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ANTHROPOMETRY OF MALE BASIC TRAINEES

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EDMUND CHURCHILL
ANTIOCH COLLEGE

JULY 1953

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ANTHROPOMETRY OF MALE BASIC TRAINEES

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July 1953

Contract No. AF 18(600)-30
RDO No. 695-71

Wright Air Development Center
Air Research and Development Command
United States Air Force
Wright-Patterson Air Force Base, Ohio

FOREWORD

The material presented in this report was compiled by the Anthropology Section, Biophysics Branch, Aero Medical Laboratory, under the authority of Research and Development Order 695-71 entitled "Anthropometry of USAF Personnel", and by Antioch College, Yellow Springs, Ohio, under Contract No. AF 18(600)-30. The project scientist was Gilbert S. Daniels, 1st Lt, USAF (MSC).

ABSTRACT

Body size data for 60 measurements of over 3,000 Air Force male basic trainees are presented for use by aircraft and equipment designers.

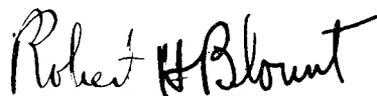
The statistics reported for each measurement are: the mean, standard deviation, coefficient of variation, standard errors of these statistics, range, and selected percentiles from the first to the ninety-ninth. In general, the statistics are reported in both the metric and English values.

A complete description of the anthropometric techniques used is presented.

PUBLICATION REVIEW

This report has been reviewed and is approved.

FOR THE COMMANDER:



ROBERT H. BLOUNT
Colonel, USAF (MC)
Chief, Aero Medical Laboratory
Directorate of Research

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ANTHROPOMETRY OF MALE BASIC TRAINEES

INTRODUCTION

In mid-1950 an anthropometric survey was conducted among Air Force flying personnel to gather information on body size and proportion for this specialized group. The results of this survey were published in summary form in WADC Technical Report 52-321, Anthropometry of Air Force Flying Personnel (1950). The information made available in this report finds extensive use in the solution of many design problems dealing with clothing, personal equipment, and other phases of the ever increasing man-machine complex.

In March 1952 the Clothing and Equipage subdivision of the Air Materiel Command requested that similar information be made available on non-rated personnel. To obtain this information, an anthropometric survey was carried out during which over three thousand male basic trainees were measured. The measuring was limited to basic trainees primarily because the greatest issue of clothing items to personnel takes place during basic training.

From 10 July through 1 August 1952 the actual job of measuring the subjects was carried out at Lackland Air Force Base under the supervision of Lt. G. S. Daniels and Capt. H. C. Meyers, Jr., of the Anthropology Section of the Aero Medical Laboratory, Wright Air Development Center. Further measurements were made at Parks and Sampson Air Force Bases during August and September under the supervision of Capt. Meyers.

The information gathered was transferred from the field recording blanks to IBM punch cards at Wright Air Development Center. These cards were then turned over to the Anthropometric Project of Antioch College, Yellow Springs, Ohio, where the data were analyzed under the provisions of Contract No. AF 18 (600) - 30.

Many thanks are due the men who did the measuring and recording of the data and to the Commanding Officers of Lackland, Parks, and Sampson Air Force Bases for their cooperation in the project. Thanks are also due to Charles Snyder of the contractor's staff for his efforts in the preparation of the statistical data for publication.

The authors wish also to thank Mr. H.T.E. Hertzberg, Chief of the Anthropology Section, for his support in the planning and preparation of this report.

SECTION I

THE SAMPLE

This report concerns the male basic trainee. Being in basic training is the only thing that was common to all the men who were measured in this anthropometric survey. Should these data be used for any purpose other than the design of items for use by male basic trainees, the following information should be considered:

	<u>RANK</u>	N = 3323
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>
Airmen Basic	3209	96.57
Airmen Third Class	110	3.31
Airmen Second Class	4	.12

Not all of the men measured were in the service for the first time. The 114 men who were either Airmen 3rd Class or Airmen 2nd Class were re-enlistees in the Air Force or men who had previous military duty in one of the other services.

The educational level of the personnel measured was recorded as the highest grade completed by each man. Special training was considered as some course beyond the high school level, such as some type of technician's training.

	<u>EDUCATION</u>	N = 3303
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>
Read and Write	56	1.69
Grade School	1375	41.63
High School	1482	44.87
Special Training	4	.12
One Year College	145	4.39
Two Years College	100	3.03
Three Years College	29	.88
College (Completed)	88	2.66
Professional	24	.73

The data for religion, marital status, and race, and the distribution by Air Force Base are self-explanatory.

<u>RELIGION</u>			N = 3285
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>	
Protestant	1975	60.12	
Catholic	1246	37.93	
Jewish	44	1.34	
Other	20	.61	

<u>MARITAL STATUS</u>			N = 3304
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>	
Single	3106	94.01	
Married	179	5.42	
Divorced or Separated	18	.54	
Widowed	1	.03	

<u>RACE</u>			N = 3305
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>	
White	2823	85.42	
Negro	455	13.77	
Indian	14	.42	
Mongoloid	13	.39	

<u>AIR FORCE BASE</u>			N = 3332
<u>Group</u>	<u>Frequency</u>	<u>Percentage</u>	
Lackland	1461	43.85	
Parks	565	16.96	
Sampson	1306	39.20	

Data on regional and national origins of the subjects and their parents are given in Table I. Distribution by age is shown in Table II.

TABLE I

BIRTHPLACE

Group	Birthplace of Subject		Birthplace of Father		Birthplace of Mother	
	<u>N = 3304</u>		<u>N = 3124</u>		<u>N = 3156</u>	
New England States Me., N.H., Vt., Mass., R.I., Conn.	53	1.60	339	10.85	299	9.47
Mid-Atlantic States N.Y., N.J., Pa.	255	7.72	203	6.50	198	6.27
South-Atlantic States Del., Md., D.C., Va., W. Va., N.C., S. C., Ga., Fla.	671	20.31	477	15.27	511	16.19
East North Central States Ohio, Ind., Ill., Mich., Wis.	502	15.19	529	16.93	520	16.48
East South Central States Ky., Tenn., Miss., Ala.	616	18.64	466	14.92	470	14.89
West North Central States Minn., Iowa, Mo., N.D., S.D., Neb., Kans.	285	8.63	335	10.72	339	10.74
West South Central States Ark., La., Okla., Texas	357	10.80	365	11.68	373	11.82
Mountain States Mont., Idaho, Wyo., Colo., Utah, Nev., Ariz., N.M.	358	10.83	328	10.50	332	10.52
Pacific Coast States Cal., Ore., Wash.	72	2.18	45	1.44	55	1.74
Foreign Born	135	4.09	37	1.18	59	1.87

ANTHROPOMETRIC SURVEY BLANK

No. 1 2 3 4

DATE _____

NAME _____
LAST FIRST MIDDLE

SERIAL No. _____

RANK _____

AFSC _____

AGE _____ (LAST BIRTHDAY)

BIRTHPLACE OF SUBJECT _____ (GIVE STATE IF NATIVE BORN; COUNTRY IF FOREIGN BORN)

BIRTHPLACE OF FATHER _____ (" " " ")

BIRTHPLACE OF MOTHER _____ (" " " ")

RELIGION _____

RACE _____

EDUCATION _____ (HIGHEST GRADE COMPLETED)

MARITAL STATUS _____

5
6 7 8 9 10
11 12
13
14
15
16
17
18
19

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AF-MPL-23 MAY 52 64

No. 1 2 3 4

WEIGHT _____	20		21	HEAD CIRC. _____	5		6
NECK CIRC. _____	22		23	SAGITTAL ARC _____	7		8
SHOULDER CIRC. _____	24		25	CORONAL ARC _____	9		10
CHEST CIRC. (RELAXED) _____	26		27	POSTERIOR ARC _____	11		12
CHEST CIRC. (EXPANDED) _____	28		29	INTERSCYE (S) _____	13		14
WAIST CIRC. _____	30		31	INTERSCYE MAX. (S) _____	15		16
BUTTOCK CIRC. _____	32		33	HIP CIRC. (S) _____	17		18
THIGH CIRC. _____	34		35	KNEE CIRC. (S) _____	19		20
LOWER THIGH CIRC. _____	36		37	STATURE _____	21		22
CALF CIRC. _____	38		39	CERVICALE HT. _____	23		24
ANKLE CIRC. _____	40		41	ACROMIAL HT. _____	25		26
BALL OF FOOT CIRC. _____	42		43	AXILLA HT. _____	27		28
ARM SCYE _____	44		45	WAIST HT. _____	29		30
AXILLARY ARM CIRC. _____	46		47	GLUTEAL SEAM HT. _____	31		32
BICEPS CIRC. (FLEXED) _____	48		49	CROTCH HT. _____	33		34
ELBOW CIRC. (FLEXED) _____	50		51	PATELLA HT. _____	35		36
LOWER ARM CIRC. (FLEXED) _____	52		53	CALF HT. _____	37		38
WRIST CIRC. _____	54		55	ANKLE HT. _____	39		40
PALM CIRC. _____	56		57	HAND LENGTH _____	41		42
FIST CIRC. _____	58		59	PALM LENGTH _____	43		44
SLEEVE INSEAM _____	60		61	HAND BREADTH AT METACARPALE _____	45		46
SLEEVE LENGTH _____	62		63	HAND BREADTH AT THUMB _____	47		48
SHOULDER LENGTH _____	64		65	THICKNESS AT METACARPALE III _____	49		50
BIACROMIAL ARC _____	66		67	HEEL WIDTH _____	51		52
WAIST BACK _____	68		69	FOOT WIDTH _____	53		54
WAIST FRONT TO CERVICALE _____	70		71	INSTEP LENGTH _____	55		56
GLUTEAL ARC _____	72		73	FOOT LENGTH _____	57		58
CROTCH LENGTH _____	74		75	HEAD LENGTH _____	59		60
VERTICAL TRUNK CIRC. _____	76		77	HEAD BREADTH _____	61		62
CHEST BREADTH _____	78		79	HIP BREADTH _____	63		64

Figure 1 - SURVEY BLANK

Unfortunately, military duties required the replacement of some of the members of the measuring teams during the work at Parks and Sampson Air Force Bases. Measurements made by the new measuring personnel while they were undergoing on-the-job training may have been subject to some error and have been eliminated from this report.

