24.8	26.7	29.9	32.5	35.7
Acromion-Radiale Length	48	26.3	1.9	22.2	23.2	26.6	29.2	29.5
Upper Arm Circumference	140	21.2	3.0	15.9	17.3	20.6	26.6	33.5
Upper Arm Depth	45	6.6	1.3	4.4	4.9	6.4	8.4	10.5
Elbow-Hand Length	140	38.2	2.6	32.2	34.2	37.9	42.6	45.9
Radiale-Stylion Length	48	20.7	1.9	16.3	17.3	20.7	23.8	25.3
Forearm Circumference	140	20.3	2.0	16.1	17.4	19.8	24.2	28.0
Forearm Breadth	45	6.3	0.8	5.0	5.0	6.1	7.8	8.5
Wrist Circumference	45	13.6	1.4	11.5	11.5	13.2	16.1	16.9
Wrist Breadth	45	3.5	0.4	2.8	2.8	3.4	4.1	4.4
Hand Length	140	15.7	1.1	13.2	14.0	15.6	17.4	18.8
Hand Breadth	140	7.0	0.5	5.9	6.1	6.9	7.8	8.6
Minimum Hand Clearance	46	58.2	4.9	44.5	47.2	56.2	65.3	69.9
Thumb Crotch-Mid Fing L	46	10.7	0.7	9.6	9.7	10.6	11.8	12.6
Thumb Length	46	5.6	0.5	4.9	4.9	5.5	6.5	6.7
Thumb Diameter	47	16.2	1.3	12.7	13.6	15.9	17.8	19.9
Index Finger Length	46	6.2	0.5	5.1	5.4	6.0	7.3	7.7
Index Finger Diameter	47	12.8	0.8	10.3	11.1	12.4	13.7	14.3
Middle Finger Length	46	6.8	0.5	5.7	6.0	6.6	7.8	7.9
Middle Finger Diameter	47	13.1	0.9	10.3	11.2	12.7	14.2	15.0
Mid Finger-Thumb Grip L	46	9.2	1.3	5.8	6.7	9.4	11.0	11.7
Maximum Fist Circ	47	22.4	1.7	18.6	19.0	22.2	24.8	27.2
Maximum Fist Breadth	47	7.3	0.7	5.7	6.1	7.2	8.4	9.3
Maximum Fist Depth	47	6.7	0.7	5.1	5.4	6.6	7.7	9.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	43	16.0	1.1	14.1	14.3	16.0	17.6	18.0
Shoulder Breadth	133	35.3	2.9	29.6	30.9	35.1	40.1	45.0
Biacromial Breadth	43	32.3	1.9	28.4	28.8	32.3	34.7	35.7
Shoulder-Elbow Length	133	31.1	1.8	26.0	28.3	31.0	33.8	36.7
Acromion-Radiale Length	43	27.1	1.9	22.2	23.2	27.2	29.7	30.7
Upper Arm Circumference	133	21.9	2.6	16.0	18.2	21.6	26.3	28.5
Upper Arm Depth	42	6.7	1.1	4.5	4.7	6.7	8.6	9.2
Elbow-Hand Length	133	39.9	2.5	34.6	35.5	39.9	43.9	48.6
Radiale-Stylion Length	43	21.8	1.7	18.7	18.9	21.7	24.8	25.9
Forearm Circumference	133	20.8	1.8	16.8	18.1	20.7	23.6	26.3
Forearm Breadth	42	6.8	0.6	5.8	5.8	6.6	7.8	8.7
Wrist Circumference	42	14.1	1.2	12.1	12.4	14.0	15.8	17.6
Wrist Breadth	42	3.6	0.4	2.9	3.0	3.5	4.1	4.4
Hand Length	133	16.3	1.0	14.1	14.6	16.2	17.7	19.7
Hand Breadth	132	7.2	0.4	6.0	6.4	7.2	7.8	8.2
Minimum Hand Clearance	48	59.4	4.3	50.8	51.1	57.4	65.2	73.0
Thumb Crotch-Mid Fing L	48	11.2	0.9	9.4	9.5	11.2	12.6	13.9
Thumb Length	48	5.7	0.5	4.7	4.8	5.7	6.4	6.6
Thumb Diameter	47	16.8	1.0	15.0	15.0	16.3	18.1	19.0
Index Finger Length	48	6.5	0.5	5.6	5.7	6.5	7.2	7.6
Index Finger Diameter	48	13.0	0.8	11.9	11.9	12.5	14.1	15.0
Middle Finger Length	48	7.1	0.5	6.2	6.3	7.1	7.9	8.3
Middle Finger Diameter	48	13.3	0.8	11.9	11.9	13.0	14.2	15.0
Mid Finger-Thumb Grip L	48	9.2	1.1	6.6	7.2	9.2	10.9	11.3
Maximum Fist Circ	47	23.0	1.3	19.9	20.6	23.0	24.9	25.5
Maximum Fist Breadth	48	7.6	0.7	6.3	6.6	7.4	9.0	9.4
Maximum Fist Depth	48	6.8	0.5	5.4	5.8	6.7	7.5	7.6

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	50	16.5	1.2	13.5	14.2	16.5	18.4	19.5
Shoulder Breadth	159	36.9	2.3	30.5	33.1	36.8	40.3	43.4
Biacromial Breadth	50	33.6	1.9	29.4	30.0	33.5	36.2	39.1
Shoulder-Elbow Length	161	32.4	1.7	27.9	29.7	32.3	35.1	37.4
Acromion-Radiale Length	50	28.7	1.7	25.1	25.6	28.6	31.5	32.4
Upper Arm Circumference	158	22.8	2.5	16.8	19.6	22.5	28.4	30.0
Upper Arm Depth	49	7.0	1.3	4.8	4.9	6.8	9.2	11.2
Elbow-Hand Length	161	41.4	2.3	34.9	37.6	41.4	44.8	48.4
Radiale-Stylion Length	50	22.5	1.9	19.2	19.8	22.4	25.4	27.6
Forearm Circumference	159	21.6	1.6	17.7	19.2	21.5	24.1	25.8
Forearm Breadth	50	7.1	0.6	5.7	6.1	7.1	8.1	9.9
Wrist Circumference	50	14.5	1.1	13.0	13.1	14.2	16.6	17.4
Wrist Breadth	50	3.8	0.3	3.1	3.2	3.7	4.4	4.7
Hand Length	160	16.9	1.0	14.7	15.1	16.9	18.4	20.1
Hand Breadth	160	7.5	0.4	6.3	6.6	7.5	8.1	8.4
Minimum Hand Clearance	61	61.0	3.4	54.1	54.1	59.4	65.3	66.7
Thumb Crotch-Mid Fing L	61	11.5	0.8	9.8	10.1	11.4	13.1	13.8
Thumb Length	61	5.9	0.5	4.6	4.9	5.8	6.5	7.0
Thumb Diameter	61	17.1	0.9	15.0	15.2	16.7	18.3	19.0
Index Finger Length	61	6.7	0.5	5.5	5.8	6.6	7.4	7.7
Index Finger Diameter	61	13.6	0.8	11.9	11.9	13.2	14.6	15.0
Middle Finger Length	61	7.3	0.5	6.0	6.5	7.2	8.2	8.9
Middle Finger Diameter	61	13.8	0.9	11.9	11.9	13.4	14.8	15.0
Mid Finger-Thumb Grip L	61	9.6	1.1	7.0	7.5	9.6	11.4	11.9
Maximum Fist Circ	60	24.0	1.7	20.6	21.2	23.7	26.4	29.3
Maximum Fist Breadth	61	7.8	0.6	6.6	6.9	7.7	8.9	9.2
Maximum Fist Depth	61	7.1	0.6	5.5	5.9	7.0	7.9	8.2

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	31	17.1	1.3	15.2	15.3	16.7	19.6	20.7
Shoulder Breadth	115	38.0	2.6	33.3	34.0	37.5	42.3	46.4
Biacromial Breadth	31	34.3	2.2	30.9	31.0	33.7	38.1	39.1
Shoulder-Elbow Length	116	33.1	1.7	28.6	30.0	33.0	35.7	37.3
Acromion-Radiale Length	31	29.3	1.8	24.3	25.4	29.5	31.4	32.9
Upper Arm Circumference	116	23.4	2.5	18.0	19.4	23.4	27.0	29.9
Upper Arm Depth	41	7.1	0.9	5.5	5.6	6.9	8.6	9.0
Elbow-Hand Length	116	42.0	2.0	37.4	38.7	41.9	45.5	47.1
Radiale-Stylion Length	31	22.9	1.5	19.0	20.0	22.7	24.5	27.9
Forearm Circumference	116	21.9	1.7	17.8	18.9	21.9	24.6	25.9
Forearm Breadth	41	7.2	0.7	6.2	6.2	7.0	8.5	9.3
Wrist Circumference	41	14.8	0.9	13.2	13.5	14.7	16.1	17.0
Wrist Breadth	41	3.8	0.3	3.2	3.3	3.7	4.2	4.3
Hand Length	116	17.0	0.9	14.6	15.6	16.9	18.4	19.6
Hand Breadth	116	7.5	0.4	6.6	6.8	7.4	8.1	8.2
Minimum Hand Clearance	44	62.1	3.2	57.2	57.2	60.9	66.5	69.9
Thumb Crotch-Mid Fing L	44	11.6	1.0	9.8	9.9	11.4	12.9	14.8
Thumb Length	44	5.9	0.5	4.8	5.0	5.8	6.8	7.5
Thumb Diameter	44	17.2	0.8	15.8	15.8	16.9	18.1	19.0
Index Finger Length	44	6.8	0.4	6.2	6.2	6.6	7.6	8.1
Index Finger Diameter	44	13.7	0.7	11.9	12.0	13.4	14.3	15.0
Middle Finger Length	44	7.4	0.5	6.3	6.7	7.3	8.3	8.9
Middle Finger Diameter	44	14.0	0.8	12.7	12.7	13.7	14.8	15.0
Mid Finger-Thumb Grip L	44	9.4	1.4	5.8	6.4	9.5	11.2	12.7
Maximum Fist Circ	43	24.0	1.5	20.9	21.0	23.8	26.7	27.3
Maximum Fist Breadth	44	8.0	0.6	6.8	6.9	7.8	9.0	9.2
Maximum Fist Depth	44	7.1	0.5	6.0	6.2	7.0	8.0	8.1

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	48	17.6	1.1	15.5	15.8	17.4	19.3	19.8
Shoulder Breadth	131	39.2	2.3	33.7	35.2	39.2	42.8	47.4
Biacromial Breadth	48	35.3	1.7	31.2	32.1	35.2	37.7	40.5
Shoulder-Elbow Length	132	33.9	1.7	30.5	31.4	33.6	36.4	39.8
Acromion-Radiale Length	48	30.0	1.7	26.1	26.8	30.0	32.4	34.1
Upper Arm Circumference	133	24.3	2.6	19.2	20.1	24.1	28.5	34.4
Upper Arm Depth	39	7.4	1.0	5.6	5.7	7.3	8.8	9.7
Elbow-Hand Length	132	43.0	2.3	37.3	39.6	42.9	46.9	49.6
Radiale-Stylion Length	48	23.4	1.7	19.6	20.6	23.2	26.3	27.1
Forearm Circumference	133	22.8	1.6	18.8	20.3	22.6	25.4	28.2
Forearm Breadth	39	7.4	0.7	5.8	5.9	7.4	8.6	8.7
Wrist Circumference	38	15.1	1.0	12.5	13.4	15.0	16.5	17.2
Wrist Breadth	38	3.8	0.4	3.1	3.1	3.8	4.3	4.4
Hand Length	132	17.3	0.9	15.2	15.8	17.2	18.8	19.7
Hand Breadth	132	7.5	0.4	6.6	6.9	7.4	8.0	8.6
Minimum Hand Clearance	45	61.6	3.5	54.1	54.3	59.7	66.5	69.9
Thumb Crotch-Mid Fing L	45	11.8	0.8	9.7	10.6	11.6	13.0	13.4
Thumb Length	45	6.1	0.4	5.4	5.4	5.9	6.8	7.0
Thumb Diameter	45	17.6	0.9	15.8	15.8	17.1	19.0	19.9
Index Finger Length	45	6.9	0.4	5.8	6.1	6.8	7.5	7.6
Index Finger Diameter	45	13.9	0.7	12.7	12.7	13.5	14.8	15.0
Middle Finger Length	45	7.5	0.4	6.7	6.7	7.5	8.0	8.5
Middle Finger Diameter	45	14.3	0.8	12.7	12.7	13.9	15.2	15.8
Mid Finger-Thumb Grip L	45	10.0	1.1	6.5	7.9	10.0	11.4	12.8
Maximum Fist Circ	44	24.7	1.6	20.9	21.5	24.6	27.2	28.7
Maximum Fist Breadth	45	7.9	0.6	6.6	6.7	7.7	8.9	9.3
Maximum Fist Depth	45	7.2	0.6	5.7	5.9	7.1	8.2	8.5

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	32	17.7	1.2	14.9	15.5	17.8	19.2	19.5
Shoulder Breadth	98	39.6	2.3	34.7	35.4	39.2	43.3	47.3
Biacromial Breadth	32	35.5	1.9	32.0	32.2	35.5	38.7	39.5
Shoulder-Elbow Length	98	33.6	1.7	29.8	30.8	33.2	36.4	38.0
Acromion-Radiale Length	32	29.9	1.7	27.2	27.3	29.2	33.2	33.7
Upper Arm Circumference	98	24.9	2.3	20.4	20.9	24.2	28.9	32.0
Upper Arm Depth	41	7.2	0.9	4.8	5.9	7.1	8.7	9.3
Elbow-Hand Length	98	42.7	2.2	38.1	39.3	42.5	46.0	49.3
Radiale-Stylion Length	32	23.5	1.7	20.5	20.6	23.1	25.9	26.4
Forearm Circumference	98	23.0	1.4	20.1	20.7	22.9	25.3	28.2
Forearm Breadth	41	7.3	0.6	5.9	6.2	7.3	8.0	8.4
Wrist Circumference	41	15.2	1.1	13.1	13.2	15.2	16.6	16.8
Wrist Breadth	40	3.9	0.3	3.2	3.2	3.8	4.2	4.5
Hand Length	98	17.2	0.9	15.2	15.5	17.1	18.6	20.9
Hand Breadth	98	7.6	0.4	6.6	6.8	7.5	8.2	8.7
Minimum Hand Clearance	25	63.9	3.9	54.1	54.9	62.2	68.9	69.9
Thumb Crotch-Mid Fing L	24	11.7	1.0	8.7	9.0	11.7	13.3	13.5
Thumb Length	25	6.2	0.5	5.1	5.2	6.2	6.8	7.1
Thumb Diameter	24	18.2	1.3	15.8	15.9	17.7	19.8	21.4
Index Finger Length	25	6.9	0.5	5.7	5.8	6.9	7.5	7.6
Index Finger Diameter	25	14.2	0.9	12.7	12.7	13.9	15.0	15.8
Middle Finger Length	25	7.5	0.4	6.5	6.6	7.5	8.1	8.3
Middle Finger Diameter	25	14.4	1.0	12.7	12.7	14.2	15.7	16.6
Mid Finger-Thumb Grip L	25	9.9	1.1	6.3	6.8	9.7	11.4	11.9
Maximum Fist Circ	25	24.6	1.5	21.8	21.8	24.6	26.8	27.0
Maximum Fist Breadth	25	8.0	0.7	6.4	6.5	8.0	9.0	9.1
Maximum Fist Depth	25	7.2	0.4	6.2	6.2	7.1	7.7	7.9

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics						
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	36	17.8	1.0	14.0	14.9	17.9	19.0	19.1
Shoulder Breadth	117	40.0	2.5	34.3	36.1	39.6	44.0	48.1
Biacromial Breadth	36	35.9	1.5	32.4	32.8	35.9	38.0	39.6
Shoulder-Elbow Length	117	33.7	1.6	29.8	31.0	33.7	36.2	37.6
Acromion-Radiale Length	36	30.1	1.4	26.7	26.8	30.2	32.1	32.8
Upper Arm Circumference	117	24.9	2.6	20.0	21.0	24.4	29.8	33.4
Upper Arm Depth	38	7.4	1.1	5.6	5.7	7.1	9.7	10.0
Elbow-Hand Length	117	42.7	1.9	38.4	39.3	42.7	45.6	48.2
Radiale-Stylion Length	36	23.2	1.5	20.8	21.0	23.1	25.6	27.5
Forearm Circumference	116	23.1	1.7	19.7	20.9	22.8	25.9	28.7
Forearm Breadth	39	7.4	0.7	5.8	6.2	7.4	8.5	8.9
Wrist Circumference	39	15.0	1.2	11.8	13.0	14.8	16.7	17.7
Wrist Breadth	39	3.7	0.4	2.6	2.8	3.7	4.3	4.8
Hand Length	117	17.1	0.9	14.4	15.6	17.1	18.4	18.8
Hand Breadth	117	7.5	0.4	6.7	6.8	7.4	8.3	8.8
Minimum Hand Clearance	42	61.6	4.2	54.1	54.1	59.5	68.2	69.9
Thumb Crotch-Mid Fing L	42	11.6	1.1	8.1	9.1	11.5	13.2	13.6
Thumb Length	42	6.0	0.5	5.1	5.2	6.0	6.8	7.1
Thumb Diameter	42	17.6	1.0	15.8	15.8	17.5	18.8	19.9
Index Finger Length	42	6.7	0.5	5.8	5.8	6.7	7.5	7.7
Index Finger Diameter	42	13.9	1.0	11.9	11.9	13.6	15.0	15.8
Middle Finger Length	42	7.4	0.6	6.2	6.3	7.5	8.2	8.6
Middle Finger Diameter	42	14.1	1.0	11.9	12.0	13.8	15.4	15.8
Mid Finger-Thumb Grip-L	42	9.6	1.3	5.0	6.2	9.6	11.3	11.5
Maximum Fist Circ	42	24.4	1.6	21.6	21.7	24.4	26.8	27.3
Maximum Fist Breadth	42	8.0	0.7	7.0	7.0	7.8	9.1	10.7
Maximum Fist Depth	42	7.1	0.6	5.6	6.0	7.1	7.8	8.0

SHOULDER, UPPER LIMB, AND HAND MEASUREMENTS
(Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics						
	N	Mean	s.d.	Min	5th	50th	95th	Max
Clavicale-Acromion Len	23	18.1	1.3	15.9	16.0	17.7	20.4	21.4
Shoulder Breadth	66	39.9	2.0	36.1	36.8	39.8	43.6	45.0
Biacromial Breadth	23	35.9	1.2	34.0	34.1	35.4	37.7	39.5
Shoulder-Elbow Length	68	33.8	1.4	31.3	31.6	33.7	36.3	37.9
Acromion-Radiale Length	23	29.6	1.4	27.4	27.4	29.4	32.1	33.7
Upper Arm Circumference	68	25.0	2.6	19.1	20.9	24.6	29.3	32.9
Upper Arm Depth	25	7.5	1.2	4.9	5.2	7.4	9.7	10.7
Elbow-Hand Length	68	42.9	1.8	37.2	40.0	42.8	45.6	49.1
Radiale-Stylion Length	23	23.1	1.6	20.0	20.1	22.9	26.1	26.4
Forearm Circumference	67	23.0	1.7	19.6	20.1	22.8	25.5	28.8
Forearm Breadth	23	7.4	0.8	6.0	6.0	7.5	8.6	8.9
Wrist Circumference	25	15.0	1.3	12.1	12.3	15.1	16.6	17.3
Wrist Breadth	25	3.7	0.3	3.2	3.2	3.7	4.1	4.3
Hand Length	68	17.3	0.8	15.5	15.7	17.3	18.5	19.0
Hand Breadth	68	7.6	0.4	6.6	6.8	7.6	8.1	8.4
Minimum Hand Clearance	19	61.5	2.2	57.2	**	60.1	**	63.5
Thumb Crotch-Mid Fing L	19	11.5	1.0	8.4	**	11.4	**	12.9
Thumb Length	19	6.2	0.3	5.7	**	6.1	**	6.7
Thumb Diameter	19	17.6	0.8	15.8	**	17.3	**	19.0
Index Finger Length	19	6.9	0.4	6.2	**	6.9	**	7.8
Index Finger Diameter	19	14.0	0.8	12.7	**	13.6	**	15.0
Middle Finger Length	19	7.5	0.4	6.8	**	7.5	**	8.2
Middle Finger Diameter	19	14.4	0.8	12.7	**	14.2	**	15.8
Mid Finger-Thumb Grip L	19	10.1	1.3	5.9	**	10.2	**	11.8
Maximum Fist Circ	20	24.8	1.4	21.2	**	24.6	**	27.5
Maximum Fist Breadth	19	7.9	0.4	7.2	**	7.8	**	8.7
Maximum Fist Depth	19	6.9	0.6	5.9	**	6.8	**	7.8

TORSO, PELVIS, LEG, AND FOOT MEASUREMENTS

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	67	72.4	4.1	63.0	66.6	72.0	79.3	83.0
Chest Height at Axilla	67	65.2	3.7	59.5	59.9	64.8	70.2	73.6
Chest Circumference	211	50.7	2.7	43.4	46.1	50.5	54.9	60.2
Chest Breadth at Axilla	65	16.1	1.2	12.9	13.8	16.0	17.8	19.2
Waist Height	67	49.3	3.3	43.7	44.2	49.3	54.0	57.5
Waist Circumference	210	48.1	3.2	38.8	43.1	48.1	52.9	60.6
Waist Breadth	65	16.1	1.0	13.7	14.3	16.0	17.9	19.8
Natural Waist Circ	65	47.0	3.1	38.4	41.5	46.9	51.4	57.3
Iliocristale Height	67	51.4	3.6	43.4	46.6	50.7	58.8	60.0
Hip Height at Buttocks	67	40.4	2.9	34.6	36.2	39.9	45.2	45.7
Hip Circumference	200	51.7	3.2	43.8	46.9	51.8	57.0	62.1
Hip Brdth at Trochanter	66	18.0	1.0	15.7	16.5	17.9	20.0	20.7
Iliospinale Height	67	47.8	3.1	39.8	43.4	47.6	53.2	55.3
Bispinous Breadth	67	14.6	1.2	11.5	12.4	14.6	16.4	16.9
Gluteal Furrow Height	67	37.5	2.9	30.4	32.1	37.5	42.1	45.0
Trochanteric Height	67	42.6	3.3	35.0	37.0	42.6	48.3	49.3
Upper Thigh Circum	209	29.1	2.5	22.9	25.5	28.9	33.4	38.6
Upper Thigh Depth	62	8.5	0.9	6.7	6.9	8.3	9.9	10.6
Tibiale Height	67	22.3	1.9	17.7	18.8	22.3	25.0	27.1
Calf Circum Height	65	16.8	1.9	11.8	13.5	17.0	19.7	21.3
Calf Circumference	212	20.6	1.5	17.1	17.9	20.6	23.0	24.4
Calf Depth	67	6.2	0.5	5.2	5.4	6.2	6.9	7.3
Ankle Circumference	67	14.8	1.0	12.1	13.1	14.8	16.4	17.1
Ankle Breadth	66	4.1	0.4	3.3	3.4	4.1	4.7	5.0
Sphyrion Height	60	3.8	1.0	2.1	2.2	3.6	5.3	6.3
Foot Length	212	14.7	1.1	11.6	13.0	14.7	16.4	17.8
Foot Breadth	212	6.1	0.5	5.0	5.3	6.0	6.8	7.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	79	78.4	4.0	71.9	72.3	78.2	84.2	89.8
Chest Height at Axilla	78	72.0	3.9	64.6	66.3	71.4	79.0	82.2
Chest Circumference	226	52.7	2.7	45.9	48.6	52.7	57.0	61.3
Chest Breadth at Axilla	77	16.7	1.1	13.7	14.5	16.7	18.3	19.5
Waist Height	78	55.4	3.2	50.3	50.9	55.0	61.2	62.7
Waist Circumference	226	49.3	2.9	41.7	44.7	49.1	54.1	58.5
Waist Breadth	77	17.0	1.1	13.4	14.8	17.1	18.7	19.2
Natural Waist Circ	67	48.4	2.8	41.2	43.6	48.4	53.1	54.5
Iliocristale Height	79	56.2	3.7	49.5	50.7	56.3	62.5	65.8
Hip Height at Buttocks	78	46.2	3.2	39.6	41.5	45.4	52.0	54.3
Hip Circumference	225	53.5	3.5	45.4	48.2	53.1	59.4	65.6
Hip Brdth at Trochanter	79	18.7	1.1	16.5	16.9	18.6	20.3	21.7
Iliospinale Height	79	52.5	3.5	46.6	47.9	52.0	59.0	64.0
Bispinous Breadth	79	14.9	1.2	12.3	12.8	14.8	16.7	18.3
Gluteal Furrow Height	79	41.7	3.1	36.6	37.1	41.4	47.4	51.8
Trochanteric Height	79	46.9	3.4	41.2	42.0	46.5	52.3	58.7
Upper Thigh Circum	226	30.9	2.6	25.3	26.8	30.8	34.9	40.0
Upper Thigh Depth	75	9.2	1.1	6.0	7.4	9.1	11.3	12.8
Tibiale Height	79	24.0	1.9	20.4	20.8	23.8	27.4	28.1
Calf Circum Height	77	18.6	1.9	14.2	14.9	18.8	21.5	24.0
Calf Circumference	227	21.2	1.5	17.6	19.0	21.1	23.6	26.9
Calf Depth	77	6.5	0.5	5.5	5.6	6.3	7.3	7.6
Ankle Circumference	77	14.9	0.9	13.0	13.4	14.8	16.7	17.8
Ankle Breadth	76	4.2	0.3	3.2	3.6	4.1	4.6	4.9
Sphyrion Height	72	4.0	0.7	2.2	2.7	3.9	5.2	5.5
Foot Length	227	16.1	1.0	13.6	14.6	16.0	17.7	20.2
Foot Breadth	226	6.5	0.4	5.5	5.8	6.4	7.1	7.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	76	84.3	3.9	74.1	77.4	84.2	90.4	93.2
Chest Height at Axilla	93	78.2	4.5	66.6	70.5	78.1	86.7	89.8
Chest Circumference	263	55.0	3.0	47.8	50.4	54.8	59.7	74.4
Chest Breadth at Axilla	92	17.3	1.0	15.2	15.6	17.1	19.0	19.8
Waist Height	93	60.6	3.5	50.7	55.0	60.4	66.8	69.6
Waist Circumference	262	51.1	3.6	43.7	45.7	50.9	57.2	77.4
Waist Breadth	93	17.8	1.2	15.2	15.8	17.8	19.5	20.8
Natural Waist Circ	88	50.9	2.8	45.1	46.0	50.8	55.9	58.2
Iliocristale Height	76	61.4	3.2	54.5	55.3	61.4	66.1	68.2
Hip Height at Buttocks	93	50.5	3.2	41.3	45.6	50.7	56.9	58.5
Hip Circumference	260	56.1	3.5	48.2	51.2	55.6	62.2	77.7
Hip Brdth at Trochanter	76	19.6	1.0	17.0	17.6	19.5	21.1	21.7
Iliospinale Height	76	57.3	3.2	50.4	51.4	57.6	62.5	63.6
Bispinous Breadth	76	15.7	1.3	12.0	13.3	15.8	17.5	18.4
Gluteal Furrow Height	76	46.1	3.0	39.6	40.6	46.3	50.2	52.1
Trochanteric Height	76	51.6	3.0	45.4	46.3	51.7	55.9	58.7
Upper Thigh Circum	259	32.5	2.9	26.0	28.5	32.1	37.2	49.1
Upper Thigh Depth	90	9.6	1.1	6.9	7.6	9.6	11.0	12.6
Tibiale Height	76	26.4	1.8	22.5	22.7	26.2	29.1	30.2
Calf Circum Height	92	20.2	2.0	15.8	16.6	20.1	23.3	24.4
Calf Circumference	263	22.1	1.5	18.7	19.7	21.9	24.5	28.2
Calf Depth	92	6.8	0.4	5.6	6.1	6.7	7.6	8.2
Ankle Circumference	93	15.5	0.9	12.9	13.9	15.3	17.0	17.5
Ankle Breadth	93	4.3	0.3	3.6	3.8	4.3	4.8	5.3
Sphyrion Height	69	4.4	0.8	2.5	2.8	4.3	5.6	6.4
Foot Length	263	17.0	0.9	14.7	15.5	17.0	18.4	20.2
Foot Breadth	263	6.8	0.4	5.7	6.0	6.8	7.5	7.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	77	90.6	4.3	79.7	84.3	90.0	97.5	102.8
Chest Height at Axilla	78	83.8	4.6	74.2	76.0	83.2	92.5	94.6
Chest Circumference	219	57.3	3.4	48.9	52.2	56.9	63.6	69.8
Chest Breadth at Axilla	79	17.9	1.4	13.7	15.8	17.9	20.4	21.1
Waist Height	80	65.2	3.8	56.6	59.0	64.9	72.1	75.7
Waist Circumference	219	52.0	3.7	44.4	45.9	51.5	58.7	65.3
Waist Breadth	78	18.3	1.6	14.5	15.9	18.1	21.0	24.5
Natural Waist Circ	79	51.6	3.5	43.9	45.8	51.1	56.9	66.8
Iliocristale Height	77	66.4	3.4	57.6	61.2	65.9	72.1	77.2
Hip Height at Buttocks	80	54.8	3.4	48.1	49.6	54.4	61.5	64.6
Hip Circumference	217	58.3	4.0	49.8	52.0	58.0	65.7	70.0
Hip Brdth at Trochanter	77	20.2	1.1	18.1	18.6	19.9	22.2	22.8
Iliospinale Height	77	62.2	3.5	53.7	57.2	61.3	68.3	73.6
Bispinous Breadth	77	16.2	1.3	12.9	14.2	16.0	18.5	19.0
Gluteal Furrow Height	76	50.7	3.1	44.1	45.4	50.9	55.4	58.0
Trochanteric Height	77	56.3	3.3	50.2	51.2	55.8	62.1	68.5
Upper Thigh Circum	217	34.0	3.1	27.8	30.2	33.5	40.3	44.3
Upper Thigh Depth	76	10.2	1.4	7.4	8.1	9.9	12.4	15.4
Tibiale Height	77	28.9	1.9	23.7	25.7	28.6	31.6	34.9
Calf Circum Height	79	21.9	2.1	17.2	18.4	21.8	25.4	27.4
Calf Circumference	218	23.0	1.6	19.3	20.5	22.9	26.2	28.8
Calf Depth	80	7.1	0.6	5.8	6.1	7.0	8.1	8.9
Ankle Circumference	80	16.0	1.1	13.4	14.5	15.8	17.6	20.0
Ankle Breadth	80	4.4	0.3	3.8	3.8	4.3	4.9	5.5
Sphyrion Height	75	4.7	0.8	3.5	3.5	4.6	5.9	6.2
Foot Length	219	17.9	1.1	14.8	16.2	17.8	19.8	21.5
Foot Breadth	219	7.1	0.5	5.8	6.3	7.0	7.8	8.3

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	76	96.4	5.2	84.6	88.0	96.6	104.9	107.5
Chest Height at Axilla	86	88.9	4.7	76.6	81.1	88.6	96.6	103.0
Chest Circumference	225	60.2	4.5	50.4	53.9	59.5	67.9	81.7
Chest Breadth at Axilla	87	18.7	1.5	15.2	16.1	18.6	21.1	22.0
Waist Height	86	69.2	3.8	58.5	62.9	68.9	75.4	80.9
Waist Circumference	224	54.9	5.7	44.3	48.0	53.9	66.7	84.5
Waist Breadth	87	19.0	2.0	14.5	15.5	18.7	22.8	24.6
Natural Waist Circ	87	53.3	4.1	45.0	46.3	52.8	60.3	65.5
Iliocristale Height	75	71.6	4.2	63.0	64.7	71.6	78.4	82.5
Hip Height at Buttocks	86	58.5	3.7	48.9	51.8	58.5	64.7	69.8
Hip Circumference	222	61.9	5.2	49.1	55.2	60.9	71.7	84.6
Hip Brdth at Trochanter	74	21.4	1.5	18.8	19.0	21.1	24.0	26.0
Iliospinale Height	76	66.9	3.8	57.9	60.7	66.4	73.0	77.2
Bispinous Breadth	75	17.2	1.4	13.9	15.0	17.1	19.4	21.9
Gluteal Furrow Height	76	54.7	3.3	47.4	48.7	54.4	59.9	62.7
Trochanteric Height	73	60.3	3.7	52.7	54.8	59.8	66.3	69.9
Upper Thigh Circum	223	36.4	3.9	28.2	31.8	35.8	44.1	54.3
Upper Thigh Depth	86	10.9	1.6	7.6	8.6	10.5	13.8	17.1
Tibiale Height	76	31.2	2.2	26.1	27.6	31.0	34.7	37.1
Calf Circum Height	87	23.4	2.2	17.5	19.6	23.8	26.4	28.7
Calf Circumference	224	24.4	2.0	18.6	21.5	24.0	27.7	32.0
Calf Depth	86	7.6	0.6	5.9	6.6	7.4	8.5	9.2
Ankle Circumference	86	16.6	1.4	13.6	14.5	16.5	19.2	20.7
Ankle Breadth	87	4.5	0.4	3.7	3.8	4.4	5.2	5.6
Sphyrion Height	72	4.8	0.7	2.8	3.4	4.9	5.9	6.4
Foot Length	225	18.9	1.2	15.6	16.9	18.8	20.8	22.7
Foot Breadth	226	7.5	0.5	6.1	6.6	7.4	8.3	9.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	64	101.1	4.8	89.8	92.8	101.4	109.4	110.6
Chest Height at Axilla	67	94.1	5.0	84.6	87.0	93.1	102.1	107.7
Chest Circumference	188	62.5	5.2	52.9	55.2	62.1	71.2	92.5
Chest Breadth at Axilla	68	19.8	1.8	16.3	17.5	19.7	23.1	27.0
Waist Height	68	73.9	4.0	66.4	67.5	72.9	80.1	84.0
Waist Circumference	189	56.8	6.1	45.4	49.9	55.5	67.9	85.5
Waist Breadth	68	20.4	1.8	18.1	18.5	20.0	22.5	28.5
Natural Waist Circ	68	56.3	5.9	46.7	50.1	55.4	65.9	82.6
Iliocristale Height	64	75.0	3.9	65.7	68.5	74.7	81.0	83.9
Hip Height at Buttocks	68	62.6	3.7	55.8	56.7	61.9	68.1	74.0
Hip Circumference	188	65.0	5.6	55.9	57.7	64.0	76.2	90.8
Hip Brdth at Trochanter	64	22.4	1.6	19.3	20.5	22.2	24.7	27.8
Iliospinale Height	64	70.3	3.6	61.8	64.0	70.4	75.6	77.6
Bispinous Breadth	64	17.6	1.4	14.4	15.1	17.4	19.5	23.1
Gluteal Furrow Height	64	58.2	3.3	51.5	52.1	58.4	63.3	64.8
Trochanteric Height	64	63.6	3.5	54.5	57.0	63.9	68.9	70.7
Upper Thigh Circum	189	38.5	4.6	30.3	32.8	37.4	47.2	58.2
Upper Thigh Depth	67	11.9	1.9	8.7	9.6	11.6	14.1	18.7
Tibiale Height	64	32.6	2.1	26.5	29.3	32.7	36.0	37.8
Calf Circum Height	68	25.2	2.1	20.9	21.2	25.5	27.7	30.6
Calf Circumference	190	25.6	2.4	21.2	22.0	25.2	29.8	34.1
Calf Depth	68	8.0	0.7	6.6	6.8	7.8	9.3	10.7
Ankle Circumference	68	17.3	1.4	15.1	15.4	17.0	20.1	21.5
Ankle Breadth	68	4.7	0.4	3.9	4.1	4.6	5.4	6.0
Sphyrion Height	61	5.2	0.9	3.4	3.5	5.3	6.4	7.0
Foot Length	191	19.8	1.1	16.8	17.9	19.7	21.5	23.0
Foot Breadth	191	7.7	0.5	6.3	6.8	7.7	8.5	9.5

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	81	106.6	5.4	94.1	96.6	106.4	113.5	122.3
Chest Height at Axilla	90	100.4	5.5	87.0	92.4	100.0	109.6	114.7
Chest Circumference	251	65.4	5.1	55.7	58.7	64.6	74.7	85.4
Chest Breadth at Axilla	91	20.8	1.9	15.5	17.8	20.6	24.0	25.2
Waist Height	91	79.2	4.5	68.3	71.5	79.0	86.9	90.5
Waist Circumference	251	58.8	6.5	48.7	51.2	57.3	71.1	89.7
Waist Breadth	90	21.3	2.2	17.0	18.2	20.9	25.1	28.5
Natural Waist Circ	90	58.4	6.2	48.1	49.8	56.8	68.4	82.7
Iliocristale Height	81	79.7	4.3	71.5	71.9	80.5	85.4	93.1
Hip Height at Buttocks	91	67.3	4.0	58.0	60.9	67.2	73.8	78.0
Hip Circumference	248	67.7	5.9	55.3	59.4	67.0	79.8	91.4
Hip Brdth at Trochanter	80	23.5	1.8	20.2	20.8	23.6	26.4	30.0
Iliospinale Height	81	74.6	4.2	65.7	67.6	75.0	81.0	86.8
Bispinous Breadth	80	18.5	1.5	15.7	16.5	18.1	21.2	22.3
Gluteal Furrow Height	79	61.5	3.8	53.2	55.5	61.3	66.8	70.5
Trochanteric Height	80	67.5	3.8	60.4	61.0	67.6	73.1	76.4
Upper Thigh Circum	248	40.3	4.5	31.2	34.1	39.6	49.1	59.4
Upper Thigh Depth	89	12.4	1.9	8.2	9.2	12.2	15.5	16.8
Tibiale Height	81	34.8	2.0	29.0	31.0	35.0	37.8	39.4
Calf Circum Height	91	27.3	2.3	20.4	23.9	27.0	31.5	32.9
Calf Circumference	251	26.6	2.4	20.4	23.1	26.4	30.6	39.3
Calf Depth	91	8.4	0.7	6.7	7.2	8.3	9.6	10.5
Ankle Circumference	91	17.9	1.5	14.9	15.5	17.7	20.1	23.3
Ankle Breadth	90	4.8	0.5	3.9	4.0	4.7	5.5	6.6
Sphyrion Height	81	5.2	0.8	2.9	4.0	5.2	6.3	8.0
Foot Length	251	20.8	1.3	17.9	19.0	20.6	23.1	25.4
Foot Breadth	251	8.0	0.5	6.4	7.1	7.9	8.9	9.6