In order to simplify the operation of measuring, it was necessary to supplement the standard anthropometric instruments (anthropometer, sliding caliper, spreading caliper, tape). An oversized sliding caliper was made for use in measurements involving large body diameters such as chest width, and a special instrument was designed for measuring sleeve inseam. All of these instruments are shown in Figure 2.

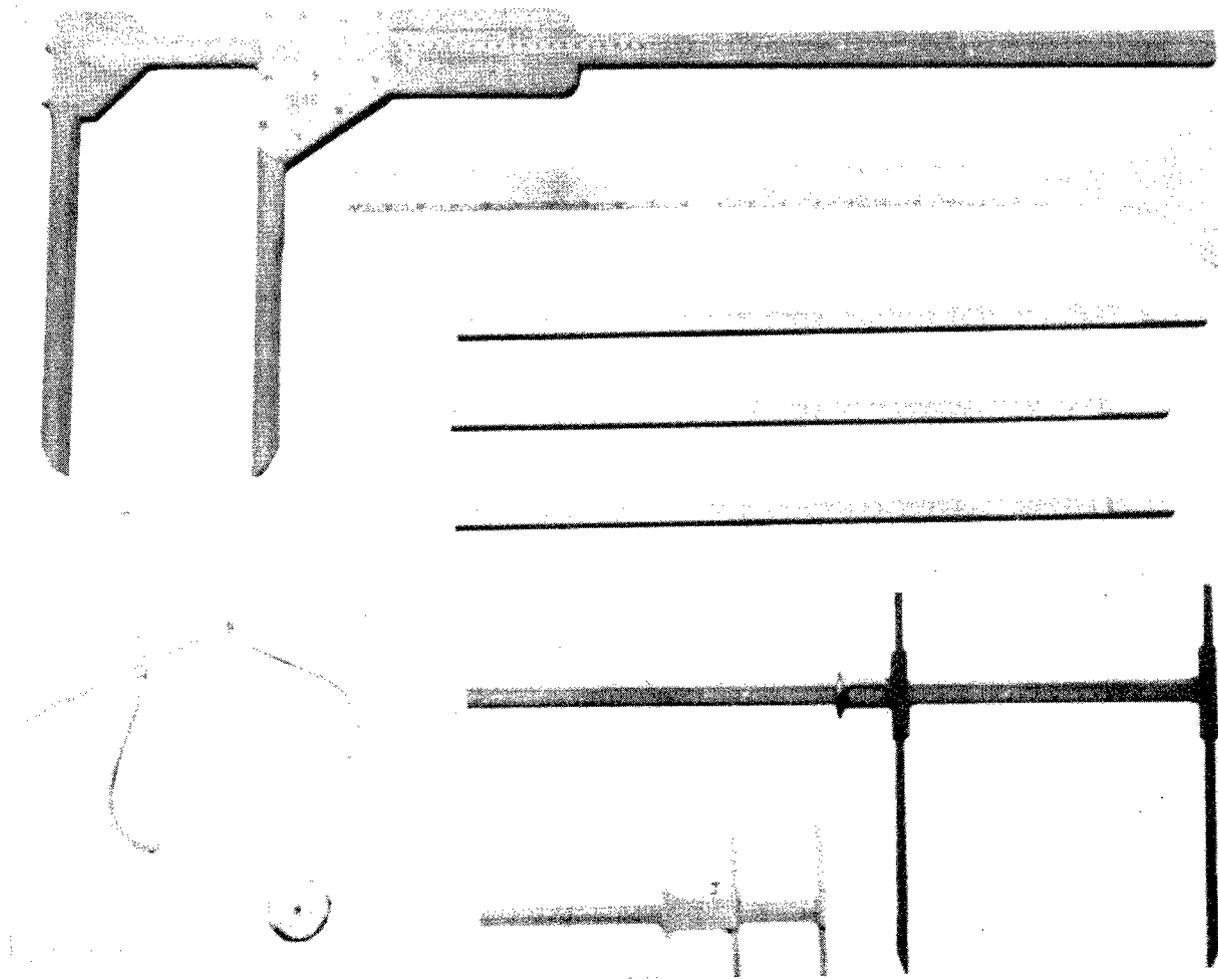


Figure 2 MEASURING INSTRUMENTS

Foot length, instep length, and foot width were taken by means of a special foot board and ankle heights were taken by means of a graduation on vertical blocks (Figure 3).

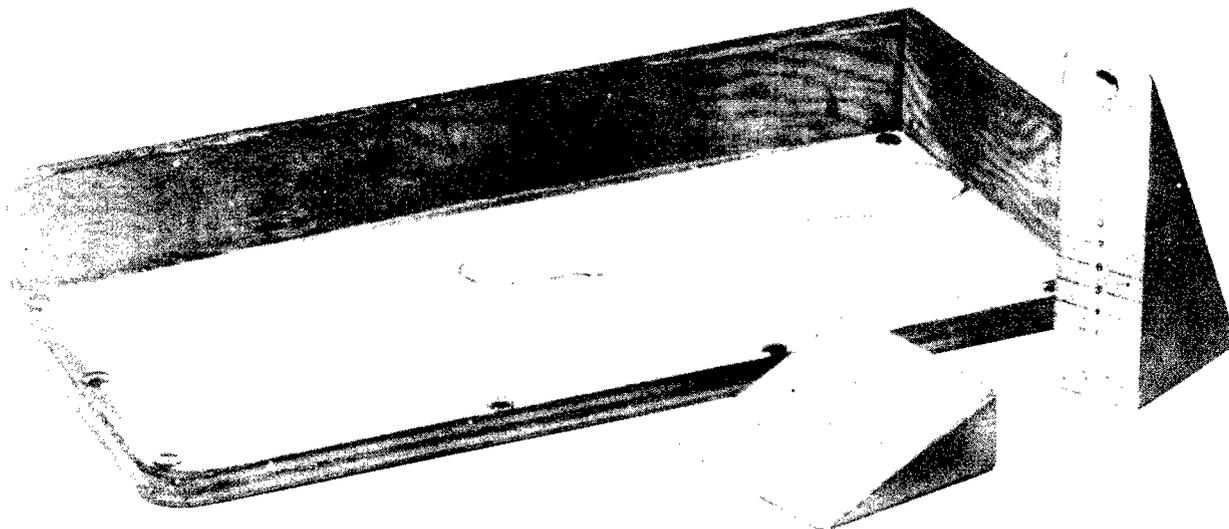
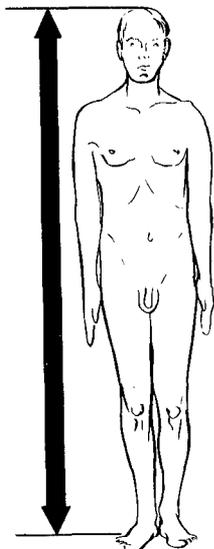


Figure 3 - FOOT BOARD AND GRADUATED BLOCKS

For convenience in making the measurements, certain anatomical points were marked on the subjects before the measuring was started. A drawing showing the locations of these points and a glossary of anatomical terms used in this report appear on pages 95 and 96. The exact technique involved in each measurement, together with schematic illustrations of the measurements, follows:

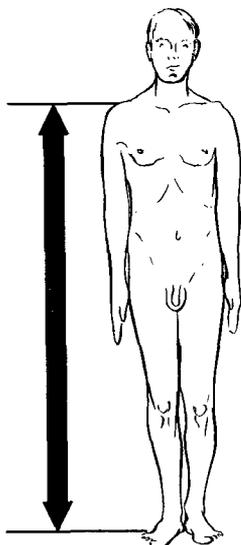
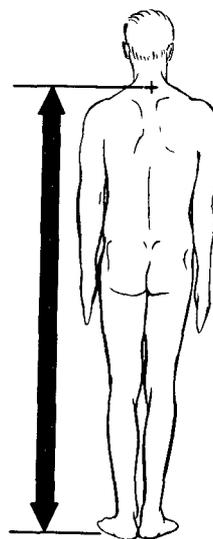


STATURE

The subject stands erect with his hands at his sides facing forward (the head in the Frankfort plane). Measure from the floor to the topmost point of the head with the anthropometer slide firmly touching the scalp.