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	74	111.5	5.2	100.5	102.8	111.0	119.8	125.1
Chest Height at Axilla	84	102.9	5.2	90.9	93.2	103.2	112.3	115.2
Chest Circumference	253	67.6	5.7	56.6	60.3	66.7	78.7	91.0
Chest Breadth at Axilla	85	21.1	2.1	17.3	18.0	20.8	24.6	26.2
Waist Height	84	81.8	4.5	71.8	73.9	82.1	89.5	91.9
Waist Circumference	253	60.9	7.0	50.1	52.8	59.4	75.9	88.6
Waist Breadth	85	21.9	2.8	16.9	18.1	21.4	26.3	33.9
Natural Waist Circ	84	60.3	7.8	49.0	50.6	58.2	74.5	87.8
Iliocristale Height	75	83.6	4.6	72.9	75.6	83.4	91.0	94.7
Hip Height at Buttocks	85	69.2	4.0	60.0	62.4	69.4	75.4	79.6
Hip Circumference	247	70.8	6.7	59.4	61.7	69.8	82.8	108.5
Hip Brdth at Trochanter	74	24.2	1.7	21.2	22.0	23.7	27.5	29.7
Iliospinale Height	75	78.2	4.6	70.3	71.4	78.1	86.7	90.3
Bispinous Breadth	75	18.7	1.6	15.3	16.1	18.5	21.2	23.3
Gluteal Furrow Height	75	64.9	4.0	57.1	58.7	64.6	71.1	74.7
Trochanteric Height	75	71.3	4.4	64.1	64.6	70.8	79.8	82.3
Upper Thigh Circum	250	42.1	5.3	33.6	34.9	41.4	50.9	67.1
Upper Thigh Depth	81	12.8	2.4	8.5	9.2	12.7	16.9	21.4
Tibiale Height	74	36.4	2.3	31.8	32.7	36.1	39.8	43.0
Calf Circum Height	85	27.8	2.6	21.3	22.6	27.9	32.1	34.5
Calf Circumference	253	27.7	2.6	22.3	23.6	27.5	32.0	40.9
Calf Depth	85	8.7	0.9	7.1	7.4	8.5	10.2	11.2
Ankle Circumference	85	18.5	1.9	14.9	15.6	18.5	21.4	27.8
Ankle Breadth	85	4.9	0.6	3.9	4.1	4.8	5.9	7.1
Sphyrion Height	74	5.4	0.9	3.7	3.8	5.3	7.0	8.2
Foot Length	253	21.6	1.3	17.9	19.6	21.6	23.6	25.3
Foot Breadth	252	8.3	0.6	6.9	7.3	8.3	9.1	10.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	96	116.0	6.2	100.5	106.6	116.1	126.9	130.1
Chest Height at Axilla	86	107.9	5.0	97.0	98.9	107.7	116.7	122.2
Chest Circumference	280	70.8	6.6	54.0	62.2	69.6	83.1	102.5
Chest Breadth at Axilla	86	21.6	2.2	17.7	18.2	21.3	24.9	31.4
Waist Height	86	85.6	4.1	72.8	79.4	85.5	92.8	95.7
Waist Circumference	279	63.4	7.9	48.7	53.8	61.2	79.6	95.1
Waist Breadth	86	22.4	2.7	16.2	18.6	22.0	26.8	33.1
Natural Waist Circ	86	60.3	7.0	48.7	51.3	59.0	71.1	92.2
Iliocristale Height	97	87.2	5.6	75.4	78.0	86.6	97.2	99.0
Hip Height at Buttocks	86	72.6	3.4	63.0	66.7	72.6	77.8	80.3
Hip Circumference	276	74.3	7.7	59.3	64.2	73.1	90.6	108.2
Hip Brdth at Trochanter	96	25.8	2.2	21.9	22.9	25.5	29.8	32.7
Iliospinale Height	97	81.9	5.0	70.6	74.0	81.5	90.7	95.7
Bispinous Breadth	97	19.5	1.8	16.3	16.8	19.3	22.5	25.7
Gluteal Furrow Height	97	67.6	4.0	58.0	60.0	67.5	74.2	75.9
Trochanteric Height	97	74.2	4.7	64.4	66.0	74.2	81.3	86.1
Upper Thigh Circum	276	44.5	5.7	34.3	36.8	43.4	55.5	69.0
Upper Thigh Depth	85	13.1	2.2	9.1	10.1	12.8	16.5	21.2
Tibiale Height	97	38.1	2.5	31.6	34.0	37.8	42.3	43.4
Calf Circum Height	86	29.5	2.6	23.0	25.6	29.4	33.7	36.2
Calf Circumference	279	28.9	2.7	22.7	24.8	28.4	33.7	39.3
Calf Depth	86	8.9	0.8	6.9	7.6	8.8	9.9	11.4
Ankle Circumference	85	18.5	1.6	15.2	15.7	18.5	20.9	23.6
Ankle Breadth	85	4.9	0.4	3.9	4.3	4.8	5.6	6.2
Sphyrion Height	95	5.8	0.9	3.6	4.4	5.7	7.5	8.5
Foot Length	282	22.4	1.3	18.2	20.2	22.3	24.8	25.9
Foot Breadth	281	8.6	0.6	6.8	7.5	8.6	9.7	10.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	96	121.0	6.7	106.6	111.1	120.0	131.9	140.8
Chest Height at Axilla	96	112.7	5.7	101.5	104.0	112.0	122.4	130.1
Chest Circumference	286	72.6	5.9	58.4	64.6	71.8	84.4	90.4
Chest Breadth at Axilla	97	22.7	2.2	18.7	19.5	22.2	26.5	28.9
Waist Height	97	89.5	4.8	81.0	82.5	88.7	98.1	105.6
Waist Circumference	286	64.9	7.1	51.1	55.6	63.3	78.2	94.6
Waist Breadth	97	23.4	2.5	18.2	19.8	23.0	28.1	29.7
Natural Waist Circ	93	63.6	7.1	54.0	54.5	62.1	76.5	90.3
Iliocristale Height	95	91.3	5.7	78.3	82.5	90.7	100.9	107.5
Hip Height at Buttocks	97	76.3	4.8	67.9	68.8	75.2	84.9	93.8
Hip Circumference	283	76.6	7.2	62.3	66.2	75.7	90.1	101.9
Hip Brdth at Trochanter	95	26.6	2.3	22.5	23.0	26.5	30.6	33.9
Iliospinale Height	96	85.5	5.4	72.7	77.0	85.3	94.4	101.7
Bispinous Breadth	96	20.1	2.1	15.5	16.6	19.9	23.7	26.9
Gluteal Furrow Height	95	71.3	4.7	62.1	63.7	71.1	79.6	84.4
Trochanteric Height	96	77.3	4.8	67.4	70.0	76.6	84.7	92.3
Upper Thigh Circum	281	45.6	5.3	34.9	38.3	44.9	55.1	66.5
Upper Thigh Depth	95	13.7	2.1	9.0	10.6	13.4	17.6	18.9
Tibiale Height	95	40.0	2.7	32.8	35.6	39.8	44.7	47.0
Calf Circum Height	97	31.4	2.7	24.2	27.6	31.5	35.4	40.3
Calf Circumference	287	29.7	2.7	23.8	25.7	29.4	34.5	41.1
Calf Depth	97	9.4	0.8	7.6	7.8	9.2	10.6	11.7
Ankle Circumference	97	19.5	1.6	16.0	16.6	19.4	22.2	24.2
Ankle Breadth	97	5.2	0.6	4.0	4.2	5.1	6.1	7.0
Sphyrion Height	92	6.0	0.7	4.6	4.8	5.8	7.3	7.9
Foot Length	287	23.2	1.3	19.8	21.1	23.2	25.3	27.2
Foot Breadth	287	8.9	0.7	7.0	7.8	8.8	9.9	10.7

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	100	125.9	6.9	112.4	113.7	125.4	137.0	147.0
Chest Height at Axilla	108	117.7	6.0	106.0	106.9	117.9	126.8	138.0
Chest Circumference	313	76.1	5.7	60.6	67.9	75.7	86.0	98.8
Chest Breadth at Axilla	107	23.7	2.0	17.6	20.5	23.8	26.8	29.3
Waist Height	108	93.6	4.7	83.7	86.2	93.3	100.8	109.9
Waist Circumference	312	67.1	6.9	52.2	57.5	65.8	80.0	98.3
Waist Breadth	108	24.5	2.7	18.4	20.8	24.2	29.6	34.6
Natural Waist Circ	97	65.3	7.1	53.1	56.5	64.2	79.3	89.3
Iliocristale Height	100	94.8	5.2	82.5	86.4	94.6	103.7	110.4
Hip Height at Buttocks	108	79.3	4.5	71.0	72.1	78.7	85.9	93.9
Hip Circumference	310	81.0	7.3	64.8	70.0	79.8	93.3	107.3
Hip Brdth at Trochanter	100	28.3	2.5	23.5	24.4	27.6	33.0	34.8
Iliospinale Height	100	89.0	5.4	74.1	81.1	89.0	98.3	103.7
Bispinous Breadth	100	21.3	2.1	16.6	17.9	21.1	24.7	26.7
Gluteal Furrow Height	100	73.6	4.6	61.0	67.2	73.4	81.0	87.5
Trochanteric Height	100	80.7	4.9	68.2	72.6	80.5	88.9	96.4
Upper Thigh Circum	309	48.0	5.4	36.4	40.1	47.1	57.9	66.9
Upper Thigh Depth	105	14.4	1.9	10.7	11.1	14.4	17.5	21.0
Tibiale Height	100	41.3	2.9	34.0	37.0	40.9	45.9	50.2
Calf Circum Height	108	31.7	2.9	24.6	26.4	31.6	36.1	39.2
Calf Circumference	313	31.3	2.9	25.7	26.9	30.9	36.3	43.4
Calf Depth	108	10.0	0.9	8.0	8.6	9.8	11.6	12.6
Ankle Circumference	108	20.4	1.7	17.0	17.7	20.1	23.3	25.3
Ankle Breadth	108	5.4	0.5	4.5	4.7	5.3	6.3	7.0
Sphyrion Height	95	6.2	1.0	3.9	4.4	6.2	7.6	9.2
Foot Length	315	23.9	1.5	20.7	21.5	23.7	26.5	28.8
Foot Breadth	315	9.2	0.7	7.4	8.2	9.1	10.4	11.3

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	82	129.7	6.8	109.0	118.4	128.6	139.7	142.6
Chest Height at Axilla	90	122.8	6.7	106.3	112.3	122.5	132.5	139.2
Chest Circumference	270	79.4	6.2	59.8	70.0	78.8	90.3	93.9
Chest Breadth at Axilla	90	24.9	2.0	19.7	21.4	24.7	27.9	29.1
Waist Height	90	97.6	5.8	84.2	87.8	97.2	106.6	113.7
Waist Circumference	270	69.2	6.9	57.4	60.2	68.0	81.9	93.7
Waist Breadth	89	25.8	2.4	20.1	21.3	25.7	29.6	31.7
Natural Waist Circ	80	68.1	7.0	56.6	57.7	66.0	81.4	93.2
Iliocristale Height	82	97.2	5.7	78.8	89.2	97.1	105.3	110.4
Hip Height at Buttocks	90	82.5	5.6	71.5	73.4	81.8	92.2	95.5
Hip Circumference	270	84.3	7.1	60.2	72.9	84.3	96.5	104.2
Hip Brdth at Trochanter	82	29.7	2.0	24.1	26.3	29.4	33.0	34.3
Iliospinale Height	82	91.8	5.6	75.0	81.5	91.8	100.5	102.9
Bispinous Breadth	82	21.6	1.7	17.3	18.2	21.6	24.0	26.0
Gluteal Furrow Height	81	75.5	5.0	60.6	67.8	75.0	83.7	85.9
Trochanteric Height	82	82.8	5.3	65.8	73.8	82.6	91.0	93.8
Upper Thigh Circum	269	49.9	5.1	39.2	41.6	49.5	59.0	63.2
Upper Thigh Depth	86	15.1	1.9	10.9	11.6	15.0	18.4	19.8
Tibiale Height	82	42.1	2.8	33.0	37.3	42.1	45.9	48.0
Calf Circum Height	89	32.9	3.5	23.0	25.6	33.3	37.5	40.6
Calf Circumference	271	32.5	2.7	25.7	28.3	32.2	36.8	40.6
Calf Depth	89	10.5	0.9	8.6	8.9	10.5	12.1	12.6
Ankle Circumference	90	21.3	1.7	17.0	18.5	21.1	24.0	24.7
Ankle Breadth	89	5.6	0.6	4.4	4.6	5.5	6.5	6.9
Sphyrion Height	76	6.3	1.0	4.0	4.7	6.2	8.0	8.9
Foot Length	270	24.6	1.7	20.6	22.0	24.4	27.7	29.5
Foot Breadth	269	9.5	0.8	7.2	8.3	9.5	10.8	12.0

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	87	132.5	6.1	121.1	122.1	132.4	142.0	144.8
Chest Height at Axilla	80	125.2	6.9	109.0	113.1	124.9	136.4	139.7
Chest Circumference	263	82.5	6.2	69.0	73.6	82.5	93.1	107.6
Chest Breadth at Axilla	81	25.8	1.9	19.8	22.6	25.9	28.7	29.4
Waist Height	81	99.8	5.4	87.5	91.1	99.7	108.4	111.5
Waist Circumference	263	71.0	7.0	57.8	61.8	69.7	83.3	109.4
Waist Breadth	81	25.9	2.2	20.7	21.7	26.1	29.0	32.0
Natural Waist Circ	81	68.3	6.1	57.5	59.5	67.3	78.5	84.5
Iliocristale Height	87	99.2	4.5	89.5	91.4	98.5	105.6	108.2
Hip Height at Buttocks	81	84.4	5.5	72.2	74.8	83.9	94.5	96.2
Hip Circumference	262	88.1	7.1	69.5	75.6	88.2	99.0	115.9
Hip Brdth at Trochanter	87	30.9	2.3	24.6	27.1	31.2	34.4	35.7
Iliospinale Height	88	93.0	4.6	81.3	85.2	92.8	99.9	101.3
Bispinous Breadth	88	22.5	1.8	17.2	19.3	22.3	25.6	27.1
Gluteal Furrow Height	88	76.5	4.6	64.5	69.8	76.7	83.3	84.8
Trochanteric Height	87	84.2	5.0	72.0	74.8	84.6	90.8	94.2
Upper Thigh Circum	258	52.1	5.6	38.2	43.7	52.1	61.4	75.3
Upper Thigh Depth	79	15.4	2.1	10.8	12.0	15.2	18.5	24.2
Tibiale Height	87	42.9	2.6	36.0	38.5	42.7	47.2	47.9
Calf Circum Height	81	34.2	3.3	25.6	28.1	33.7	40.1	41.1
Calf Circumference	264	33.6	2.9	26.0	28.9	33.4	38.4	46.7
Calf Depth	81	10.6	0.9	8.4	8.9	10.5	12.1	12.8
Ankle Circumference	81	21.1	1.5	17.1	18.5	21.2	23.4	24.9
Ankle Breadth	81	5.6	0.5	4.4	4.7	5.6	6.4	7.3
Sphyrion Height	83	6.3	0.9	4.1	4.6	6.3	7.9	8.8
Foot Length	264	24.8	1.7	20.3	22.4	24.7	27.5	29.2
Foot Breadth	264	9.6	0.8	7.9	8.3	9.5	10.9	11.6

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	62	136.1	8.0	120.5	123.4	135.2	148.2	151.6
Chest Height at Axilla	79	127.7	7.4	110.3	115.7	127.9	140.4	142.5
Chest Circumference	198	85.9	7.4	69.2	75.5	84.3	99.8	112.3
Chest Breadth at Axilla	79	26.7	2.1	22.0	23.2	26.5	30.0	33.7
Waist Height	79	101.3	6.0	89.0	92.2	100.9	111.2	114.3
Waist Circumference	196	73.2	7.3	56.9	64.2	71.6	86.2	108.5
Waist Breadth	79	27.1	2.2	21.6	23.6	27.1	30.8	33.0
Natural Waist Circ	78	70.4	7.7	57.2	59.2	70.5	83.2	91.2
Iliocristale Height	63	101.5	6.1	90.1	92.1	101.9	111.4	113.1
Hip Height at Buttocks	79	85.2	6.0	73.1	76.3	85.5	94.1	99.4
Hip Circumference	198	90.5	6.3	67.1	80.9	90.1	101.5	108.9
Hip Brdth at Trochanter	63	32.2	2.0	28.1	28.6	32.1	36.1	39.0
Iliospinale Height	63	95.3	6.3	82.3	85.1	95.2	105.7	106.6
Bispinous Breadth	63	23.5	1.9	19.0	20.0	23.4	26.4	27.3
Gluteal Furrow Height	63	78.2	5.9	67.0	68.2	76.9	87.5	91.0
Trochanteric Height	63	85.9	6.2	74.2	76.8	86.2	95.3	99.6
Upper Thigh Circum	196	53.5	5.1	38.9	45.6	52.7	62.0	70.5
Upper Thigh Depth	76	15.6	1.8	12.1	12.7	15.3	19.2	20.5
Tibiale Height	63	44.1	3.4	37.5	39.0	44.5	48.6	52.4
Calf Circum Height	79	34.0	3.4	25.7	26.5	34.5	39.0	40.4
Calf Circumference	198	34.6	2.9	26.7	30.2	34.7	39.4	43.6
Calf Depth	79	11.0	1.0	8.9	9.4	10.9	12.6	13.2
Ankle Circumference	79	21.8	1.9	17.1	18.9	21.8	24.7	27.5
Ankle Breadth	78	5.8	0.6	4.4	4.8	5.7	6.7	7.2
Sphyrion Height	60	6.8	1.0	4.5	5.0	6.8	8.1	9.6
Foot Length	197	25.1	1.9	21.2	22.2	24.9	27.8	29.3
Foot Breadth	198	9.8	0.8	8.0	8.4	9.7	11.0	11.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	74	137.0	7.7	120.1	125.2	135.0	149.5	153.4
Chest Height at Axilla	67	127.9	7.5	113.6	116.0	128.3	140.0	141.2
Chest Circumference	221	87.2	7.5	70.6	77.0	86.4	99.9	111.1
Chest Breadth at Axilla	67	27.3	2.1	23.0	23.9	27.1	30.6	33.9
Waist Height	67	101.8	6.1	90.1	91.3	102.0	111.4	114.6
Waist Circumference	219	74.2	7.8	60.3	64.1	73.2	90.3	106.3
Waist Breadth	67	27.5	2.3	22.3	23.5	27.3	31.3	33.8
Natural Waist Circ	66	71.0	8.4	57.4	58.5	69.5	84.3	94.1
Iliocristale Height	74	101.7	5.5	88.5	92.5	100.9	109.7	114.7
Hip Height at Buttocks	67	85.1	6.1	73.3	75.5	85.2	94.0	96.6
Hip Circumference	220	91.8	6.4	78.7	82.9	91.0	104.6	116.0
Hip Brdth at Trochanter	74	32.4	2.1	28.7	29.6	32.0	36.6	38.7
Iliospinale Height	74	95.5	6.0	80.5	86.0	94.3	104.3	108.8
Bispinous Breadth	73	23.7	1.9	18.8	20.3	23.9	26.5	28.2
Gluteal Furrow Height	74	78.0	5.7	64.1	67.6	77.5	86.0	89.2
Trochanteric Height	74	85.8	6.0	72.4	75.8	84.8	95.2	100.9
Upper Thigh Circum	221	54.4	5.1	43.0	47.4	53.5	64.0	72.8
Upper Thigh Depth	66	16.2	1.8	11.9	13.5	16.2	19.2	20.0
Tibiale Height	73	44.0	3.1	37.4	38.4	44.0	48.6	49.9
Calf Circum Height	67	34.5	3.5	25.8	26.7	34.7	39.1	40.7
Calf Circumference	221	34.8	2.7	26.0	30.9	34.5	40.2	43.2
Calf Depth	67	10.9	1.0	9.1	9.3	10.7	12.4	13.1
Ankle Circumference	67	21.5	1.6	17.3	18.7	21.1	24.1	24.6
Ankle Breadth	67	5.6	0.6	4.1	4.5	5.5	6.5	7.3
Sphyrion Height	69	6.9	0.9	4.5	5.5	6.7	8.5	9.2
Foot Length	221	25.0	1.9	21.5	22.1	24.7	28.1	30.0
Foot Breadth	221	9.7	0.9	7.8	8.3	9.6	-11.0	11.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males and Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	45	138.0	8.5	123.0	125.2	138.2	152.5	155.1
Chest Height at Axilla	63	130.7	8.3	114.1	116.0	131.0	143.2	150.8
Chest Circumference	156	89.6	8.0	72.2	76.7	90.1	102.3	107.5
Chest Breadth at Axilla	63	27.9	2.3	22.9	24.5	27.6	31.3	33.3
Waist Height	62	103.7	6.9	88.6	93.2	103.7	113.4	122.5
Waist Circumference	155	75.9	7.7	60.2	65.5	75.6	90.5	105.3
Waist Breadth	63	28.0	3.1	20.7	23.5	27.5	32.9	36.5
Natural Waist Circ	63	74.3	9.4	56.1	60.3	73.7	87.5	105.8
Iliocristale Height	46	102.5	6.4	91.6	93.3	102.0	112.8	117.9
Hip Height at Buttocks	63	87.4	7.1	71.8	75.3	87.3	99.0	103.7
Hip Circumference	156	93.0	6.0	77.1	84.2	92.4	103.4	112.5
Hip Brdth at Trochanter	46	32.8	1.7	29.6	30.6	32.4	36.3	37.9
Iliospinale Height	46	95.9	7.1	84.0	85.9	95.2	108.7	110.9
Bispinous Breadth	45	23.9	1.9	20.1	20.3	24.0	26.9	29.3
Gluteal Furrow Height	46	78.7	6.5	69.0	69.9	78.5	89.4	91.5
Trochanteric Height	46	86.7	6.6	75.9	76.5	86.7	98.1	100.7
Upper Thigh Circum	155	55.3	5.0	42.6	48.1	54.7	64.6	70.5
Upper Thigh Depth	62	16.8	2.2	12.9	13.3	16.6	20.0	24.0
Tibiale Height	46	44.2	3.9	37.4	38.5	43.5	50.7	55.5
Calf Circum Height	63	35.4	4.1	25.0	28.3	35.7	41.6	44.3
Calf Circumference	155	35.6	3.1	29.0	30.4	35.5	41.1	44.8
Calf Depth	63	11.4	1.2	9.0	9.2	11.5	13.4	14.0
Ankle Circumference	63	22.1	2.0	18.2	18.8	22.0	26.1	27.7
Ankle Breadth	63	5.8	0.6	4.6	4.7	5.6	6.8	7.4
Sphyrion Height	46	6.5	1.0	4.8	4.9	6.5	8.1	8.4
Foot Length	155	25.5	2.1	20.8	22.2	25.2	28.7	31.1
Foot Breadth	155	9.9	0.9	7.8	8.5	9.9	11.6	12.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	37	72.7	4.2	66.5	66.9	71.8	80.4	83.0
Chest Height at Axilla	33	66.6	3.4	60.0	60.3	67.1	70.6	73.6
Chest Circumference	115	51.3	2.6	45.0	47.1	51.1	55.8	60.2
Chest Breadth at Axilla	32	16.5	1.3	12.9	13.6	16.5	18.2	19.2
Waist Height	33	50.4	3.1	43.7	44.7	50.5	54.1	57.5
Waist Circumference	115	48.5	3.3	42.1	43.6	48.1	54.3	60.6
Waist Breadth	33	16.3	1.1	14.0	14.6	16.0	17.9	19.8
Natural Waist Circ	33	47.8	3.0	41.9	42.2	47.3	51.6	57.3
Iliocristale Height	37	51.3	3.7	46.1	46.4	50.2	58.9	59.0
Hip Height at Buttocks	33	41.3	2.8	36.2	36.5	41.6	45.2	45.7
Hip Circumference	105	52.2	3.2	43.9	47.2	52.0	57.7	62.1
Hip Brdth at Trochanter	36	18.1	1.1	16.4	16.6	17.9	20.3	20.7
Iliospinale Height	37	47.6	3.1	39.8	42.8	47.6	52.5	54.7
Bispinous Breadth	37	14.6	1.2	11.5	12.3	14.5	16.4	16.8
Gluteal Furrow Height	37	37.3	2.8	32.0	32.0	37.4	41.5	42.2
Trochanteric Height	37	42.5	3.4	36.9	36.9	42.4	48.3	49.3
Upper Thigh Circum	112	28.9	2.5	23.6	25.6	28.6	33.2	38.6
Upper Thigh Depth	29	8.5	0.9	6.9	7.1	8.4	9.9	10.6
Tibiale Height	37	21.9	1.8	17.7	19.0	21.9	25.1	25.6
Calf Circum Height	32	17.4	1.7	13.4	14.2	17.6	19.6	20.4
Calf Circumference	114	20.7	1.4	17.8	18.5	20.6	23.5	24.4
Calf Depth	32	6.4	0.4	5.7	5.7	6.2	7.0	7.3
Ankle Circumference	32	14.9	0.9	13.3	13.5	14.9	16.6	16.9
Ankle Breadth	31	4.2	0.3	3.6	3.6	4.1	4.7	5.0
Sphyrion Height	31	3.9	1.1	2.2	2.3	3.7	5.6	6.3
Foot Length	114	15.0	1.1	11.6	13.0	15.0	16.6	17.8
Foot Breadth	114	6.3	0.4	5.3	5.5	6.2	7.0	7.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	44	77.6	4.0	71.9	72.2	76.9	84.0	87.3
Chest Height at Axilla	37	72.3	4.0	66.1	66.7	71.4	79.6	82.2
Chest Circumference	118	53.0	2.7	46.3	48.7	53.0	57.2	61.3
Chest Breadth at Axilla	36	16.7	1.1	13.8	14.7	16.5	18.1	18.8
Waist Height	37	55.5	3.0	50.3	50.8	55.0	60.2	61.9
Waist Circumference	117	49.2	2.9	42.0	44.7	48.8	53.8	58.5
Waist Breadth	37	17.2	1.1	14.8	14.8	17.3	18.9	19.2
Natural Waist Circ	33	48.3	2.8	41.2	42.5	48.3	52.8	53.2
Iliocristale Height	44	55.0	3.5	49.5	50.6	54.3	60.1	64.3
Hip Height at Buttocks	37	46.3	3.3	41.7	42.3	45.4	53.2	54.3
Hip Circumference	116	52.8	3.5	45.4	47.2	52.3	58.8	64.7
Hip Brdth at Trochanter	44	18.5	1.2	16.5	16.7	18.2	20.5	21.7
Iliospinale Height	44	51.5	3.1	46.6	46.9	51.0	55.8	60.2
Bispinous Breadth	44	14.8	1.4	12.3	12.5	14.6	17.1	18.3
Gluteal Furrow Height	44	40.9	2.9	36.6	36.8	40.4	45.6	43.2
Trochanteric Height	44	46.0	3.1	41.2	41.4	45.8	51.3	54.5
Upper Thigh Circum	117	30.2	2.6	25.3	25.9	29.9	34.5	36.7
Upper Thigh Depth	37	9.0	1.2	6.0	6.9	8.8	11.0	11.4
Tibiale Height	44	23.6	1.8	20.4	20.6	23.3	26.8	27.5
Calf Circum Height	37	18.8	2.1	14.5	14.8	18.7	22.0	24.0
Calf Circumference	118	21.0	1.4	17.6	19.0	20.8	23.4	25.0
Calf Depth	37	6.5	0.5	5.5	5.6	6.4	7.2	7.6
Ankle Circumference	37	15.0	0.8	13.4	13.6	14.9	16.2	17.1
Ankle Breadth	36	4.2	0.3	3.2	3.6	4.1	4.6	4.9
Sphyrion Height	39	3.9	0.7	2.2	2.4	3.8	5.0	5.3
Foot Length	118	16.1	0.9	14.2	14.7	16.0	17.7	18.9
Foot Breadth	117	6.5	0.4	5.5	5.8	6.4	7.2	7.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	35	84.4	4.4	74.1	76.6	84.3	90.2	93.2
Chest Height at Axilla	58	78.1	4.6	66.6	69.4	77.8	86.7	89.8
Chest Circumference	143	55.4	2.7	49.9	50.9	55.2	59.8	63.4
Chest Breadth at Axilla	58	17.4	1.0	15.4	15.8	17.4	19.1	19.8
Waist Height	58	60.6	3.6	50.7	54.5	60.4	67.8	69.6
Waist Circumference	142	51.0	3.4	43.7	45.0	50.9	57.4	62.0
Waist Breadth	58	17.8	1.2	15.2	15.8	17.8	19.5	20.8
Natural Waist Circ	55	51.2	3.0	45.1	45.7	51.0	57.0	58.2
Iliocristale Height	35	61.2	3.5	54.5	54.8	61.3	66.1	67.1
Hip Height at Buttocks	58	50.4	3.3	41.3	43.6	50.8	55.1	58.5
Hip Circumference	140	55.6	3.4	48.2	50.3	55.0	62.2	68.5
Hip Brdth at Trochanter	35	19.4	1.1	17.0	17.2	19.4	20.7	21.5
Iliospinale Height	35	57.0	3.2	51.0	51.3	56.8	62.5	62.7
Bispinous Breadth	35	15.6	1.4	12.0	12.5	15.7	17.5	17.6
Gluteal Furrow Height	35	45.6	3.2	39.6	40.2	45.3	50.2	50.8
Trochanteric Height	35	51.3	3.0	46.1	46.2	51.1	55.4	56.5
Upper Thigh Circum	139	31.7	2.7	26.0	27.8	31.2	36.1	43.2
Upper Thigh Depth	55	9.4	1.0	6.9	7.3	9.4	10.8	12.6
Tibiale Height	35	26.4	1.9	22.7	22.7	26.3	29.0	29.7
Calf Circum Height	58	20.2	1.9	15.8	16.5	20.1	23.5	24.4
Calf Circumference	143	22.0	1.5	18.7	19.5	21.9	24.6	27.0
Calf Depth	57	6.8	0.4	6.0	6.1	6.7	7.6	8.2
Ankle Circumference	58	15.4	0.9	12.9	13.8	15.3	17.0	17.5
Ankle Breadth	58	4.3	0.3	3.7	3.8	4.3	4.8	5.3
Sphyrion Height	29	4.5	0.8	2.8	2.8	4.5	5.4	6.0
Foot Length	143	17.1	1.0	14.7	15.6	17.0	18.5	20.2
Foot Breadth	143	6.9	0.4	5.9	6.1	6.9	7.6	7.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	43	91.2	4.7	80.7	84.7	90.1	99.1	102.8
Chest Height at Axilla	37	83.3	5.0	74.6	75.7	82.6	92.7	94.4
Chest Circumference	108	57.8	3.6	50.5	52.5	57.3	64.3	69.8
Chest Breadth at Axilla	39	17.7	1.6	13.7	15.1	17.5	20.5	21.1
Waist Height	39	64.8	3.9	56.6	57.0	64.2	72.1	74.1
Waist Circumference	108	51.9	3.7	44.4	45.8	51.5	58.3	64.4
Waist Breadth	39	18.2	1.6	15.2	15.7	18.0	19.8	24.5
Natural Waist Circ	39	51.7	4.0	43.9	44.7	51.2	56.5	66.8
Iliocristale Height	43	66.3	3.6	61.2	61.3	65.6	72.6	77.2
Hip Height at Buttocks	39	54.4	3.4	48.1	49.5	53.9	60.7	63.5
Hip Circumference	106	57.8	4.0	49.8	52.1	57.4	66.0	69.7
Hip Brdth at Trochanter	43	20.3	1.0	18.3	18.8	20.0	22.2	22.7
Iliospinale Height	43	62.6	3.6	56.4	57.4	61.6	68.2	73.6
Bispinous Breadth	43	16.0	1.3	12.9	13.7	15.6	18.4	19.0
Gluteal Furrow Height	43	51.5	3.0	45.4	46.1	51.1	55.9	58.0
Trochanteric Height	43	56.6	3.5	50.2	51.1	55.9	62.4	68.5
Upper Thigh Circum	107	33.4	3.1	27.8	29.2	32.6	40.2	43.0
Upper Thigh Depth	38	9.8	1.2	7.4	8.0	9.6	12.2	12.9
Tibiale Height	43	29.2	1.8	25.9	26.5	28.6	31.8	34.9
Calf Circum Height	38	22.3	1.9	18.4	18.8	22.0	25.4	26.2
Calf Circumference	108	23.0	1.7	19.6	20.5	22.9	26.2	28.8
Calf Depth	39	7.1	0.6	6.0	6.1	7.0	8.0	8.5
Ankle Circumference	39	15.8	1.2	13.4	14.1	15.8	17.5	20.0
Ankle Breadth	39	4.4	0.4	3.8	3.8	4.4	4.9	5.5
Sphyrion Height	42	4.8	0.8	3.5	3.5	4.7	5.9	6.2
Foot Length	108	18.1	1.1	15.3	16.4	17.8	20.2	21.5
Foot Breadth	108	7.2	0.5	5.8	6.4	7.2	7.9	8.3

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	34	97.7	5.3	84.6	87.4	97.8	106.9	107.5
Chest Height at Axilla	41	88.9	4.0	79.4	81.9	88.8	94.3	97.4
Chest Circumference	104	60.6	4.2	51.7	54.4	60.2	67.1	76.9
Chest Breadth at Axilla	41	18.1	1.2	15.2	15.7	18.0	19.7	20.4
Waist Height	41	69.2	3.2	61.1	63.4	69.0	72.9	76.4
Waist Circumference	104	54.3	5.0	44.3	48.9	53.5	62.4	78.9
Waist Breadth	41	18.5	1.9	14.5	15.0	18.4	20.9	22.7
Natural Waist Circ	41	53.4	3.7	46.0	46.0	52.9	59.0	63.6
Iliocristale Height	34	71.8	4.4	63.0	63.9	71.9	78.7	82.5
Hip Height at Buttocks	41	58.4	3.2	51.3	51.7	58.8	63.3	64.5
Hip Circumference	103	61.2	4.9	52.6	54.8	60.4	70.2	83.4
Hip Brdth at Trochanter	32	21.2	1.3	18.8	19.0	21.1	23.2	24.0
Iliospinale Height	34	67.3	3.8	59.9	60.1	66.5	72.5	77.2
Bispinous Breadth	34	17.0	1.3	14.3	14.7	16.8	19.0	19.6
Gluteal Furrow Height	34	55.8	3.5	47.4	48.4	55.4	60.6	62.7
Trochanteric Height	32	61.1	3.9	55.6	55.7	60.4	68.1	69.9
Upper Thigh Circum	102	35.6	3.6	29.2	31.7	35.0	42.4	54.3
Upper Thigh Depth	40	10.6	1.6	8.3	8.3	10.1	12.5	17.1
Tibiale Height	34	31.3	2.4	26.1	26.2	31.3	34.5	37.1
Calf Circum Height	41	24.1	1.8	18.2	20.7	24.3	26.4	26.6
Calf Circumference	104	24.5	2.0	20.6	21.8	24.1	27.8	32.0
Calf Depth	41	7.6	0.6	6.4	6.6	7.4	8.6	9.2
Ankle Circumference	40	16.5	1.2	14.5	14.5	16.2	18.5	20.0
Ankle Breadth	41	4.5	0.4	3.7	3.7	4.4	5.1	5.6
Sphyrion Height	32	4.9	0.8	3.4	3.5	5.0	6.1	6.4
Foot Length	105	19.1	1.2	15.6	16.8	18.8	20.9	22.7
Foot Breadth	105	7.6	0.5	6.7	6.8	7.5	8.5	9.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	32	103.0	4.5	95.1	95.3	102.4	110.0	110.6
Chest Height at Axilla	36	94.6	5.0	86.7	87.6	93.2	102.4	107.7
Chest Circumference	95	62.9	4.6	52.9	56.5	62.7	70.2	84.1
Chest Breadth at Axilla	36	19.3	1.6	16.3	17.2	19.1	21.5	25.9
Waist Height	36	74.0	3.9	67.8	68.4	72.7	79.9	84.0
Waist Circumference	96	56.6	5.7	45.4	49.5	55.6	65.5	83.8
Waist Breadth	36	20.1	1.5	18.1	18.5	19.8	22.0	26.9
Natural Waist Circ	36	56.8	5.8	46.7	49.7	56.1	64.2	82.6
Iliocristale Height	32	75.1	3.5	68.4	69.3	75.0	80.9	81.5
Hip Height at Buttocks	36	62.9	3.8	55.8	57.2	61.9	68.5	74.0
Hip Circumference	94	64.3	5.2	55.9	57.1	63.8	72.8	81.7
Hip Brdth at Trochanter	32	22.6	1.4	20.6	20.7	22.4	24.3	27.8
Iliospinale Height	32	71.3	3.2	64.5	64.9	71.4	76.1	77.6
Bispinous Breadth	32	17.3	1.0	14.4	15.2	17.1	18.9	19.2
Gluteal Furrow Height	32	59.4	3.3	52.9	53.1	59.2	63.9	64.8
Trochanteric Height	32	64.4	3.3	56.8	57.3	64.2	70.2	70.7
Upper Thigh Circum	95	37.5	4.3	30.3	32.3	36.5	45.6	53.1
Upper Thigh Depth	35	11.5	1.7	9.4	9.6	10.8	13.8	18.2
Tibiale Height	32	33.7	1.9	30.5	30.6	33.8	36.4	37.8
Calf Circum Height	36	25.8	1.6	22.1	22.6	26.0	27.6	30.6
Calf Circumference	96	25.7	2.4	21.4	22.1	25.4	30.3	33.3
Calf Depth	36	8.0	0.8	6.6	6.7	7.8	9.3	10.7
Ankle Circumference	36	17.1	1.4	15.1	15.3	16.9	19.6	21.5
Ankle Breadth	36	4.7	0.4	4.0	4.1	4.6	5.4	5.6
Sphyrion Height	31	5.4	0.8	3.6	3.7	5.5	6.5	7.0
Foot Length	98	20.0	1.0	16.8	18.3	20.0	21.6	22.9
Foot Breadth	98	7.9	0.5	6.7	7.0	7.9	8.7	9.5

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	33	108.2	4.6	96.6	97.2	108.7	113.4	117.4
Chest Height at Axilla	41	99.5	5.7	87.0	89.1	99.4	107.8	111.5
Chest Circumference	114	65.3	4.6	56.8	58.7	65.1	73.7	85.4
Chest Breadth at Axilla	42	20.2	1.8	15.5	17.3	20.0	22.8	25.2
Waist Height	42	77.9	4.4	68.3	69.9	77.8	84.3	87.5
Waist Circumference	114	58.3	5.9	49.1	51.5	57.1	70.3	85.7
Waist Breadth	41	20.8	2.3	17.0	17.8	20.3	24.2	28.5
Natural Waist Circ	42	59.2	6.8	48.9	50.1	57.6	71.9	82.7
Iliocristale Height	33	79.8	3.8	71.7	71.8	80.9	84.2	84.9
Hip Height at Buttocks	42	66.5	4.0	58.0	59.6	66.2	72.7	74.5
Hip Circumference	111	66.5	5.5	55.3	57.9	66.1	75.4	86.8
Hip Brdth at Trochanter	33	23.7	1.6	20.7	20.8	23.7	26.1	27.5
Iliospinale Height	33	75.4	3.5	68.2	69.0	75.8	80.2	81.9
Bispinous Breadth	33	18.0	1.3	15.7	16.0	17.9	20.1	21.2
Gluteal Furrow Height	32	62.6	3.7	55.5	55.6	63.7	67.6	68.7
Trochanteric Height	33	68.0	3.2	60.6	61.4	69.1	72.1	73.1
Upper Thigh Circum	111	39.2	4.0	31.2	33.8	38.6	45.4	53.7
Upper Thigh Depth	40	11.9	1.6	9.0	9.4	11.6	14.6	15.6
Tibiale Height	33	35.2	1.8	30.1	30.9	35.3	37.7	38.0
Calf Circum Height	42	27.6	1.9	24.5	24.6	27.4	30.0	32.3
Calf Circumference	114	26.6	2.2	20.4	23.1	26.7	30.1	33.8
Calf Depth	42	8.4	0.7	6.7	6.9	8.3	9.2	10.5
Ankle Circumference	42	17.6	1.5	15.0	15.4	17.5	19.7	23.3
Ankle Breadth	41	4.9	0.5	4.2	4.3	4.7	5.5	6.6
Sphyrion Height	33	5.4	0.9	4.0	4.1	5.4	6.8	8.0
Foot Length	114	21.0	1.3	17.9	19.0	20.8	23.3	23.9
Foot Breadth	114	8.2	0.5	6.9	7.2	8.1	9.1	9.6

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	37	111.6	5.4	100.5	101.3	111.0	119.3	125.1
Chest Height at Axilla	39	102.5	5.0	92.0	92.9	102.6	110.5	113.3
Chest Circumference	124	68.0	5.7	59.2	60.5	67.0	81.1	83.9
Chest Breadth at Axilla	40	20.9	2.1	17.3	17.6	20.3	24.2	26.2
Waist Height	40	81.3	4.6	71.8	73.1	81.1	89.6	91.9
Waist Circumference	124	61.0	7.3	50.9	53.5	59.2	78.9	86.8
Waist Breadth	40	21.6	2.8	17.4	18.0	21.2	25.8	31.4
Natural Waist Circ	39	62.2	7.5	52.0	53.6	60.6	75.4	84.0
Iliocristale Height	37	83.1	4.7	72.9	74.9	83.1	89.4	94.4
Hip Height at Buttocks	40	69.1	4.4	60.0	62.3	68.5	76.2	79.6
Hip Circumference	118	70.0	6.7	59.4	61.4	68.3	83.0	91.2
Hip Brdth at Trochanter	37	24.0	1.8	21.2	21.8	23.4	27.7	29.7
Iliospinale Height	37	78.2	4.6	70.3	70.9	78.2	84.7	90.3
Bispinous Breadth	37	18.3	1.8	15.3	15.7	18.2	20.9	23.3
Gluteal Furrow Height	37	65.3	3.8	57.4	58.8	65.5	70.8	74.7
Trochanteric Height	37	71.4	4.2	64.1	64.4	71.2	77.6	82.3
Upper Thigh Circum	121	41.2	5.6	33.6	34.5	39.5	51.3	63.9
Upper Thigh Depth	36	12.8	2.2	9.1	9.2	12.7	16.8	19.1
Tibiale Height	37	36.7	2.4	31.8	32.5	36.8	40.1	43.0
Calf Circum Height	40	28.4	2.0	25.9	25.9	28.1	32.1	33.5
Calf Circumference	124	27.7	2.6	22.3	24.0	27.4	32.7	36.2
Calf Depth	40	8.8	0.9	7.4	7.4	8.7	10.3	10.5
Ankle Circumference	40	18.3	1.7	15.6	15.8	18.4	21.6	22.2
Ankle Breadth	40	5.0	0.5	4.1	4.1	4.8	5.9	6.5
Sphyrion Height	37	5.6	0.9	3.8	4.1	5.6	7.0	8.2
Foot Length	124	21.8	1.4	18.8	19.6	21.6	24.0	25.3
Foot Breadth	123	8.4	0.6	7.1	7.4	8.3	9.4	10.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	49	115.0	5.3	104.5	105.4	115.2	123.6	130.1
Chest Height at Axilla	41	107.3	4.2	98.7	99.3	106.9	114.0	117.1
Chest Circumference	141	70.4	5.9	59.3	63.1	69.1	80.9	88.4
Chest Breadth at Axilla	41	20.8	1.7	17.7	17.8	20.7	23.6	25.4
Waist Height	41	84.5	3.1	78.2	78.7	84.2	89.4	92.9
Waist Circumference	141	63.0	7.7	50.6	53.3	60.9	75.8	88.6
Waist Breadth	41	21.2	2.1	16.2	17.1	21.0	24.3	27.8
Natural Waist Circ	41	60.4	5.2	50.6	52.1	59.0	67.3	75.0
Iliocristale Height	49	85.3	4.9	75.4	76.0	85.1	94.6	97.6
Hip Height at Buttocks	41	72.5	2.6	66.7	67.7	72.4	76.9	77.5
Hip Circumference	137	72.9	7.0	62.6	64.1	71.1	84.7	99.0
Hip Brdth at Trochanter	48	25.5	2.0	22.5	23.0	24.7	29.0	30.2
Iliospinale Height	49	80.8	4.0	72.7	73.8	80.8	87.7	91.2
Bispinous Breadth	49	19.1	1.4	16.3	16.5	18.9	21.4	22.4
Gluteal Furrow Height	49	66.9	3.3	58.7	60.5	66.8	72.9	74.3
Trochanteric Height	49	73.6	4.2	64.9	66.4	73.3	80.4	86.1
Upper Thigh Circum	137	43.5	5.4	34.6	36.4	42.4	52.2	62.3
Upper Thigh Depth	40	12.4	1.5	9.1	9.5	12.4	14.6	15.7
Tibiale Height	49	37.9	2.4	32.7	34.1	37.5	41.8	43.4
Calf Circum Height	41	29.8	2.0	26.1	26.7	29.6	33.0	34.2
Calf Circumference	140	28.8	2.5	23.7	25.2	28.5	33.4	35.8
Calf Depth	41	8.7	0.6	7.7	7.7	8.7	9.7	9.9
Ankle Circumference	40	18.2	1.2	15.7	15.9	18.2	19.7	21.7
Ankle Breadth	41	4.9	0.3	4.4	4.4	4.8	5.5	5.8
Sphyrion Height	48	6.0	0.9	4.3	4.5	5.9	7.6	8.5
Foot Length	142	22.5	1.3	19.1	20.3	22.5	24.7	25.9
Foot Breadth	142	8.7	0.6	7.4	7.8	8.7	9.7	10.5