CERVICALE HEIGHT

Subject stands. Measure from the floor to the marked cervicale point with the anthropometer.

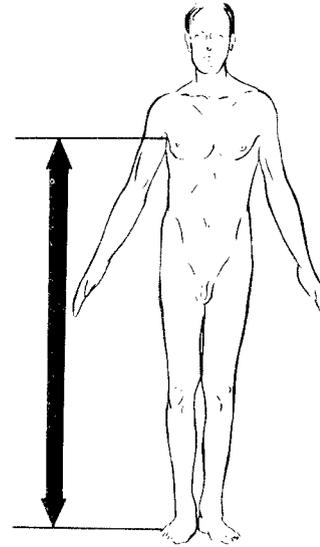


ACROMIAL HEIGHT

Subject stands erect. Measure from the floor to the marked acromion point on the right side with the anthropometer.

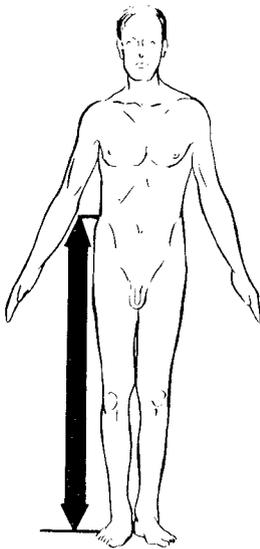
AXILLA HEIGHT

Subject stands with his arms raised slightly. The cross bar of the anthropometer is raised until it comes just under the right armpit. The subject then lowers his arms. Care is taken that both shoulders are level before reading the anthropometer.



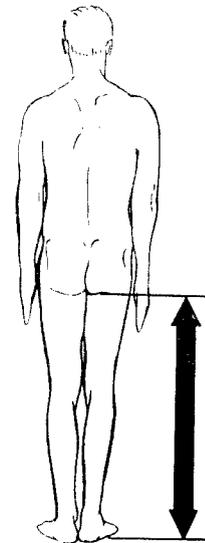
WAIST HEIGHT

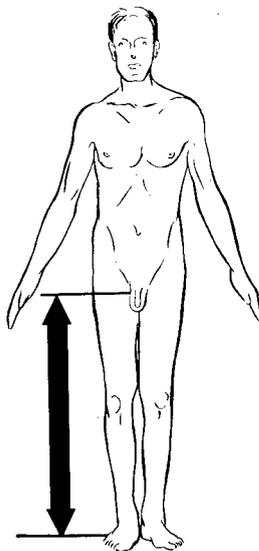
Subject stands erect. Measure from the floor to the marked waist line on the right side with the anthropometer.



GLUTEAL FURROW HEIGHT

Subject stands. Measure from the floor to the lowest point of the gluteal furrow below the right buttock with the anthropometer.



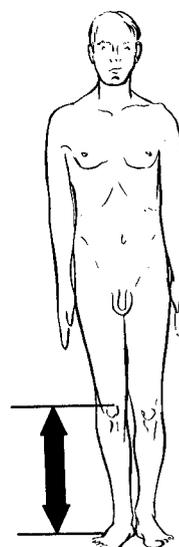


CROTCH HEIGHT (INSEAM)

Subject stands with his legs slightly apart. Measure from the floor to the highest point in the crotch between the scrotum and the right leg. This measurement is made from the front of the subject with the anthropometer.

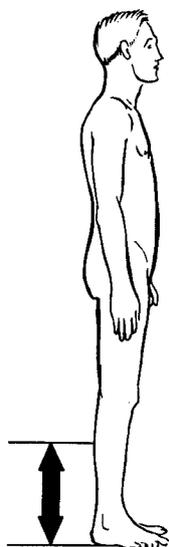
PATELLA HEIGHT

Subject stands. Measure from the floor to the upper edge of the right knee cap with the anthropometer.



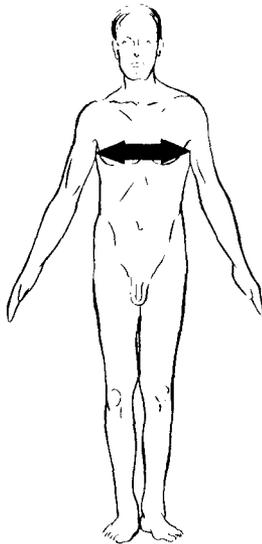
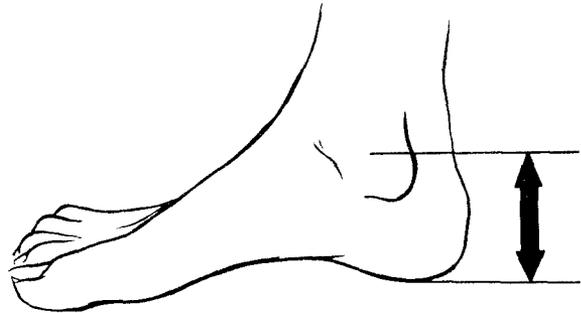
CALF HEIGHT

Subject stands. With the anthropometer measure the height from the floor to the marked point on the right calf.



ANKLE HEIGHT

Subject stands, preferably on a table, with weight equally distributed on both feet and the right foot slightly forward. The measurement is taken by means of a special block having a scale perpendicular to the table top. Bring the surface of the block against the medial ankle bone of the right foot and measure the height to the center of the area of tangency with the ankle bone to the nearest half-centimeter.

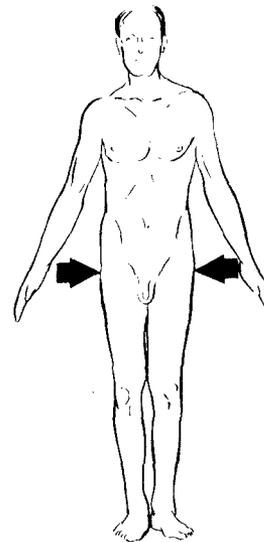


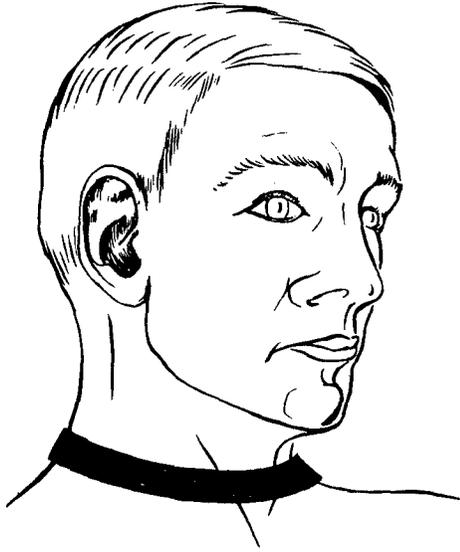
CHEST BREADTH

Subject stands erect with his arms slightly raised. Measure the chest breadth with the anthropometer caliper held horizontally at the level of the nipples, after the subjects arms have been lowered.

HIP BREADTH

Subject stands. Measure across the widest portion of the hips with the anthropometer held horizontally.



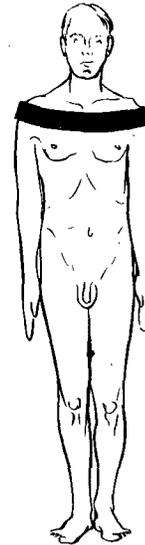


NECK CIRCUMFERENCE

Subject stands. Measure around the neck with the tape held in a horizontal plane and passing just below the "Adam's apple".

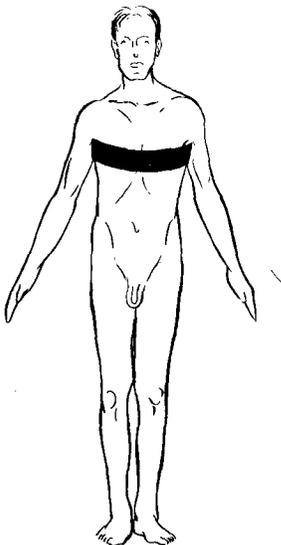
SHOULDER CIRCUMFERENCE

Subject stands. Hold the tape horizontally and passing over the maximum lateral portion of the deltoid muscles.



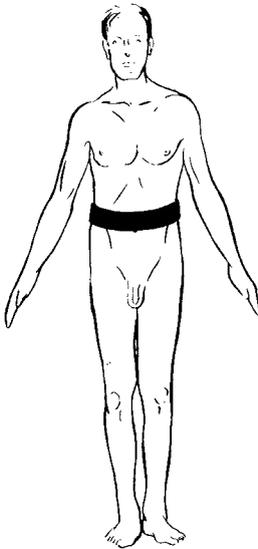
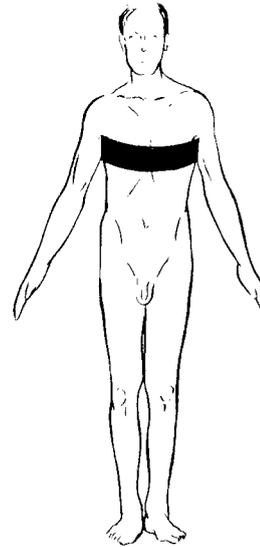
CHEST CIRCUMFERENCE (RELAXED)

Subject stands. His arms are raised and the tape is placed in a horizontal position at the level of the nipples. The arms are then lowered over the tape. Record chest circumference at the maximum dimension during normal breathing.



CHEST CIRCUMFERENCE (EXPANDED)

Subject stands. His arms are raised and the tape is placed in a horizontal position at the level of the nipples. The arms are then lowered over the tape. Record chest circumference at the maximum dimension upon inhalation.

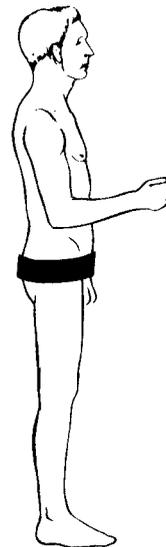


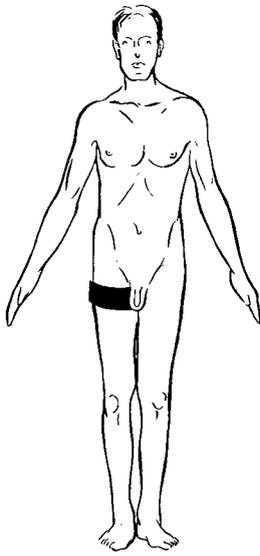
WAIST CIRCUMFERENCE

Subject stands. Measure at the natural waist line with the abdomen relaxed (minimum circumference). If no natural waist line is easily determined, ask the subject to place the tape where the belt of his trousers would fall.

BUTTOCKS CIRCUMFERENCE

Subject stands. Hold the tape in a horizontal plane, passing over the area of the most posterior projection of the buttocks.



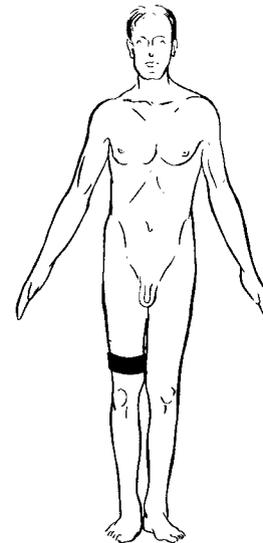


THIGH CIRCUMFERENCE

Subject stands, with the legs slightly apart. Place the tape horizontally around the right thigh, as high up as possible in the crotch, without including any portion of the buttock.

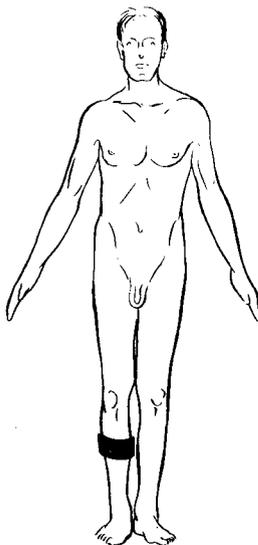
LOWER THIGH CIRCUMFERENCE

Subject stands. Hold the tape horizontally above the right knee (over the medial Vastus muscle, but below any portion of the lateral Vastus muscle).



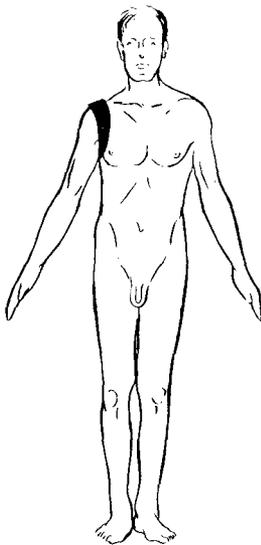
CALF CIRCUMFERENCE

Subject stands. Pass the tape horizontally over the maximum bulge of the right calf.



ANKLE CIRCUMFERENCE

Subject stands. Measure the minimum circumference with the tape held above the projections of the ankle bones of the right leg.

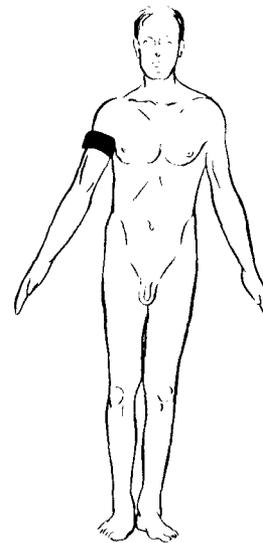


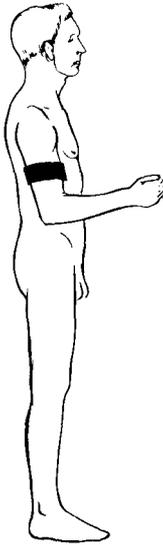
ARM SCYE

Subject stands. Place the tape through the armpit of the right arm and, with the arm lowered, measure the circumference vertically over the shoulder.

AXILLARY ARM CIRCUMFERENCE

Subject stands. Place the tape as high as possible in the armpit of the right arm and, with the arm at the subject's side, measure the circumference in a horizontal plane.



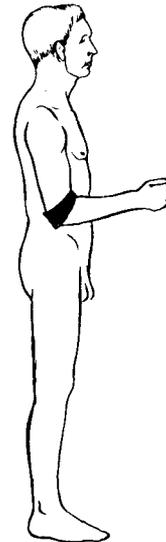


BICEPS CIRCUMFERENCE (FLEXED)

Ask the subject to flex his right biceps muscle and measure the circumference at the point of maximum bulge with the tape held in a plane at right angles to the long axis of the upper arm.

ELBOW CIRCUMFERENCE (FLEXED)

Ask the subject to flex his right arm so that his elbow is bent at a right angle. Then measure the circumference with a tape passing over the tip and through the crotch of the elbow.

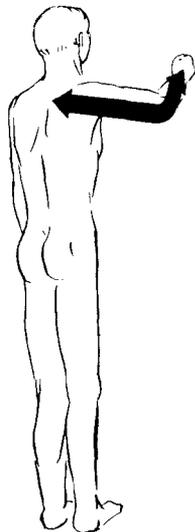


LOWER ARM CIRCUMFERENCE (FLEXED)

Ask the subject to hold his arm bent at a right angle and flex the muscles of the forearm by making a fist. Measure the maximum circumference of the lower arm in a plane at right angles to the long axis of the forearm.

WRIST CIRCUMFERENCE

Measure the minimum circumference with the tape held at right angles to the long axis of the forearm just above the styloid process of the ulna.

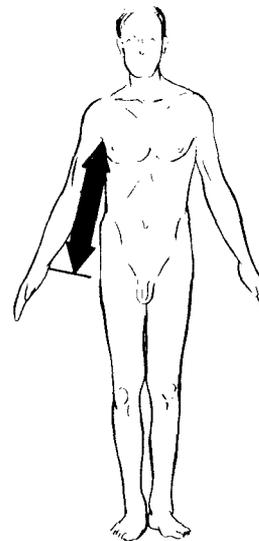


SLEEVE INSEAM

The subject stands with his right arm held slightly away from the body. Measure the distance from the armpit to the distal surface of the styloid process of the radius with the special measuring stick shown in Fig. 2.

SLEEVE LENGTH

The subject stands with the arms raised horizontally and his elbow approximately bent at a right angle. For purposes of uniformity, both wrists may be pressed together. Measure the distance from the midpoint of the back to the distal surface of the styloid process of the ulna with the tape passing over the tip of the elbow.



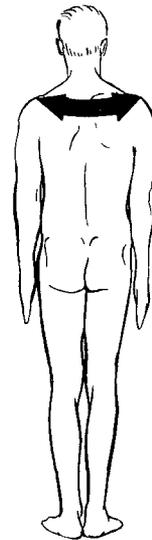


SHOULDER LENGTH

Subject stands. Measure the surface distance from the marked point on the right side of the neck to the marked point at acromion with the tape.

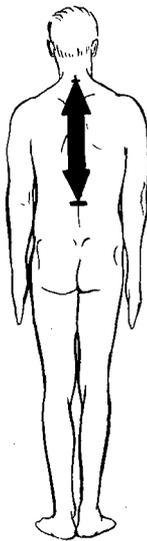
BIACROMIAL ARC

Subject sits erect with his upper arms hanging at his sides and his lower arms extended horizontally. Measure between the marked acromion points with the tape passing horizontally across the back.



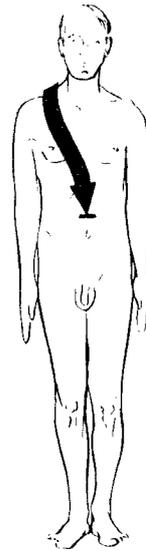
WAIST BACK

Subject stands. Measure the surface distance from the marked point of cervicale to the marked point on the waist of the back with the tape.



WAIST FRONT TO CERVICALE

Subject stands. Measure from the marked cervicale point with the tape passing over the right shoulder to the waist point marked on the abdomen.