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	53	121.2	7.3	106.6	110.5	119.9	135.2	140.8
Chest Height at Axilla	55	112.1	5.7	103.2	104.0	111.4	122.0	124.7
Chest Circumference	154	72.1	5.4	58.4	65.0	71.3	81.5	90.4
Chest Breadth at Axilla	55	22.2	1.9	18.7	19.1	22.0	24.8	28.3
Waist Height	55	88.9	4.7	81.0	82.3	87.8	97.5	98.8
Waist Circumference	154	64.4	6.6	53.0	56.1	62.9	75.4	94.6
Waist Breadth	55	22.9	2.2	18.2	19.7	22.6	27.3	29.0
Natural Waist Circ	53	65.3	6.9	54.8	55.0	63.2	76.5	90.3
Iliocristale Height	52	91.5	6.3	80.3	81.9	89.9	104.4	107.5
Hip Height at Buttocks	55	76.0	4.7	67.9	68.6	74.9	84.9	86.8
Hip Circumference	150	75.0	6.7	62.3	66.1	74.2	87.7	101.9
Hip Brdth at Trochanter	52	26.2	2.1	22.5	23.2	26.0	29.6	32.8
Iliospinale Height	53	86.1	5.7	76.3	77.6	84.7	97.0	101.7
Bispinous Breadth	53	19.3	1.7	15.5	15.8	19.1	22.0	24.2
Gluteal Furrow Height	52	72.2	4.9	62.1	65.2	71.3	80.7	84.4
Trochanteric Height	53	78.0	5.3	68.2	70.8	76.4	88.2	92.3
Upper Thigh Circum	150	44.4	5.1	34.9	37.9	43.2	53.5	66.5
Upper Thigh Depth	53	13.5	2.0	9.0	10.4	13.2	17.2	18.7
Tibiale Height	52	40.5	2.9	35.0	36.1	39.8	45.7	47.0
Calf Circum Height	55	31.5	2.1	27.2	28.0	31.5	34.6	36.1
Calf Circumference	154	29.7	2.7	24.6	26.1	29.2	35.2	41.1
Calf Depth	55	9.5	0.8	7.6	8.0	9.3	10.8	11.0
Ankle Circumference	55	19.7	1.7	16.1	16.6	19.6	22.2	24.2
Ankle Breadth	55	5.3	0.6	4.3	4.4	5.2	6.4	6.8
Sphyrion Height	52	6.2	0.7	4.9	5.1	6.1	7.4	7.9
Foot Length	154	23.4	1.4	20.0	21.3	23.4	25.6	27.1
Foot Breadth	154	9.1	0.7	7.7	7.9	9.0	10.1	10.7

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	50	126.4	7.4	112.9	114.4	125.0	138.1	147.0
Chest Height at Axilla	58	117.6	6.5	106.0	106.1	117.6	130.0	138.0
Chest Circumference	154	76.0	6.2	63.4	67.4	75.4	86.7	98.8
Chest Breadth at Axilla	58	23.3	2.2	17.6	19.1	23.5	26.0	29.3
Waist Height	58	93.5	5.2	83.7	85.9	92.4	102.6	109.9
Waist Circumference	154	67.1	7.5	52.2	56.9	65.7	81.2	98.3
Waist Breadth	58	24.1	2.6	18.4	20.3	23.9	28.8	30.2
Natural Waist Circ	51	67.3	7.3	53.1	57.6	65.6	81.4	86.4
Iliocristale Height	50	95.1	5.6	85.7	86.4	94.5	104.6	110.4
Hip Height at Buttocks	58	79.6	5.0	71.5	72.3	78.7	89.1	93.9
Hip Circumference	152	78.8	6.9	64.8	69.1	77.4	90.8	103.8
Hip Brdth at Trochanter	50	27.5	2.3	23.5	23.8	27.2	31.5	34.1
Iliospinale Height	50	89.9	5.5	77.2	81.1	89.5	99.2	103.7
Bispinous Breadth	50	20.6	2.2	16.6	17.1	20.0	25.0	26.7
Gluteal Furrow Height	50	74.9	4.8	66.5	67.6	74.1	82.4	87.5
Trochanteric Height	50	81.6	5.1	71.9	73.2	80.7	90.5	96.4
Upper Thigh Circum	149	46.6	5.2	36.4	39.6	45.8	57.2	64.2
Upper Thigh Depth	55	14.0	1.8	10.7	10.9	13.9	16.7	19.8
Tibiale Height	50	42.3	2.8	37.1	37.8	41.9	46.1	50.2
Calf Circum Height	58	32.8	2.3	27.4	29.8	32.5	36.2	39.2
Calf Circumference	153	31.3	3.2	26.0	26.9	30.8	37.4	43.4
Calf Depth	58	10.0	1.0	8.0	8.5	9.9	11.8	12.6
Ankle Circumference	58	20.4	1.9	17.2	17.6	20.1	23.3	25.3
Ankle Breadth	58	5.5	0.5	4.5	4.7	5.4	6.3	7.0
Sphyrion Height	49	6.5	0.8	4.1	4.9	6.5	7.8	9.2
Foot Length	154	24.4	1.5	21.2	22.1	24.2	27.1	28.8
Foot Breadth	154	9.5	0.7	7.8	8.4	9.4	10.6	11.3

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	51	130.9	6.5	117.9	120.2	129.7	140.7	142.6
Chest Height at Axilla	49	124.5	6.7	106.3	112.9	124.6	133.6	139.2
Chest Circumference	154	80.1	6.5	59.8	69.9	79.4	91.6	93.9
Chest Breadth at Axilla	49	24.9	2.0	19.7	20.7	24.9	27.9	28.3
Waist Height	49	99.1	5.9	84.2	89.1	99.3	107.2	113.7
Waist Circumference	155	69.2	6.8	58.2	60.3	68.0	83.1	90.9
Waist Breadth	49	25.4	2.6	20.1	21.2	25.1	29.5	31.7
Natural Waist Circ	41	71.1	6.7	60.9	63.2	70.6	82.5	93.2
Iliocristale Height	51	97.8	5.3	87.2	90.7	97.2	105.3	110.4
Hip Height at Buttocks	49	84.8	5.2	72.8	75.1	85.0	93.4	95.5
Hip Circumference	154	82.6	7.0	60.2	72.0	82.4	94.9	99.0
Hip Brdth at Trochanter	51	29.5	2.1	24.1	25.8	29.2	33.0	33.9
Iliospinale Height	51	92.7	5.4	81.4	83.3	92.3	100.2	102.9
Bispinous Breadth	51	21.2	1.7	17.3	18.0	21.1	23.6	26.0
Gluteal Furrow Height	51	76.6	4.7	64.5	69.8	75.8	84.2	85.9
Trochanteric Height	51	83.9	5.1	73.1	75.4	83.9	91.6	93.8
Upper Thigh Circum	153	48.9	4.9	39.2	41.0	48.3	58.1	62.3
Upper Thigh Depth	46	14.8	2.0	10.9	11.4	14.9	17.7	19.8
Tibiale Height	51	42.7	2.6	37.5	37.7	42.8	46.3	48.0
Calf Circum Height	48	34.9	2.4	26.8	30.9	35.0	38.4	40.6
Calf Circumference	155	32.9	2.6	26.3	28.9	32.7	37.0	40.6
Calf Depth	48	10.7	0.9	8.6	9.2	10.7	12.1	12.6
Ankle Circumference	49	21.7	1.8	17.0	18.1	21.7	24.4	24.7
Ankle Breadth	48	5.8	0.6	4.4	4.8	5.8	6.6	6.9
Sphyrion Height	50	6.5	1.0	4.0	4.4	6.4	8.1	8.9
Foot Length	154	25.4	1.6	22.4	22.9	25.3	28.0	29.5
Foot Breadth	153	9.9	0.7	8.3	8.6	9.9	11.0	12.0

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	38	134.7	6.1	121.6	122.9	135.1	142.2	143.6
Chest Height at Axilla	42	125.9	7.3	109.0	113.5	125.8	137.2	139.7
Chest Circumference	131	84.2	6.7	71.0	73.5	84.3	94.7	107.6
Chest Breadth at Axilla	42	25.5	2.2	19.8	21.3	25.5	28.6	29.1
Waist Height	42	100.0	5.8	87.8	90.8	99.7	109.0	111.2
Waist Circumference	131	71.5	7.6	57.8	61.7	70.0	85.1	109.4
Waist Breadth	42	25.4	2.2	20.7	20.9	25.5	28.7	30.2
Natural Waist Circ	42	70.8	6.3	57.9	59.7	69.8	81.0	84.5
Iliocristale Height	39	100.4	3.7	90.4	94.1	100.5	105.5	106.0
Hip Height at Buttocks	42	85.6	5.9	73.8	75.0	85.4	94.6	96.2
Hip Circumference	129	85.9	7.3	69.5	74.2	86.2	97.2	112.5
Hip Brdth at Trochanter	39	30.2	2.4	24.6	25.9	30.1	33.5	34.0
Iliospinale Height	39	94.8	3.8	87.3	87.5	94.6	99.8	101.3
Bispinous Breadth	39	22.0	1.7	17.2	18.6	21.9	24.2	25.0
Gluteal Furrow Height	39	79.0	3.7	71.7	72.7	78.7	84.2	84.8
Trochanteric Height	38	86.5	3.5	78.5	79.5	87.0	90.7	91.6
Upper Thigh Circum	125	51.0	5.8	38.2	42.5	50.5	61.0	75.3
Upper Thigh Depth	40	15.1	2.3	10.8	11.9	14.7	17.7	24.2
Tibiale Height	39	44.1	2.3	38.5	39.3	44.3	47.3	47.9
Calf Circum Height	42	35.4	2.8	30.0	30.8	34.8	40.4	41.1
Calf Circumference	131	33.9	3.0	27.5	29.0	33.7	38.4	46.7
Calf Depth	42	10.7	1.0	8.8	8.9	10.6	12.1	12.3
Ankle Circumference	42	21.2	1.6	17.7	18.0	21.2	23.6	24.9
Ankle Breadth	42	5.7	0.6	4.6	4.7	5.7	6.5	7.3
Sphyrion Height	39	6.7	0.9	4.6	4.6	6.6	8.1	8.8
Foot Length	131	25.8	1.3	22.3	23.5	25.9	27.9	29.2
Foot Breadth	131	10.1	0.7	8.3	8.9	10.1	11.1	11.6

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	30	141.3	6.8	123.3	126.3	142.5	150.4	151.6
Chest Height at Axilla	38	133.2	6.0	110.3	123.5	133.1	142.1	142.5
Chest Circumference	100	89.6	7.3	69.2	78.4	90.5	101.8	112.3
Chest Breadth at Axilla	38	27.7	2.3	22.0	22.9	27.6	30.7	33.7
Waist Height	38	105.8	4.7	89.0	98.6	106.0	112.5	114.3
Waist Circumference	100	74.4	7.7	56.9	64.4	73.0	89.5	108.5
Waist Breadth	38	27.2	2.4	22.0	23.2	27.1	31.7	33.0
Natural Waist Circ	38	75.6	6.6	57.2	67.9	74.1	87.6	91.2
Iliocristale Height	31	104.5	5.6	92.5	93.5	104.8	111.8	113.1
Hip Height at Buttocks	38	89.7	4.1	77.6	82.9	90.0	94.9	99.4
Hip Circumference	100	90.2	6.8	67.1	79.1	90.4	101.2	108.9
Hip Brdth at Trochanter	31	32.2	1.9	28.1	28.3	32.2	35.5	37.1
Iliospinale Height	31	98.8	5.3	87.0	89.0	98.2	106.1	106.6
Bispinous Breadth	31	23.5	2.1	19.0	19.4	23.6	26.4	27.3
Gluteal Furrow Height	31	81.7	5.0	71.7	72.7	82.1	88.2	91.0
Trochanteric Height	31	89.7	4.9	77.4	79.6	90.2	95.7	99.6
Upper Thigh Circum	98	52.9	5.5	38.9	43.9	52.5	61.3	68.7
Upper Thigh Depth	36	15.8	2.0	12.1	12.6	15.4	19.5	20.5
Tibiale Height	31	46.1	3.0	40.2	40.4	46.0	50.0	52.4
Calf Circum Height	38	36.5	1.8	32.0	34.2	36.2	39.6	40.4
Calf Circumference	100	35.6	3.0	26.7	29.9	35.6	40.3	43.6
Calf Depth	38	11.5	0.9	8.9	9.7	11.5	12.9	13.2
Ankle Circumference	38	22.5	1.9	17.1	18.9	22.5	25.4	27.5
Ankle Breadth	38	6.0	0.5	4.8	4.9	5.9	6.7	7.2
Sphyrion Height	29	7.4	0.8	5.7	5.9	7.3	8.3	9.6
Foot Length	99	26.5	1.2	23.5	24.3	26.6	28.2	29.3
Foot Breadth	100	10.3	0.6	8.6	9.0	10.3	11.1	11.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	38	142.3	6.0	128.8	130.5	142.7	151.8	153.4
Chest Height at Axilla	28	134.9	4.1	128.3	128.3	135.4	140.6	141.2
Chest Circumference	104	92.4	6.3	78.9	82.5	92.0	103.7	111.1
Chest Breadth at Axilla	28	28.6	2.2	23.0	23.6	28.8	31.6	33.9
Waist Height	28	107.1	3.8	100.7	101.1	107.1	111.8	114.6
Waist Circumference	104	76.6	7.7	63.5	67.3	75.2	91.1	106.3
Waist Breadth	28	27.6	2.1	22.3	22.7	27.4	30.1	32.2
Natural Waist Circ	27	77.8	5.5	68.4	69.2	76.7	86.0	94.1
Iliocristale Height	38	104.9	4.8	94.8	95.3	105.0	110.4	114.7
Hip Height at Buttocks	28	90.9	3.0	85.5	85.8	91.2	94.9	96.6
Hip Circumference	104	91.7	6.2	78.7	83.4	90.7	103.4	116.0
Hip Brdth at Trochanter	38	32.3	2.2	29.4	29.5	31.8	36.6	38.7
Iliospinale Height	38	99.3	4.9	88.6	89.6	99.2	104.7	108.8
Bispinous Breadth	38	23.4	1.8	20.5	20.6	23.4	26.6	27.3
Gluteal Furrow Height	38	81.9	4.2	72.5	73.3	82.7	87.4	89.2
Trochanteric Height	38	89.9	4.6	79.3	80.9	90.6	95.4	100.9
Upper Thigh Circum	104	54.4	5.4	43.0	47.4	53.2	65.6	72.8
Upper Thigh Depth	28	16.7	1.6	13.7	13.8	16.6	18.8	20.0
Tibiale Height	37	46.1	2.2	40.8	41.6	46.6	49.4	49.9
Calf Circum Height	28	37.4	1.7	34.7	34.8	37.6	39.7	40.7
Calf Circumference	104	35.9	2.7	29.8	31.3	36.0	40.8	43.2
Calf Depth	28	11.6	0.7	9.7	10.0	11.4	12.8	13.1
Ankle Circumference	28	22.5	1.4	18.8	19.2	22.7	24.2	24.5
Ankle Breadth	28	6.0	0.5	5.4	5.4	5.9	7.0	7.3
Sphyrion Height	35	7.2	1.1	4.5	5.4	7.0	8.8	9.2
Foot Length	104	26.6	1.3	23.4	24.2	26.6	28.3	30.0
Foot Breadth	104	10.4	0.6	9.1	9.4	10.4	11.2	11.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Males - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	23	144.4	5.5	137.8	137.8	142.0	154.0	155.1
Chest Height at Axilla	38	134.9	6.8	120.3	120.8	135.1	143.6	150.8
Chest Circumference	88	94.8	5.6	81.4	83.4	94.5	104.2	107.5
Chest Breadth at Axilla	38	28.9	2.0	25.6	25.7	28.8	31.9	33.3
Waist Height	38	106.9	6.1	93.8	95.5	106.6	116.8	122.5
Waist Circumference	88	78.8	7.6	62.5	68.4	77.4	92.1	105.3
Waist Breadth	38	28.0	3.1	20.7	20.8	28.1	32.6	36.5
Natural Waist Circ	38	79.3	8.0	63.6	67.9	78.6	92.5	105.8
Iliocristale Height	23	106.9	4.9	99.2	99.3	106.1	115.7	117.9
Hip Height at Buttocks	38	91.1	5.6	80.1	80.5	91.4	100.2	103.7
Hip Circumference	88	93.5	5.8	77.1	84.0	93.8	101.5	112.5
Hip Brdth at Trochanter	23	33.0	1.6	29.6	29.8	32.6	35.9	36.4
Iliospinale Height	23	100.9	5.3	93.1	93.2	99.3	109.9	110.9
Bispinous Breadth	23	23.6	1.9	20.1	20.1	23.4	26.8	27.2
Gluteal Furrow Height	23	83.4	4.6	76.1	76.2	81.8	91.0	91.5
Trochanteric Height	23	91.7	4.6	82.7	83.1	90.2	100.0	100.7
Upper Thigh Circum	88	55.9	5.3	42.6	47.6	55.4	65.2	70.5
Upper Thigh Depth	38	17.4	2.2	13.1	13.3	17.4	21.0	24.0
Tibiale Height	23	46.7	3.3	42.5	42.5	45.2	51.8	55.5
Calf Circum Height	38	37.4	3.1	30.5	32.0	37.5	42.4	44.3
Calf Circumference	88	36.9	2.8	29.7	32.3	36.6	41.6	44.8
Calf Depth	38	12.0	0.9	10.1	10.3	11.8	13.5	14.0
Ankle Circumference	38	22.8	2.0	18.4	19.1	22.6	26.6	27.7
Ankle Breadth	38	6.1	0.6	5.2	5.2	6.0	6.9	7.4
Sphyrion Height	23	7.0	0.9	5.3	5.4	6.9	8.2	8.4
Foot Length	88	26.9	1.6	22.9	24.5	27.0	30.1	31.1
Foot Breadth	88	10.5	0.7	9.4	9.6	10.4	11.8	12.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 2.0 to 3.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	30	72.0	4.0	63.0	64.4	72.0	77.2	81.8
Chest Height at Axilla	34	63.8	3.5	59.5	59.5	63.1	69.5	71.9
Chest Circumference	96	49.9	2.6	43.4	45.2	49.7	53.9	55.6
Chest Breadth at Axilla	33	15.7	1.0	13.2	13.6	15.7	17.0	17.2
Waist Height	34	48.2	3.2	44.1	44.1	48.2	53.6	54.5
Waist Circumference	95	47.6	3.0	38.8	41.9	48.0	52.2	54.7
Waist Breadth	32	15.9	0.9	13.7	14.0	15.9	17.0	18.0
Natural Waist Circ	32	46.1	2.9	38.4	39.9	46.2	49.5	53.4
Iliocristale Height	30	51.6	3.6	43.4	45.1	51.1	58.1	60.0
Hip Height at Buttocks	34	39.4	2.7	34.6	35.7	38.8	44.7	45.5
Hip Circumference	95	51.2	3.1	43.8	46.0	51.3	56.2	58.8
Hip Brdth at Trochanter	30	17.9	0.9	15.7	16.1	17.9	19.1	20.0
Iliospinale Height	30	48.1	3.2	41.7	42.6	47.5	53.8	55.3
Bispinous Breadth	30	14.6	1.1	11.7	12.0	14.8	15.9	16.9
Gluteal Furrow Height	30	37.7	3.1	30.4	31.1	37.4	42.8	45.0
Trochanteric Height	30	42.8	3.3	35.0	36.2	43.0	47.6	48.9
Upper Thigh Circum	97	29.2	2.6	22.9	24.9	29.1	33.4	34.6
Upper Thigh Depth	33	8.4	1.0	6.7	6.8	8.2	10.0	10.4
Tibiale Height	30	22.7	1.9	18.1	18.6	23.0	24.7	27.1
Calf Circum Height	33	16.3	2.0	11.8	12.6	16.5	19.3	21.3
Calf Circumference	98	20.4	1.5	17.1	17.7	20.7	22.2	23.8
Calf Depth	35	6.0	0.5	5.2	5.3	5.9	6.7	6.8
Ankle Circumference	35	14.8	1.1	12.1	12.7	14.7	16.0	17.1
Ankle Breadth	35	4.1	0.4	3.3	3.3	4.1	4.6	4.8
Sphyrion Height	29	3.5	0.8	2.1	2.1	3.4	4.8	5.1
Foot Length	98	14.5	1.0	11.9	13.0	14.5	16.0	17.1
Foot Breadth	98	5.9	0.4	5.0	5.2	5.9	6.6	6.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 3.5 to 4.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	35	79.3	4.0	72.0	72.6	79.3	84.4	89.8
Chest Height at Axilla	41	71.7	3.9	64.6	65.9	71.4	78.2	81.7
Chest Circumference	108	52.4	2.6	45.9	48.4	52.5	56.7	60.1
Chest Breadth at Axilla	41	16.7	1.2	13.7	14.2	16.8	18.3	19.5
Waist Height	41	55.4	3.3	50.4	50.7	55.0	61.1	62.7
Waist Circumference	109	49.5	2.9	41.7	44.6	49.4	54.5	57.2
Waist Breadth	40	16.8	1.1	13.4	14.7	16.9	18.1	18.8
Natural Waist Circ	34	48.6	2.9	41.9	43.6	48.5	53.4	54.5
Iliocristale Height	35	57.6	3.4	51.0	52.0	57.8	62.8	65.8
Hip Height at Buttocks	41	46.1	3.2	39.6	40.4	45.4	51.2	52.4
Hip Circumference	109	54.1	3.4	46.2	49.1	53.7	59.8	65.6
Hip Brdth at Trochanter	35	18.9	0.9	16.9	17.3	18.7	20.0	20.8
Iliospinale Height	35	53.8	3.6	48.2	48.4	53.6	59.0	64.0
Bispinous Breadth	35	15.1	0.9	13.4	13.4	15.1	16.3	16.7
Gluteal Furrow Height	35	42.7	3.1	38.2	38.2	42.2	47.6	51.8
Trochanteric Height	35	48.0	3.5	42.4	42.8	47.7	52.6	58.7
Upper Thigh Circum	109	31.6	2.4	26.0	27.6	31.4	35.0	40.0
Upper Thigh Depth	38	9.4	1.1	7.6	7.9	9.2	11.5	12.8
Tibiale Height	35	24.6	1.8	21.8	21.9	24.2	27.8	28.1
Calf Circum Height	40	18.4	1.7	14.2	14.8	18.7	20.7	21.4
Calf Circumference	109	21.3	1.5	17.7	19.1	21.2	23.7	26.9
Calf Depth	40	6.4	0.5	5.5	5.6	6.3	7.3	7.5
Ankle Circumference	40	14.9	1.1	13.0	13.3	14.6	16.9	17.8
Ankle Breadth	40	4.1	0.3	3.6	3.6	4.1	4.6	4.9
Sphyrion Height	33	4.1	0.7	2.6	2.9	4.0	5.3	5.5
Foot Length	109	16.1	1.0	13.6	14.3	16.0	17.6	20.2
Foot Breadth	109	6.4	0.4	5.7	5.7	6.4	7.1	7.4

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 4.5 to 5.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	41	84.1	3.5	76.5	77.6	83.9	90.4	91.4
Chest Height at Axilla	35	78.4	4.5	69.9	70.6	77.7	85.0	87.1
Chest Circumference	120	54.6	3.3	47.8	50.0	54.2	59.5	74.4
Chest Breadth at Axilla	34	17.0	0.9	15.2	15.3	16.9	18.4	19.3
Waist Height	35	60.5	3.3	54.2	55.4	60.2	66.0	68.5
Waist Circumference	120	51.1	3.9	43.7	46.0	50.8	56.7	77.4
Waist Breadth	35	17.6	1.1	15.6	15.7	17.4	19.4	20.3
Natural Waist Circ	33	50.5	2.4	46.0	46.1	50.3	55.4	55.7
Iliocristale Height	41	61.6	2.9	55.4	56.8	61.3	65.7	68.2
Hip Height at Buttocks	35	50.6	3.0	46.2	46.3	50.0	56.8	58.0
Hip Circumference	120	56.7	3.6	49.7	52.0	56.2	61.8	77.7
Hip Brdth at Trochanter	41	19.7	0.8	18.2	18.4	19.5	21.3	21.7
Iliospinale Height	41	57.6	3.1	50.4	51.4	57.7	62.1	63.6
Bispinous Breadth	41	15.8	1.1	13.4	13.6	15.9	17.3	18.4
Gluteal Furrow Height	41	46.5	2.7	39.7	41.5	46.8	49.7	52.1
Trochanteric Height	41	51.9	3.0	45.4	46.3	51.7	56.2	58.7
Upper Thigh Circum	120	33.5	2.9	28.6	29.5	33.1	37.9	49.1
Upper Thigh Depth	35	9.9	1.1	7.5	7.8	9.9	11.2	12.4
Tibiale Height	41	26.4	1.8	22.5	22.6	26.2	29.0	30.2
Calf Circum Height	34	20.2	2.0	16.4	16.5	20.1	23.0	23.7
Calf Circumference	120	22.2	1.4	19.4	20.1	21.9	24.4	28.2
Calf Depth	35	6.7	0.4	5.6	6.0	6.7	7.3	7.5
Ankle Circumference	35	15.5	0.9	13.9	14.0	15.3	17.0	17.3
Ankle Breadth	35	4.2	0.3	3.6	3.7	4.1	4.6	5.0
Sphyrion Height	40	4.4	0.9	2.5	2.7	4.2	5.6	6.4
Foot Length	120	16.9	0.9	15.0	15.4	16.8	18.3	19.7
Foot Breadth	120	6.7	0.4	5.7	6.0	6.6	7.2	7.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 5.5 to 6.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	34	89.7	3.7	79.7	82.7	89.9	95.9	96.6
Chest Height at Axilla	41	84.3	4.2	74.2	76.5	83.5	90.1	94.6
Chest Circumference	111	56.8	3.2	48.9	51.5	56.6	61.8	67.1
Chest Breadth at Axilla	40	18.2	1.2	15.9	16.1	18.1	20.1	20.9
Waist Height	41	65.5	3.6	57.2	59.0	65.1	70.2	75.7
Waist Circumference	111	52.1	3.7	45.1	46.0	51.4	58.8	65.3
Waist Breadth	39	18.4	1.7	14.5	15.8	18.1	21.3	22.8
Natural Waist Circ	40	51.4	3.0	46.9	47.4	50.8	57.7	59.0
Iliocristale Height	34	66.5	3.3	57.6	60.0	66.5	71.5	72.2
Hip Height at Buttocks	41	55.1	3.4	48.6	48.7	54.8	61.4	64.6
Hip Circumference	111	58.8	4.0	50.6	52.0	58.6	64.8	70.0
Hip Brdth at Trochanter	34	20.1	1.1	18.1	18.2	19.9	22.0	22.8
Iliospinale Height	34	61.8	3.4	53.7	55.7	61.2	67.4	68.4
Bispinous Breadth	34	16.5	1.2	14.0	14.1	16.1	18.5	18.8
Gluteal Furrow Height	33	49.7	3.1	44.1	44.6	50.4	54.3	56.7
Trochanteric Height	34	55.8	3.0	50.3	50.8	55.4	60.7	62.4
Upper Thigh Circum	110	34.5	3.1	28.4	30.4	34.1	40.2	44.3
Upper Thigh Depth	38	10.6	1.5	7.9	8.4	10.3	13.9	15.4
Tibiale Height	34	28.5	2.0	23.7	24.9	28.6	31.4	31.8
Calf Circum Height	41	21.5	2.2	17.2	17.8	21.5	25.4	27.4
Calf Circumference	110	23.0	1.6	19.3	20.5	22.9	25.6	28.1
Calf Depth	41	7.2	0.6	5.8	6.3	7.0	8.5	8.9
Ankle Circumference	41	16.1	1.1	14.4	14.6	15.9	18.0	19.9
Ankle Breadth	41	4.3	0.3	3.9	3.9	4.2	4.9	5.3
Sphyrion Height	33	4.6	0.7	3.5	3.5	4.5	5.9	6.0
Foot Length	111	17.8	1.0	14.8	16.1	17.8	19.2	20.4
Foot Breadth	111	6.9	0.4	5.8	6.2	6.9	7.6	8.2

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 6.5 to 7.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	42	95.4	5.0	85.9	86.9	95.5	104.1	105.5
Chest Height at Axilla	45	88.9	5.4	76.6	78.4	88.2	97.5	103.0
Chest Circumference	121	59.8	4.8	50.4	53.3	58.9	68.8	81.7
Chest Breadth at Axilla	46	19.2	1.5	15.3	16.2	19.1	21.7	22.0
Waist Height	45	69.3	4.4	58.5	60.8	68.5	76.6	80.9
Waist Circumference	120	55.3	6.3	45.3	47.7	54.2	68.3	84.5
Waist Breadth	46	19.4	2.0	14.9	16.3	19.1	23.3	24.6
Natural Waist Circ	46	53.2	4.5	45.0	46.5	52.6	60.8	65.5
Iliocristale Height	41	71.4	4.0	64.0	64.8	71.1	78.0	79.1
Hip Height at Buttocks	45	58.5	4.1	48.9	50.4	57.6	66.2	69.8
Hip Circumference	119	62.5	5.4	49.1	55.7	62.0	71.8	84.6
Hip Brdth at Trochanter	42	21.5	1.7	18.8	18.9	21.2	24.1	26.0
Iliospinale Height	42	66.5	3.9	57.9	60.8	66.1	72.8	74.0
Bispinous Breadth	41	17.4	1.5	13.9	15.1	17.2	19.4	21.9
Gluteal Furrow Height	42	53.8	2.9	47.7	47.9	53.8	58.0	59.7
Trochanteric Height	41	59.7	3.4	52.7	52.9	59.3	65.5	68.0
Upper Thigh Circum	121	37.1	4.1	28.2	31.6	36.5	44.4	53.7
Upper Thigh Depth	46	11.2	1.6	7.6	8.8	10.9	13.9	15.1
Tibiale Height	42	31.0	1.9	27.5	27.9	30.7	34.9	35.7
Calf Circum Height	46	22.9	2.3	17.5	19.0	23.2	25.8	28.7
Calf Circumference	120	24.3	2.0	18.6	21.4	23.9	27.3	31.8
Calf Depth	45	7.6	0.6	5.9	6.5	7.5	8.4	8.6
Ankle Circumference	46	16.8	1.5	13.6	14.3	16.5	19.2	20.7
Ankle Breadth	46	4.5	0.4	3.7	3.8	4.4	5.3	5.4
Sphyrion Height	40	4.7	0.6	2.8	2.9	4.7	5.3	6.2
Foot Length	120	18.8	1.1	16.2	16.9	18.8	20.4	22.4
Foot Breadth	121	7.3	0.5	6.1	6.5	7.3	8.2	8.6

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 7.5 to 8.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	32	99.2	4.5	89.8	90.0	98.9	106.2	109.5
Chest Height at Axilla	31	93.4	4.9	84.6	85.8	92.3	102.0	103.3
Chest Circumference	93	62.2	5.8	53.5	54.0	61.3	72.4	92.5
Chest Breadth at Axilla	32	20.4	1.8	17.9	18.1	20.0	23.5	27.0
Waist Height	32	73.9	4.1	66.4	66.5	73.0	80.5	81.2
Waist Circumference	93	57.0	6.5	46.3	49.9	55.4	69.1	85.5
Waist Breadth	32	20.8	2.0	18.3	18.4	20.2	23.2	28.5
Natural Waist Circ	32	55.9	6.1	48.2	49.2	54.8	65.4	80.8
Iliocristale Height	32	74.8	4.2	65.7	66.9	74.2	81.2	83.9
Hip Height at Buttocks	32	62.2	3.6	55.8	56.0	61.9	67.5	71.2
Hip Circumference	94	65.8	5.9	55.9	58.3	64.6	77.5	90.8
Hip Brdth at Trochanter	32	22.3	1.7	19.3	19.8	22.1	24.8	27.5
Iliospinale Height	32	69.2	3.7	61.8	62.1	69.0	74.3	76.9
Bispinous Breadth	32	17.8	1.7	14.9	15.0	17.7	20.4	23.1
Gluteal Furrow Height	32	57.0	2.9	51.5	51.7	57.8	60.7	62.5
Trochanteric Height	32	62.9	3.5	54.5	55.4	63.0	67.7	69.0
Upper Thigh Circum	94	39.4	4.6	31.3	33.3	38.2	47.2	58.2
Upper Thigh Depth	32	12.4	2.0	8.7	9.2	12.4	15.1	18.7
Tibiale Height	32	31.5	1.7	26.5	28.1	31.4	34.1	34.4
Calf Circum Height	32	24.6	2.3	20.9	20.9	24.9	27.7	29.0
Calf Circumference	94	25.5	2.4	21.2	21.9	25.0	29.3	34.1
Calf Depth	32	8.0	0.7	6.9	7.0	7.8	9.1	10.3
Ankle Circumference	32	17.6	1.3	15.5	15.6	17.4	19.8	21.2
Ankle Breadth	32	4.7	0.4	3.9	3.9	4.6	5.5	6.0
Sphyrion Height	30	4.9	0.8	3.4	3.4	4.8	6.0	6.5
Foot Length	93	19.6	1.1	17.1	17.7	19.5	21.4	23.0
Foot Breadth	93	7.5	0.5	6.3	6.5	7.5	8.3	9.4

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 8.5 to 9.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	48	105.5	5.6	94.1	96.5	105.0	113.5	122.3
Chest Height at Axilla	49	101.2	5.2	91.5	92.9	100.3	110.1	114.7
Chest Circumference	137	65.4	5.4	55.7	58.3	64.4	75.1	85.1
Chest Breadth at Axilla	49	21.3	1.8	16.4	18.1	21.2	24.2	24.4
Waist Height	49	80.2	4.4	71.5	73.3	79.9	87.1	90.5
Waist Circumference	137	59.2	7.0	48.7	50.5	57.5	71.4	89.7
Waist Breadth	49	21.7	2.1	17.6	18.3	21.4	25.1	26.2
Natural Waist Circ	48	57.7	5.7	48.1	49.7	56.1	68.1	70.4
Iliocristale Height	48	79.6	4.6	71.5	72.3	79.7	86.1	93.1
Hip Height at Buttocks	49	67.9	3.9	60.7	61.4	67.4	74.4	78.0
Hip Circumference	137	68.7	6.1	57.8	60.6	67.7	79.9	91.4
Hip Brdth at Trochanter	47	23.5	2.0	20.2	20.8	23.4	26.3	30.0
Iliospinale Height	48	74.1	4.6	65.7	66.9	73.9	81.4	86.8
Bispinous Breadth	47	18.8	1.5	16.5	16.8	18.3	21.7	22.3
Gluteal Furrow Height	47	60.8	3.7	53.2	54.0	60.7	65.8	70.5
Trochanteric Height	47	67.1	4.1	60.4	60.9	67.4	74.9	76.4
Upper Thigh Circum	137	41.1	4.8	31.9	34.8	40.1	49.4	59.4
Upper Thigh Depth	49	12.7	2.1	8.2	8.9	12.8	16.2	16.8
Tibiale Height	48	34.5	2.1	29.0	30.8	34.2	37.8	39.4
Calf Circum Height	49	27.0	2.5	20.4	23.0	26.8	31.5	32.9
Calf Circumference	137	26.6	2.5	22.1	23.0	26.2	31.0	39.3
Calf Depth	49	8.5	0.8	7.0	7.1	8.3	9.7	10.1
Ankle Circumference	49	18.1	1.4	14.9	15.4	18.0	20.4	20.9
Ankle Breadth	49	4.8	0.4	3.9	3.9	4.7	5.4	5.6
Sphyrion Height	48	5.0	0.7	2.9	3.9	5.1	6.2	6.3
Foot Length	137	20.7	1.3	18.0	18.9	20.5	22.9	25.4
Foot Breadth	137	7.9	0.5	6.4	7.1	7.8	8.7	9.5

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 9.5 to 10.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	37	111.4	5.1	101.8	103.1	110.9	120.4	122.9
Chest Height at Axilla	45	103.3	5.4	90.9	93.1	103.5	112.7	115.2
Chest Circumference	129	67.3	5.8	56.6	59.6	66.4	76.9	91.0
Chest Breadth at Axilla	45	21.3	2.0	17.5	18.1	21.1	24.7	26.0
Waist Height	44	82.2	4.3	73.9	74.1	82.8	89.3	90.9
Waist Circumference	129	60.9	6.7	50.1	51.9	59.6	73.7	88.6
Waist Breadth	45	22.2	2.9	16.9	18.1	21.6	26.3	33.9
Natural Waist Circ	45	58.6	7.7	49.0	49.6	56.3	72.0	87.8
Iliocristale Height	38	84.2	4.4	77.7	77.8	83.6	91.6	94.7
Hip Height at Buttocks	45	69.3	3.6	62.3	62.4	69.9	75.2	76.9
Hip Circumference	129	71.6	6.7	59.7	62.3	70.6	82.3	108.5
Hip Brdth at Trochanter	37	24.3	1.6	22.1	22.1	24.0	27.0	28.5
Iliospinale Height	38	78.3	4.6	71.3	71.5	77.9	87.0	87.3
Bispinous Breadth	38	19.0	1.4	16.7	16.8	18.9	21.5	22.5
Gluteal Furrow Height	38	64.4	4.1	57.1	58.4	63.7	71.3	73.6
Trochanteric Height	38	71.2	4.7	64.3	65.0	70.4	79.6	81.1
Upper Thigh Circum	129	43.0	4.9	34.5	35.9	42.6	50.5	67.1
Upper Thigh Depth	45	12.9	2.6	8.5	9.2	12.6	16.8	21.4
Tibiale Height	37	36.1	2.1	32.4	32.7	35.8	39.5	40.0
Calf Circum Height	45	27.2	2.9	21.3	21.8	27.4	30.4	34.5
Calf Circumference	129	27.7	2.5	22.3	23.4	27.6	31.1	40.9
Calf Depth	45	8.7	0.8	7.1	7.4	8.5	10.0	11.2
Ankle Circumference	45	18.7	2.0	14.9	15.5	18.7	20.8	27.8
Ankle Breadth	45	4.9	0.6	3.9	4.0	4.8	5.8	7.1
Sphyrion Height	37	5.2	0.8	3.7	3.7	5.2	6.3	7.2
Foot Length	129	21.5	1.2	17.9	19.6	21.4	23.3	24.1
Foot Breadth	129	8.2	0.6	6.9	7.1	8.2	9.1	9.4

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 10.5 to 11.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	47	117.1	6.9	100.5	106.9	116.9	127.6	129.6
Chest Height at Axilla	45	108.5	5.6	97.0	97.3	108.9	117.1	122.2
Chest Circumference	139	71.2	7.3	54.0	61.6	70.0	86.8	102.5
Chest Breadth at Axilla	45	22.3	2.4	18.5	18.9	21.9	25.9	31.4
Waist Height	45	86.6	4.6	72.8	79.9	86.6	93.1	95.7
Waist Circumference	138	63.7	8.1	48.7	54.0	61.8	80.0	95.1
Waist Breadth	45	23.4	2.7	19.9	20.0	22.4	27.2	33.1
Natural Waist Circ	45	60.2	8.3	48.7	50.5	58.8	79.6	92.2
Iliocristale Height	48	89.0	5.6	77.9	79.9	89.1	97.8	99.0
Hip Height at Buttocks	45	72.7	4.1	63.0	65.4	72.4	78.1	80.3
Hip Circumference	139	75.7	8.1	59.3	64.8	74.2	91.3	108.2
Hip Brdth at Trochanter	48	26.1	2.3	21.9	22.7	25.8	30.0	32.7
Iliospinale Height	48	83.1	5.7	70.6	73.9	82.5	91.3	95.7
Bispinous Breadth	48	19.9	2.0	16.8	17.1	19.4	24.3	25.7
Gluteal Furrow Height	48	68.4	4.6	58.0	59.5	68.3	74.7	75.9
Trochanteric Height	48	74.9	5.1	64.4	65.8	74.6	81.8	84.9
Upper Thigh Circum	139	45.4	5.9	34.3	37.6	44.3	56.7	69.0
Upper Thigh Depth	45	13.8	2.4	9.6	10.0	13.7	17.1	21.2
Tibiale Height	48	38.2	2.6	31.6	33.2	38.2	42.5	42.7
Calf Circum Height	45	29.1	3.0	23.0	25.0	29.0	33.9	36.2
Calf Circumference	139	28.9	3.0	22.7	24.4	28.3	34.2	39.3
Calf Depth	45	9.0	0.9	6.9	7.5	8.9	10.9	11.4
Ankle Circumference	45	18.8	1.8	15.2	15.6	18.7	21.4	23.6
Ankle Breadth	44	4.9	0.5	3.9	4.0	4.8	5.6	6.2
Sphyrion Height	47	5.6	0.8	3.6	4.3	5.5	6.7	7.9
Foot Length	140	22.3	1.4	18.2	20.0	22.2	24.8	25.6
Foot Breadth	139	8.5	0.7	6.8	7.4	8.4	9.7	10.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 11.5 to 12.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	43	120.7	5.8	108.2	110.9	120.5	129.0	129.8
Chest Height at Axilla	41	113.4	5.8	101.5	102.1	112.7	122.3	130.1
Chest Circumference	132	73.3	6.3	61.8	64.0	72.9	84.8	89.8
Chest Breadth at Axilla	42	23.3	2.4	19.6	19.9	22.5	27.9	28.9
Waist Height	42	90.4	5.0	81.7	81.9	89.6	99.9	105.6
Waist Circumference	132	65.2	7.7	51.1	55.4	63.8	81.3	90.3
Waist Breadth	42	23.9	2.8	19.8	19.9	23.2	29.3	29.7
Natural Waist Circ	40	61.5	6.8	54.0	54.0	58.6	72.9	82.8
Iliocristale Height	43	91.0	5.1	78.3	82.5	91.9	97.5	101.5
Hip Height at Buttocks	42	76.6	5.0	68.2	68.8	75.3	84.8	93.8
Hip Circumference	133	78.3	7.3	63.8	66.2	77.9	91.1	99.1
Hip Brdth at Trochanter	43	27.1	2.4	22.9	23.0	27.0	31.2	33.9
Iliospinale Height	43	84.7	4.9	72.7	76.8	85.4	92.4	94.7
Bispinous Breadth	43	21.2	2.1	16.7	17.6	21.1	24.1	26.9
Gluteal Furrow Height	43	70.2	4.1	62.1	63.0	70.9	76.8	79.5
Trochanteric Height	43	76.3	4.0	67.4	69.0	76.7	82.5	84.6
Upper Thigh Circum	131	46.9	5.3	36.5	38.9	46.4	55.8	62.4
Upper Thigh Depth	42	13.9	2.3	10.5	10.6	13.4	17.5	18.9
Tibiale Height	43	39.3	2.4	32.8	34.7	39.6	42.7	44.6
Calf Circum Height	42	31.4	3.3	24.2	25.9	30.9	36.7	40.3
Calf Circumference	133	29.7	2.8	23.8	25.3	29.6	34.1	40.1
Calf Depth	42	9.2	0.9	7.7	7.8	9.0	10.3	11.7
Ankle Circumference	42	19.3	1.6	16.0	16.5	19.3	21.4	24.0
Ankle Breadth	42	5.0	0.6	4.0	4.1	5.0	5.7	7.0
Sphyrion Height	40	5.7	0.7	4.6	4.7	5.6	7.1	7.7
Foot Length	133	23.0	1.2	19.8	21.1	23.0	24.9	27.2
Foot Breadth	133	8.7	0.6	7.0	7.7	8.7	9.6	10.3

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 12.5 to 13.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	50	125.3	6.3	112.4	113.1	125.7	135.5	137.8
Chest Height at Axilla	50	117.8	5.3	106.0	107.0	118.1	125.9	126.9
Chest Circumference	159	76.2	5.3	60.6	68.4	75.8	85.8	90.6
Chest Breadth at Axilla	49	24.3	1.6	21.2	21.5	24.1	26.8	28.1
Waist Height	50	93.8	4.1	85.9	86.4	93.7	99.8	101.8
Waist Circumference	158	67.2	6.3	53.0	58.4	65.9	77.2	98.0
Waist Breadth	50	25.1	2.7	20.6	21.5	24.5	30.3	34.6
Natural Waist Circ	46	63.2	6.4	54.7	54.9	61.2	73.6	89.3
Iliocristale Height	50	94.5	4.8	82.5	85.2	94.6	101.9	105.0
Hip Height at Buttocks	50	79.0	4.0	71.0	71.7	78.6	84.5	89.1
Hip Circumference	158	83.0	7.1	65.7	72.5	82.2	94.4	107.3
Hip Brdth at Trochanter	50	29.0	2.6	24.4	24.5	29.0	33.5	34.8
Iliospinale Height	50	88.1	5.1	74.1	78.9	88.5	96.7	98.8
Bispinous Breadth	50	22.0	1.8	16.8	18.5	22.0	24.4	26.4
Gluteal Furrow Height	50	72.3	4.0	61.0	65.6	71.8	78.9	80.8
Trochanteric Height	50	79.8	4.5	68.2	71.5	80.1	86.7	89.4
Upper Thigh Circum	160	49.4	5.2	38.9	42.1	48.2	59.6	66.9
Upper Thigh Depth	50	15.0	2.0	10.8	12.1	14.9	18.8	21.0
Tibiale Height	50	40.4	2.6	34.0	35.6	40.3	44.2	47.5
Calf Circum Height	50	30.4	3.0	24.6	25.3	30.4	34.9	36.4
Calf Circumference	160	31.2	2.6	25.7	26.9	31.0	36.0	38.8
Calf Depth	50	9.9	0.8	8.6	8.7	9.7	11.2	11.8
Ankle Circumference	50	20.4	1.6	17.0	17.7	20.0	22.9	24.5
Ankle Breadth	50	5.4	0.5	4.7	4.7	5.2	6.3	6.6
Sphyrion Height	46	5.8	0.9	3.9	4.2	5.8	7.4	8.2
Foot Length	161	23.4	1.2	20.7	21.4	23.4	25.5	26.6
Foot Breadth	161	9.0	0.6	7.4	8.1	8.9	9.9	10.8

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 13.5 to 14.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	31	127.7	6.8	109.0	114.0	128.1	137.8	139.8
Chest Height at Axilla	41	120.8	6.2	106.8	110.2	120.5	130.9	134.1
Chest Circumference	116	78.5	5.7	66.5	70.1	78.2	87.8	91.9
Chest Breadth at Axilla	41	24.9	2.0	21.1	21.5	24.3	27.8	29.1
Waist Height	41	95.8	5.1	86.3	86.9	95.1	104.4	108.9
Waist Circumference	115	69.1	7.0	57.4	58.7	68.0	81.1	93.7
Waist Breadth	40	26.4	2.2	21.1	22.2	26.4	29.3	31.0
Natural Waist Circ	39	64.9	5.8	56.6	57.1	64.0	74.4	82.6
Iliocristale Height	31	96.3	6.1	78.8	83.0	95.6	104.9	106.3
Hip Height at Buttocks	41	79.7	4.6	71.5	72.7	78.9	87.0	92.1
Hip Circumference	116	86.5	6.7	71.0	75.9	86.5	98.5	104.2
Hip Brdth at Trochanter	31	30.0	1.9	27.2	27.3	29.5	33.2	34.3
Iliospinale Height	31	90.4	5.8	75.0	78.0	90.2	100.0	101.8
Bispinous Breadth	31	22.4	1.6	17.6	18.7	22.6	24.8	25.3
Gluteal Furrow Height	30	73.6	5.1	60.6	63.7	73.5	81.8	82.4
Trochanteric Height	31	80.9	5.2	65.8	69.0	80.9	90.0	91.1
Upper Thigh Circum	116	51.3	5.0	39.7	43.5	51.8	60.0	63.2
Upper Thigh Depth	40	15.5	1.8	11.3	11.8	15.4	18.4	19.2
Tibiale Height	31	41.1	3.0	33.0	34.1	41.3	45.3	46.7
Calf Circum Height	41	30.6	3.3	23.0	24.1	30.6	34.7	37.7
Calf Circumference	116	32.1	2.7	25.7	27.5	31.9	36.1	38.6
Calf Depth	41	10.3	0.8	8.7	8.8	10.1	11.4	12.3
Ankle Circumference	41	20.8	1.4	18.3	18.4	20.7	23.2	23.9
Ankle Breadth	41	5.5	0.5	4.4	4.5	5.4	6.3	6.6
Sphyrion Height	26	6.0	0.7	4.7	4.8	5.8	7.0	7.7
Foot Length	116	23.6	1.2	20.6	21.5	23.4	25.9	27.0
Foot Breadth	116	9.1	0.6	7.2	7.9	9.0	10.0	10.4

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 14.5 to 15.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	49	130.7	5.6	121.1	121.5	129.5	140.7	144.8
Chest Height at Axilla	38	124.4	6.5	111.1	112.8	124.2	133.2	139.6
Chest Circumference	132	80.8	5.1	69.0	73.3	80.5	88.8	107.4
Chest Breadth at Axilla	39	26.1	1.6	21.6	22.4	26.1	28.5	29.4
Waist Height	39	99.6	4.8	87.5	90.9	99.2	107.6	111.5
Waist Circumference	132	70.5	6.3	58.9	61.9	69.5	81.1	100.3
Waist Breadth	39	26.5	2.0	21.3	22.7	26.4	29.3	32.0
Natural Waist Circ	39	65.5	4.6	57.5	59.1	64.9	73.5	77.9
Iliocristale Height	48	98.3	4.8	89.5	90.2	97.3	106.9	108.2
Hip Height at Buttocks	39	83.2	4.8	72.2	74.3	83.0	90.1	94.5
Hip Circumference	133	90.2	6.2	71.1	79.4	90.3	99.6	115.9
Hip Brdth at Trochanter	48	31.5	2.1	27.6	27.8	31.7	34.7	35.7
Iliospinale Height	49	91.6	4.8	81.3	82.8	91.5	99.6	101.2
Bispinous Breadth	49	22.9	1.8	19.7	20.3	22.4	26.1	27.1
Gluteal Furrow Height	49	74.6	4.4	64.5	66.6	73.8	81.5	83.4
Trochanteric Height	49	82.5	5.3	72.0	73.2	81.4	91.3	94.2
Upper Thigh Circum	133	53.2	5.1	41.1	44.8	52.7	61.4	71.8
Upper Thigh Depth	39	15.7	1.8	11.9	12.9	15.5	18.9	19.6
Tibiale Height	48	41.9	2.4	36.0	37.9	42.1	45.2	47.6
Calf Circum Height	39	32.9	3.3	25.6	26.9	33.0	37.9	40.8
Calf Circumference	133	33.3	2.7	26.0	28.9	33.2	38.0	42.1
Calf Depth	39	10.5	0.9	8.4	8.8	10.4	12.0	12.8
Ankle Circumference	39	21.0	1.4	17.1	18.4	21.1	23.2	24.7
Ankle Breadth	39	5.5	0.5	4.4	4.5	5.4	6.1	7.0
Sphyrion Height	44	6.0	0.8	4.1	4.3	5.9	7.1	7.3
Foot Length	133	23.8	1.3	20.3	21.9	23.6	26.2	27.5
Foot Breadth	133	9.1	0.6	7.9	8.2	9.0	10.1	10.9

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 15.5 to 16.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	32	131.2	5.6	120.5	122.2	130.2	141.1	143.5
Chest Height at Axilla	41	122.7	4.4	114.8	115.6	121.9	128.7	136.0
Chest Circumference	98	82.1	5.3	71.9	74.2	81.7	90.7	103.6
Chest Breadth at Axilla	41	25.7	1.4	23.0	23.2	25.7	27.5	29.4
Waist Height	41	97.1	3.7	91.3	92.1	96.1	102.3	108.8
Waist Circumference	96	71.9	6.7	59.7	62.9	70.7	84.3	105.4
Waist Breadth	41	27.0	2.1	21.6	23.8	27.0	30.6	32.4
Natural Waist Circ	40	65.5	5.2	57.4	58.7	64.0	75.4	78.9
Iliocristale Height	32	98.7	5.2	90.1	90.5	98.2	107.2	108.1
Hip Height at Buttocks	41	81.0	4.0	73.1	74.3	80.3	87.1	93.7
Hip Circumference	98	90.9	5.6	80.7	83.4	89.5	101.9	107.6
Hip Brdth at Trochanter	32	32.2	2.2	28.6	28.7	31.9	35.6	39.0
Iliospinale Height	32	91.8	5.2	82.3	83.2	91.7	100.0	103.9
Bispinous Breadth	32	23.4	1.8	20.6	20.7	23.2	26.3	27.0
Gluteal Furrow Height	32	74.8	4.5	67.0	67.0	74.1	82.2	83.3
Trochanteric Height	32	82.3	5.0	74.2	75.1	80.1	90.1	95.8
Upper Thigh Circum	98	54.1	4.6	44.4	47.7	53.0	62.7	70.5
Upper Thigh Depth	40	15.5	1.7	12.5	12.7	15.2	18.3	20.1
Tibiale Height	32	42.2	2.7	37.5	37.9	41.6	46.5	48.6
Calf Circum Height	41	31.7	3.0	25.7	26.1	32.0	35.4	37.6
Calf Circumference	98	33.6	2.4	29.1	30.2	33.2	38.4	39.4
Calf Depth	41	10.4	0.7	9.3	9.4	10.3	11.6	12.3
Ankle Circumference	41	21.2	1.5	18.3	18.8	20.8	23.7	24.7
Ankle Breadth	40	5.5	0.5	4.4	4.6	5.4	6.3	6.7
Sphyrion Height	31	6.3	0.8	4.5	4.7	6.4	7.2	7.5
Foot Length	98	23.8	1.3	21.2	21.7	23.6	26.3	27.6
Foot Breadth	98	9.2	0.5	8.0	8.3	9.2	10.1	10.5

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 16.5 to 17.5 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	36	131.4	4.7	120.1	122.3	131.7	138.0	143.0
Chest Height at Axilla	39	122.9	4.8	113.6	114.5	121.8	131.5	132.4
Chest Circumference	117	82.7	5.2	70.6	75.4	82.1	92.1	98.3
Chest Breadth at Axilla	39	26.4	1.4	23.5	23.7	26.4	28.2	30.1
Waist Height	39	98.0	4.2	90.1	90.2	97.6	104.1	106.7
Waist Circumference	115	72.2	7.3	60.3	63.2	70.5	87.3	101.0
Waist Breadth	39	27.4	2.4	22.9	23.6	27.1	31.5	33.8
Natural Waist Circ	39	66.2	6.6	57.4	57.7	64.0	81.8	86.4
Iliocristale Height	36	98.4	4.0	88.5	90.3	98.7	105.2	107.5
Hip Height at Buttocks	39	81.0	4.0	73.3	75.0	80.2	86.6	91.5
Hip Circumference	116	91.9	6.5	79.2	81.6	91.6	105.6	113.8
Hip Brdth at Trochanter	36	32.6	2.0	28.7	29.6	32.5	36.0	37.4
Iliospinale Height	36	91.4	4.0	80.5	81.9	91.7	97.5	99.5
Bispinous Breadth	35	23.9	2.1	18.8	19.5	24.6	26.0	28.2
Gluteal Furrow Height	36	73.8	3.8	64.1	66.0	73.8	81.0	81.9
Trochanteric Height	36	81.4	3.6	72.4	73.1	81.5	87.2	90.2
Upper Thigh Circum	117	54.3	4.8	43.3	47.4	53.8	63.2	69.1
Upper Thigh Depth	38	15.8	1.9	11.9	13.2	15.5	19.2	20.0
Tibiale Height	36	41.8	2.2	37.4	37.7	42.2	44.6	45.0
Calf Circum Height	39	32.4	3.0	25.8	26.0	32.4	36.8	38.3
Calf Circumference	117	33.9	2.5	26.0	30.4	33.4	38.6	40.3
Calf Depth	39	10.3	0.7	9.1	9.2	10.2	11.8	12.1
Ankle Circumference	39	20.8	1.5	17.3	18.5	20.5	24.0	24.6
Ankle Breadth	39	5.4	0.5	4.1	4.3	5.3	6.2	6.5
Sphyrion Height	34	6.5	0.6	5.4	5.5	6.6	7.3	8.2
Foot Length	117	23.6	1.1	21.5	21.9	23.4	25.7	26.3
Foot Breadth	117	9.0	0.5	7.8	8.2	9.0	9.9	10.7

TORSO, PELVIS, LOWER LIMB, AND FOOT MEASUREMENTS
(Females - Ages 17.5 to 19.0 Years)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Suprasternale Height	22	131.3	5.3	123.0	123.2	130.2	138.2	148.8
Chest Height at Axilla	25	124.2	5.9	114.1	114.2	124.3	131.9	136.8
Chest Circumference	68	82.8	4.9	72.2	75.3	82.4	92.5	96.4
Chest Breadth at Axilla	25	26.4	1.8	22.9	22.9	26.2	29.4	30.1
Waist Height	24	98.6	4.9	88.6	89.5	98.3	106.3	110.7
Waist Circumference	67	72.0	6.1	60.2	63.3	70.3	82.2	94.3
Waist Breadth	25	28.1	3.1	23.8	23.9	27.0	34.3	36.4
Natural Waist Circ	25	66.8	5.9	56.1	57.0	65.3	76.9	81.4
Iliocristale Height	23	98.1	4.3	91.6	91.8	96.7	104.3	110.6
Hip Height at Buttocks	25	81.8	5.0	71.8	72.5	81.4	90.7	92.5
Hip Circumference	68	92.4	6.1	82.9	84.3	91.5	104.1	107.7
Hip Brdth at Trochanter	23	32.6	1.9	30.6	30.6	32.0	36.5	37.9
Iliospinale Height	23	90.8	4.5	84.0	84.2	89.5	96.9	103.2
Bispinous Breadth	22	24.3	1.8	21.3	21.3	24.3	26.5	29.3
Gluteal Furrow Height	23	73.9	4.4	69.0	69.1	73.2	81.9	87.5
Trochanteric Height	23	81.8	4.3	75.9	76.0	79.9	89.1	91.7
Upper Thigh Circum	67	54.6	4.6	45.5	49.0	54.1	63.1	68.1
Upper Thigh Depth	24	15.9	2.0	12.9	13.0	15.0	19.6	20.0
Tibiale Height	23	41.8	2.7	37.4	37.5	41.1	45.4	50.8
Calf Circum Height	25	32.4	3.7	25.0	25.3	32.4	38.2	39.1
Calf Circumference	67	33.9	2.7	29.0	29.7	33.5	38.0	43.5
Calf Depth	25	10.6	1.0	9.0	9.0	10.6	12.1	13.4
Ankle Circumference	25	21.0	1.6	18.2	18.3	20.7	23.8	24.4
Ankle Breadth	25	5.3	0.5	4.6	4.6	5.3	6.1	6.3
Sphyrion Height	23	6.1	0.8	4.8	4.8	5.9	7.2	7.5
Foot Length	67	23.7	1.2	20.8	21.8	23.7	25.6	27.2
Foot Breadth	67	9.2	0.6	7.8	8.2	9.0	10.0	11.6

D. Bivariate Relationships of Selected Measurements with Stature and Weight.

It is often the case that an investigator or designer knows the height and weight and possibly a few other basic measurements on a specific population of individuals with which he is concerned and would like to know something about other measurements, perhaps of a more functional nature. For example, one might know the average or mean weight and age of a group of individuals and would like to know what the seated hip breadth (e.g., for seat design) for this population would be.

In this section, the regression and correlation coefficients which describe the relationships between selected functional measurements taken in this study and stature or weight are given. These coefficients are tabulated by males and females separately and for seven age groups over the range 2-19 years. Along with these tables a scatter plot showing visually the relationship between the two measurement variables is also given for males and females combined.

The linear regression equation provides a quick way of approximating one measurement given another, plus or minus some expected error given by the standard error of the regression. The correlation value in the table assigns the degree of linear relationship between the two measurements. Correlation values range from -1 to +1, where values greater than zero indicate that small values of one measurement are, in general, associated with small values of the other, and large values of one measurement are associated with large values of the other. If the correlation is negative, the inverse relationship holds. A value close to ±1 indicates an almost perfect linear relationship.

Thus, given the linear regression coefficient, regression constant, and regression standard error which describes the relationship of one dependent measurement variable (V1) with respect to a second independent variable (V2), one can then estimate V1 given V2 on any individual or for any population which meet the age and sex criteria

of the sample population from which the coefficients were derived. That is:

V1 = regression coeff. x V2 + regression constant ± standard error.

The following measurements have been selected for regression analysis with stature or weight and are presented in the order given in this section.

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Regression of

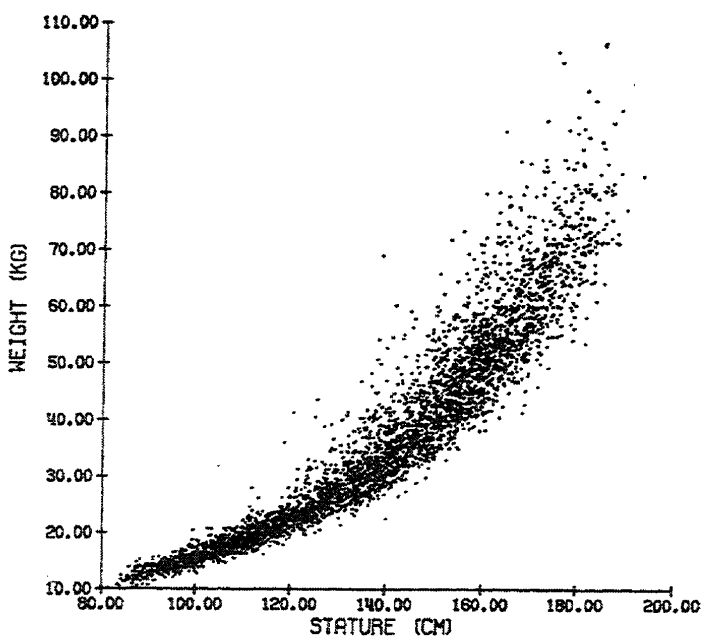
Weight with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.797	.301	-14.01	1.16
4-6	.861	.408	-25.75	1.39
6-9	.763	.528	-40.48	3.15
9-11	.671	.732	-67.57	5.04
11-13	.772	.814	-80.41	5.39
13-15	.819	.929	-97.99	6.06
15-19	.675	1.068	-118.72	8.68

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.843	.296	-13.80	1.16
4-6	.803	.383	-23.17	1.74
6-9	.809	.584	-47.17	3.19
9-11	.715	.709	-64.85	5.18
11-13	.724	.830	-82.74	6.10
13-15	.615	.724	-65.21	6.70
15-19	.534	.753	-66.92	7.19



Regression of

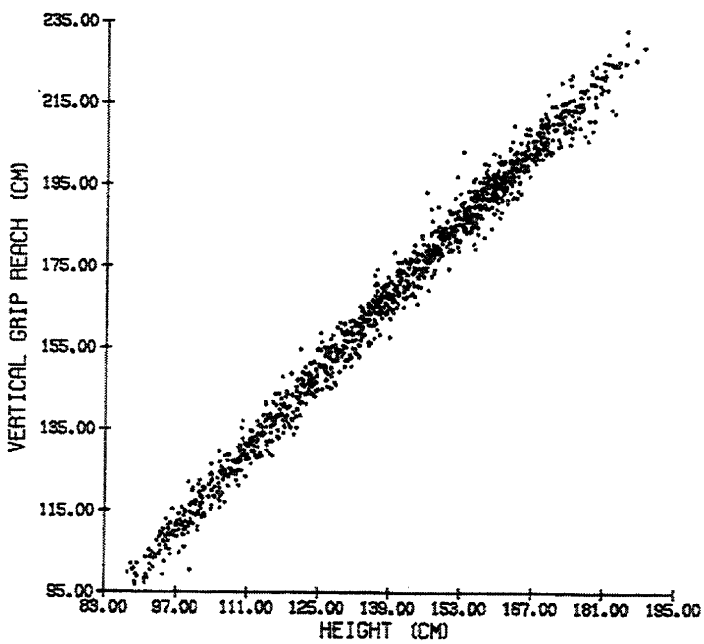
Vertical Grip Reach with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.883	1.291	-15.52	3.18
4-6	.938	1.301	-14.53	3.18
6-9	.947	1.315	-16.62	3.40
9-11	.935	1.302	-14.00	2.96
11-13	.961	1.329	-16.99	3.11
13-15	.948	1.237	-2.59	3.76
15-19	.911	1.194	4.96	3.81

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.933	1.328	-18.34	2.38
4-6	.912	1.321	-16.99	3.23
6-9	.943	1.370	-21.39	3.36
9-11	.955	1.350	-18.61	3.28
11-13	.929	1.259	-5.39	3.60
13-15	.922	1.342	-18.77	4.33
15-19	.915	1.279	-9.61	3.34



Regression of

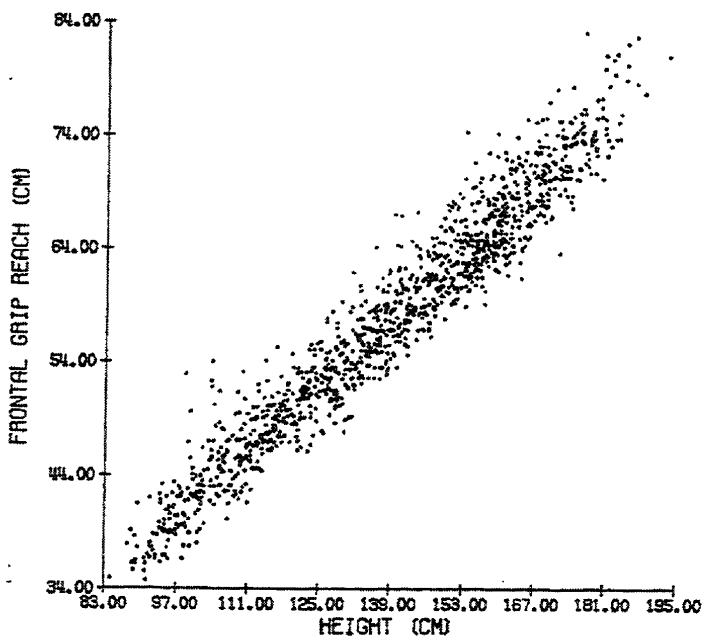
Frontal Grip Reach with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.658	.497	-7.60	2.63
4-6	.788	.428	-0.75	2.20
6-9	.707	.326	11.18	2.48
9-11	.659	.390	3.39	2.66
11-13	.777	.402	2.14	2.66
13-15	.791	.401	2.74	2.80
15-19	.762	.452	-5.99	2.70

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.857	.696	-26.76	1.95
4-6	.639	.423	-0.36	2.76
6-9	.749	.391	3.12	2.42
9-11	.824	.441	-3.15	2.36
11-13	.679	.329	13.29	2.55
13-15	.735	.384	4.86	2.72
15-19	.715	.484	-11.33	2.80



Regression of

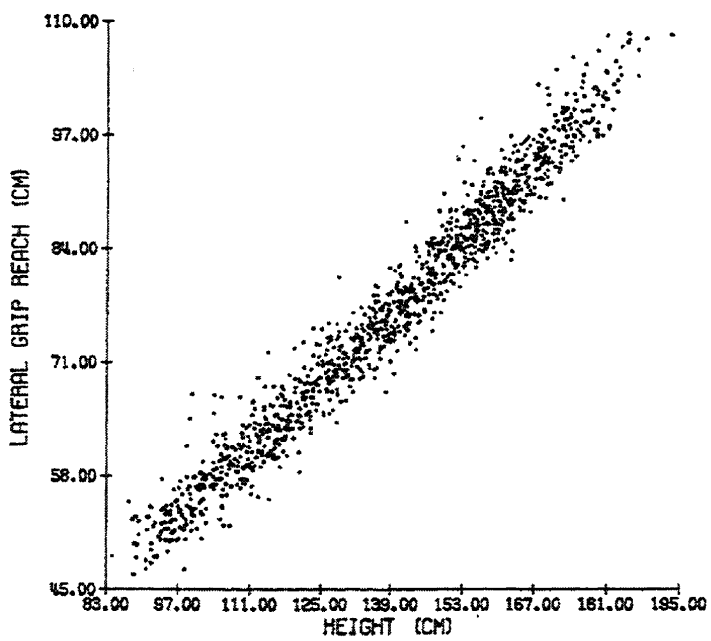
Lateral Grip Reach with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.715	.524	2.79	2.37
4-6	.832	.648	-10.20	2.85
6-9	.789	.496	6.37	2.94
9-11	.750	.557	- 1.37	2.94
11-13	.897	.618	-10.14	2.48
13-15	.891	.616	-9.40	2.83
15-19	.848	.641	-13.01	2.82

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.700	.532	2.56	2.55
4-6	.666	.515	3.96	3.12
6-9	.838	.564	-1.74	2.57
9-11	.863	.602	-6.62	2.74
11-13	.829	.565	-1.52	2.74
13-15	.761	.450	16.95	2.94
15-19	.763	.537	3.56	2.70



Regression of

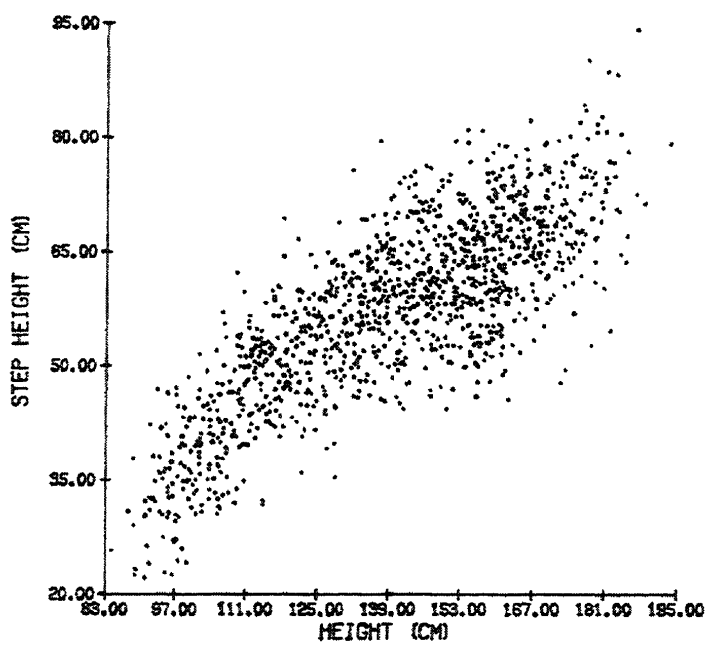
Step Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.351	.498	-13.47	6.16
4-6	.460	.524	-12.87	6.67
6-9	.374	.323	15.70	6.11
9-11	.285	.291	20.53	5.85
11-13	.375	.365	8.63	7.38
13-15	.378	.259	23.93	5.73
15-19	.321	.359	7.33	7.47

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.355	.464	-9.54	5.69
4-6	.475	.592	-19.53	5.94
6-9	.498	.500	-10.13	6.08
9-11	.370	.368	5.96	7.21
11-13	.294	.324	12.17	7.57
13-15	.363	.362	6.67	7.14
15-19	.306	.407	-2.07	7.50



Regression of

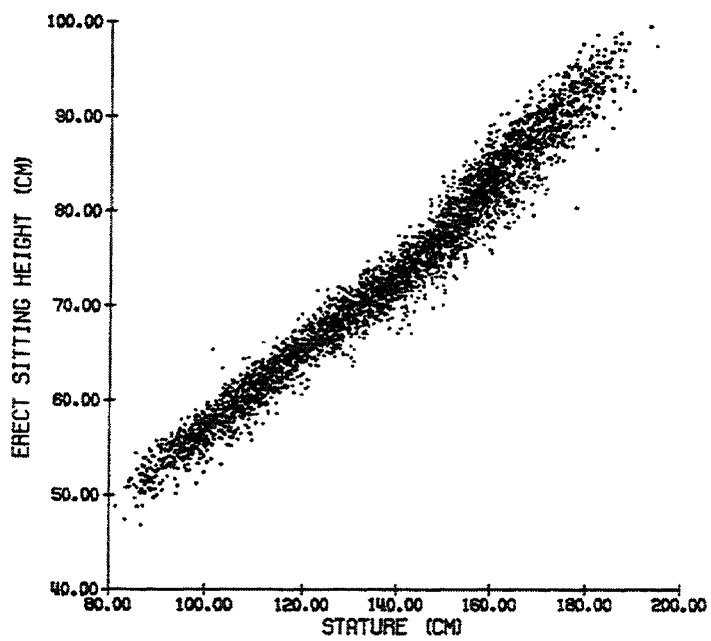
Erect Sitting Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.843	.422	15.39	1.38
4-6	.873	.452	11.87	1.48
6-9	.868	.406	16.62	1.67
9-11	.856	.413	15.38	1.56
11-13	.888	.451	9.56	1.84
13-15	.904	.506	0.79	2.21
15-19	.806	.471	8.27	2.47

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.889	.426	14.15	1.33
4-6	.870	.465	9.92	1.56
6-9	.896	.408	16.16	1.54
9-11	.884	.419	14.46	1.64
11-13	.886	.505	1.98	2.04
13-15	.820	.442	12.54	2.23
15-19	.790	.443	13.67	2.08



Regression of

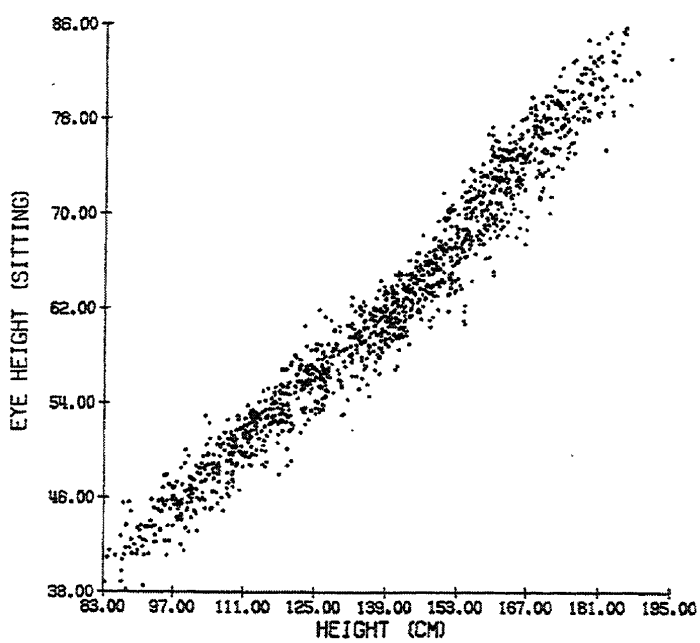
Eye Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.676	.309	15.51	1.58
4-6	.839	.429	3.24	1.64
6-9	.846	.399	6.20	1.77
9-11	.829	.386	7.37	1.70
11-13	.885	.448	-1.88	1.90
13-15	.865	.424	2.35	2.28
15-19	.835	.448	0.57	2.22

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.832	.436	3.06	1.71
4-6	.845	.442	1.73	1.96
6-9	.816	.368	10.06	2.17
9-11	.830	.413	4.14	1.76
11-13	.861	.497	-8.18	2.18
13-15	.793	.433	2.61	2.39
15-19	.789	.428	4.67	2.07



Regression of

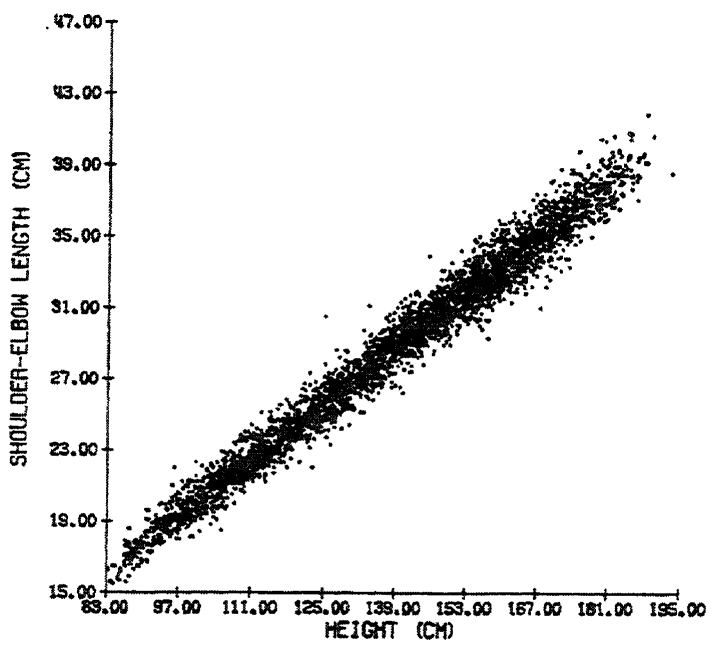
Shoulder-Elbow Length with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.824	.213	-1.39	0.75
4-6	.819	.201	0.01	0.83
6-9	.896	.220	-1.85	0.78
9-11	.864	.219	-1.53	0.80
11-13	.891	.214	-0.66	0.86
13-15	.908	.213	-0.42	0.91
15-19	.778	.212	-0.31	1.22

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.896	.229	-2.89	0.69
4-6	.857	.210	-0.89	0.75
6-9	.877	.211	-0.94	0.88
9-11	.892	.215	-1.26	0.81
11-13	.852	.208	-0.06	0.99
13-15	.842	.216	-1.04	1.00
15-19	.780	.201	1.03	.97



Regression of

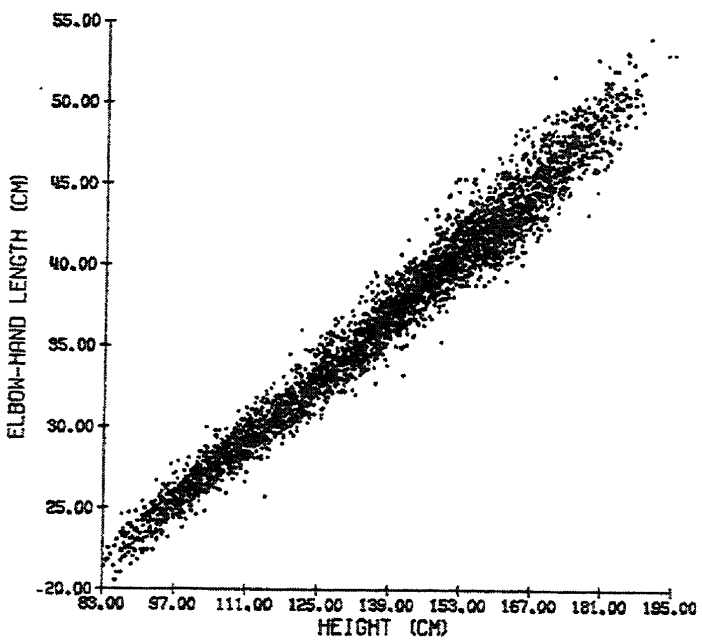
Elbow-Hand Length with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.853	.274	-1.16	0.86
4-6	.882	.268	-0.30	0.84
6-9	.896	.273	-1.04	0.97
9-11	.853	.280	-1.80	1.07
11-13	.894	.280	-1.52	1.11
13-15	.898	.293	-3.24	1.33
15-19	.818	.256	2.82	1.29

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.903	.277	-1.55	0.80
4-6	.870	.255	0.74	0.86
6-9	.895	.271	-1.21	1.02
9-11	.881	.290	-3.55	1.16
11-13	.851	.280	-1.92	1.33
13-15	.802	.254	1.82	1.37
15-19	.722	.243	3.40	1.40



Regression of

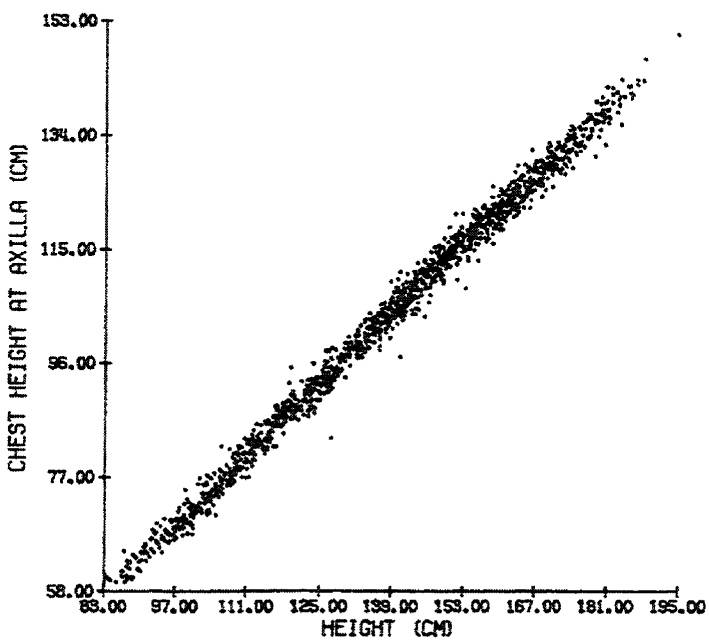
Chest Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.867	.659	4.75	1.74
4-6	.951	.826	-11.69	1.54
6-9	.960	.834	-11.51	1.70
9-11	.948	.821	-9.34	1.73
11-13	.961	.820	-8.77	1.90
13-15	.973	.762	0.02	1.69
15-19	.957	.821	-10.52	1.87

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.958	.773	-6.18	1.38
4-6	.953	.854	-14.00	1.91
6-9	.968	.823	-10.18	1.76
9-11	.942	.797	-6.30	1.80
11-13	.964	.797	-5.64	1.63
13-15	.960	.829	-10.56	1.74
15-19	.932	.798	-6.37	1.93



Regression of

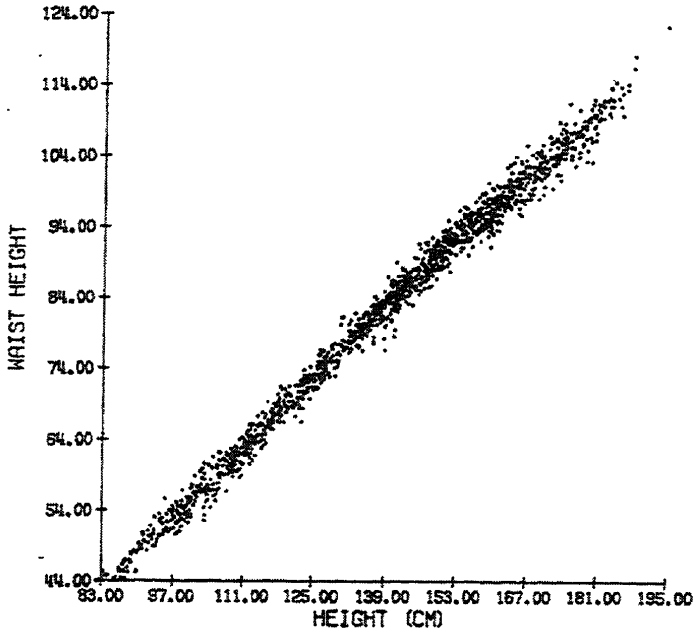
Waist Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.893	.628	-8.58	1.46
4-6	.920	.651	-10.21	1.59
6-9	.969	.671	-11.52	1.21
9-11	.938	.639	-6.45	1.48
11-13	.959	.661	-8.62	1.57
13-15	.960	.627	-2.99	1.69
15-19	.943	.679	-13.15	1.79

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.959	.691	-14.28	1.22
4-6	.957	.692	-14.25	1.49
6-9	.966	.700	-14.64	1.54
9-11	.957	.681	-11.46	1.30
11-13	.931	.611	-0.93	1.79
13-15	.928	.670	-10.01	1.92
15-19	.921	.645	-6.88	1.69