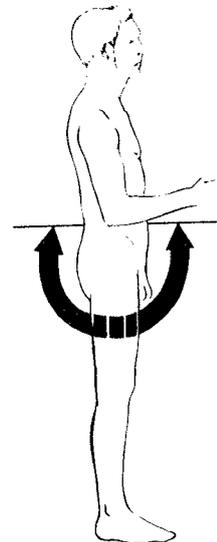


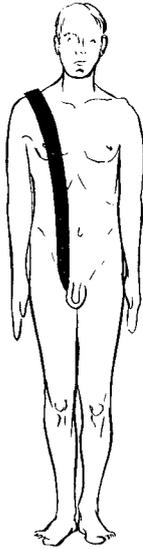
GLUTEAL ARC

Subject stands. Measure the surface arc over the right buttock from the marked line on the waist to the gluteal furrow with the tape in a vertical plane.

CROTCH LENGTH

The subject stands with his legs slightly apart. Measure the distance with the tape from the anterior waist mark through the crotch and over the right buttock to the posterior waist mark.



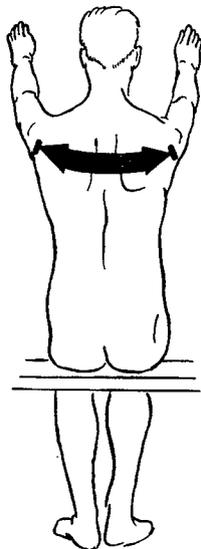
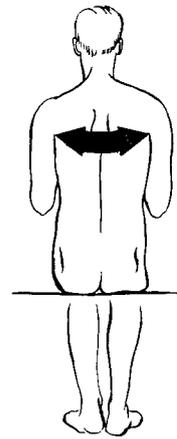


VERTICAL TRUNK CIRCUMFERENCE

Subject stands with his legs slightly apart. Measure the vertical circumference of the torso with the tape passing through the crotch and over the midpoint of the right shoulder and buttock. Before reading, press the tape into the concavity of the small of the back so that it follows the body contour at all points.

INTERSCYE

Subject sits erect with his hands placed on his knees. Measure the minimum surface distance between the bottoms of the marked scye points with the tape.



INTERSCYE MAXIMUM

Subject sits erect with his arms thrust as far forward as possible. Measure the minimum distance between the bottoms of the marked scye points with the tape across the surface of the back.

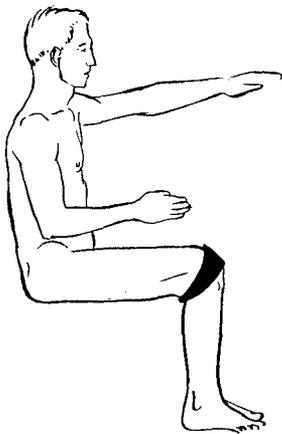
HIP CIRCUMFERENCE (SITTING)

Subject sits. Place the tape behind the subject and just under the buttocks at the point where they contact the seating surface. The tape is then brought up at about a forty-five degree angle and across the lap in the furrow between the torso and the legs.



KNEE CIRCUMFERENCE (SITTING)

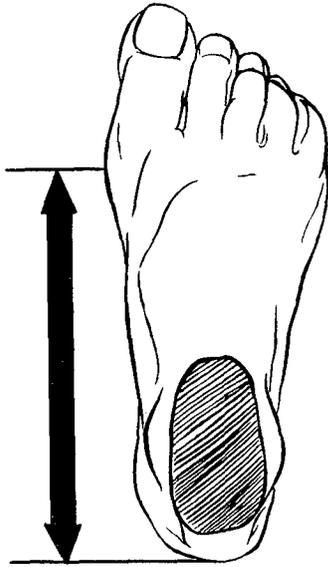
The subject sits with his knees bent at a right angle. Pass the tape under the popliteal area and bring it up at about a forty-five degree angle over the right knee.



FOOT LENGTH

The subject stands with his weight equally distributed on both feet. His right foot is placed in a special foot measuring box with his heel touching the rear wall of the box and the lateral edge of his instep touching the lateral wall of the box. The longitudinal axis of the foot is parallel to the lateral wall of the box so that the side of the heel is not necessarily in contact with the lateral wall of the box. Measure the length from the rear of the measuring box to the tip of the longest toe.





INSTEP LENGTH

The subject stands with his weight equally distributed on both feet. His right foot is placed in a special foot measuring box with his heel touching the rear wall of the box and the lateral edge of his instep touching the lateral wall of the box. The longitudinal axis of the foot is parallel to the lateral wall of the box so that the side of the heel is not necessarily in contact with the lateral wall of the box. Measure the length from the rear of the measuring box to the point of greatest width of the foot.

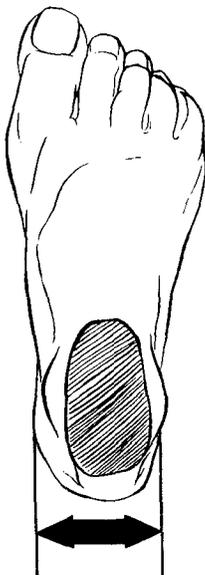
FOOT WIDTH

The subject stands with his weight equally distributed on both feet. His right foot is placed in a special foot measuring box with his heel touching the rear wall of the box and the lateral edge of his instep touching the lateral wall of the box. The longitudinal axis of the foot is parallel to the lateral wall of the box so that the side of the heel is not necessarily in contact with the lateral wall of the box. Locate the widest part of the foot with a block and read the width from the grid on the base of the measuring box.



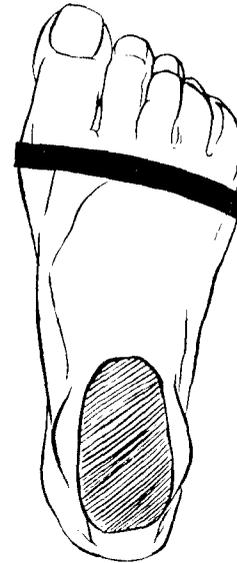
HEEL WIDTH

The subject stands with his weight equally distributed on both feet. From behind, and with the bar of the sliding caliper at right angles to the longitudinal axis of the foot, measure the maximum width of the heel behind the projection of the ankle bones.



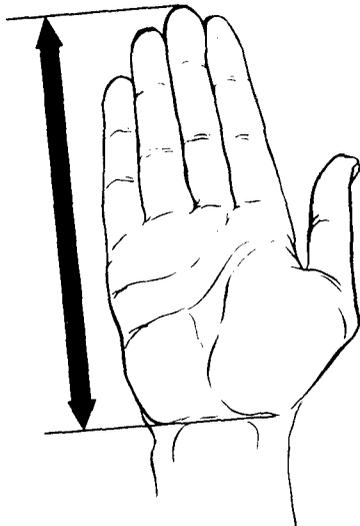
BALL OF FOOT CIRCUMFERENCE

Subject stands. Ask the subject to lift his right foot and place the tape under the ball of the foot. The subject then replaces his weight equally on both feet and the circumference is measured around the distal ends of the protuberances of the metatarsal bones.



HAND LENGTH

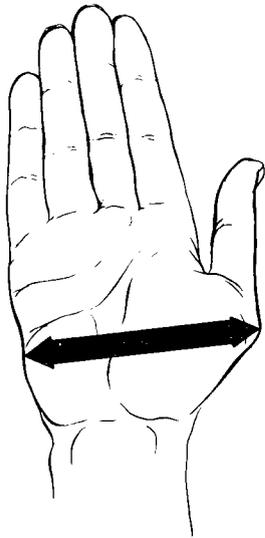
The subject's right hand is extended. With the sliding calipers resting on the subject's palm, measure from the proximal edge of the navicular bone to the tip of the middle finger.



HAND BREADTH AT METACARPALE

The subject's hand is extended with the palm up. Place the bar of the sliding caliper across the distal ends of the metacarpale bones and measure the width with light contact.



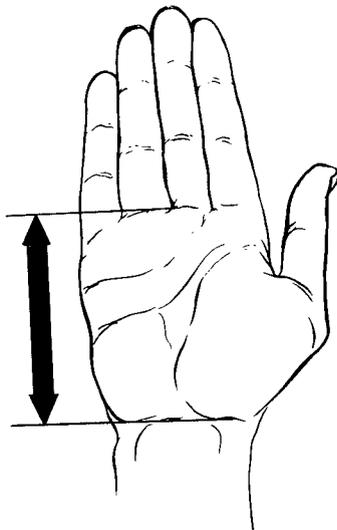
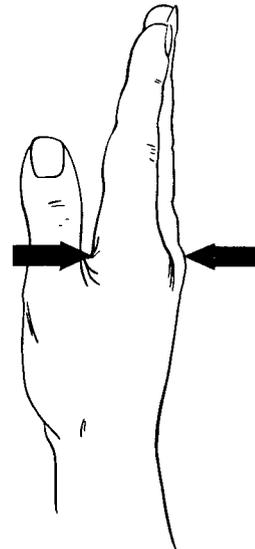


HAND BREADTH AT THUMB

The subject's hand is extended, palm up. With the bar of the sliding caliper resting on the palm, measure the maximum width with light contact at right angles to the longitudinal axis of the hand. The fixed arm of the caliper is placed at the metacarpal-phalangeal joint of the thumb.