Regression of

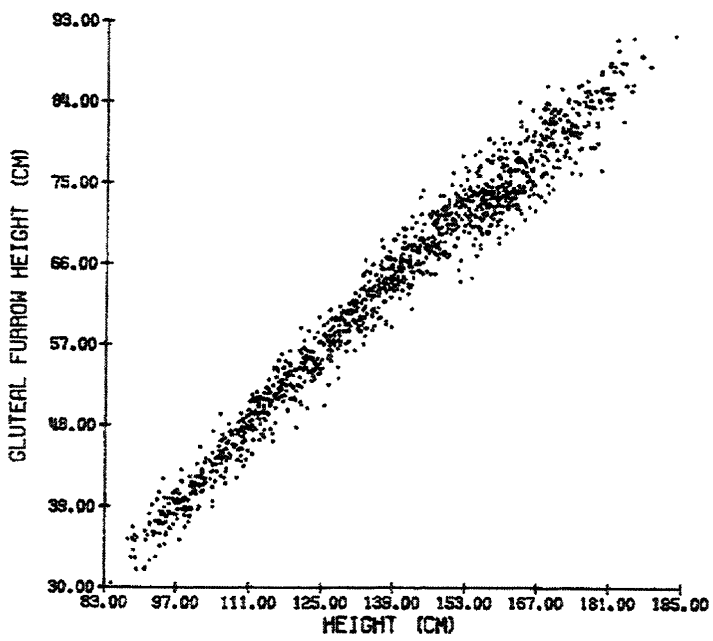
Gluteal Furrow Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.769	.478	-7.90	1.84
4-6	.912	.576	-16.71	1.70
6-9	.911	.531	-9.68	1.83
9-11	.855	.520	-7.07	1.89
11-13	.907	.543	-9.72	2.06
13-15	.861	.459	2.95	2.44
15-19	.811	.514	-7.75	2.61

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.882	.529	-11.85	1.31
4-6	.904	.607	-19.05	1.56
6-9	.879	.552	-12.51	2.09
9-11	.919	.567	-14.00	1.89
11-13	.828	.460	1.71	2.24
13-15	.896	.545	-12.53	2.07
15-19	.854	.634	-28.50	2.29



Regression of

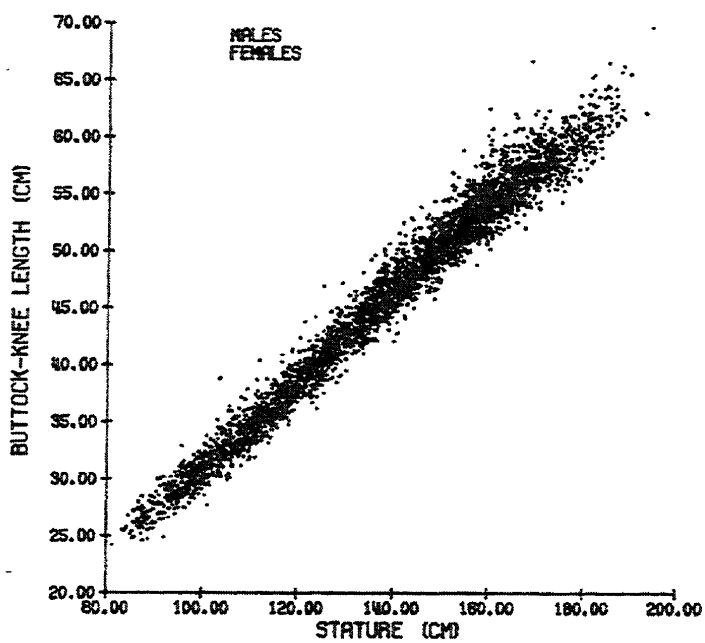
Buttock-Knee Length with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.878	.339	-3.57	0.94
4-6	.886	.337	-2.93	1.03
6-9	.912	.376	-6.76	1.21
9-11	.882	.392	-8.46	1.31
11-13	.904	.364	-4.19	1.36
13-15	.892	.336	0.30	1.58
15-19	.830	.343	-1.40	1.65

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.896	.355	-4.27	1.06
4-6	.870	.332	-1.66	1.12
6-9	.923	.403	-9.50	1.28
9-11	.902	.405	-9.75	1.44
11-13	.862	.374	-5.12	1.70
13-15	.837	.361	-2.95	1.71
15-19	.796	.351	-1.56	1.61



Regression of

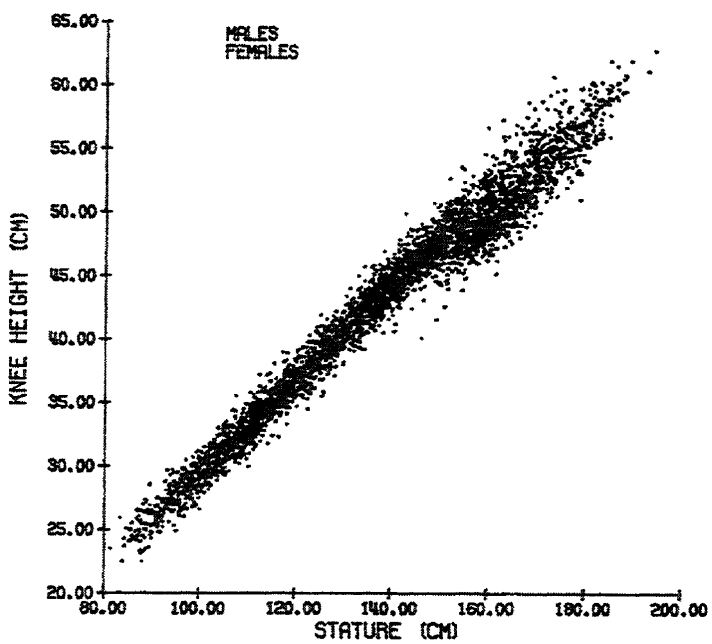
Knee Height with Stature

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.828	.321	-2.98	1.11
4-6	.890	.358	-6.39	1.07
6-9	.920	.357	-5.76	1.09
9-11	.895	.379	-8.44	1.18
11-13	.915	.364	-6.13	1.26
13-15	.890	.328	-1.08	1.55
15-19	.840	.346	-5.42	1.60

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.908	.352	-5.79	0.98
4-6	.906	.363	-6.83	1.01
6-9	.934	.370	-7.67	1.08
9-11	.934	.363	-6.66	1.03
11-13	.889	.306	1.37	1.22
13-15	.852	.328	-2.66	1.46
15-19	.827	.347	-6.57	1.42



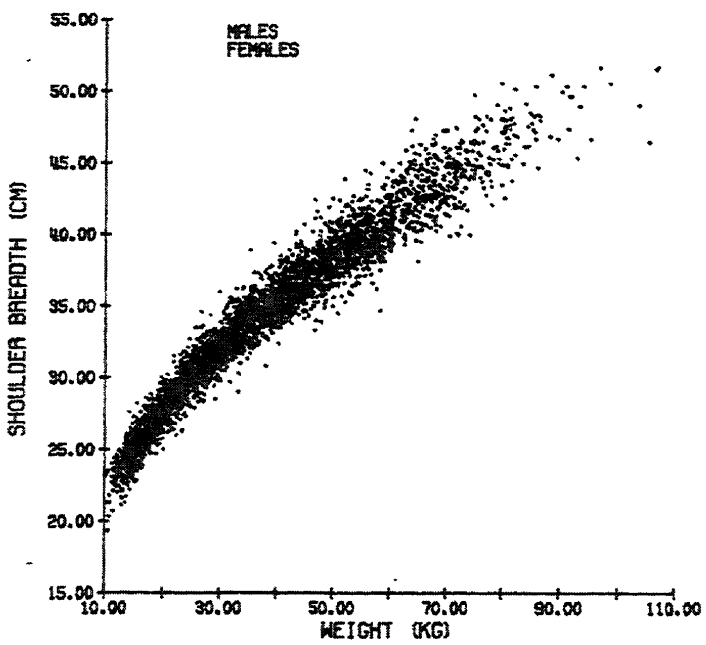
Regression of
Shoulder Breadth with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.802	.637	15.36	0.93
4-6	.884	.503	17.67	0.83
6-9	.898	.400	20.06	1.04
9-11	.865	.326	22.46	1.09
11-13	.881	.264	24.76	1.21
13-15	.899	.245	25.26	1.37
15-19	.852	.220	28.97	1.59

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.788	.645	15.33	1.01
4-6	.804	.487	17.93	0.93
6-9	.917	.419	19.54	1.00
9-11	.897	.339	21.77	1.21
11-13	.901	.298	23.25	1.28
13-15	.824	.243	25.91	1.41
15-19	.814	.228	27.12	1.39



Regression of

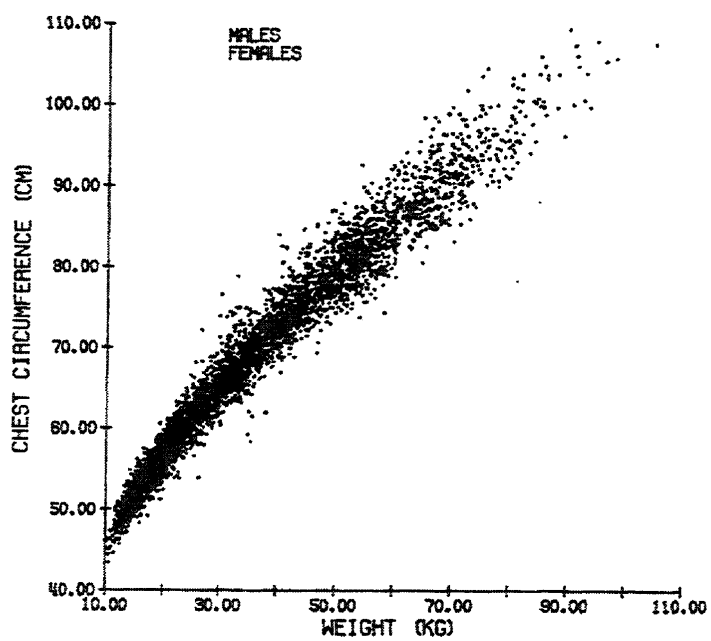
Chest Circumference with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.840	1.098	35.21	1.38
4-6	.878	.978	37.38	1.48
6-9	.902	.850	40.07	2.00
9-11	.910	.769	42.24	2.39
11-13	.908	.621	47.44	2.45
13-15	.913	.597	49.38	2.82
15-19	.897	.528	55.36	3.16

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.812	1.079	35.19	1.55
4-6	.839	1.018	36.11	1.71
6-9	.930	.968	36.95	2.11
9-11	.915	.770	42.16	2.46
11-13	.929	.675	45.64	2.39
13-15	.868	.555	50.87	2.70
15-19	.856	.526	53.10	2.71



Regression of

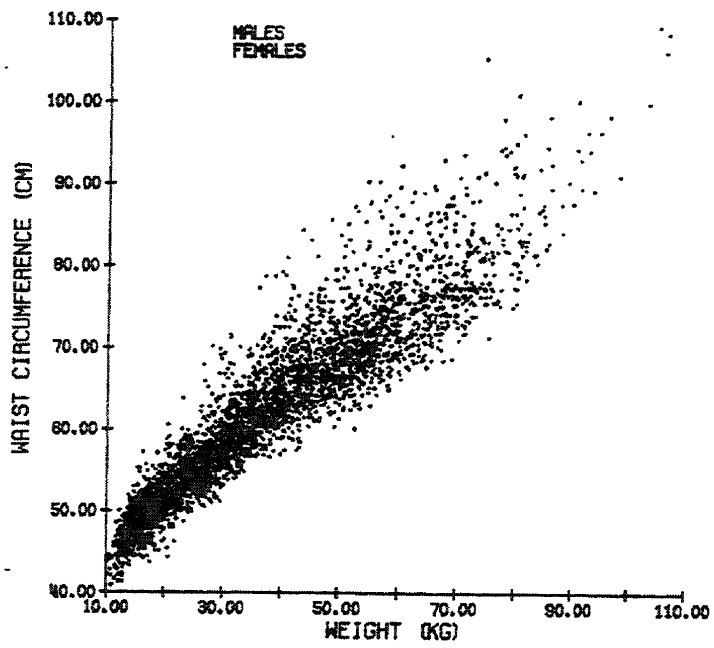
Waist Circumference with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.784	1.261	29.76	1.94
4-6	.757	.932	33.58	2.23
6-9	.869	.936	31.43	2.61
9-11	.904	.998	27.62	3.24
11-13	.898	.765	33.87	3.20
13-15	.840	.567	40.02	3.88
15-19	.889	.602	35.00	3.64

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.703	1.061	32.92	2.15
4-6	.758	.956	33.59	2.13
6-9	.894	1.047	29.85	2.89
9-11	.880	.859	32.66	3.36
11-13	.854	.716	35.71	3.88
13-15	.846	.663	39.96	3.54
15-19	.814	.657	35.42	4.01



Regression of

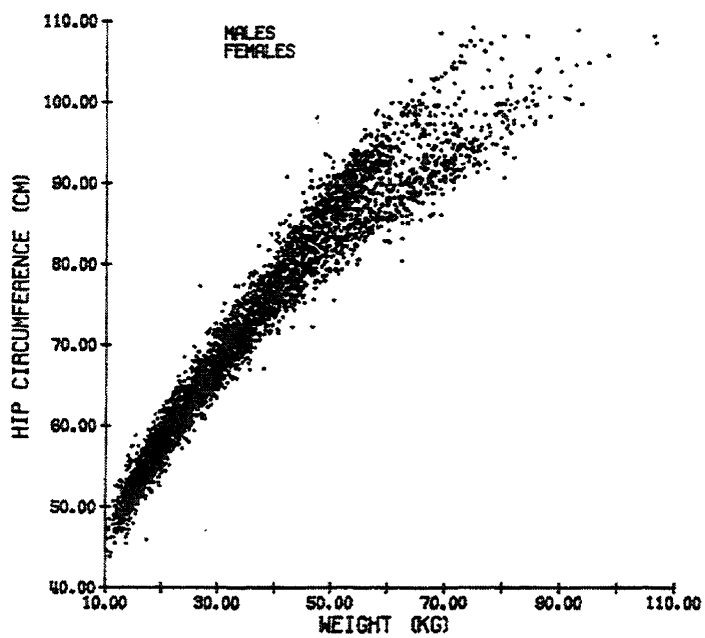
Hip Circumference with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.795	1.274	33.07	1.90
4-6	.900	1.223	32.85	1.64
6-9	.951	1.046	35.92	1.66
9-11	.966	.952	38.06	1.75
11-13	.960	.799	43.09	1.99
13-15	.951	.647	49.19	2.24
15-19	.938	.527	55.29	2.30

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.860	1.367	32.33	1.63
4-6	.895	1.244	34.03	1.60
6-9	.960	1.108	36.43	1.77
9-11	.954	.916	41.44	2.10
11-13	.964	.844	44.01	2.07
13-15	.941	.761	48.66	2.32
15-19	.926	.689	53.40	2.40



Regression of

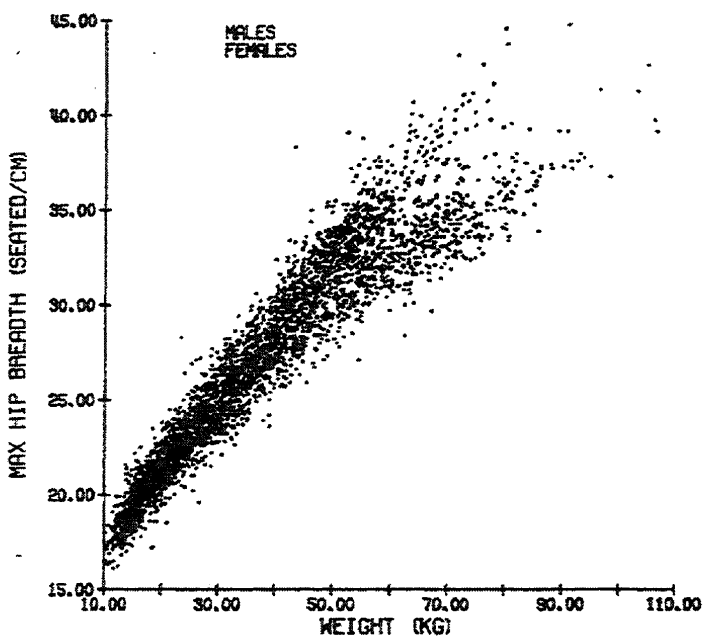
Maximum Hip Breadth with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.787	.489	12.04	0.74
4-6	.850	.434	12.53	0.75
6-9	.883	.374	13.48	0.97
9-11	.913	.347	13.96	1.06
11-13	.913	.296	15.60	1.12
13-15	.913	.240	17.73	1.14
15-19	.880	.183	21.01	1.15

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.766	.512	11.95	0.92
4-6	.790	.448	12.77	0.90
6-9	.904	.397	13.64	1.03
9-11	.895	.313	16.03	1.16
11-13	.914	.337	15.45	1.33
13-15	.913	.305	17.41	1.16
15-19	.846	.266	19.70	1.43



Regression of

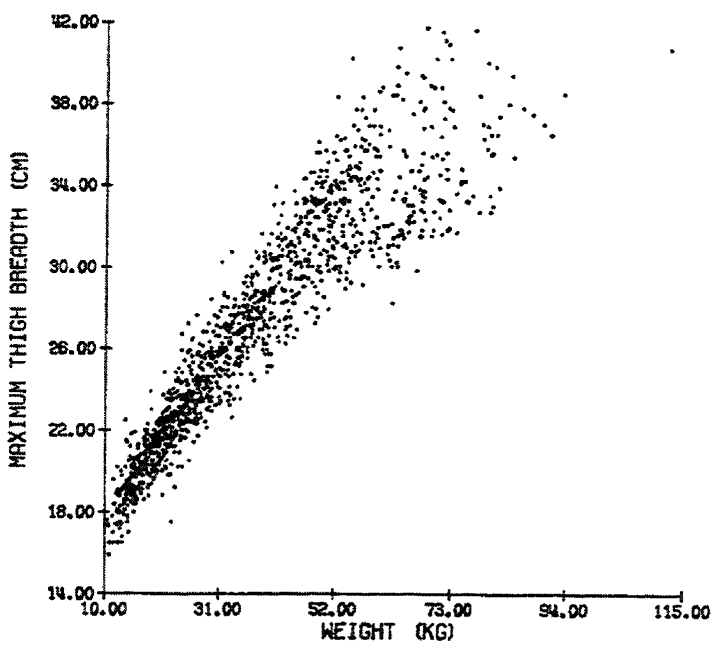
Maximum Thigh Breadth with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.766	.662	9.56	0.941
4-6	.744	.441	12.54	1.01
6-9	.880	.412	12.68	1.08
9-11	.907	.392	12.80	1.23
11-13	.893	.325	14.67	1.37
13-15	.897	.268	16.28	1.28
15-19	.832	.204	19.12	1.50

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.730	.580	11.07	1.07
4-6	.811	.435	13.21	0.94
6-9	.918	.435	13.14	1.16
9-11	.907	.368	14.46	1.32
11-13	.921	.382	13.86	1.57
13-15	.887	.323	16.45	1.49
15-19	.836	.288	19.03	1.73



Regression of

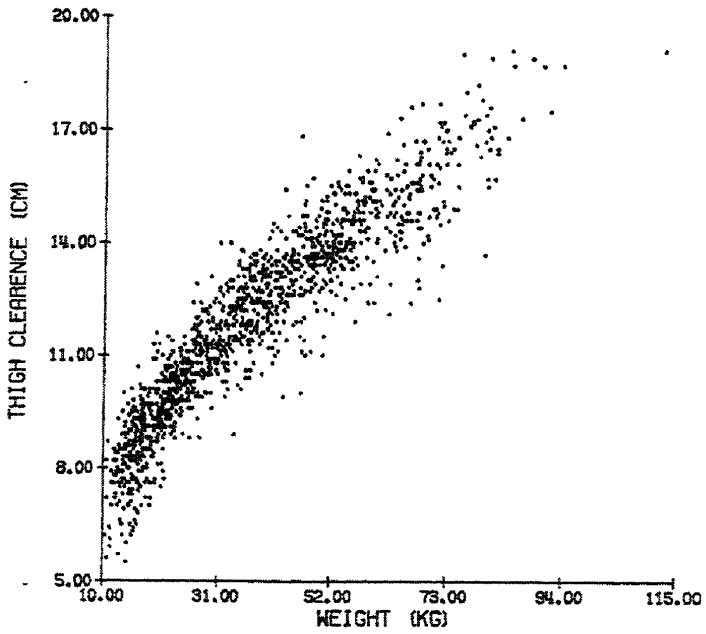
Thigh Clearance with Weight

MALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.391	.238	4.86	0.95
4-6	.586	.237	4.61	0.84
6-9	.813	.215	5.10	0.75
9-11	.850	.179	6.00	0.75
11-13	.782	.130	7.45	0.86
13-15	.746	.113	7.97	0.98
15-19	.751	.119	7.09	1.16

FEMALES

Age Group (Years)	Correlation	Regression Coefficient	Regression Constant	Regression Standard Error
2-4	.628	.358	3.16	0.87
4-6	.675	.292	3.71	0.96
6-9	.874	.190	5.68	0.65
9-11	.827	.149	6.83	0.79
11-13	.823	.141	6.79	0.95
13-15	.821	.129	7.12	0.78
15-19	.871	.138	6.70	0.71



E. Infant Measurement Results

This section contains the statistical results for the 34 measurements taken on infants less than 24 months old. The presentation of these data is divided into three parts. In the first part the measurement descriptions along with photograph and illustration are given along with the scatter plot of measurement values versus age and summary statistics for males and females combined for seven age intervals. These results are presented on one page for each measurement and in the order shown in Figure 28. The numbers on the index pages preceding these results (Figure 29) correspond to the measurement numbers in this list and also appear in parentheses in the upper left or right hand corner of the data pages. In the second part of this section the infant statistical results are presented in tables by age group and in the third part (Figure 30) a weight versus stature scatter plot for infants is shown.

1. Weight
2. Crown-sole Length
3. Crown-rump Length
4. Head Circumference
5. Head Breadth
6. Head Length
7. Shoulder Breadth
8. Shoulder-Elbow Length
9. Upper Arm Circumference
10. Elbow-Hand Length
11. Forearm Circumference
12. Wrist Circumference
13. Hand Length
14. Hand Breadth
15. Minimum Hand Clearance
16. Maximum Fist Breadth
17. Thumb Diameter
18. Middle Finger Diameter
19. Chest Circumference
20. Chest Breadth
21. Waist Circumference
22. Waist Breadth
23. Rump-Sole Length
24. Rump-Knee Length
25. Hip Circumference
26. Hip Breadth
27. Mid-Thigh Circumference
28. Mid-Thigh Depth
29. Knee-Sole Length
30. Calf Circumference
31. Ankle Circumference
32. Ankle Breadth
33. Foot Length
34. Foot Breadth

Figure 28. Infant Measurement List

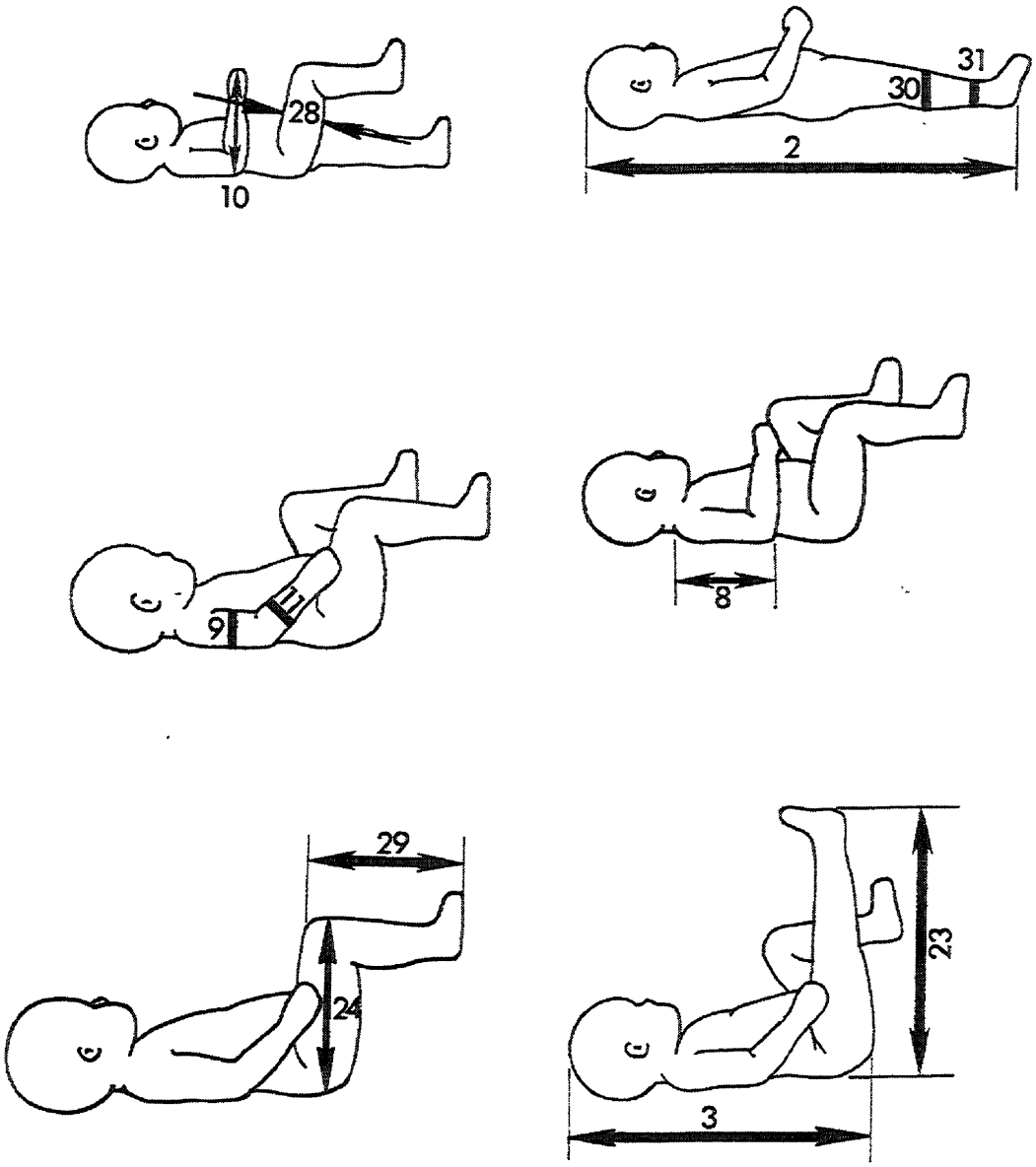


Figure 28. Infant Measurement Illustrations

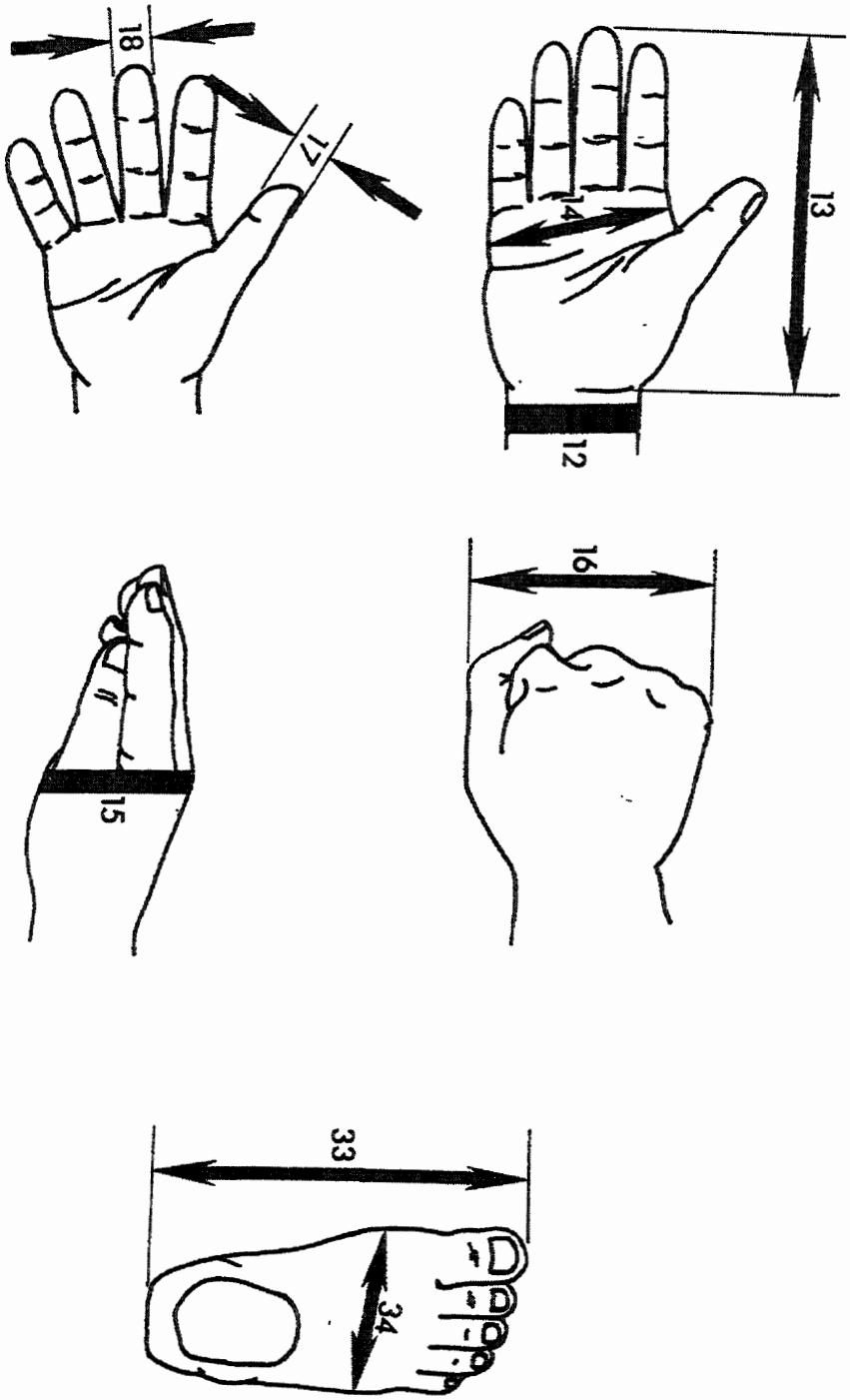


Figure 28 (continued) Infant Measurement Illustrations

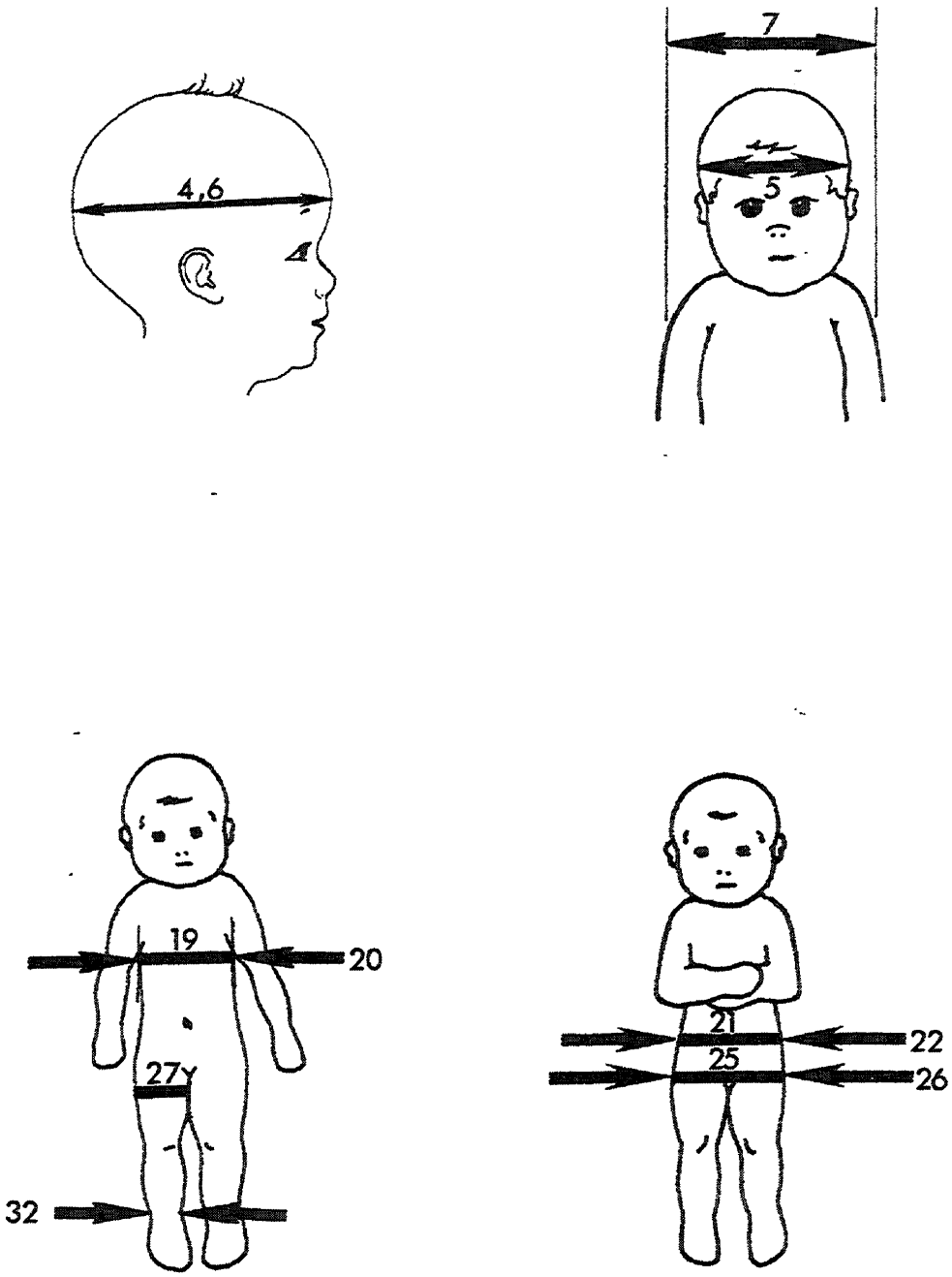
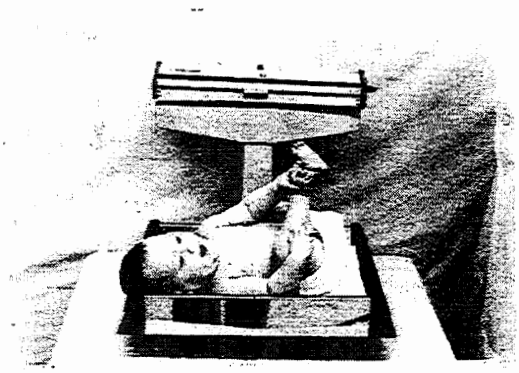
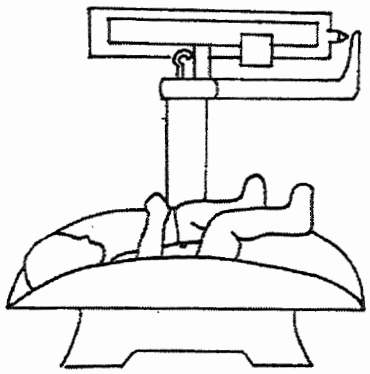


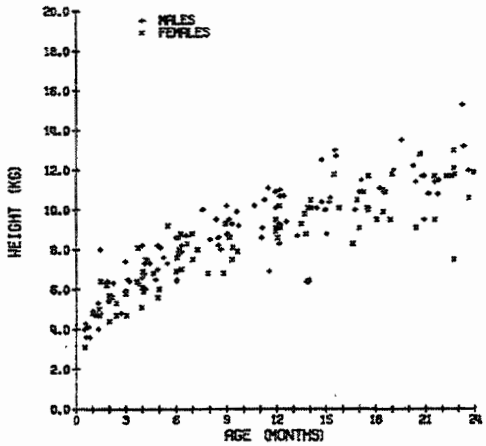
Figure 28. (continued) Infant Measurement Illustrations

WEIGHT

The diapered infant is placed on a clinical scale and weighed to the nearest tenth of a kilogram. The measurement is typed into the computer.





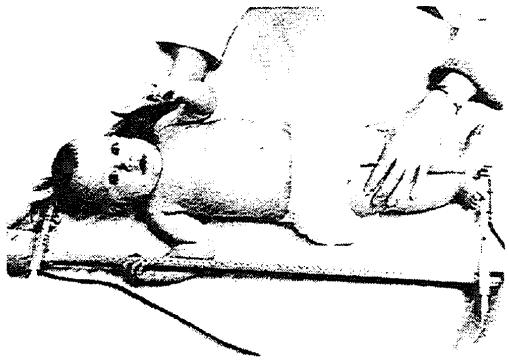


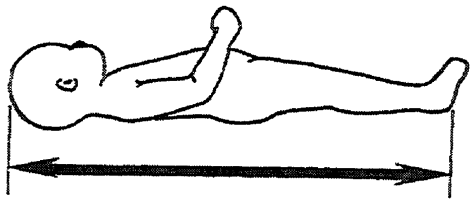
WEIGHT (kg)
(Males and Females)

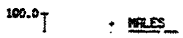
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	5.1	1.1	3.1	3.2	4.7	6.9	8.0
3-5	29	6.9	1.0	4.7	4.9	6.7	8.2	9.2
6-8	28	8.1	0.9	6.4	6.4	8.0	9.4	10.0
9-11	22	9.2	1.1	6.9	7.0	9.1	10.9	11.1
12-15	28	10.1	1.2	8.3	8.4	10.0	12.6	13.0
16-19	19	10.6	1.2	8.3	**	10.6	**	13.5
20-23	24	11.5	1.5	7.5	7.8	11.6	13.2	15.3

CROWN-SOLE LENGTH

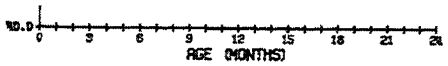
Infant lies on back with legs extended; the head is aligned in the Frankfort Plane relative to the extended torso (the head faces forward). With the paddle blades of an automated anthropometer, measure the distance from vertex (top of head) to the heel of the right foot. An assistant is required to assure that the infant is in the correct position.







Crown sole length						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	22.52	20.2	20.28	22.2	25.32	25.64
3-5	25.24	21.64	22.48	25.32	27.28	27.64
6-8	27.4	25.36	25.68	27.48	28.88	29.12
9-11	29.2	26.36	26.48	29.2	30.96	31.64
12-15	30.6	27.76	27.92	30.68	32.28	33.92
16-19	31.68	28.92	29.04	31.6	33.84	34.36
20-23	33.04	29.44	29.76	33	35.32	35.92

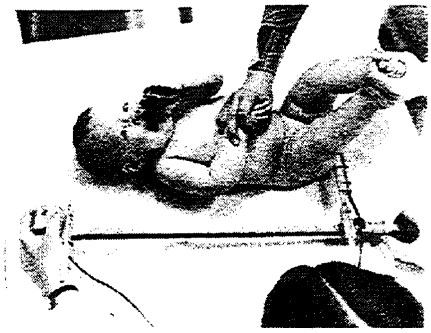


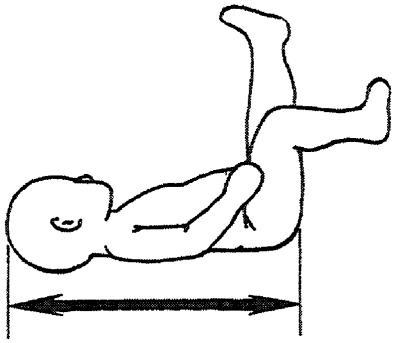
CROWN-SOLE LENGTH (cm)
(Males and Females)

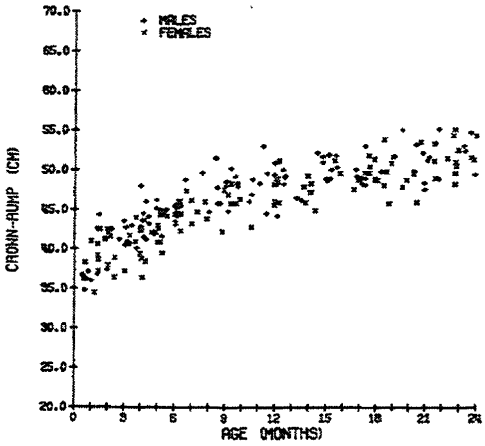
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	56.3	3.9	50.5	50.7	55.5	63.3	64.1
3-5	45	63.1	3.6	54.1	56.2	63.3	68.2	69.1
6-8	31	68.5	2.6	63.4	64.2	68.7	72.2	72.8
9-11	26	73.0	3.3	65.9	66.2	73.0	77.4	79.1
12-15	32	76.5	3.2	69.4	69.8	76.7	80.7	84.8
16-19	27	79.2	3.4	72.3	72.6	79.0	84.6	85.9
20-23	31	82.6	4.0	73.6	74.4	82.5	88.3	89.8

CROWN-RUMP LENGTH

The infant lies on back with right leg flexed 90° to torso so that rotation of the pelvis is minimal; the head is aligned in the Frankfort Plane relative to the torso (the head faces forward). With the paddle blades of an automated anthropometer, measure the distance from vertex to the surface of the right buttock. An assistant is required to assure that the infant is in the correct position.





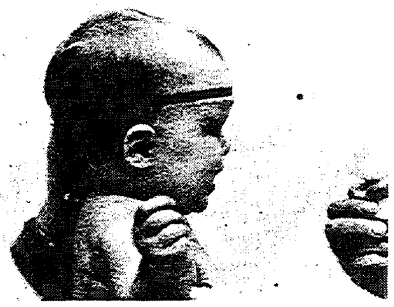


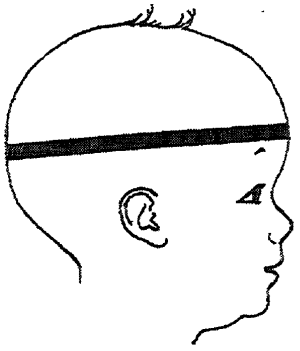
CROWN-RUMP LENGTH (cm)
(Males and Females)

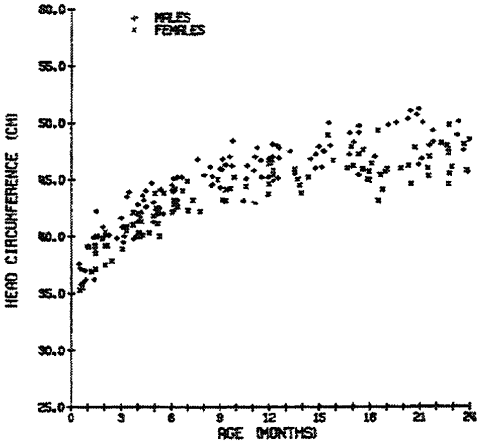
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	39.1	2.8	34.5	34.7	38.4	43.0	44.3
3-5	45	42.3	2.4	36.4	37.5	42.2	45.8	48.0
6-8	31	45.7	2.3	42.2	42.3	45.3	50.0	51.5
9-11	26	47.6	2.2	42.8	43.3	48.0	50.7	53.0
12-15	32	49.0	2.1	44.2	44.6	48.9	51.8	52.2
16-19	29	49.8	2.0	45.8	46.6	49.1	53.5	55.1
20-23	31	51.5	2.4	46.0	46.9	51.5	54.9	55.2

HEAD CIRCUMFERENCE

The infant's head is supported away from table surface. With an automated tape device, measure the circumference of the head at the level of the plane passing above the glabella (the most anterior protrusion of the forehead) and over the opisthrocranion (the most posterior protrusion from glabella on the back of the head), perpendicular to the mid-sagittal plane. An assistant is required to assure that the infant is in the correct position.







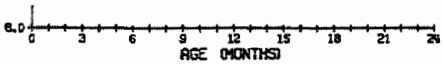
HEAD CIRCUMFERENCE (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	38.5	1.9	35.3	35.4	38.8	41.2	42.2
3-5	44	41.7	1.4	38.9	39.6	41.8	44.0	44.7
6-8	28	43.9	1.3	42.1	42.1	43.7	45.8	46.8
9-11	27	45.5	1.4	43.1	43.1	45.5	47.5	48.4
12-15	29	46.6	1.4	43.8	44.1	46.6	48.5	50.0
16-19	27	46.8	1.8	43.1	43.4	46.1	49.8	50.0
20-23	31	47.8	1.9	44.6	44.6	47.7	50.8	51.2

HEAD BREADTH

The infant is placed in a sitting position. With the paddle blades of an automated sliding caliper, measure the maximum breadth of the head above and behind the ears. An assistant is required to assure that the infant is in the correct position.

Head breadth							
Age (months)	N	Mean	Min	5th	50th	95th	Max
0-2	31	4.16	3.8	3.8	4.12	4.48	4.52
3-5	44	4.56	4.16	4.2	4.52	4.88	4.92
6-8	30	4.72	4.44	4.44	4.72	4.96	5.04
9-11	27	4.88	4.52	4.56	4.84	5.16	5.44
12-15	31	5.08	4.8	4.8	5.08	5.4	5.44
16-19	29	5.08	4.72	4.76	5.04	5.28	5.32
20-23	31	5.16	4.84	4.84	5.16	5.44	5.48

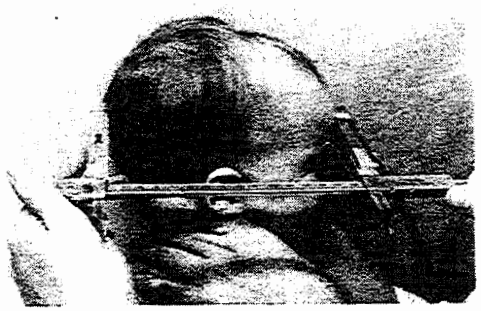


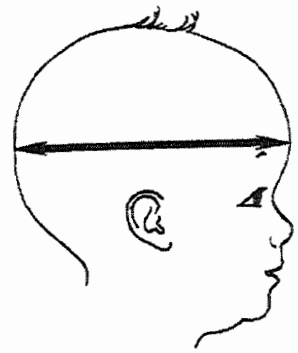
HEAD BREADTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	10.4	0.5	9.5	9.5	10.3	11.2	11.3
3-5	44	11.4	0.5	10.4	10.5	11.3	12.2	12.3
6-8	30	11.8	0.4	11.1	11.1	11.8	12.4	12.6
9-11	27	12.2	0.5	11.3	11.4	12.1	12.9	13.6
12-15	31	12.7	0.4	12.0	12.0	12.7	13.5	13.6
16-19	29	12.7	0.4	11.8	11.9	12.6	13.2	13.3
20-23	31	12.9	0.5	12.1	12.1	12.9	13.6	13.7

HEAD LENGTH

The infant's head is supported free from table surface. With an automated sliding caliper, measure the distance from glabella (most anterior protrusion of the forehead) to opisthocanion (the most posterior point from glabella or the back of the head). An assistant is required to assure that the infant is in the correct position.





25.0 + MALES × FEMALES

Head length							
Age (months)	N	Mean	Min	5th	50th	95th	Max
0-2	31	5.36	4.88	4.92	5.36	5.88	6.04
3-5	44	5.84	5.44	5.48	5.8	6.24	6.32
6-8	29	6.2	5.68	5.72	6.2	6.56	6.68
9-11	27	6.4	5.8	5.88	6.44	6.72	7.16
12-15	31	6.68	6.2	6.24	6.6	7.04	7.52
16-19	29	6.68	6.12	6.2	6.6	7.12	7.2
20-23	31	6.84	6.28	6.28	6.88	7.36	7.44

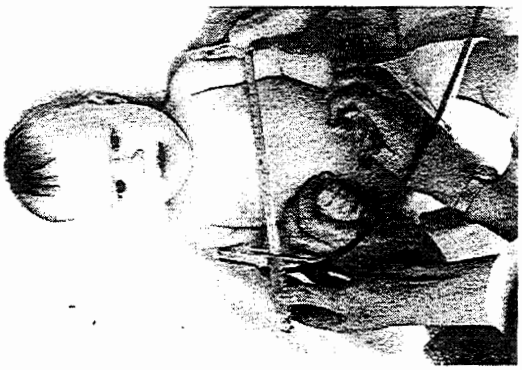
AGE (MONTHS)

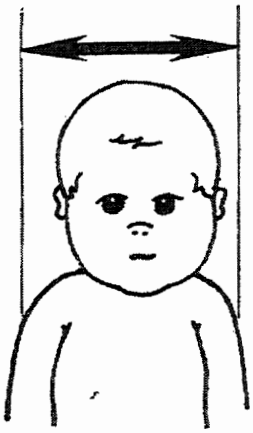
HEAD LENGTH (cm)
(Males and Females)

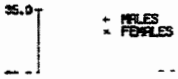
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	13.4	0.8	12.2	12.3	13.4	14.7	15.1
3-5	44	14.6	0.6	13.6	13.7	14.5	15.6	15.8
6-8	29	15.5	0.6	14.2	14.3	15.5	16.4	16.7
9-11	27	16.0	0.7	14.5	14.7	16.1	16.8	17.9
12-15	31	16.7	0.7	15.5	15.6	16.5	17.6	18.8
16-19	29	16.7	0.7	15.3	15.5	16.5	17.8	18.0
20-23	31	17.1	0.8	15.7	15.7	17.2	18.4	18.6

SHOULDER BREADTH

The infant lies on back with upper arms resting against body. With the paddle blades of an automated anthropometer or sliding caliper, measure the breadth across the shoulders at a fixed pressure value. An assistant is required to assure that the infant is in the correct position.







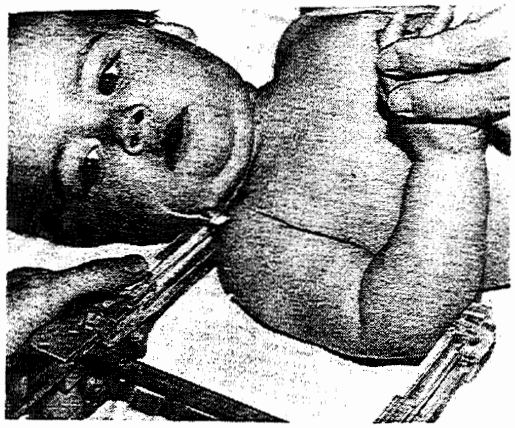
Shoulder breadth						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	6.68	5.52	5.6	6.52	7.76	8
3-5	7.48	6.24	6.6	7.56	8.16	8.72
6-8	8.04	7	7.2	7.84	8.8	9.04
9-11	8.44	7.68	7.72	8.32	9.24	9.32
12-15	8.52	7.48	7.6	8.44	9.32	9.48
16-19	8.68	7.68	7.68	8.64	9.44	9.8
20-23	8.96	8.04	8.12	8.84	9.56	10.2

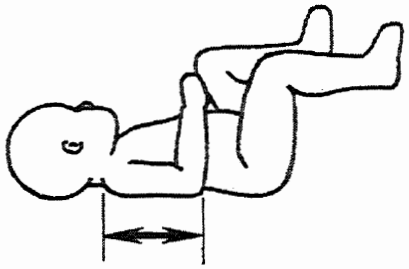
SHOULDER BREADTH (cm)
(Males and Females)

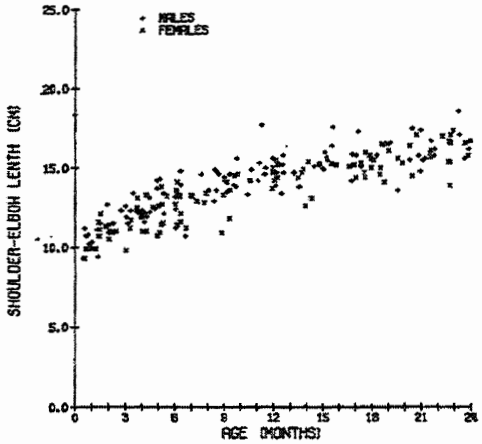
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	16.7	1.6	13.8	14.0	16.3	19.4	20.0
3-5	44	18.7	1.4	15.6	16.5	18.9	20.4	21.8
6-8	30	20.1	1.2	17.5	18.0	19.6	22.0	22.6
9-11	27	21.1	1.3	19.2	19.3	20.8	23.1	23.3
12-15	29	21.3	1.3	18.7	19.0	21.1	23.3	23.7
16-19	29	21.7	1.3	19.2	19.2	21.6	23.6	24.5
20-23	31	22.4	1.3	20.1	20.3	22.1	23.9	25.5

SHOULDER-ELBOW LENGTH

The infant lies on back with right upper arm resting against body and right elbow flexed 90°. With the paddle blades of an automated sliding caliper, measure the distance from the superior surface of the right shoulder to the inferior surface of the right elbow parallell to the long axis of the upperarm. An assistant is required to assure that the [illegible] the correct position.





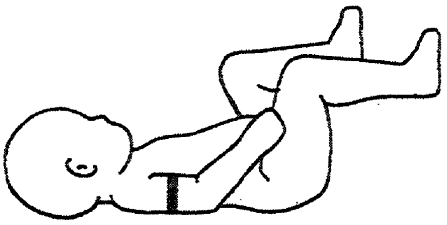


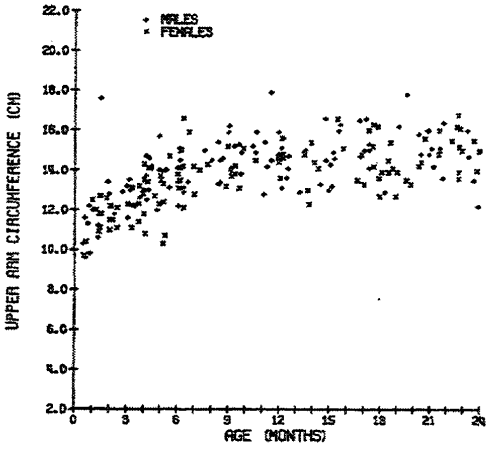
SHOULDER-ELBOW LENGTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	10.9	0.9	9.3	9.3	10.9	12.4	12.7
3-5	44	12.3	1.0	9.8	10.7	12.2	13.8	14.3
6-8	31	13.1	1.2	10.7	10.8	13.2	14.7	14.9
9-11	27	14.5	1.0	11.8	12.3	14.3	15.6	17.7
12-15	32	14.9	1.0	12.6	12.9	15.0	16.2	17.6
16-19	29	15.4	0.8	13.6	13.8	15.2	16.6	17.3
20-23	31	16.2	1.0	13.9	14.2	16.1	17.4	18.6

UPPER ARM CIRCUMFERENCE

The infant's right arm is extended. With an automated tape device, measure the circumference perpendicular to the long axis of the upper arm midway between shoulder and elbow. An assistant is required to assure that the infant is in the correct position.



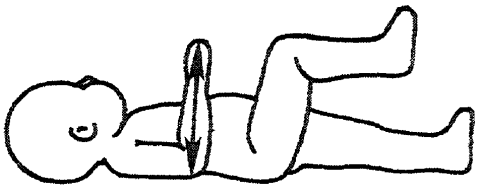


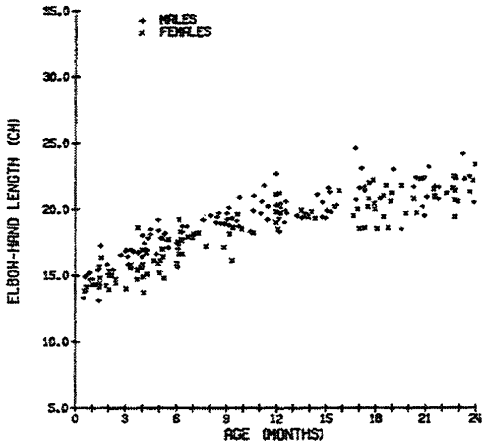
UPPER ARM CIRCUMFERENCE (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	11.8	1.5	9.6	9.7	11.6	13.3	17.6
3-5	44	13.0	1.2	10.3	10.7	13.0	14.6	15.7
6-8	30	14.0	1.0	12.1	12.1	14.0	15.7	16.6
9-11	27	14.8	1.0	12.8	12.9	14.6	16.1	17.9
12-15	32	14.5	1.1	12.3	12.7	14.6	16.4	16.6
16-19	29	14.7	1.3	12.7	12.7	14.3	16.6	17.8
20-23	31	15.0	1.0	12.2	12.9	15.0	16.3	16.8

ELBOW-HAND LENGTH

The infant lies on back with right elbow flexed 90° and right hand and fingers extended. With the paddle blades of an automated anthropometer or sliding caliper, measure the distance from the posterior surface of the right upper arm, just above the elbow, to the tip of the middle finger of the right hand parallel to the long axis of the forearm. An assistant is required to assure that the infant is in the correct position.



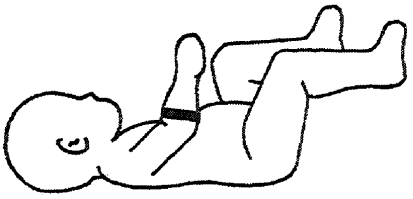


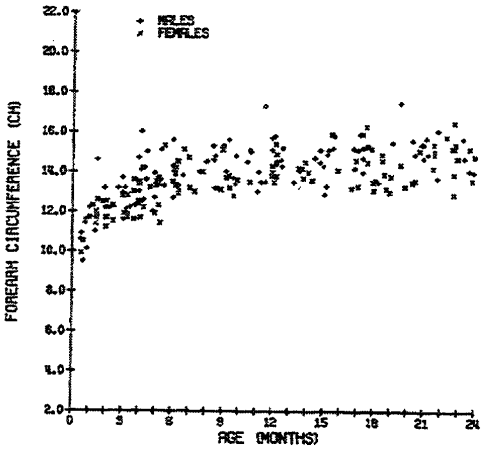
ELBOW-HAND LENGTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	14.9	1.0	13.1	13.2	14.7	16.6	17.2
3-5	44	16.6	1.3	13.7	14.1	16.7	18.5	19.2
6-8	30	18.0	1.1	15.6	15.7	17.9	19.5	19.7
9-11	27	19.6	1.3	16.1	16.8	19.4	21.6	22.7
12-15	31	19.9	0.8	18.3	18.4	19.8	21.3	21.6
16-19	29	20.7	1.5	18.5	18.5	20.7	23.1	24.6
20-23	31	21.5	1.1	19.4	19.5	21.4	23.3	24.2

FOREARM CIRCUMFERENCE

The infant's right arm is extended. With an automated tape device, measure the maximum circumference of the right forearm perpendicular to the long axis. An assistant is required to assure that the infant is in the correct position.



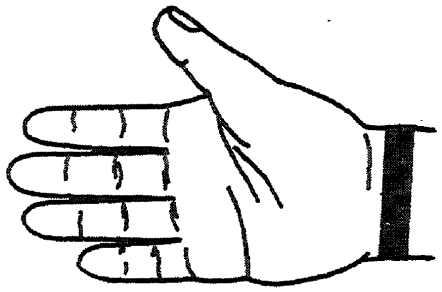


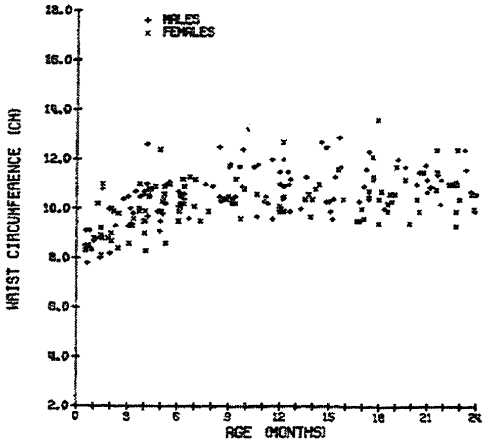
FOREARM CIRCUMFERENCE (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	11.8	1.1	9.5	9.7	11.7	13.4	14.6
3-5	44	13.1	1.1	11.4	11.5	13.0	15.1	16.0
6-8	30	14.0	0.8	12.7	12.8	13.9	15.2	15.6
9-11	27	14.3	1.0	12.8	12.9	13.9	15.7	17.3
12-15	32	14.5	0.8	12.9	13.1	14.4	15.7	15.9
16-19	29	14.5	1.1	13.0	13.0	14.4	16.1	17.5
20-23	31	14.8	0.8	12.9	13.2	14.9	15.9	16.5

WRIST CIRCUMFERENCE

The infant's right arm is extended. With an automated tape device, measure the minimum circumference of the right wrist above the distal (ulna) styloid process. An assistant is required to assure that the infant is in the correct position.



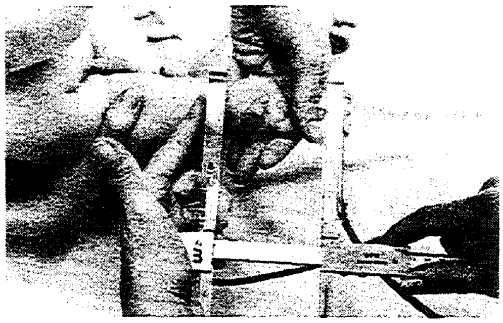


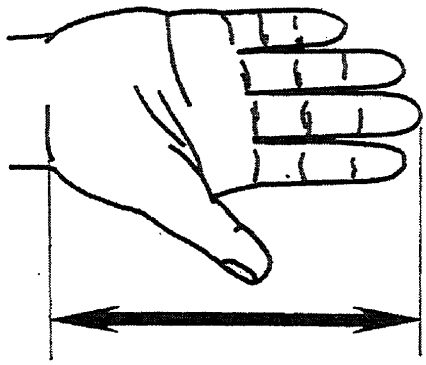
WRIST CIRCUMFERENCE (cm)
(Males and Females)

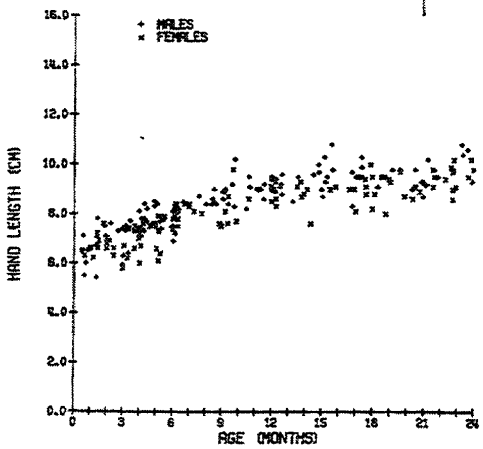
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	9.1	0.9	7.8	7.9	8.8	10.6	11.0
3-5	44	10.2	0.9	8.3	8.5	10.2	11.1	12.6
6-8	30	10.5	0.6	9.5	9.5	10.3	11.2	12.5
9-11	27	10.8	0.8	9.6	9.6	10.5	11.9	12.4
12-15	32	10.9	0.9	9.6	9.7	10.5	12.6	12.9
16-19	29	10.7	1.0	9.4	9.4	10.5	12.2	13.6
20-23	31	10.9	0.8	9.3	9.4	10.9	12.1	12.4

HAND LENGTH

The infant's right hand is fully extended, palm up. With the paddle blades of an automated sliding caliper, measure the distance from the right wrist crease to the tip of the middle finger parallel to the fingers. An assistant is required to assure that the infant is in the correct position.





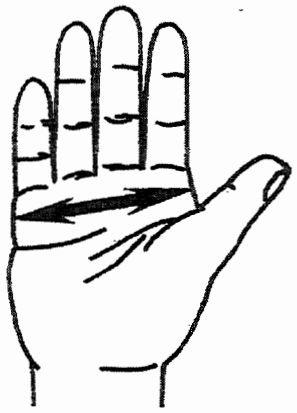


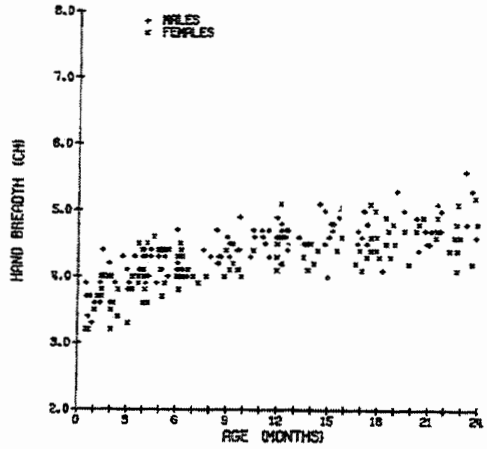
HAND LENGTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	6.8	0.6	5.4	5.4	6.6	7.6	7.8
3-5	44	7.4	0.6	6.0	6.1	7.4	8.3	8.5
6-8	30	8.0	0.5	6.9	7.0	8.1	8.6	9.0
9-11	27	8.9	0.6	7.6	7.6	8.9	9.7	10.2
12-15	31	9.2	0.6	7.6	8.0	9.1	10.1	10.8
16-19	29	9.3	0.6	8.0	8.0	9.4	10.0	10.3
20-23	31	9.5	0.6	8.6	8.6	9.4	10.5	10.8

HAND BREADTH

The infant's right hand is fully extended, palm up, thumb away (abducted) from hand. With the paddle blades of an automated sliding caliper, measure the maximum width across the metacarpal-phalangeal-joints II and V (knuckles). An assistant is required to assure that the infant is in the correct position.



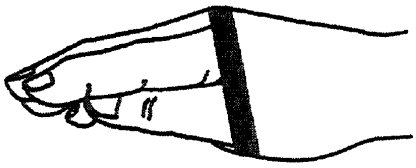


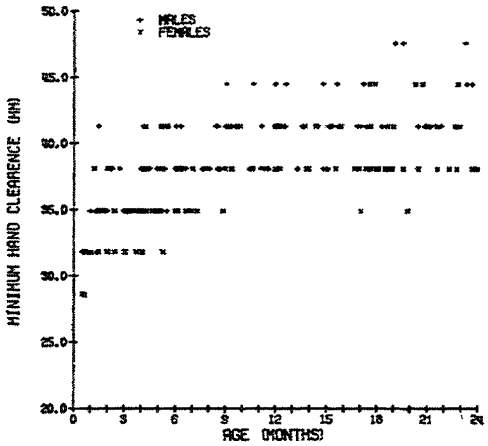
HAND BREADTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	3.7	0.3	3.2	3.2	3.6	4.2	4.4
3-5	44	4.1	0.3	3.3	3.5	4.0	4.4	4.6
6-8	30	4.2	0.2	3.8	3.8	4.1	4.5	4.7
9-11	27	4.5	0.2	4.0	4.0	4.4	4.8	4.9
12-15	30	4.6	0.3	4.0	4.0	4.5	5.0	5.1
16-19	29	4.6	0.3	4.1	4.1	4.5	5.1	5.3
20-23	31	4.7	0.3	4.1	4.2	4.6	5.2	5.6

MINIMUM HAND CLEARANCE

The fingers of the right hand are extended and placed together so as to form the narrowest configuration. With a hand measurement board, record the smallest diameter through which the measurer can pull the infant's right hand. The measurement is typed into the computer. An assistant is required to assure that the infant is in the correct position.



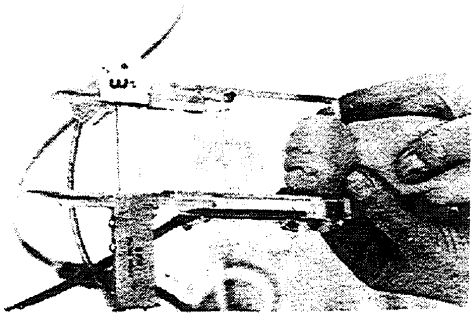


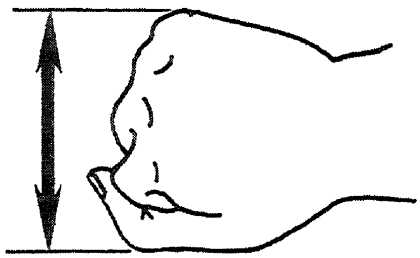
MINIMUM HAND CLEARENCE (mm)
(Males and Females)

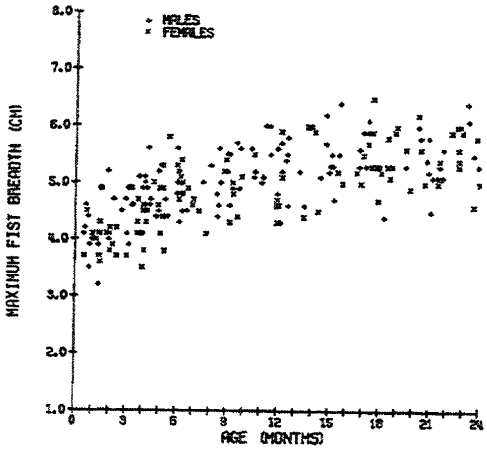
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	33.9	3.0	28.6	28.6	31.8	37.8	41.3
3-5	43	36.1	2.7	31.8	31.8	34.1	39.9	41.3
6-8	30	37.9	2.0	34.9	34.9	36.3	40.3	41.3
9-11	26	40.3	2.2	38.1	38.1	38.6	43.1	44.5
12-15	29	40.6	2.0	38.1	38.1	39.1	43.0	44.5
16-19	28	40.1	3.3	34.9	34.9	37.9	45.4	47.6
20-23	31	41.2	2.5	38.1	38.1	39.5	44.2	47.6

MAXIMUM FIST BREADTH

The infant's right arm is extended with the hand contracted to form a fist. With the paddle blades of an automated sliding caliper, measure the maximum breadth across the knuckles and thumb of the right hand. An assistant is required to assure that the infant is in the correct position.





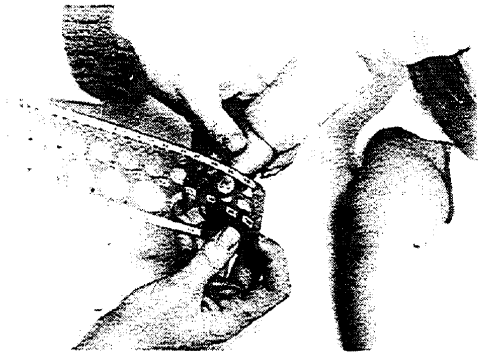


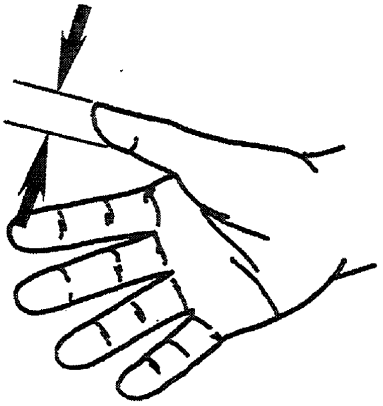
MAXIMUM FIST BREADTH (cm)
(Males and Females)

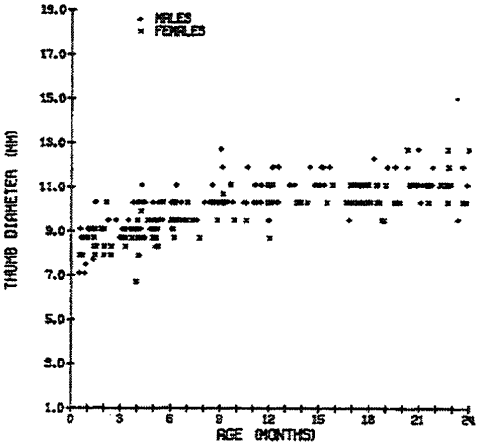
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	4.2	0.4	3.2	3.4	4.0	4.8	5.2
3-5	44	4.6	0.5	3.5	3.7	4.5	5.3	5.8
6-8	30	4.9	0.4	4.1	4.2	4.9	5.4	5.6
9-11	27	5.1	0.5	4.3	4.3	5.0	5.8	6.0
12-15	31	5.3	0.6	4.3	4.4	5.2	6.1	6.4
16-19	27	5.5	0.5	4.4	4.5	5.3	6.1	6.5
20-23	31	5.5	0.5	4.5	4.6	5.4	6.1	6.4

THUMB DIAMETER

The thumb on the right hand is extended. With a finger measurement board, record the greatest diameter through which the first joint of the right thumb cannot pass. The measurement is typed into the computer. An assistant is required to assure that the infant is in the correct position.





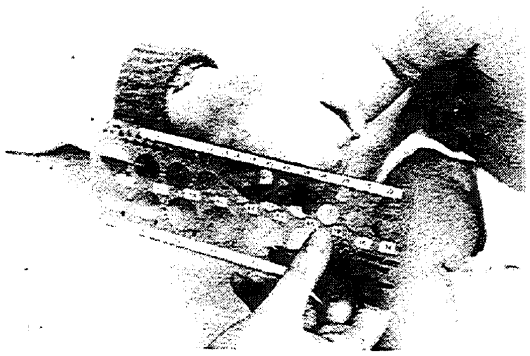


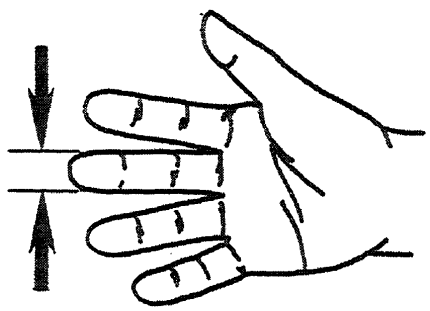
THUMB DIAMETER (MM)
(Males and Females)

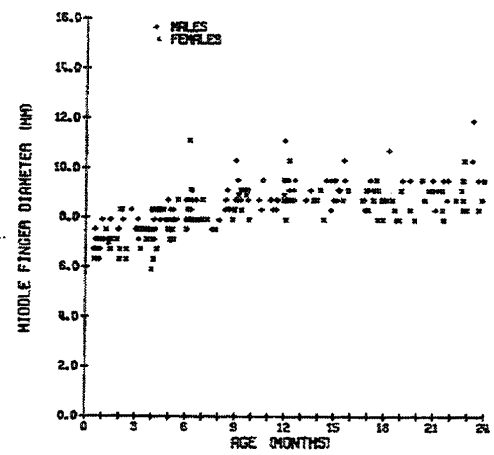
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	8.6	0.8	7.1	7.1	8.5	9.7	10.3
3-5	44	9.2	0.8	6.7	7.4	8.9	10.2	11.1
6-8	29	9.9	0.7	8.7	8.7	9.5	10.7	11.1
9-11	26	10.6	0.8	9.5	9.5	10.1	11.8	12.7
12-15	28	11.0	0.7	8.7	8.8	10.6	11.7	11.9
16-19	28	10.7	0.7	9.5	9.5	10.3	11.7	12.3
20-23	31	11.4	1.0	9.5	9.6	10.8	12.6	15.0

MIDDLE FINGER DIAMETER

The middle finger of the right hand is extended. With a finger measurement board, record the greatest diameter through which the first joint of the middle finger cannot pass. The measurement is typed into the computer. An assistant is required to assure that the infant is in the correct position.





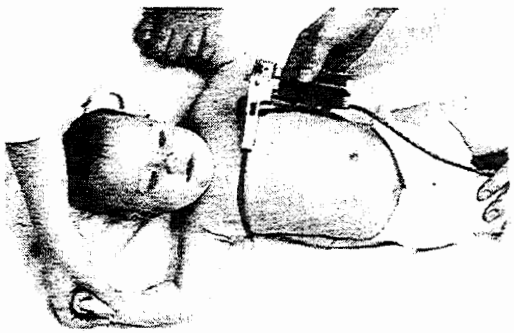


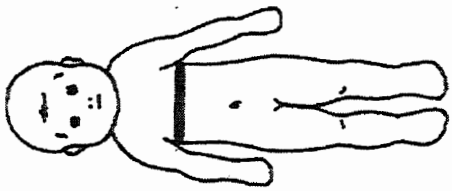
MIDDLE FINGER DIAMETER (mm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	7.2	0.6	6.3	6.3	7.0	8.1	8.3
3-5	43	7.6	0.6	5.9	6.3	7.4	8.3	8.7
6-8	29	8.3	0.7	7.5	7.5	8.0	9.0	11.1
9-11	27	8.9	0.7	7.5	7.6	8.6	10.0	11.1
12-15	29	9.0	0.6	7.9	7.9	8.7	9.7	10.3
16-19	28	8.8	0.6	7.9	7.9	8.5	9.5	10.7
20-23	31	9.1	0.8	7.9	7.9	8.9	10.1	11.9

CHEST CIRCUMFERENCE

The infant lies on back. With an automated tape device, measure the circumference of the chest at the level of the nipples during normal breathing. An assistant is required to assure that the infant is in the correct position.





Chest circumference						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	14.6	12.4	12.8	14.6	16.3	16.6
3-5	15.9	14.3	14.4	15.9	17.4	18.3
6-8	17.1	15.5	15.7	17.1	18.2	18.7
9-11	17.8	15.7	15.9	17.8	18.8	19.1
12-15	18.2	16.5	16.5	18.1	19.6	20.6
16-19	18.4	16.3	16.7	18.5	19.7	20.4
20-23	18.8	17.0	17.2	18.7	20.0	20.2

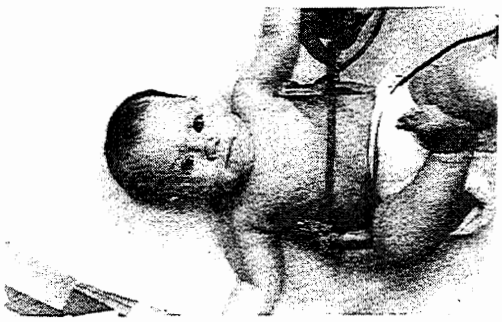
AGE (MONTHS)

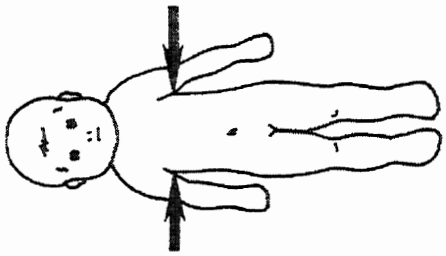
CHEST CIRCUMFERENCE (cm)
(Males and Females)

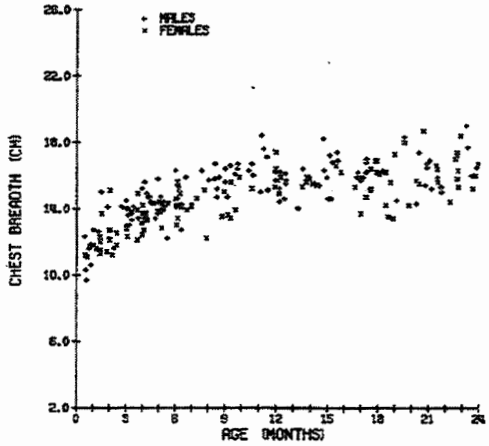
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	37.1	2.5	31.5	32.4	37.0	41.4	42.2
3-5	44	40.4	2.4	36.2	36.5	40.5	44.1	46.4
6-8	30	43.4	1.8	39.4	40.0	43.5	46.3	47.6
9-11	27	45.1	2.3	39.8	40.3	45.3	47.8	48.5
12-15	30	46.3	2.3	41.8	41.9	46.1	49.7	52.2
16-19	29	46.8	2.2	41.4	42.3	46.9	50.1	51.9
20-23	31	47.7	2.2	43.1	43.6	47.4	50.9	51.3

CHEST BREADTH

The infant lies on back with arms held away from chest. With the paddle blades of an automated anthropometer or sliding caliper, measure the breadth of the chest at the level of the nipples. An assistant is required to assure that the infant is in the correct position.





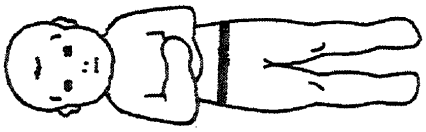


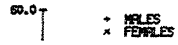
CHEST BREADTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	12.2	1.3	9.7	10.0	11.8	14.7	15.1
3-5	44	13.8	0.8	12.1	12.2	13.8	15.1	15.8
6-8	31	14.7	1.1	12.2	12.5	14.5	16.2	16.7
9-11	27	15.9	1.2	13.4	13.5	15.9	17.5	18.4
12-15	31	15.8	0.9	14.0	14.2	15.7	17.3	18.2
16-19	29	15.8	1.3	13.4	13.4	15.9	17.7	18.3
20-23	31	16.3	1.2	14.3	14.4	16.1	18.5	19.0

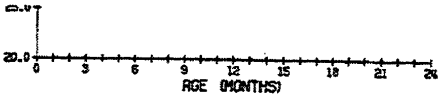
WAIST CIRCUMFERENCE

The infant lies on back with legs fully extended. With an automated tape device, measure the circumference just below the level of the iliac crest and above the level of the greater trochanter in a plane perpendicular to the torso. An assistant is required to assure that the infant is in the correct position.





Waist circumference						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	13.5	10.4	10.6	13.4	15.9	18.1
3-5	14.9	12.3	12.6	14.9	17.4	18.4
6-8	15.9	14.0	14.1	15.8	17.3	17.8
9-11	15.9	14.3	14.3	15.6	17.3	18.5
12-15	16.4	14.4	14.6	16.2	17.9	18.8
16-19	17.0	15.2	15.2	16.7	19.0	21.1
20-23	17.3	14.6	15.1	17.2	19.1	20.3

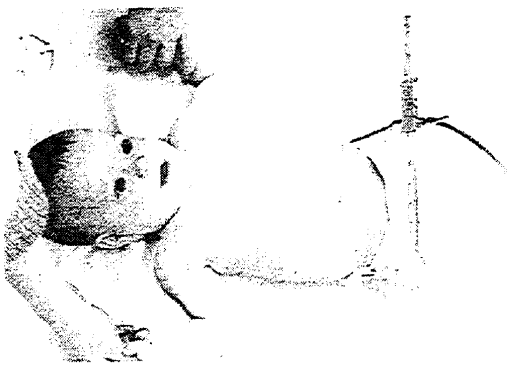


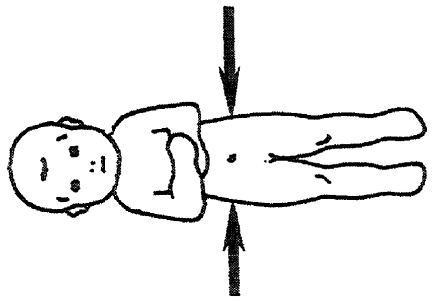
WAIST CIRCUMFERENCE (cm)
(Males and Females)

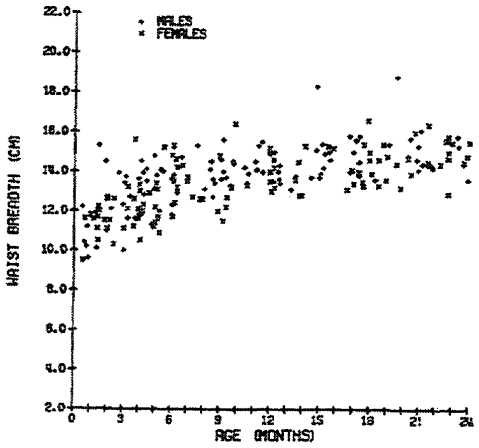
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	34.4	4.0	26.5	27.0	34.0	40.5	46.0
3-5	42	37.9	3.3	31.2	31.9	37.8	44.2	46.8
6-8	29	40.3	2.5	35.5	35.9	40.2	44.0	45.1
9-11	26	40.4	2.7	36.2	36.3	39.7	44.0	47.1
12-15	29	41.6	2.6	36.6	37.0	41.1	45.4	47.7
16-19	28	43.1	3.1	38.6	38.7	42.3	48.3	53.6
20-23	31	43.9	2.9	37.2	38.4	43.8	48.4	51.6

WAIST BREADTH

The infant lies on back with legs fully extended. With the paddle blades of an automated anthropometer or sliding caliper measure the breadth of the waist just below the level of the iliac crest and above the level of the greater trochanter at a fixed pressure value. An assistant is required to assure that the infant is in the correct position.