THICKNESS AT METACARPALE III

The subject's right hand is extended, palm up. Measure the thickness of the hand at the metacarpal-first phalanx joint of the middle finger with the sliding caliper.



PALM LENGTH

The subject's right hand is extended, palm up. With the bar of the sliding caliper resting on the palm, measure from the proximal edge of the navicular bone to the skin furrow formed where the middle finger folds upon the palm.

PALM CIRCUMFERENCE

The subject holds his right hand upward. Measure with the tape the circumference around the distal ends of the metacarpal bones.



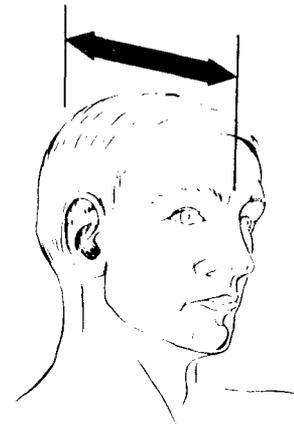
FIST CIRCUMFERENCE

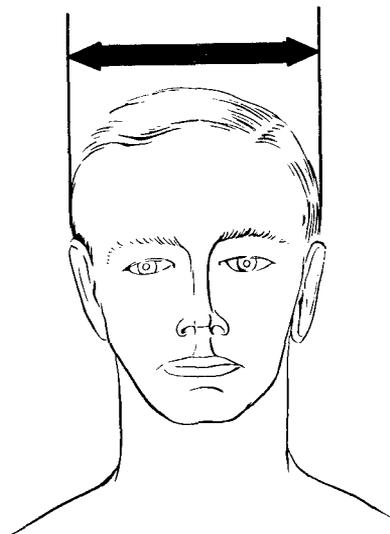
The subject holds his right fist with the thumb lying on the outside. Measure the circumference with the tape passing over the distal end of the metacarpal bone.



HEAD LENGTH

Measure the maximum length of the head from glabella to the occipital region in the mid-sagittal plane of the head with the spreading caliper.



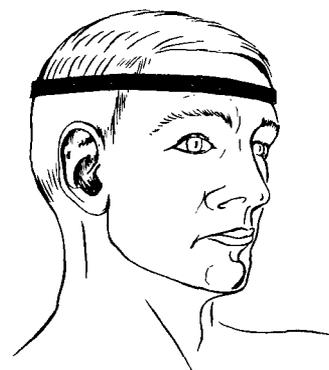


HEAD BREADTH

Measure the maximum breadth of the head with the spreading caliper perpendicular to the mid-sagittal plane of the head.

HEAD CIRCUMFERENCE

Subject sits. Measure the maximum circumference of the head with the tape passing over the brow ridges and held perpendicular to the mid-sagittal plane, but not necessarily horizontally.



SAGITTAL ARC

Subject sits. Measure the arc with the tape in the mid-sagittal plane from glabella to the lowest point on the base of the skull that can be felt by a firm touch amid the nuchal musculature. This may be at inion or below.

CORONAL ARC

The subject sits looking straight ahead (the head in the Frankfort plane). Measure the arc from right to left tragon over the top of the skull with the tape in a vertical plane.



POSTERIOR ARC

Subject sits. Measure the arc from right to left tragon with the tape passing over the lowest point of the skull where the nuchal musculature attaches.

The statistics reported for each measurement are the mean, the standard deviation, the coefficient of variation (designated by V), the standard errors of these statistics, the range, and selected percentiles from the first to the ninety-ninth. The statistics are, in general, reported both in metric and English values.

The MEAN is the most common of the averages. It is computed by adding together each of the recorded values of the given measurement and dividing by the number of values. The mean of the weights, for example, is the sum of all 3332 weights divided by 3332, or: 491,270 pounds ÷ 3332 = 147.44 pounds.

The RANGE is reported here by specifying the smallest and largest values recorded for the measurement. It should be noted that whereas the mean is an approximation to the most common or central value for a measurement, the two figures given for the range represent the two extreme and most uncommon values and may be considerably influenced by a single unusual individual.

The STANDARD DEVIATION is a measure of the variability of the measured values. If most of the men were similar in one measurement, the standard deviation of that measurement is small. If, on the other hand, in some other measurement many of them were considerably above average and many others were considerably below average, the standard deviation of this measurement was large. As a general rule, about two-thirds of the group is within one standard deviation of the mean and about 95% are within two standard deviations of the mean. Three standard deviations either side of the mean include better than 99% of the group, and are a better approximation of the extreme values to be expected for any measurement than the actual range as recorded.

The COEFFICIENT OF VARIATION (V) is simply the standard deviation expressed as a percent of the mean value.

The STANDARD ERRORS of the mean and other statistics follow each of the statistics to which they apply, separated from them by ± signs. These standard errors provide a measure of the extent to which these statistics are likely to deviate from the true mean, etc., of a hypothetical infinite basic trainee population of which these 3332 men constitute a random sample.

The PERCENTILES are the values below which specified percents of the measured values lie. Thus, 1% of the men weighed less than the first percentile of the weights, 35% were less than the thirty-fifth, etc.

The percentiles reported here were obtained graphically from plots on special "normal distribution" graph paper.

STANDARD ERRORS OF PERCENTILES are not given directly but can be estimated from the standard errors of the mean and the following table.

<u>Percentiles</u>	<u>Standard Errors</u>
30th thru 70th	1.3 times standard error of mean
20th, 25th, 75th, 80th	1.4 " " " " "
15th, 85th	1.5 " " " " "
10th, 90th	1.7 " " " " "
5th, 95th	2.1 " " " " "
3rd, 97th	2.5 " " " " "
2nd, 98th	2.9 " " " " "
1st, 99th	3.7 " " " " "

The statistical data on the sixty measurements recorded on the basic trainees are as follows:

WEIGHT

Range: 100 to 295 lb.

N = 3332

Mean: 147.44 ± .36 lb.

Standard Deviation: 20.97 ± .26 lb.

Coefficient of Variation: 14.22 ± .17 %

Percentile Values

1%	108.6 lb.	55%	147.9 lb.
2%	112.4 lb.	60%	150.1 lb.
3%	115.2 lb.	65%	152.7 lb.
5%	118.4 lb.	70%	155.3 lb.
10%	123.7 lb.	75%	159.5 lb.
15%	126.8 lb.	80%	163.1 lb.
20%	130.0 lb.	85%	167.6 lb.
25%	133.0 lb.	90%	173.9 lb.
30%	135.3 lb.	95%	186.3 lb.
35%	137.8 lb.	97%	194.1 lb.
40%	140.0 lb.	98%	199.2 lb.
45%	142.6 lb.	99%	208.4 lb.
50%	145.4 lb.		

STATURE

Range: 155 to 194 cm
61.0 to 76.4 in.

N = 3331

Mean: 174.09 ± .11 cm ; 68.54 ± .05 in.

Standard Deviation: 6.62 ± .08 cm ; 2.61 ± .03 in.

Coefficient of Variation: 3.81 ± .05 %

Percentile Values

1%	158.8 cm	62.5 in.	55%	174.9 cm	68.9 in.
2%	160.5 cm	63.2 in.	60%	175.7 cm	69.2 in.
3%	161.6 cm	63.6 in.	65%	176.6 cm	69.5 in.
5%	163.2 cm	64.2 in.	70%	177.5 cm	69.9 in.
10%	165.5 cm	65.1 in.	75%	178.5 cm	70.3 in.
15%	167.1 cm	65.8 in.	80%	179.7 cm	70.7 in.
20%	168.3 cm	66.3 in.	85%	181.0 cm	71.2 in.
25%	169.8 cm	66.8 in.	90%	182.5 cm	71.9 in.
30%	170.6 cm	67.2 in.	95%	184.8 cm	72.7 in.
35%	171.6 cm	67.6 in.	97%	186.6 cm	73.5 in.
40%	172.5 cm	67.9 in.	98%	187.9 cm	74.0 in.
45%	173.4 cm	68.3 in.	99%	189.8 cm	74.7 in.
50%	174.1 cm	68.6 in.			

CERVICALE HEIGHT

Range: 131 to 170 cm
51.6 to 66.9 in.

N = 3330

Mean: 149.16 ± .11 cm ; 58.73 ± .04 in.

Standard Deviation: 6.17 ± .08 cm ; 2.43 ± .03 in.

Coefficient of Variation: 4.14 ± .05 %

Percentile Values

1%	134.9 cm	53.1 in.	55%	149.9 cm	59.0 in.
2%	136.5 cm	53.7 in.	60%	150.7 cm	59.3 in.
3%	137.5 cm	54.1 in.	65%	151.5 cm	59.6 in.
5%	139.1 cm	54.7 in.	70%	152.3 cm	60.0 in.
10%	141.3 cm	55.6 in.	75%	153.2 cm	60.3 in.
15%	142.8 cm	56.2 in.	80%	154.2 cm	60.7 in.
20%	143.9 cm	56.7 in.	85%	155.4 cm	61.2 in.
25%	145.0 cm	57.1 in.	90%	156.8 cm	61.7 in.
30%	145.9 cm	57.4 in.	95%	159.3 cm	62.7 in.
35%	146.7 cm	57.8 in.	97%	161.0 cm	63.4 in.
40%	147.6 cm	58.1 in.	98%	162.3 cm	63.9 in.
45%	148.4 cm	58.4 in.	99%	164.2 cm	64.7 in.
50%	149.2 cm	58.7 in.			