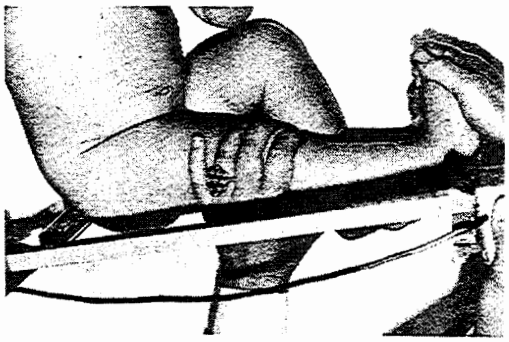


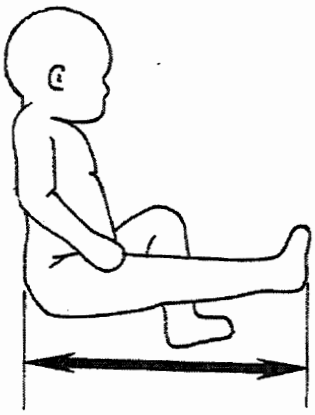
WAIST BREADTH (cm)
(Males and Females)

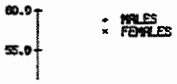
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	11.6	1.4	9.5	9.5	11.6	14.2	15.3
3-5	45	12.6	1.3	10.0	10.6	12.4	14.7	15.6
6-8	31	13.5	1.0	11.7	11.8	13.5	15.2	15.3
9-11	27	14.1	1.1	11.5	11.7	14.0	15.6	16.4
12-15	30	14.3	1.1	12.8	12.8	14.1	15.3	18.3
16-19	28	14.6	1.2	13.1	13.1	14.4	16.3	18.8
20-23	30	14.9	0.8	12.9	13.2	14.6	16.0	16.4

RUMP-SOLE LENGTH

Infant lies on left side with 90° right hip flexion and right leg fully extended. With the paddle blades of an automated anthropometer, measure the distance from the posterior surface of the right buttock to the heel of the right foot. An assistant is required to assure that the infant is in the correct position.







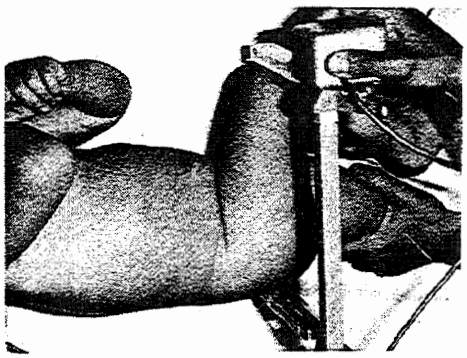
Rump-Sole length						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	9.24	7.84	7.88	9.32	10.4	10.68
3-5	10.72	8.6	9.36	10.6	12.12	12.4
6-8	11.96	10.08	10.28	11.76	13.4	13.96
9-11	13.52	10.96	11.04	13.32	15.88	17.36
12-15	14.16	12.88	12.92	14	15.8	16.48
16-19	15	12.44	12.6	14.96	16.6	17.2
20-23	16.2	13.68	14.04	15.8	18.2	18.76

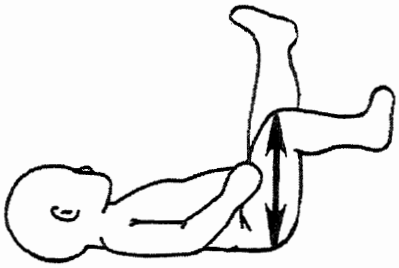
RUMP-SOLE LENGTH (cm)
(Males and Females)

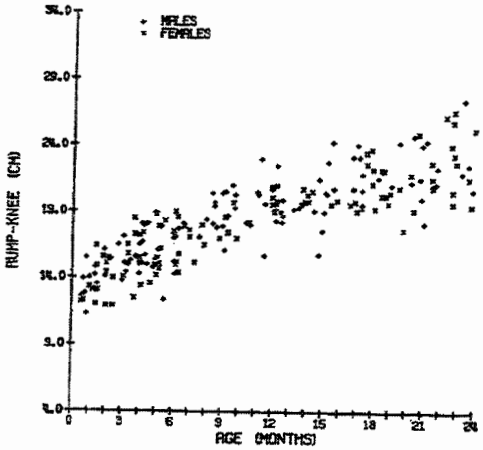
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	23.1	1.9	19.6	19.7	23.3	26.0	26.7
3-5	45	26.8	2.4	21.5	23.4	26.5	30.3	31.0
6-8	31	29.9	2.3	25.2	25.7	29.4	33.5	34.9
9-11	27	33.8	3.7	27.4	27.6	33.3	39.7	43.4
12-15	32	35.4	2.1	32.2	32.3	35.0	39.5	41.2
16-19	29	37.5	2.9	31.1	31.5	37.4	41.5	43.0
20-23	31	40.5	3.4	34.2	35.1	39.5	45.5	46.9

RUMP KNEE LENGTH

The infant lies on left side with 90° right hip flexion and 90° right knee flexion. With the paddle blades of an automated anthropometer, measure the distance from the posterior surface of the right buttock to the anterior surface of the right knee. An assistant is required to assure that the infant is in the correct position.





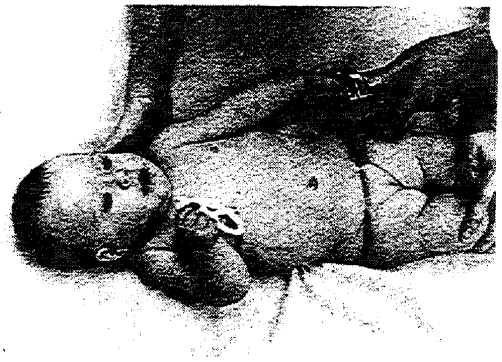


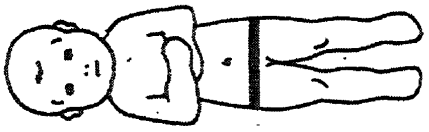
RUMP-KNEE LENGTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	13.9	1.5	11.3	11.4	13.9	16.2	16.5
3-5	44	15.9	1.7	12.4	12.7	15.5	18.5	18.9
6-8	30	17.2	1.5	14.3	14.3	17.2	19.5	20.4
9-11	27	19.2	1.7	15.7	15.8	19.4	21.0	23.0
12-15	31	19.9	1.6	15.8	16.8	19.6	22.6	24.3
16-19	29	21.3	1.7	17.7	18.3	21.0	24.0	24.3
20-23	31	22.6	2.4	18.2	18.7	21.9	26.5	27.5

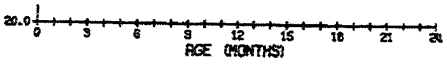
HIP CIRCUMFERENCE

The infant lies on back with legs fully extended. With an automated tape device, measure the maximum circumference of the hips in a plane perpendicular to the torso. An assistant is required to assure that the infant is in the correct position.





Hip circumference						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	14.5	11.1	11.3	14.3	17.7	19.4
3-5	15.9	12.7	13.1	15.8	18.7	19.6
6-8	18.0	16.1	16.2	17.7	20.2	20.7
9-11	17.6	15.5	15.7	17.6	20.4	20.8
12-15	18.3	15.8	16.0	18.4	19.6	21.8
16-19	18.8	15.9	16.1	18.7	20.9	21.1
20-23	18.7	16.1	16.3	18.3	20.9	22.9

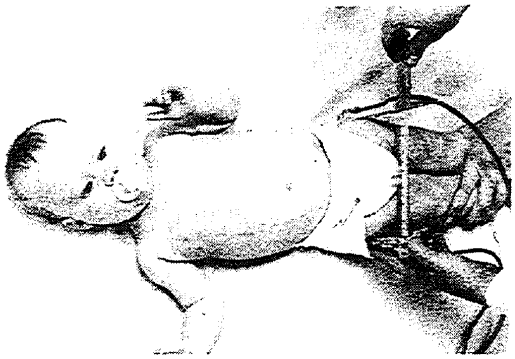


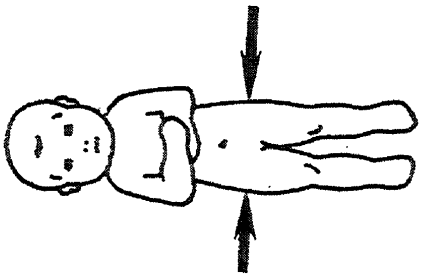
HIP CIRCUMFERENCE (cm)
(Males and Females)

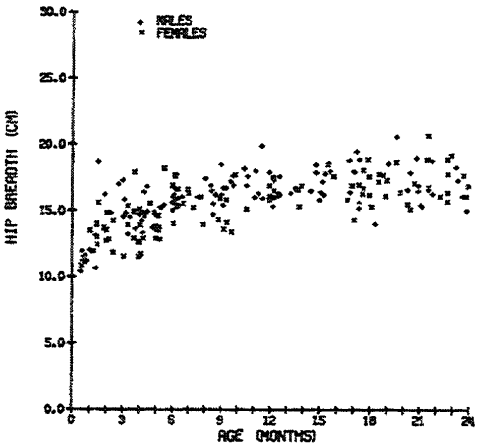
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	36.8	5.0	28.2	28.6	36.4	45.0	49.3
3-5	44	40.5	4.4	32.3	33.2	40.2	47.6	49.7
6-8	28	45.7	2.9	41.0	41.2	45.0	51.2	52.7
9-11	26	44.8	3.3	39.3	39.8	44.6	51.7	52.9
12-15	26	46.4	3.3	40.2	40.6	46.7	49.7	55.4
16-19	26	47.7	4.0	40.4	40.9	47.5	53.0	53.7
20-23	30	47.6	3.9	40.9	41.5	46.5	53.0	58.2

HIP BREADTH

Infant lies on back with legs fully extended. With the paddle blades of an automated anthropometer or sliding caliper measure the maximum breadth across the hips at a fixed pressure value. An assistant is required to assure that the infant is in the correct position.





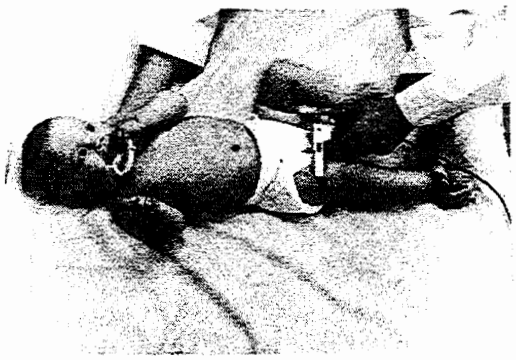


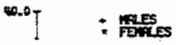
HIP BREADTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	13.2	2.1	10.4	10.5	12.9	17.1	18.7
3-5	45	14.3	1.4	11.5	11.5	14.4	16.7	18.2
6-8	31	15.9	1.0	13.9	14.0	15.9	17.5	17.7
9-11	27	16.6	1.5	13.4	13.5	16.6	18.4	19.9
12-15	28	16.9	0.9	15.3	15.3	16.6	18.4	18.6
16-19	28	17.1	1.6	14.0	14.1	17.0	19.3	20.6
20-23	29	17.1	1.4	15.0	15.0	16.7	19.1	20.7

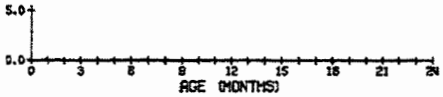
MID-THIGH CIRCUMFERENCE

The infant lies on back with right leg extended. With an automated tape device, measure the circumference of the right leg midway between the abdomen-thigh flexure crease and the knee. An assistant is required to assure that the infant is in the correct position.





Thigh circumference						
Age (months)	Mean	Min	5th	50th	95th	Max
0-2	6.7	5.0	5.1	6.5	7.7	8.4
3-5	8.1	6.4	6.6	7.9	10.3	10.8
6-8	8.3	7.2	7.2	8.1	9.4	11.4
9-11	9.1	7.6	7.9	9.0	10.8	11.0
12-15	9.2	7.6	7.6	8.9	10.6	10.7
16-19	9.6	8.3	8.3	9.5	11.0	11.4
20-23	9.7	7.1	7.5	9.7	10.9	11.8

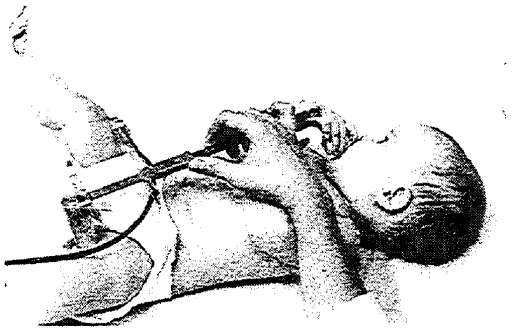


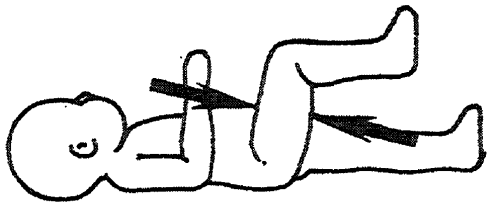
MID THIGH CIRCUMFERENCE (cm)
(Males and Females)

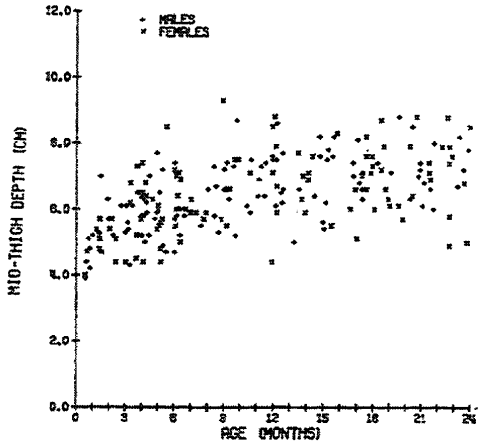
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	16.9	1.9	12.8	13.0	16.6	19.6	21.4
3-5	44	20.7	2.8	16.3	16.7	20.1	26.2	27.5
6-8	29	21.2	2.1	18.4	18.4	20.5	23.9	29.0
9-11	27	23.2	2.0	19.2	20.0	22.8	27.5	28.0
12-15	30	23.4	2.1	19.3	19.3	22.7	26.9	27.2
16-19	29	24.4	2.0	21.0	21.0	24.2	27.9	29.0
20-23	31	24.7	2.5	18.1	19.0	24.6	27.6	29.9

MID-THIGH DEPTH

The infant lies on back with right leg supported free of table surface. With the paddle blades of an automated sliding caliper, measure the depth midway between the abdomen-thigh flexure crease and the knee at a fixed pressure value. An assistant is required to assure that the infant is in the correct position.





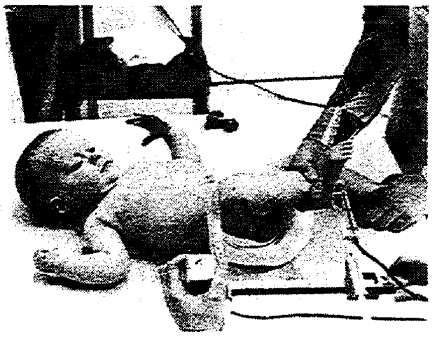


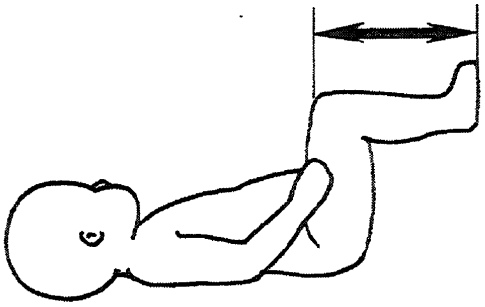
MID THIGH DEPTH (cm)
(Males and Females)

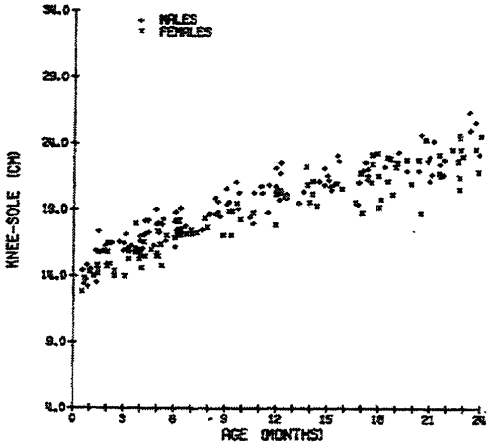
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	27	5.2	0.7	3.9	3.9	5.1	6.2	7.0
3-5	45	5.9	0.9	4.3	4.3	5.8	7.4	8.5
6-8	31	6.2	0.9	4.7	4.9	5.9	7.3	9.3
9-11	27	6.9	0.9	4.4	4.7	6.9	8.2	8.7
12-15	32	7.0	1.0	5.0	5.2	6.9	8.4	8.8
16-19	29	7.0	0.9	5.1	5.4	6.9	8.5	8.8
20-23	30	7.2	1.0	4.9	4.9	7.1	8.6	8.8

KNEE-SOLE LENGTH

Infant lies on back with the right knee flexed 90°. With the paddle blades of an automated anthropometer, measure the distance from the superior surface of the right knee to the heel of the right foot. An assistant is required to assure that the infant is in the correct position.





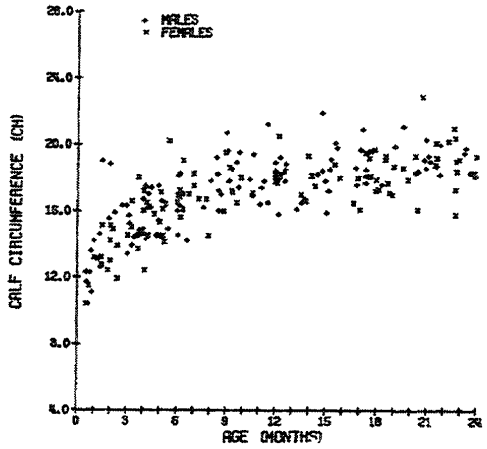


KNEE-SOLE LENGTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	30	14.9	1.1	12.8	13.0	14.7	16.5	17.4
3-5	45	16.5	1.1	14.0	14.6	16.3	18.2	19.0
6-8	30	17.9	0.8	16.2	16.5	17.7	19.3	19.9
9-11	27	19.8	1.5	17.1	17.4	19.5	21.8	24.2
12-15	31	20.8	1.0	19.3	19.4	20.5	22.6	23.1
16-19	29	21.6	1.3	18.8	19.0	21.7	23.3	23.4
20-23	31	23.0	1.6	18.8	19.8	22.9	25.3	26.4

CALF CIRCUMFERENCE

The infant lies on back with right leg extended. With an automated tape device, measure the maximum circumference at the level of the greatest posterior protrusion of the calf. An assistant is required to assure that the infant is in the correct position.

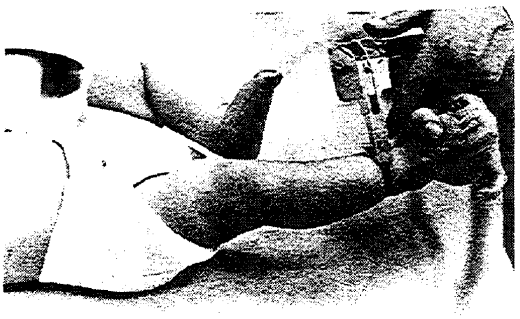


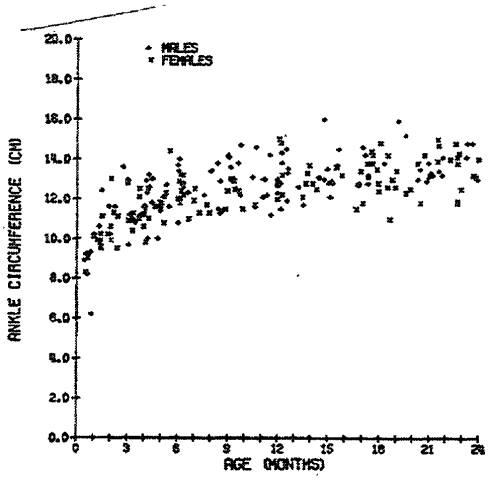
CALF CIRCUMFERENCE (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	13.7	2.1	10.4	10.4	13.1	17.4	19.0
3-5	44	15.6	1.5	12.4	13.5	15.3	17.5	20.2
6-8	31	16.9	1.3	14.2	14.3	16.8	19.1	19.5
9-11	27	18.1	1.2	16.4	16.4	17.8	20.3	21.2
12-15	32	18.1	1.3	15.8	15.9	18.1	20.3	21.9
16-19	29	18.4	1.2	16.1	16.3	18.1	20.4	21.1
20-23	31	19.0	1.3	15.8	16.0	18.9	20.7	22.9

ANKLE CIRCUMFERENCE

The infant lies on back with right leg extended. With an automated tape device, measure the minimum circumference of the ankle above the malleoli. An assistant is required to assure that the infant is in the correct position.



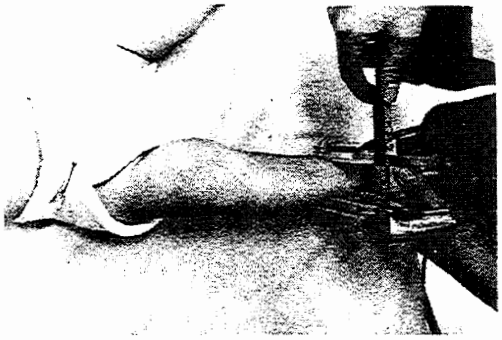


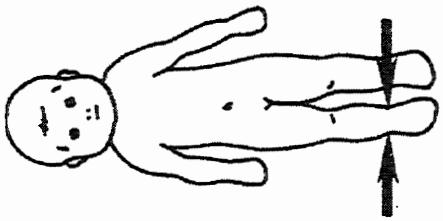
ANKLE CIRCUMFERENCE (cm)
(Males and Females)

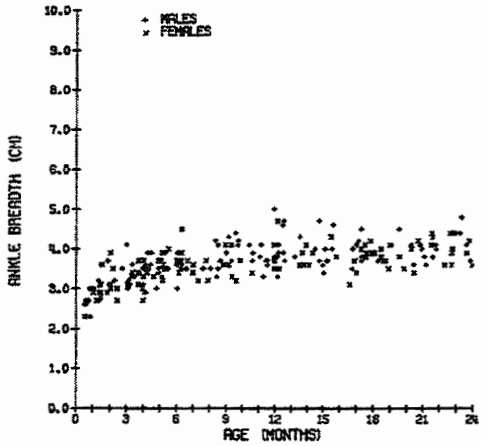
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	10.2	1.5	6.2	7.3	10.0	12.9	13.6
3-5	44	11.6	1.0	9.7	9.8	11.5	13.0	14.4
6-8	31	12.3	0.9	10.8	10.9	12.2	13.7	14.0
9-11	27	12.9	1.0	11.2	11.3	12.8	14.5	14.7
12-15	32	13.2	1.0	11.5	11.6	13.1	14.9	16.0
16-19	29	13.3	1.1	11.0	11.2	13.1	15.0	15.9
20-23	31	13.6	0.9	11.8	11.8	13.5	14.8	15.0

ANKLE BREADTH

The infant lies on back with right leg extended and supported free of table surface. With the paddle blades of an automated sliding caliper, measure the minimum breadth above the malleoli. An assistant is required to assure that the infant is in the correct position.





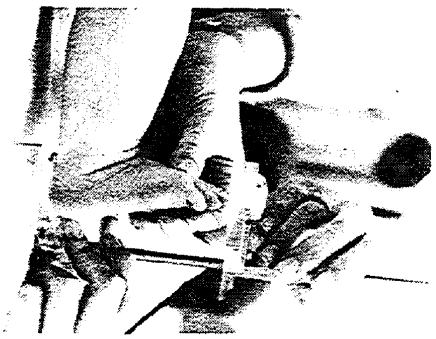


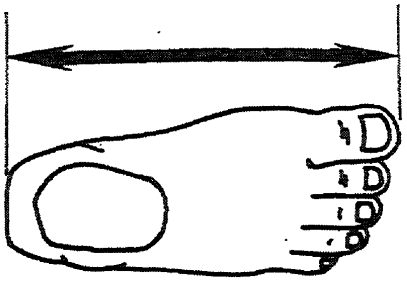
ANKLE BREADTH (cm)
(Males and Females)

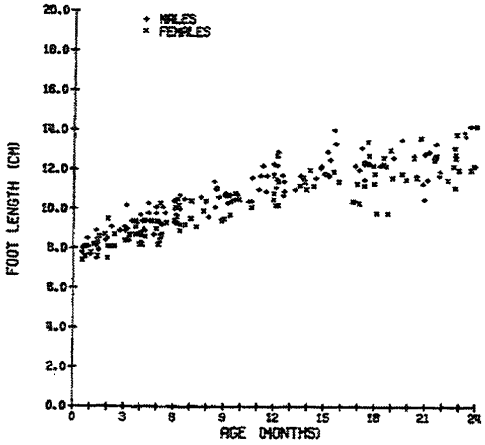
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	3.0	0.4	2.3	2.3	2.9	3.8	4.1
3-5	44	3.4	0.3	2.7	2.8	3.4	3.8	4.0
6-8	31	3.6	0.3	3.0	3.1	3.6	4.1	4.5
9-11	27	3.8	0.4	3.2	3.2	3.7	4.4	5.0
12-15	32	3.9	0.4	3.3	3.4	3.8	4.6	4.7
16-19	29	3.9	0.3	3.1	3.2	3.8	4.3	4.5
20-23	31	4.0	0.3	3.4	3.4	4.0	4.4	4.8

FOOT LENGTH

The infant lies on back. With the paddle blades of an automated sliding caliper, measure the distance from the heel to the longest toe of the right foot parallel to the long axis of the foot. An assistant is required to assure that the infant is in the correct position.





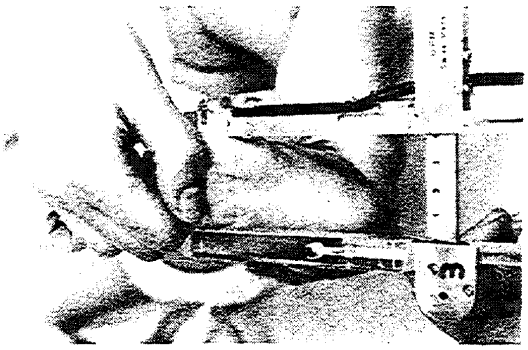


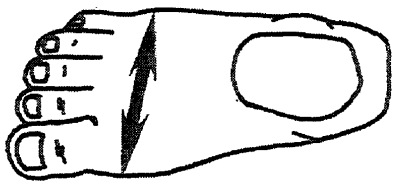
FOOT LENGTH (cm)
(Males and Females)

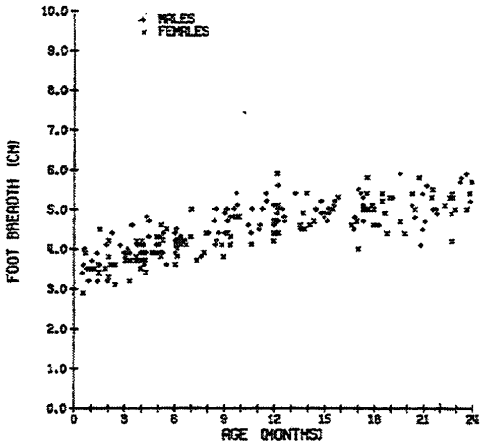
Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	8.2	0.5	7.4	7.4	8.1	9.0	9.5
3-5	44	9.1	0.6	8.2	8.2	9.0	10.2	10.3
6-8	31	10.0	0.7	8.9	9.0	9.9	11.0	11.4
9-11	27	10.9	0.6	9.7	9.8	10.7	12.1	12.3
12-15	32	11.7	0.8	10.2	10.2	11.6	13.1	14.0
16-19	29	11.9	1.0	9.8	9.8	12.0	13.3	13.5
20-23	31	12.5	0.9	10.5	10.8	12.5	14.0	14.2

FOOT BREADTH

The infant lies on back. With the paddle blades of an automated sliding caliper, measure the maximum breadth across the ball of the right foot. An assistant is required to assure that the infant is in the correct position.







FOOT BREADTH (cm)
(Males and Females)

Age (mos)	N	Mean	s.d.	Min	5th	50th	95th	Max
0-2	31	3.6	0.4	2.9	3.0	3.5	4.3	4.5
3-5	44	4.0	0.3	3.2	3.4	3.9	4.6	4.8
6-8	31	4.2	0.3	3.6	3.7	4.1	4.8	5.0
9-11	27	4.7	0.4	4.1	4.1	4.7	5.3	5.4
12-15	32	4.9	0.3	4.4	4.4	4.9	5.5	5.9
16-19	29	5.0	0.4	4.0	4.1	4.9	5.7	5.9
20-23	31	5.2	0.4	4.1	4.2	5.2	5.8	5.9

INFANT MEASUREMENTS
(Ages 0 to 2 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	30	5.1	1.1	3.1	3.2	4.7	6.9	8.0
Crown-Sole Length	31	56.3	3.9	50.5	50.7	55.5	63.3	64.1
Crown-Rump Length	31	39.1	2.8	34.5	34.7	38.4	43.0	44.3
Head Circumference	30	38.5	1.9	35.3	35.4	38.8	41.2	42.2
Head Breadth	31	10.4	0.5	9.5	9.5	10.3	11.2	11.3
Head Length	31	13.4	0.8	12.2	12.3	13.4	14.7	15.1
Shoulder Breadth	31	16.7	1.6	13.8	14.0	16.3	19.4	20.0
Shoulder-Elbow Length	31	10.9	0.9	9.3	9.3	10.9	12.4	12.7
Upper Arm Circumference	31	11.8	1.5	9.6	9.7	11.6	13.3	17.6
Elbow-Hand Length	31	14.9	1.0	13.1	13.2	14.7	16.6	17.2
Forearm Circumference	31	11.8	1.1	9.5	9.7	11.7	13.4	14.6
Wrist Circumference	31	9.1	0.9	7.8	7.9	8.8	10.6	11.0
Hand Length	30	6.8	0.6	5.4	5.4	6.6	7.6	7.8
Hand Breadth	31	3.7	0.3	3.2	3.2	3.6	4.2	4.4
Minimum Hand Clearence	30	33.9	3.0	28.6	28.6	31.8	37.8	41.3
Maximum Fist Breadth	31	4.2	0.4	3.2	3.4	4.0	4.8	5.2
Thumb Diameter	31	8.6	0.8	7.1	7.1	8.5	9.7	10.3
Middle Finger Diameter	31	7.2	0.6	6.3	6.3	7.0	8.1	8.3
Chest Circumference	31	37.1	2.5	31.5	32.4	37.0	41.4	42.2
Chest Breadth	31	12.2	1.3	9.7	10.0	11.8	14.7	15.1
Waist Circumference	31	34.4	4.0	26.5	27.0	34.0	40.5	46.0
Waist Breadth	31	11.6	1.4	9.5	9.5	11.6	14.2	15.3
Rump-Sole Length	31	23.1	1.9	19.6	19.7	23.3	26.0	26.7
Rump-Knee Length	30	13.9	1.5	11.3	11.4	13.9	16.2	16.5
Hip Circumference	30	36.8	5.0	28.2	28.6	36.4	45.0	49.3
Hip Breadth	31	13.2	2.1	10.4	10.5	12.9	17.1	18.7
Mid Thigh Circum	30	16.9	1.9	12.8	13.0	16.6	19.6	21.4
Mid Thigh Depth	27	5.2	0.7	3.9	3.9	5.1	6.2	7.0
Knee-Sole Length	30	14.9	1.1	12.8	13.0	14.7	16.5	17.4
Calf Circumference	31	13.7	2.1	10.4	10.4	13.1	17.4	19.0
Ankle Circumference	31	10.2	1.5	6.2	7.3	10.0	12.9	13.6
Ankle Breadth	31	3.0	0.4	2.3	2.3	2.9	3.8	4.1
Foot Length	31	8.2	0.5	7.4	7.4	8.1	9.0	9.5
Foot Breadth	31	3.6	0.4	2.9	3.0	3.5	4.3	4.5

INFANT MEASUREMENTS
(Ages 3 to 5 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	29	6.9	1.0	4.7	4.9	6.7	8.2	9.2
Crown-Sole Length	45	63.1	3.6	54.1	56.2	63.3	68.2	69.1
Crown-Rump Length	45	42.3	2.4	36.4	37.5	42.2	45.8	48.0
Head Circumference	44	41.7	1.4	38.9	39.6	41.8	44.0	44.7
Head Breadth	44	11.4	0.5	10.4	10.5	11.3	12.2	12.3
Head Length	44	14.6	0.6	13.6	13.7	14.5	15.6	15.8
Shoulder Breadth	44	18.7	1.4	15.6	16.5	18.9	20.4	21.8
Shoulder-Elbow Length	44	12.3	1.0	9.8	10.7	12.2	13.8	14.3
Upper Arm Circumference	44	13.0	1.2	10.3	10.7	13.0	14.6	15.7
Elbow-Hand Length	44	16.6	1.3	13.7	14.1	16.7	18.5	19.2
Forearm Circumference	44	13.1	1.1	11.4	11.5	13.0	15.1	16.0
Wrist Circumference	44	10.2	0.9	8.3	8.5	10.2	11.1	12.6
Hand Length	44	7.4	0.6	6.0	6.1	7.4	8.3	8.5
Hand Breadth	44	4.1	0.3	3.3	3.5	4.0	4.4	4.6
Minimum Hand Clearence	43	36.1	2.7	31.8	31.8	34.1	39.9	41.3
Maximum Fist Breadth	44	4.6	0.5	3.5	3.7	4.5	5.3	5.8
Thumb Diameter	44	9.2	0.8	6.7	7.4	8.9	10.2	11.1
Middle Finger Diameter	43	7.6	0.6	5.9	6.3	7.4	8.3	8.7
Chest Circumference	44	40.4	2.4	36.2	36.5	40.5	44.1	46.4
Chest Breadth	44	13.8	0.8	12.1	12.2	13.8	15.1	15.8
Waist Circumference	42	37.9	3.3	31.2	31.9	37.8	44.2	46.8
Waist Breadth	45	12.6	1.3	10.0	10.6	12.4	14.7	15.6
Rump-Sole Length	45	26.8	2.4	21.5	23.4	26.5	30.3	31.0
Rump-Knee Length	44	15.9	1.7	12.4	12.7	15.5	18.5	18.9
Hip Circumference	44	40.5	4.4	32.3	33.2	40.2	47.6	49.7
Hip Breadth	45	14.3	1.4	11.5	11.5	14.4	16.7	18.2
Mid Thigh Circum	44	20.7	2.8	16.3	16.7	20.1	26.2	27.5
Mid Thigh Depth	45	5.9	0.9	4.3	4.3	5.8	7.4	8.5
Knee-Sole Length	45	16.5	1.1	14.0	14.6	16.3	18.2	19.0
Calf Circumference	44	15.6	1.5	12.4	13.5	15.3	17.5	20.2
Ankle Circumference	44	11.6	1.0	9.7	9.8	11.5	13.0	14.4
Ankle Breadth	44	3.4	0.3	2.7	2.8	3.4	3.8	4.0
Foot Length	44	9.1	0.6	8.2	8.2	9.0	10.2	10.3
Foot Breadth	44	4.0	0.3	3.2	3.4	3.9	4.6	4.8

INFANT MEASUREMENTS
(Ages 6 to 8 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	28	8.1	0.9	6.4	6.4	8.0	9.4	10.0
Crown-Sole Length	31	68.5	2.6	63.4	64.2	68.7	72.2	72.8
Crown-Rump Length	31	45.7	2.3	42.2	42.3	45.3	50.0	51.5
Head Circumference	28	43.9	1.3	42.1	42.1	43.7	45.8	46.8
Head Breadth	30	11.8	0.4	11.1	11.1	11.8	12.4	12.6
Head Length	29	15.5	0.6	14.2	14.3	15.5	16.4	16.7
Shoulder Breadth	30	20.1	1.2	17.5	18.0	19.6	22.0	22.6
Shoulder-Elbow Length	31	13.1	1.2	10.7	10.8	13.2	14.7	14.9
Upper Arm Circumference	30	14.0	1.0	12.1	12.1	14.0	15.7	16.6
Elbow-Hand Length	30	18.0	1.1	15.6	15.7	17.9	19.5	19.7
Forearm Circumference	30	14.0	0.8	12.7	12.8	13.9	15.2	15.6
Wrist Circumference	30	10.5	0.6	9.5	9.5	10.3	11.2	12.5
Hand Length	30	8.0	0.5	6.9	7.0	8.1	8.6	9.0
Hand Breadth	30	4.2	0.2	3.8	3.8	4.1	4.5	4.7
Minimum Hand Clearence	30	37.9	2.0	34.9	34.9	36.3	40.3	41.3
Maximum Fist Breadth	30	4.9	0.4	4.1	4.2	4.9	5.4	5.6
Thumb Diameter	29	9.9	0.7	8.7	8.7	9.5	10.7	11.1
Middle Finger Diameter	29	8.3	0.7	7.5	7.5	8.0	9.0	11.1
Chest Circumference	30	43.4	1.8	39.4	40.0	43.5	46.3	47.6
Chest Breadth	31	14.7	1.1	12.2	12.5	14.5	16.2	16.7
Waist Circumference	29	40.3	2.5	35.5	35.9	40.2	44.0	45.1
Waist Breadth	31	13.5	1.0	11.7	11.8	13.5	15.2	15.3
Rump-Sole Length	31	29.9	2.3	25.2	25.7	29.4	33.5	34.9
Rump-Knee Length	30	17.2	1.5	14.3	14.3	17.2	19.5	20.4
Hip Circumference	28	45.7	2.9	41.0	41.2	45.0	51.2	52.7
Hip Breadth	31	15.9	1.0	13.9	14.0	15.9	17.5	17.7
Mid Thigh Circum	29	21.2	2.1	18.4	18.4	20.5	23.9	29.0
Mid Thigh Depth	31	6.2	0.9	4.7	4.9	5.9	7.3	9.3
Knee-Sole Length	30	17.9	0.8	16.2	16.5	17.7	19.3	19.9
Calf Circumference	31	16.9	1.3	14.2	14.3	16.8	19.1	19.5
Ankle Circumference	31	12.3	0.9	10.8	10.9	12.2	13.7	14.0
Ankle Breadth	31	3.6	0.3	3.0	3.1	3.6	4.1	4.5
Foot Length	31	10.0	0.7	8.9	9.0	9.9	11.0	11.4
Foot Breadth	31	4.2	0.3	3.6	3.7	4.1	4.8	5.0

INFANT MEASUREMENTS
(Ages 9 to 11 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	22	9.2	1.1	6.9	7.0	9.1	10.9	11.1
Crown-Sole Length	26	73.0	3.3	65.9	66.2	73.0	77.4	79.1
Crown-Rump Length	26	47.6	2.2	42.8	43.3	48.0	50.7	53.0
Head Circumference	27	45.5	1.4	43.1	43.1	45.5	47.5	48.4
Head Breadth	27	12.2	0.5	11.3	11.4	12.1	12.9	13.6
Head Length	27	16.0	0.7	14.5	14.7	16.1	16.8	17.9
Shoulder Breadth	27	21.1	1.3	19.2	19.3	20.8	23.1	23.3
Shoulder-Elbow Length	27	14.5	1.0	11.8	12.3	14.3	15.6	17.7
Upper Arm Circumference	27	14.8	1.0	12.8	12.9	14.6	16.1	17.9
Elbow-Hand Length	27	19.6	1.3	16.1	16.8	19.4	21.6	22.7
Forearm Circumference	27	14.3	1.0	12.8	12.9	13.9	15.7	17.3
Wrist Circumference	27	10.8	0.8	9.6	9.6	10.5	11.9	12.4
Hand Length	27	8.9	0.6	7.6	7.6	8.9	9.7	10.2
Hand Breadth	27	4.5	0.2	4.0	4.0	4.4	4.8	4.9
Minimum Hand Clearence	26	40.3	2.2	38.1	38.1	38.6	43.1	44.5
Maximum Fist Breadth	27	5.1	0.5	4.3	4.3	5.0	5.8	6.0
Thumb Diameter	26	10.6	0.8	9.5	9.5	10.1	11.8	12.7
Middle Finger Diameter	27	8.9	0.7	7.5	7.6	8.6	10.0	11.1
Chest Circumference	27	45.1	2.3	39.8	40.3	45.3	47.8	48.5
Chest Breadth	27	15.9	1.2	13.4	13.5	15.9	17.5	18.4
Waist Circumference	26	40.4	2.7	36.2	36.3	39.7	44.0	47.1
Waist Breadth	27	14.1	1.1	11.5	11.7	14.0	15.6	16.4
Rump-Sole Length	27	33.8	3.7	27.4	27.6	33.3	39.7	43.4
Rump-Knee Length	27	19.2	1.7	15.7	15.8	19.4	21.0	23.0
Hip Circumference	26	44.8	3.3	39.3	39.8	44.6	51.7	52.9
Hip Breadth	27	16.6	1.5	13.4	13.5	16.6	18.4	19.9
Mid Thigh Circum	27	23.2	2.0	19.2	20.0	22.8	27.5	28.0
Mid Thigh Depth	27	6.9	0.9	4.4	4.7	6.9	8.2	8.7
Knee-Sole Length	27	19.8	1.5	17.1	17.4	19.5	21.8	24.2
Calf Circumference	27	18.1	1.2	16.4	16.4	17.8	20.3	21.2
Ankle Circumference	27	12.9	1.0	11.2	11.3	12.8	14.5	14.7
Ankle Breadth	27	3.8	0.4	3.2	3.2	3.7	4.4	5.0
Foot Length	27	10.9	0.6	9.7	9.8	10.7	12.1	12.3
Foot Breadth	27	4.7	0.4	4.1	4.1	4.7	5.3	5.4

INFANT MEASUREMENTS
(Ages 12 to 15 Months)