ACROMIAL HEIGHT

Range: 122 to 162 cm
48.0 to 63.8 in.

N = 3326

Mean: 142.04 ± .11 cm ; 55.9 ± .04 in.

Standard Deviation: 6.13 ± .08 cm ; 2.41 ± .03 in.

Coefficient of Variation: 4.32 ± .07 %

Percentile Values

1%	127.7 cm	50.3 in.		55%	142.8 cm	56.2 in.
2%	129.3 cm	50.9 in.		60%	143.4 cm	56.5 in.
3%	130.4 cm	51.3 in.		65%	144.3 cm	56.8 in.
5%	132.0 cm	52.0 in.		70%	145.2 cm	57.1 in.
10%	133.4 cm	52.5 in.		75%	146.0 cm	57.5 in.
15%	135.9 cm	53.5 in.		80%	147.1 cm	57.9 in.
20%	137.0 cm	53.9 in.		85%	148.3 cm	58.4 in.
25%	138.0 cm	54.3 in.		90%	149.8 cm	59.0 in.
30%	138.9 cm	54.7 in.		95%	152.2 cm	59.9 in.
35%	139.7 cm	55.0 in.		97%	153.7 cm	60.5 in.
40%	140.5 cm	55.3 in.		98%	154.9 cm	61.0 in.
45%	141.3 cm	55.6 in.		99%	156.9 cm	61.8 in.
50%	142.0 cm	55.9 in.				

AXILLA HEIGHT

Range: 113 to 152 cm
44.5 to 59.8 in.

N = 2017

Mean: 133.58 ± .13 cm ; 52.59 ± .05 in.

Standard Deviation: 5.69 ± .09 cm ; 2.24 ± .04 in.

Coefficient of Variation: 4.26 ± .07 %

Percentile Values

1%	120.0 cm	47.2 in.	55%	134.2 cm	52.8 in.
2%	121.8 cm	48.0 in.	60%	134.9 cm	53.1 in.
3%	122.9 cm	48.4 in.	65%	135.7 cm	53.4 in.
5%	124.4 cm	49.0 in.	70%	136.5 cm	53.7 in.
10%	126.5 cm	49.8 in.	75%	137.3 cm	54.1 in.
15%	127.8 cm	50.3 in.	80%	138.1 cm	54.4 in.
20%	128.9 cm	50.7 in.	85%	138.6 cm	54.6 in.
25%	129.8 cm	51.1 in.	90%	140.0 cm	55.1 in.
30%	130.6 cm	51.4 in.	95%	143.5 cm	56.5 in.
35%	131.4 cm	51.7 in.	97%	144.8 cm	57.0 in.
40%	132.1 cm	52.0 in.	98%	145.6 cm	57.3 in.
45%	132.8 cm	52.3 in.	99%	146.9 cm	57.8 in.
50%	133.5 cm	52.6 in.			

WAIST HEIGHT

Range: 82 to 124 cm
32.3 to 48.8 in.

N = 3319

Mean: 105.73 ± .09 cm ; 41.62 ± .04 in.

Standard Deviation: 5.10 ± .06 cm ; 2.01 ± .02 in.

Coefficient of Variation: 4.82 ± .06 %

Percentile Values

1%	94.2 cm	37.1 in.	55%	106.2 cm	41.8 in.
2%	95.7 cm	37.7 in.	60%	106.9 cm	42.1 in.
3%	96.6 cm	38.0 in.	65%	107.5 cm	42.3 in.
5%	97.7 cm	38.5 in.	70%	108.2 cm	42.6 in.
10%	99.5 cm	39.2 in.	75%	109.0 cm	42.9 in.
15%	100.6 cm	39.6 in.	80%	109.9 cm	43.3 in.
20%	101.5 cm	40.0 in.	85%	111.0 cm	43.7 in.
25%	102.3 cm	40.3 in.	90%	112.3 cm	44.2 in.
30%	103.0 cm	40.6 in.	95%	114.3 cm	45.0 in.
35%	103.7 cm	40.8 in.	97%	115.5 cm	45.5 in.
40%	104.3 cm	41.1 in.	98%	116.4 cm	45.8 in.
45%	105.0 cm	41.3 in.	99%	118.4 cm	46.6 in.
50%	105.6 cm	41.6 in.			

GLUTEAL FURROW HEIGHT

Range: 63 to 99 cm
24.8 to 38.98 in.

N = 3330

Mean: 80.53 ± .08 cm ; 31.70 ± .03 in.

Standard Deviation: 4.38 ± .05 cm ; 1.72 ± .02 in.

Coefficient of Variation: 5.44 ± .07 %

Percentile Values

1%	70.5 cm	27.7 in.	55%	81.0 cm	31.9 in.
2%	71.7 cm	28.2 in.	60%	81.6 cm	32.1 in.
3%	72.5 cm	28.5 in.	65%	82.1 cm	32.3 in.
5%	73.5 cm	28.9 in.	70%	82.7 cm	32.5 in.
10%	75.0 cm	29.5 in.	75%	83.4 cm	32.8 in.
15%	76.0 cm	29.9 in.	80%	84.1 cm	33.1 in.
20%	76.8 cm	30.3 in.	85%	84.9 cm	33.4 in.
25%	77.5 cm	30.5 in.	90%	86.1 cm	33.9 in.
30%	78.2 cm	30.8 in.	95%	87.8 cm	34.6 in.
35%	78.8 cm	31.0 in.	97%	89.0 cm	35.0 in.
40%	79.4 cm	31.3 in.	98%	89.9 cm	35.4 in.
45%	79.9 cm	31.5 in.	99%	91.1 cm	35.9 in.
50%	80.5 cm	31.7 in.			

GROUCH HEIGHT

Range: 65 to 100 cm
25.6 to 39.4 in.

N = 2024

Mean: 84.32 ± .10 cm ; 33.20 ± .04 in.

Standard Deviation: 4.42 ± .07 cm ; 1.74 ± .03 in.

Coefficient of Variation: 5.24 ± .08 %

Percentile Values

1%	74.2 cm	29.2 in.	55%	84.8 cm	33.4 in.
2%	75.4 cm	29.7 in.	60%	85.4 cm	33.6 in.
3%	76.1 cm	30.0 in.	65%	86.0 cm	33.9 in.
5%	77.1 cm	30.4 in.	70%	86.6 cm	34.1 in.
10%	78.8 cm	31.0 in.	75%	87.3 cm	34.4 in.
15%	79.9 cm	31.4 in.	80%	88.0 cm	34.7 in.
20%	80.7 cm	31.8 in.	85%	88.8 cm	35.0 in.
25%	81.4 cm	32.1 in.	90%	89.9 cm	35.4 in.
30%	82.1 cm	32.3 in.	95%	91.5 cm	36.0 in.
35%	82.6 cm	32.5 in.	97%	92.7 cm	36.5 in.
40%	83.2 cm	32.8 in.	98%	93.6 cm	36.8 in.
45%	83.7 cm	33.0 in.	99%	95.1 cm	37.5 in.
50%	84.3 cm	33.2 in.			

PATELLA HEIGHT

Range: 40 to 62 cm
15.7 to 24.4 in.

N = 2759

Mean: 52.63 ± .06 cm ; 20.72 ± .02 in.

Standard Deviation: 2.93 ± .04 cm ; 1.15 ± .02 in.

Coefficient of Variation: 5.57 ± .08 %

Percentile Values

1%	46.0 cm	18.1 in.	55%	52.9 cm	20.8 in.
2%	46.8 cm	18.4 in.	60%	53.3 cm	21.0 in.
3%	47.3 cm	18.6 in.	65%	53.7 cm	21.1 in.
5%	48.0 cm	18.9 in.	70%	54.1 cm	21.3 in.
10%	49.0 cm	19.3 in.	75%	54.6 cm	21.5 in.
15%	49.7 cm	19.6 in.	80%	55.1 cm	21.7 in.
20%	50.2 cm	19.8 in.	85%	55.8 cm	22.0 in.
25%	50.7 cm	19.9 in.	90%	56.5 cm	22.3 in.
30%	51.1 cm	20.1 in.	95%	57.7 cm	22.7 in.
35%	51.5 cm	20.3 in.	97%	58.4 cm	23.0 in.
40%	51.8 cm	20.4 in.	98%	58.9 cm	23.2 in.
45%	52.2 cm	20.5 in.	99%	59.7 cm	23.5 in.
50%	52.6 cm	20.7 in.			

CALF HEIGHT

Range: 25 to 50 cm
9.8 to 19.7 in.

N = 3321

Mean: 35.16 ± .05 cm ; 13.84 ± .02 in.