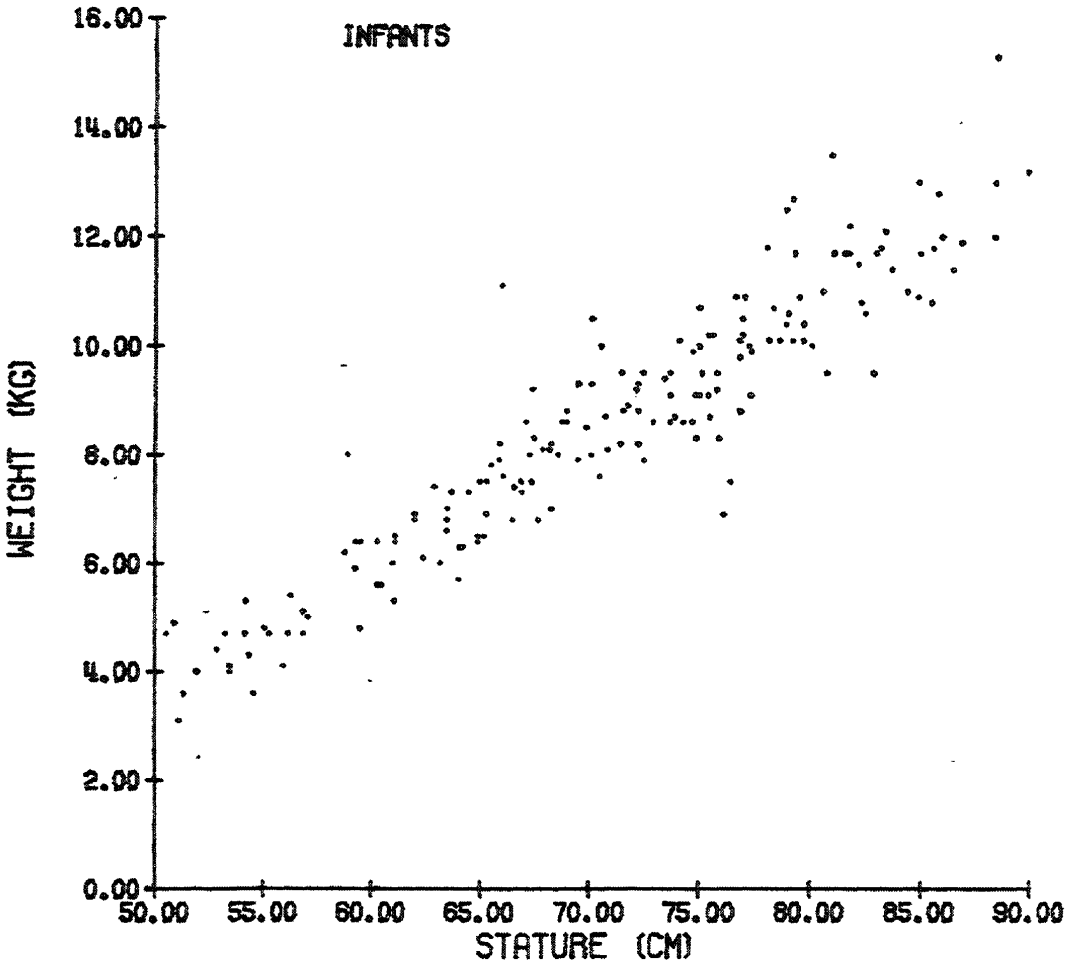
Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	28	10.1	1.2	8.3	8.4	10.0	12.6	13.0
Crown-Sole Length	32	76.5	3.2	69.4	69.8	76.7	80.7	84.8
Crown-Rump Length	32	49.0	2.1	44.2	44.6	48.9	51.8	52.2
Head Circumference	29	46.6	1.4	43.8	44.1	46.6	48.5	50.0
Head Breadth	31	12.7	0.4	12.0	12.0	12.7	13.5	13.6
Head Length	31	16.7	0.7	15.5	15.6	16.5	17.6	18.8
Shoulder Breadth	29	21.3	1.3	18.7	19.0	21.1	23.3	23.7
Shoulder-Elbow Length	32	14.9	1.0	12.6	12.9	15.0	16.2	17.6
Upper Arm Circumference	32	14.5	1.1	12.3	12.7	14.6	16.4	16.6
Elbow-Hand Length	31	19.9	0.8	18.3	18.4	19.8	21.3	21.6
Forearm Circumference	32	14.5	0.8	12.9	13.1	14.4	15.7	15.9
Wrist Circumference	32	10.9	0.9	9.6	9.7	10.5	12.6	12.9
Hand Length	31	9.2	0.6	7.6	8.0	9.1	10.1	10.8
Hand Breadth	30	4.6	0.3	4.0	4.0	4.5	5.0	5.1
Minimum Hand Clearence	29	40.6	2.0	38.1	38.1	39.1	43.0	44.5
Maximum Fist Breadth	31	5.3	0.6	4.3	4.4	5.2	6.1	6.4
Thumb Diameter	28	11.0	0.7	8.7	8.8	10.6	11.7	11.9
Middle Finger Diameter	29	9.0	0.6	7.9	7.9	8.7	9.7	10.3
Chest Circumference	30	46.3	2.3	41.8	41.9	46.1	49.7	52.2
Chest Breadth	31	15.8	0.9	14.0	14.2	15.7	17.3	18.2
Waist Circumference	29	41.6	2.6	36.6	37.0	41.1	45.4	47.7
Waist Breadth	30	14.3	1.1	12.8	12.8	14.1	15.3	18.3
Rump-Sole Length	32	35.4	2.1	32.2	32.3	35.0	39.5	41.2
Rump-Knee Length	31	19.9	1.6	15.8	16.8	19.6	22.6	24.3
Hip Circumference	26	46.4	3.3	40.2	40.6	46.7	49.7	55.4
Hip Breadth	28	16.9	0.9	15.3	15.3	16.6	18.4	18.6
Mid Thigh Circum	30	23.4	2.1	19.3	19.3	22.7	26.9	27.2
Mid Thigh Depth	32	7.0	1.0	5.0	5.2	6.9	8.4	8.8
Knee-Sole Length	31	20.8	1.0	19.3	19.4	20.5	22.6	23.1
Calf Circumference	32	18.1	1.3	15.8	15.9	18.1	20.3	21.9
Ankle Circumference	32	13.2	1.0	11.5	11.6	13.1	14.9	16.0
Ankle Breadth	32	3.9	0.4	3.3	3.4	3.8	4.6	4.7
Foot Length	32	11.7	0.8	10.2	10.2	11.6	13.1	14.0
Foot Breadth	32	4.9	0.3	4.4	4.4	4.9	5.5	5.9

INFANT MEASUREMENTS
(Ages 16 to 19 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	19	10.6	1.2	8.3	**	10.6	**	13.5
Crown-Sole Length	27	79.2	3.4	72.3	72.6	79.0	84.6	85.9
Crown-Rump Length	29	49.8	2.0	45.8	46.6	49.1	53.5	55.1
Head Circumference	27	46.8	1.8	43.1	43.4	46.1	49.8	50.0
Head Breadth	29	12.7	0.4	11.8	11.9	12.6	13.2	13.3
Head Length	29	16.7	0.7	15.3	15.5	16.5	17.8	18.0
Shoulder Breadth	29	21.7	1.3	19.2	19.2	21.6	23.6	24.5
Shoulder-Elbow Length	29	15.4	0.8	13.6	13.8	15.2	16.6	17.3
Upper Arm Circumference	29	14.7	1.3	12.7	12.7	14.3	16.6	17.8
Elbow-Hand Length	29	20.7	1.5	18.5	18.5	20.7	23.1	24.6
Forearm Circumference	29	14.5	1.1	13.0	13.0	14.4	16.1	17.5
Wrist Circumference	29	10.7	1.0	9.4	9.4	10.5	12.2	13.6
Hand Length	29	9.3	0.6	8.0	8.0	9.4	10.0	10.3
Hand Breadth	29	4.6	0.3	4.1	4.1	4.5	5.1	5.3
Minimum Hand Clearence	28	40.1	3.3	34.9	34.9	37.9	45.4	47.6
Maximum Fist Breadth	27	5.5	0.5	4.4	4.5	5.3	6.1	6.5
Thumb Diameter	28	10.7	0.7	9.5	9.5	10.3	11.7	12.3
Middle Finger Diameter	28	8.8	0.6	7.9	7.9	8.5	9.5	10.7
Chest Circumference	29	46.8	2.2	41.4	42.3	46.9	50.1	51.9
Chest Breadth	29	15.8	1.3	13.4	13.4	15.9	17.7	18.3
Waist Circumference	28	43.1	3.1	38.6	38.7	42.3	48.3	53.6
Waist Breadth	28	14.6	1.2	13.1	13.1	14.4	16.3	18.8
Rump-Sole Length	29	37.5	2.9	31.1	31.5	37.4	41.5	43.0
Rump-Knee Length	29	21.3	1.7	17.7	18.3	21.0	24.0	24.3
Hip Circumference	26	47.7	4.0	40.4	40.9	47.5	53.0	53.7
Hip Breadth	28	17.1	1.6	14.0	14.1	17.0	19.3	20.6
Mid Thigh Circum	29	24.4	2.0	21.0	21.0	24.2	27.9	29.0
Mid Thigh Depth	29	7.0	0.9	5.1	5.4	6.9	8.5	8.8
Knee-Sole Length	29	21.6	1.3	18.8	19.0	21.7	23.3	23.4
Calf Circumference	29	18.4	1.2	16.1	16.3	18.1	20.4	21.1
Ankle Circumference	29	13.3	1.1	11.0	11.2	13.1	15.0	15.9
Ankle Breadth	29	3.9	0.3	3.1	3.2	3.8	4.3	4.5
Foot Length	29	11.9	1.0	9.8	9.8	12.0	13.3	13.5
Foot Breadth	29	5.0	0.4	4.0	4.1	4.9	5.7	5.9

INFANT MEASUREMENTS
(Ages 20 to 23 Months)

Measurement	Descriptive Statistics							
	N	Mean	s.d.	Min	5th	50th	95th	Max
Weight	24	11.5	1.5	7.5	7.8	11.6	13.2	15.3
Crown-Sole Length	31	82.6	4.0	73.6	74.4	82.5	88.3	89.8
Crown-Rump Length	31	51.5	2.4	46.0	46.9	51.5	54.9	55.2
Head Circumference	31	47.8	1.9	44.6	44.6	47.7	50.8	51.2
Head Breadth	31	12.9	0.5	12.1	12.1	12.9	13.6	13.7
Head Length	31	17.1	0.8	15.7	15.7	17.2	18.4	18.6
Shoulder Breadth	31	22.4	1.3	20.1	20.3	22.1	23.9	25.5
Shoulder-Elbow Length	31	16.2	1.0	13.9	14.2	16.1	17.4	18.6
Upper Arm Circumference	31	15.0	1.0	12.2	12.9	15.0	16.3	16.8
Elbow-Hand Length	31	21.5	1.1	19.4	19.5	21.4	23.3	24.2
Forearm Circumference	31	14.8	0.8	12.9	13.2	14.9	15.9	16.5
Wrist Circumference	31	10.9	0.8	9.3	9.4	10.9	12.1	12.4
Hand Length	31	9.5	0.6	8.6	8.6	9.4	10.5	10.8
Hand Breadth	31	4.7	0.3	4.1	4.2	4.6	5.2	5.6
Minimum Hand Clearence	31	41.2	2.5	38.1	38.1	39.5	44.2	47.6
Maximum Fist Breadth	31	5.5	0.5	4.5	4.6	5.4	6.1	6.4
Thumb Diameter	31	11.4	1.0	9.5	9.6	10.8	12.6	15.0
Middle Finger Diameter	31	9.1	0.8	7.9	7.9	8.9	10.1	11.9
Chest Circumference	31	47.7	2.2	43.1	43.6	47.4	50.9	51.3
Chest Breadth	31	16.3	1.2	14.3	14.4	16.1	18.5	19.0
Waist Circumference	31	43.9	2.9	37.2	38.4	43.8	48.4	51.6
Waist Breadth	30	14.9	0.8	12.9	13.2	14.6	16.0	16.4
Rump-Sole Length	31	40.5	3.4	34.2	35.1	39.5	45.5	46.9
Rump-Knee Length	31	22.6	2.4	18.2	18.7	21.9	26.5	27.5
Hip Circumference	30	47.6	3.9	40.9	41.5	46.5	53.0	58.2
Hip Breadth	29	17.1	1.4	15.0	15.0	16.7	19.1	20.7
Mid Thigh Circum	31	24.7	2.5	18.1	19.0	24.6	27.6	29.9
Mid Thigh Depth	30	7.2	1.0	4.9	4.9	7.1	8.6	8.8
Knee-Sole Length	31	23.0	1.6	18.8	19.8	22.9	25.3	26.4
Calf Circumference	31	19.0	1.3	15.8	16.0	18.9	20.7	22.9
Ankle Circumference	31	13.6	0.9	11.8	11.8	13.5	14.8	15.0
Ankle Breadth	31	4.0	0.3	3.4	3.4	4.0	4.4	4.8
Foot Length	31	12.5	0.9	10.5	10.8	12.5	14.0	14.2
Foot Breadth	31	5.2	0.4	4.1	4.2	5.2	5.8	5.9


INFANTS
WEIGHT (KG)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
90.00
STATURE (CM)

F. Glossary of Anatomical and Anthropometric Terms.

Technical terms which are used in the description of the particular measurements conducted in this study are defined below. Where possible, an attempt has also been made in the description of each measurement to use the most clearly understood term, and in some cases, provide both a technical and non-technical term so that both the professional anthropometrist and the untrained reader can clearly understand and reproduce the measurements.

1. Body Landmarks

ACROMION - The most lateral bony point on the acromion process of the scapula (shoulder blade). It is near the shoulder joint center of rotation.

AXILLA - The armpit.

CALF - The greatest muscular development of the lower leg formed by gastrocnemius and soleus muscles.

CLAVICLE - The "collar bone" which lies between the sternum and acromion process of the scapula.

CRINION - The point on the forehead where the hairline intersects the midline.

DIGIT - A finger or toe.

EXTERNAL CANTHUS - The most lateral outer angle of the slit between the eyelids.

GLABELLA - The most prominent point palpable on the forehead between the eyebrows (supra-orbital ridges) and above the junction of the nose (nasofrontal suture) with the forehead.

GLUTEAL FURROW - The crease at the junction of the back of the legs with buttocks.

GREATER TROCHANTER - The large bony prominence located on the lateral (outside) aspect of the shaft of the upper leg bone (femur). It is near the joint center of rotation for the hip.

ILIAC CREST - The palpable ridge along the upper and outer surface of the pelvis.

ILIOCRISTALE - The highest point on the lateral brim of the iliac crest of the pelvis.

ILIOSPINALE - The most foreward point on the anterior-superior iliac spine of the pelvis.

MALLEOLI - The rounded bony prominence on either side of the ankle joint. The lateral malleolus is on the outside of the ankle (fibula) and the medial malleolus is the projection on the inside of the ankle (tibia).

MENTON - The bony point of the chin.

OPISTHOCRANION - The most posterior bony point from Glabella on the back of the head.

PATELLA - The kneecap.

PHALANGES - The long bones in the fingers.

RADIALE - A bony point at the uppermost point on the proximal border of the radius. It is found in the dimple on the lateral surface of the elbow with the arm hanging loose and palm forward. It is an approximation of the elbow joint center of rotation.

RADIUS - The bone on the thumb side of the forearm. It is the shorter of the two bones of the forearm.

RUMP - The buttocks in infants.

SELLION - The greatest nasal root depression at the junction of the nose with the forehead.

SOLE - The bottom of the foot.

SPHYRION - The most distal tip of the tibia below the medial malleolus at the ankle. It is an approximation of the ankle joint center of rotation.

STYLION - A bony point at the distal tip of the styloid process of the radius at the wrist. It can be palpated near the bony prominence on the thumb side of the wrist as the lower edge of the prominence closest to the hand. It is an approximation of the wrist joint center of rotation.

STYLOID PROCESS - The bony tip of either the radius or ulna at the wrist.

SUPRASTERNALE - The lowest, deepest point in the hollow of the notch of the manubrium (breastbone).

TIBIALE - The point at the upper inside edge on the head of the tibial bone of the lower leg. It is an approximation of the knee joint center of rotation.

TRAGION - The anterior portion of the cartilaginous notch just superior to the tragus (cartilaginous projection in front of ear hole) of the ear. The center of gravity of the head is located near an axis passing through the right and left tragion landmarks.

VERTEX - The highest point at the top of the head in the mid-sagittal plane.

ZYGOMATIC ARCH - The bony arch on either side of the face (cheekbone).

2. Body Orientations and Motions.

ABDUCT - To move away from the body in a lateral direction.

ANTERIOR - The front surface.

ANTERIOR-POSTERIOR - From front to back.

CENTER OF GRAVITY (C.G.) - That point in a body around which its weight is evenly distributed or balanced. In this study, center of gravity is reported as a lineal distance from a specified reference plane. It thus denotes the position of a plane through the body where the body could theoretically be balanced on a knife edge.

DISTAL - Farthest from the center (opposite to proximal).

EXTENSION - The straightening of one body segment relative to another.

FLEXION - The bending of one body segment relative to another.

FRANKFORT PLANE - The standard plane of orientation of the head, determined by locating the lowest point of the base of the bony margin of the left eye (orbitale) and the right and left ear holes (porion) in the same horizontal plane. This can be closely approximated when the subject looks directly forward.

INFERIOR - The lower surface, toward the feet.

MEDIOLATERAL - Relating to the middle and to a side.

MID-SAGITTAL PLANE - The front to back (anteroposterior) plane that pass approximately between the legs and through the middle of the body.

POSTERIOR - The back surface, toward the back or dorsal surface of the body.

SUPERIOR - The upper surface, toward the head.

CHAPTER IV

SUMMARY AND DISCUSSION

This report marks the completion of over five years of collecting anthropometric data on the current population of infants, children, and youth in the United States. In this study, data for 87 body measurements for 4127 children from age 2 weeks to 19 years have been collected, compiled, edited, statistically analyzed and presented in a format which can be utilized by all user groups. The previous Consumer Product Safety Commission sponsored measurement study included 4027 infants and children to age 12 for 41 body measurements. The combined studies result in a total of 93 functional and traditional body measurements taken on 8154 subjects throughout the United States. Together, these data represent the most comprehensive source of anthropometric information for application to child product safety currently available.

The critical need for child body size information was detailed in a previous survey compiled in 1972 of some 800 world-wide references (18). In this report an attempt has been made to present information that will correct the deficiencies observed in this survey of prior studies and to present the results in ways most useful to the potential user. However, anthropometry presents many complex relationships that may not be evident to the casual user. In this regard an attempt has been made to provide details of the problems encountered in data collection and analysis in Chapter II. This chapter will briefly discuss the results relative to further relationships and observations which are intended to assist the user in understanding the limits and meaning of the data presented.

A. Representativeness of Sample

A major goal of this study was to obtain anthropometric measurements on a sample of subjects which would be representative of the U.S. population. Racial, geographic, and socio-economic factors

were recorded and every attempt made to achieve a reasonable and representative balance of the factors that might bias the measurement statistics. A National Sampling Scheme was utilized for selecting schools and school districts in an attempt to provide a random sampling of children from rural and suburban areas.

Racial differences in man have been observed in body size and proportions as well as among ethnic groups of different national ancestry within a single race. With regard to race, the final sample was in excellent agreement with estimates from the U.S. Department of Health, Education and Welfare, National Center for Health Statistics, in that 11% was identified as black (Negroid), 1.0% Oriental (Mongoloid) including 0.1% American Indian, 86.5% as white (Caucasoid), and 1.5% as "Other", a category which included those individuals which were of unknown racial affiliation, usually a mixture. It should be pointed out, however, that since there is a lack of precise genealogical and biological information on each subject racial designations can only be approximate. Within the limitations presented by the HEW racial proportions, it is believed that this study is racially representative of the U. S. population.

Graphically, the sample was distributed throughout the conterminous United States, utilizing the National Sampling Scheme, which took into consideration census and demographic data. Since some regions chosen by this design could not be used, an attempt was made to substitute comparable alternate locations. The sample included both rural and urban populations as well as varied socio-economic factors. An attempt was made to cross-check pertinent criteria by periodic evaluation of the questionnaires, and observations by the measurers. However, the school locations within a particular city, town, or area were chosen to provide a sample with varied socio-economic backgrounds, and where particular schools selected by the national design could not be used, an effort was made to substitute a school within the area consisting of a similar socio-economic background. This involved assistance from the local school administrations, which often had very detailed breakdowns of

the makeup of each schools' population.

No matter how "good" or sophisticated a sampling design may be in theory, bias may occur in practice, particularly where subjects must volunteer. It was found, for example, that in junior high and high school, teenagers were more self conscious of physical characteristics, and that the athletic or more physically mature individuals may tend to participate more readily than lesser endowed individuals. While every attempt was made to discourage this type of bias (e.g., having schools offer academic credit incentive to students who participate) it is difficult to remove or measure all possible biases due to these factors.

B. Results with Respect to Age

Since it is common to think of children's physical dimensions as related to age, it is logical to present the data as a function of age. In both the previous study and this one, subject age was considered the primary independent variable for most of the data presentation. Measurement statistics calculated for subjects in selected age intervals and graphical displays were used with age as the horizontal axis (abcissa). Several points can be noted about the data presented in this way.

From the scatter plots and tabular data it is seen that the spread or variance of the measurements increase with age. This is as expected since the cumulative effects of varying growth rates become greater. It is also observed in many measurements, however, that the spread or variance increases more after age 14 for tables and plots where data for males and females are presented together. Again, this is expected and is due to the divergence in the measurements of the sexes. This can be observed on many of the scatter plots where until age 14 the females (x's) and males (+'s) are jointly randomly distributed, and after age 14, the males tend to separate above the females. This is seen for both height and weight type measurements since in the teen years males tend to be both

taller and heavier than females. This is also quite apparent in many of the head, face and hand measurements where one might not expect such differences. For step height, the large variances relative to the measurement range reflect the fact that subject motivation and interpretation of instructions may also influence the results.

On the scatter plots of some measurements (e.g., wrist breadth, finger diameter), it will be noted that the points tend to cluster or stratify rather than be randomly distributed. There are two reasons for this. First, if the total range of the plot values is small as is the case for wrist breadth, the clustering is due to the fact that all measurement values have been rounded off to the nearest millimeter. For hand clearance and finger diameters the clustering is due to the fact that only discrete measurement values corresponding to the hole sizes in the measurement boards were recorded.

With regard to weight and other measurements related to weight such as waist circumference, it is also interesting to note that the bottom edge of the scatter plot is usually quite smooth while the top edge shows a wide scattering of data points. This scattering becomes most apparent above an age of about 8 and indicates the tendency for the population to be skewed toward heavier individuals. Another way of stating this is that there is an apparent minimum limit in body weight, but the maximum limit is indefinite. This skewness is not observed for stature or height measures where the measurements are primarily influenced by skeletal size.

Concerning center of gravity measurements, it was again observed that as a percent of stature, the center of gravity is nearly constant at 56-58 percent although a slight decrease from age 2 to 18 is seen. Seated center of gravity as a percent of sitting height decreases from about 35 percent at 2 years to 27 percent at 18 years while as a percent of buttock-knee length it is again nearly constant at about 42 percent.

C. Bivariate Measurement Relationships.

In the bivariate plots shown in Section D of Chapter III several

interesting points can be observed. In the weight versus stature scatter plot for 2-18 years, the non-linearity of the relationship is obvious. For persons of larger stature the relationship has a steeper slope than for persons of small stature. While these are cross-sectional data and not longitudinal growth data, the implication would seem to be that as a person gets closer to his mature stature his weight continues to increase due to growth in other directions or a filling out of body mass. At low statures corresponding to young children and for infants, the relationship is nearly linear, indicating that weight gain is a constant function of stature gain.

In other bivariate relationships, it will be noted that those length measurements plotted with stature are quite linear and the variance is nearly constant throughout the curve. Those plotted with weight, however, show a more curved relationship and an increasing variance with larger weights. It is also interesting to note the separation of the data points into two groups for some measurements like maximum hip breadth or maximum thigh breadth versus weight. From the regression coefficients for males and females it is seen that these groups correspond to changing relationships of the measurements between sexes. Females tend to have broader hips, for example, per given weight after 50 kg than males. This divergence of the sexes probably accounts for the increasing variance on the weight curves even when the separation is not apparent (e.g., shoulder breadth or thigh clearance with weight).

D. Use of Summary Statistics

In this study, as is traditionally done in anthropometric surveys, the summary statistics including mean, standard deviation, 5th, 50th, and 95th percentiles and minimum and maximum values have been given for each measurement and for various subject groupings by age and sex. In addition, every data point has been plotted in a measurement versus age scatter plot along with each table in order to indicate visually the relationship with age and the variability of the bandwidth .

With regard to the minimum and maximum values, it can be seen in scanning values for most measurements, that there are some minor fluctuations up and down as age increases. On the scatter plots one can observe the scattering of extreme data points from which these fluctuations result. In fact, if one were to shift the age groups one or two months either way, the pattern of minima and maxima would also shift. Thus, the minimum and maximum values shown are merely extremes of the particular sampled population and are subject to the limitations imposed by chance, sample size, and criteria for subject groups.

Engineers and product designers may find the 5th and 95th percentile values most useful, since it is these values which bracket the dimensions into which 90% of the population can be expected to lie. The user should be cautioned, however, in the use and limitations of percentiles to describe an individual or class of individuals. As Daniels (3) has demonstrated it is virtually impossible to find an individual who is "average" in more than a few body measurements. Similarly, no one person is 5th or 95th percentile in more than a few dimensions. Anthropometrically, while the human body is the same in qualitative appearance within the species, there are considerable differences in the quantitative measures of the body. In statistical terms, there are relatively few dimensions that are highly correlated ("r" >.70) which means that the system varies in dimensional description within the same body and population.

A good example of how the correlation coefficient between anthropometric dimensions affects the designs of a workspace is found in a two-part article by Moroney (8) and Smith (17). Thirteen dimensions traditionally used as the workspace anthropometry were selected to demonstrate the effect of designing a workspace for those individuals who were outside the 5th and 95th percentiles for these dimensions. If an individual had any measured dimension that was smaller than the 5th percentile or greater than the 95th percentile for any of the 13 dimensions, he or she was excluded from the population for

which the workspace was being designed. Of an original sample size of 1,547, 814, or 52.62%, were excluded.

All this is to say that one cannot define or construct a 5th or 95th percentile human by adding together all the 5th and 95th percentile dimensions. For example, one does not obtain a person of 5th percentile stature by adding together 5th percentile linkage lengths. Such a task is further complicated by the complexity of the human anthropometric system whose dynamic spatial geometry cannot be predicted easily from static dimensional anthropometry. For example, one cannot actually predict the functional reach of the forearm in the horizontal plane by adding together the lengths shoulder-elbow, elbow-wrist and hand length since these measurements do not consider the joint linkage systems involved.

E. Statistical Comparisons

As mentioned at the beginning of Chapter III, a statistical comparison (analysis of variance) between measurement means for selected core measurements from the three subsamples (i.e., three data sets) taken in this study showed no significant difference between these subsamples at the .05 level of significance. A similar comparison was made between results taken by automated and standard measurement techniques in this study and between results for this study and the previous CPSC study completed in 1975 by comparing selected core measurements.

Table 4 shows the results obtained by using a Student's t-test to compare means for selected core measurements taken by automated and standard techniques. As indicated in the last column there was a significant difference at the .05 level in several instances. If one excludes the first two age groups, however, it is observed that a statistically significant difference in the means occurred in only 6 out of 30 cases and that these were randomly distributed among the

Table 4. Statistical Comparisons of Selected Measurement Means for Automated Versus Standard Measuring

Age (Yrs)	Mean Value Standard	(N)	Automated	(N)	Difference S-A	Sig. Diff. @ .05 level
WEIGHT (kg)						
2-4	14.9	(146)	14.4	(180)	.5	Yes
4-6	18.1	(235)	18.7	(281)	-.6	Yes
6-9	25.3	(184)	24.9	(475)	.4	No
9-11	33.9	(153)	33.1	(379)	.8	No
11-13	41.1	(112)	41.0	(481)	.1	No
13-15	50.0	(91)	50.4	(469)	-.4	No
15-19	60.6	(169)	61.9	(536)	-1.3	No
STATURE (cm)						
2-4	96.6	(147)	94.9	(180)	1.6	Yes
4-6	107.2	(234)	109.5	(281)	-2.3	Yes
6-9	124.0	(182)	123.8	(475)	.2	No
9-11	138.6	(153)	137.9	(379)	.7	No
11-13	149.0	(112)	149.0	(481)	.0	No
13-15	158.7	(91)	159.7	(469)	-1.0	No
15-19	167.6	(169)	168.8	(536)	-1.2	No
ERECT SITTING HEIGHT (cm)						
2-4	55.4	(144)	55.2	(176)	.2	No
4-6	60.1	(231)	61.1	(276)	-1.0	Yes
6-9	67.0	(185)	66.8	(474)	.2	No
9-11	72.4	(150)	72.4	(372)	.0	No
11-13	77.0	(112)	77.0	(474)	.0	No
13-15	81.7	(91)	82.3	(466)	-.6	No
15-19	88.0	(168)	88.1	(534)	-.1	No
SHOULDER BREADTH (cm)						
2-4	25.2	(146)	24.4	(179)	.8	Yes
4-6	26.9	(235)	26.8	(250)	.1	No
6-9	30.3	(185)	30.0	(456)	.3	No
9-11	33.9	(153)	33.0	(371)	.9	Yes
11-13	36.1	(112)	35.4	(481)	-.7	Yes
13-15	38.9	(91)	38.3	(463)	.6	No
15-19	42.1	(168)	41.7	(535)	.4	No
MAXIMUM HIP BREADTH (cm)						
2-4	19.6	(147)	19.1	(175)	.5	Yes
4-6	20.8	(232)	20.6	(247)	.2	No
6-9	23.6	(185)	23.1	(452)	.5	Yes
9-11	26.4	(153)	25.9	(362)	.5	Yes
11-13	28.9	(112)	28.4	(475)	.5	No
13-15	31.1	(91)	31.0	(460)	.1	No
15-19	34.5	(169)	33.8	(531)	.7	Yes
WAIST CIRCUMFERENCE (cm)						
2-4	49.2	(146)	47.6	(177)	1.6	Yes
4-6	51.2	(234)	50.7	(252)	-.5	No
6-9	56.6	(182)	55.1	(456)	1.5	Yes
9-11	62.0	(153)	60.8	(370)	1.2	No
11-13	66.0	(111)	64.9	(477)	1.1	No
13-15	68.7	(91)	68.9	(466)	-.2	No
15-19	73.7	(169)	73.9	(531)	-.2	No

age groups and measurements. It is also observed, that while the differences were statistically different in these cases, the actual differences are probably not significant from a design point of view.

For the 2-4 and 4-6 year groups, the differences may be explained by differences in age distribution for the two techniques. As has been previously mentioned, standard techniques were used most often in day care centers where only a few children could be measured and physical conditions were not conducive to the computer system. Subjects measured at these facilities were generally in the range of 3 to 4 years old. Toddlers from 2-3 years were generally measured using the automated equipment while 5-6 year olds were usually measured in schools also using the automated equipment. Thus, in the age group 2-4, standard measuring accounts for most of the 3-4 year olds and automated measuring accounts for most of the 2-3 year olds. This accounts for the fact that the mean values for standard measuring are consistently larger than for automated measuring in this age group. Similarly, for 4-6 year olds, standard measuring accounts for most of the 4-5 year olds and automated for most of the 5-6 year olds resulting in the fact that the measurement means for standard measuring are almost always smaller than for automated measuring.

Other differences between results from the two techniques may also be explained by differences in sampling locations. For example, much of the standard measuring for subjects over 6 years was conducted in summer camps and seasonal effects on body dimensions may therefore be a factor.

It should also be pointed out, however, that some differences may be attributed to changes in the "feel" between the standard and automated instruments to the anthropometrist. As much as one would like to mechanize the anthropometric process, there remains a personal element and changes in instrumentation and anthropometrists can and will have an effect. In this study, one purpose of the automated equipment was to standardize and minimize those effects and every attempt was made to utilize this equipment at all times. While

certain practical constraints previously discussed necessitated the use of standard equipment at times, it can be seen from Table 4 that 70% of the subjects over 6 years were measured by automated equipment. Thus, differences caused by use of standard instrument techniques on the overall results are reduced by the relative sample sizes.

Table 5 shows the results obtained by using a Student's t-test to compare population means for selected measurements taken in the 1975 study with the same measurements taken in the present study. At first glance a number of cases where a statistically significant difference exists are observed. On closer inspection, however, it is seen that the actual differences are probably not functionally important from a design application viewpoint. Similar to the results for 2-4 and 4-6 year olds in Table 4, many of these differences may be attributed to differences of age distribution between the studies within the age groups compared. For example, for infants less than 6 months (.5 years), the 1975 study mean values are consistently smaller than the 1977 study mean values reflecting the fact that a larger number of the infants in the 1975 study were measured at infant clinics where most infants are less than 3 months. Similarly, the 1½-2 year olds show consistently larger mean values in the 1975 study reflecting differences in sampling and age distribution in the two studies. Two other factors which may be reflected in these statistical differences include differences in geographic distribution and differences in anthropometrists.

The fact that these differences appear to exist between two studies conducted under such similar circumstances only serves to point out the magnitude of the problem one has in combining or using anthropometric data taken in two or more independent studies. It does not alter the fact that the combined results of these two studies represent the most accurate, consistent, and complete body of U. S. infant, child and youth anthropometric data available today for application to consumer product design.

Table 5. Statistical Comparisons of Selected Measurement Means for 1975 and 1977 CPSC Child Measurement Studies

Age (Yrs)	Mean Value 1975	(N)	1977	(N)	Difference 1975-1977	Sig. Diff. @ .05 level
WEIGHT (kg)						
0-.5	5.4	(189)	6.9	(62)	-1.5	Yes
.5-1.0	8.4	(99)	8.6	(50)	-.2	No
1.0-1.5	10.0	(50)	10.2	(38)	-.2	No
1.5-2.0	11.7	(52)	11.3	(33)	.4	No
2.0-5.0	15.9	(803)	15.9	(578)	.0	No
5.0-7.0	20.5	(647)	20.6	(483)	-.1	No
7.0-10.0	27.5	(772)	28.4	(715)	-.9	Yes
STATURE (cm)						
0-.5	57.9	(217)	62.7	(79)	-4.8	Yes
.5-1.0	69.6	(111)	70.5	(57)	- .9	No
1.0-1.5	75.9	(52)	77.2	(48)	-1.3	Yes
1.5-2.0	83.7	(60)	81.9	(42)	1.8	Yes
2.0-5.0	100.5	(1366)	99.8	(579)	.7	Yes
5.0-7.0	113.8	(791)	114.5	(480)	-.7	No
7.0-10.0	129.3	(821)	130.1	(715)	-.8	Yes
SHOULDER BREADTH (cm)						
0-.5	16.7	(206)	18.3	(78)	-1.6	Yes
.5-1.0	20.0	(98)	20.6	(57)	-.6	Yes
1.0-1.5	21.6	(48)	21.5	(46)	.1	No
1.5-2.0	22.7	(63)	22.2	(43)	.5	No
2.0-5.0	25.3	(1336)	25.5	(576)	-.2	Yes
5.0-7.0	27.7	(779)	28.1	(445)	-.4	Yes
7.0-10.0	30.9	(790)	31.4	(695)	-.5	Yes
ERECT SITTING HEIGHT (cm)						
0-.5	38.5	(202)	42.0	(79)	-3.6	Yes
.5-1.0	45.0	(91)	46.6	(57)	-1.6	Yes
1.0-1.5	47.8	(41)	49.2	(49)	-1.4	Yes
1.5-2.0	51.3	(52)	51.1	(43)	.2	No
2.0-5.0	56.7	(1359)	57.0	(569)	-.3	Yes
5.0-7.0	62.1	(793)	63.2	(477)	-1.1	Yes
7.0-10.0	68.5	(816)	69.3	(710)	-.8	Yes
KNEE-HEIGHT (cm)						
0-.5	15.0	(209)	16.7	(78)	-1.7	Yes
.5-1.0	18.4	(99)	18.8	(57)	-.4	Yes
1.0-1.5	20.8	(52)	21.0	(48)	-.2	No
1.5-2.0	23.4	(66)	22.7	(43)	.7	Yes
2.0-5.0	29.5	(1350)	29.3	(536)	.2	No
5.0-7.0	34.3	(781)	34.8	(428)	-.5	Yes
7.0-10.0	40.0	(807)	40.7	(686)	-.7	Yes
HEAD CIRCUMFERENCE (cm)						
0-.5	39.3	(197)	40.9	(77)	-1.6	Yes
.5-1.0	45.1	(92)	44.7	(55)	.4	No
1.0-1.5	46.8	(44)	46.7	(45)	.1	No
1.5-2.0	48.7	(63)	47.5	(42)	1.2	Yes
2.0-5.0	50.5	(1355)	50.1	(575)	.4	Yes
5.0-7.0	51.6	(709)	51.1	(448)	.5	Yes
7.0-10.0	52.5	(809)	52.2	(687)	.3	Yes

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Films

1975 NEW METHODS OF INFANT AND CHILD ANTHROPOMETRY FOR PRODUCT SAFETY. 18 minutes-color-sound-16mm. 31 March.

1973 CRIB-SLAT STUDY. TV release. 1 min. 30 sec.-color-sound-16mm-24 July.

Automatic Data Processing

1977 Consumer Product Safety Commission Final Summary data in both printed tabular format and IBM compatible magnetic tape (9-track 1600 BPI) with standard label) for 87 measurements of 4,127 U.S. children from age 2 weeks through 18 years. (31 April).

1975 Consumer Product Safety Commission Final Summary data in both printed tabular format and IBM compatible Magnetic Tape (9-track

1600 BPI with standard label) for 41 measurements of 4027 U.S. children from age 2 weeks to 12 years. (31 March).

In Preparation

ORBITAL DIMENSIONS OF CHILDREN AGED 2 THROUGH 12 YEARS, Snyder, R.G., C.L. Owings, L.W. Schneider, and M. Spencer.

APPENDIX

MEASUREMENT LOCATIONS BY GEOGRAPHIC AREA

NEW ENGLAND

MASSACHUSETTS

Westborough Junior High School, Westborough
Treasure Valley Boy Scout Camp, Paxton
Living and Learning Centers, Boston Area

CONNECTICUT

Windham Tolland 4H Camp, Abington
Camp Sloan YMCA, Lakeville

NEW HAMPSHIRE

Camp Andover-Waldron, Meredith Center

MIDDLE ATLANTIC

NEW YORK

Roslyn High School, Roslyn

NEW JERSEY

YMCA Day Camp, Scotch Plains
4 Seasons Outdoor Center, Lebanon

PENNSYLVANIA

Riverview High School, Oakmont
Riverview Junior High, Oakmont

MARYLAND

Black Rock YMCA, Butler

MIDWEST

MICHIGAN

Highway Safety Research Institute, Ann Arbor
Children's Play School, Ann Arbor
Little Farms Nursery, Ann Arbor
St. Lukes Nursery, Ann Arbor
Little Red School House, Ann Arbor
Community Day Care Center, Ann Arbor

MICHIGAN (continued)

Little Angels Nursery, Ann Arbor
Meadowbrook Farms Nursery, Ann Arbor
Perry School Nursery, Ann Arbor
Well Baby Clinic, University Hospital, Ann Arbor
St. Pauls Lutheran Elementary School
Dr. Donnelly's Pediatric Clinic, Pontiac
Oakland University Toddler Center, Oakland
Children's Center Montessori, Detroit
Do Re Me Nursery, Detroit
Sugar 'N Spice Nursery, Detroit
East Middle, Ypsilanti
Ypsilanti High School
West Middle, Ypsilanti
Estabrook Elementary, Ypsilanti
Pontiac Central, Pontiac
Whitfield Elementary, Pontiac
Franklin Elementary, Pontiac
Erickson Elementary, Ypsilanti
George Elementary, Ypsilanti
Woodruff Elementary, Ypsilanti
Manchester High, Manchester
South Lyon Elementary, South Lyon

OHIO

Mt. Vernon High, Mt. Vernon
Wiggin St. Elementary, Gambier
Fredericktown High
Fredericktown Intermediate

SOUTH ATLANTIC

FLORIDA

Wilkinson Elementary, Sarasota
Bradenton Middle School, Bradenton
Gocio Elementary, Sarasota

GEORGIA

Mini-School System, Atlanta Area

SOUTH

LOUISIANA

Rayne High School, Rayne
Crowley Junior High School, Crowley

MISSISSIPPI

Mendenhall Attendance Center
Magee Attendance Center
West Union Junior High School, Pinola
Magee Junior High School

TEXAS

Robert E. Lee High School
Pumphrey Elementary
Baytown Junior High School
Sugar 'N Spice Nursery
Little Friends Day Care Center

CENTRAL

COLORADO

Sterling High School
Caliche High School, Iliff
Campbell Elementary, Sterling
Aunt Betty's Playschool, Sterling
N.E. College Day Care Center, Sterling

MISSOURI

Spoede Elementary, St. Louis
West Ladue Junior High, St. Louis

IOWA

West High, Waterloo
McKinstry Junior High, Waterloo
Orange Elementary, Waterloo
Waterloo Day Care Center

WEST

OREGON

Dune Elementary, Eugene
Churchill High, Eugene
Patterson Community School, Eugene
Towne Carousell Day Care, Eugene
Rainbow Valley Day Care, Eugene

N. CALIFORNIA

Ridgeview Junior High, Napa
Vintage High, Napa

N. CALIFORNIA (Cont'd)

Armijo High, Fairfield
Fairfield High
Amy Blanc Elementary, Fairfield
Crystal Intermediate, Suisun

SOUTHWEST

S. CALIFORNIA

Goldenbert School - Overland, Westwood
The Nurtery, Los Angeles
Los Angeles Family School
Goldenberg School - Brentwood

ARIZONA

Greenway Middle School, Phoenix
Desert Cove Elementary, Phoenix

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