Standard Deviation: 2.73 ± .03 cm ; 1.07 ± .01 in.

Coefficient of Variation: 7.75 ± .09 %

Percentile Values

1%	29.2 cm	11.5 in.	55%	35.5 cm	14.0 in.
2%	29.9 cm	11.8 in.	60%	35.8 cm	14.1 in.
3%	30.3 cm	11.9 in.	65%	36.1 cm	14.2 in.
5%	30.9 cm	12.2 in.	70%	36.5 cm	14.4 in.
10%	31.8 cm	12.5 in.	75%	36.9 cm	14.5 in.
15%	32.4 cm	12.8 in.	80%	37.4 cm	14.7 in.
20%	32.9 cm	13.0 in.	85%	37.9 cm	14.9 in.
25%	33.3 cm	13.1 in.	90%	38.6 cm	15.2 in.
30%	33.7 cm	13.3 in.	95%	39.6 cm	15.6 in.
35%	34.1 cm	13.4 in.	97%	40.4 cm	15.9 in.
40%	34.4 cm	13.5 in.	98%	40.9 cm	16.1 in.
45%	34.7 cm	13.7 in.	99%	41.8 cm	16.5 in.
50%	35.1 cm	13.8 in.			

ANKLE HEIGHT

Range: 48 to 83 mm
1.89 to 3.27 in.

N = 3329

Mean: 65.84 ± .09 mm ; 2.59 ± .01 in.

Standard Deviation: 4.91 ± .06 mm ; .19 ± .01 in.

Coefficient of Variation: 7.46 ± .09 %

Percentile Values

1%	54.3 mm	2.14 in.		55%	66.5 mm	2.62 in.
2%	55.6 mm	2.19 in.		60%	67.2 mm	2.64 in.
3%	56.5 mm	2.22 in.		65%	67.8 mm	2.67 in.
5%	57.6 mm	2.27 in.		70%	68.6 mm	2.70 in.
10%	59.5 mm	2.34 in.		75%	69.3 mm	2.73 in.
15%	60.7 mm	2.39 in.		80%	70.0 mm	2.76 in.
20%	61.7 mm	2.43 in.		85%	70.8 mm	2.79 in.
25%	62.6 mm	2.46 in.		90%	71.8 mm	2.83 in.
30%	63.3 mm	2.49 in.		95%	73.5 mm	2.89 in.
35%	64.0 mm	2.52 in.		97%	74.7 mm	2.94 in.
40%	64.7 mm	2.55 in.		98%	75.7 mm	2.98 in.
45%	65.3 mm	2.57 in.		99%	77.3 mm	3.04 in.
50%	65.9 mm	2.59 in.				

CHEST BREADTH

Range: 20 to 40 cm
7.9 to 15.7 in.

N = 3326

Mean: 29.10 ± .04 cm ; 11.46 ± .02 in.

Standard Deviation: 2.30 ± .03 cm ; .91 ± .01 in.

Coefficient of Variation: 7.91 ± .10 %

Percentile Values

1%	24.6 cm	9.69 in.	55%	29.1 cm	11.46 in.
2%	25.1 cm	9.88 in.	60%	29.4 cm	11.57 in.
3%	25.4 cm	10.00 in.	65%	29.7 cm	11.69 in.
5%	25.9 cm	10.20 in.	70%	30.0 cm	11.81 in.
10%	26.5 cm	10.43 in.	75%	30.3 cm	11.93 in.
15%	27.0 cm	10.63 in.	80%	30.7 cm	12.09 in.
20%	27.5 cm	10.83 in.	85%	31.2 cm	12.28 in.
25%	27.6 cm	10.87 in.	90%	31.8 cm	12.52 in.
30%	27.9 cm	10.98 in.	95%	33.0 cm	12.99 in.
35%	28.2 cm	11.10 in.	97%	34.0 cm	13.39 in.
40%	28.4 cm	11.18 in.	98%	34.9 cm	13.74 in.
45%	28.6 cm	11.26 in.	99%	36.4 cm	14.33 in.
50%	28.9 cm	11.38 in.			

HIP BREADTH

Range: 23 to 49 cm
9.1 to 19.3 in.

N = 3328

Mean: 33.92 ± .04 cm ; 13.35 ± .02 in.

Standard Deviation: 2.39 ± .03 cm ; .94 ± .01 in.

Coefficient of Variation: 7.04 ± .09 %

Percentile Values

1%	29.3 cm	11.5 in.	55%	34.0 cm	13.4 in.
2%	30.0 cm	11.8 in.	60%	34.2 cm	13.5 in.
3%	30.3 cm	11.9 in.	65%	34.5 cm	13.6 in.
5%	30.7 cm	12.1 in.	70%	34.8 cm	13.7 in.
10%	31.3 cm	12.3 in.	75%	35.1 cm	13.8 in.
15%	31.7 cm	12.5 in.	80%	35.6 cm	14.0 in.
20%	32.0 cm	12.6 in.	85%	36.0 cm	14.2 in.
25%	32.5 cm	12.8 in.	90%	36.7 cm	14.4 in.
30%	32.7 cm	12.9 in.	95%	38.1 cm	15.0 in.
35%	32.9 cm	13.0 in.	97%	39.2 cm	15.4 in.
40%	33.2 cm	13.1 in.	98%	40.1 cm	15.8 in.
45%	33.5 cm	13.2 in.	99%	41.5 cm	16.3 in.
50%	33.7 cm	13.3 in.			

NECK CIRCUMFERENCE

Range: 29 to 45 cm
11.4 to 17.7 in.

N = 3322

Mean: 36.24 ± .03 cm ; 14.27 ± .01 in.

Standard Deviation: 1.94 ± .02 cm ; .76 ± .01 in.

Coefficient of Variation: 5.36 ± .07 %

Percentile Values

1%	32.1 cm	12.6 in.	55%	36.5 cm	14.4 in.
2%	32.6 cm	12.8 in.	60%	36.7 cm	14.4 in.
3%	32.9 cm	12.9 in.	65%	37.0 cm	14.6 in.
5%	33.3 cm	13.1 in.	70%	37.2 cm	14.6 in.
10%	33.9 cm	13.3 in.	75%	37.5 cm	14.8 in.
15%	34.3 cm	13.5 in.	80%	37.9 cm	14.9 in.
20%	34.7 cm	13.6 in.	85%	38.3 cm	15.1 in.
25%	35.0 cm	13.8 in.	90%	38.7 cm	15.2 in.
30%	35.3 cm	13.9 in.	95%	39.6 cm	15.6 in.
35%	35.5 cm	14.0 in.	97%	40.1 cm	15.8 in.
40%	35.8 cm	14.1 in.	98%	40.6 cm	16.0 in.
45%	36.0 cm	14.2 in.	99%	41.3 cm	16.3 in.
50%	36.2 cm	14.3 in.			

SHOULDER CIRCUMFERENCE

Range: 90 to 129 cm
35.4 to 50.8 in.

N = 1460

Mean: 108.18 ± .15 cm ; 42.59 ± .06 in.

Standard Deviation: 5.56 ± .10 cm ; 2.19 ± .04 in.

Coefficient of Variation: 5.14 ± .10 %

Percentile Values

1%	96.2 cm	37.9 in.		55%	108.6 cm	42.8 in.
2%	97.6 cm	38.4 in.		60%	109.3 cm	43.0 in.
3%	98.4 cm	38.7 in.		65%	110.0 cm	43.3 in.
5%	99.6 cm	39.2 in.		70%	110.8 cm	43.6 in.
10%	101.3 cm	39.9 in.		75%	111.7 cm	44.0 in.
15%	102.5 cm	40.4 in.		80%	112.6 cm	44.3 in.
20%	103.5 cm	40.7 in.		85%	113.7 cm	44.8 in.
25%	104.3 cm	41.1 in.		90%	115.2 cm	45.4 in.
30%	105.1 cm	41.4 in.		95%	117.6 cm	46.3 in.
35%	105.8 cm	41.7 in.		97%	119.6 cm	47.1 in.
40%	106.6 cm	42.0 in.		98%	121.0 cm	47.6 in.
45%	107.3 cm	42.2 in.		99%	123.2 cm	48.5 in.
50%	108.0 cm	42.5 in.				

CHEST CIRCUMFERENCE (RELAXED)

Range: 74 to 121 cm
29.1 to 47.6 in.

N = 3330

Mean: 90.37 ± .10 cm ; 35.58 ± .04 in.

Standard Deviation: 6.07 ± .07 cm ; 2.39 ± .03 in.

Coefficient of Variation: 6.71 ± .08 %

Percentile Values

1%	78.6 cm	30.9 in.	55%	90.5 cm	35.6 in.
2%	79.8 cm	31.4 in.	60%	91.2 cm	35.9 in.
3%	80.6 cm	31.7 in.	65%	92.0 cm	36.2 in.
5%	81.5 cm	32.1 in.	70%	92.7 cm	36.5 in.
10%	83.3 cm	32.8 in.	75%	93.6 cm	36.9 in.
15%	84.5 cm	33.3 in.	80%	94.7 cm	37.3 in.
20%	85.4 cm	33.6 in.	85%	96.0 cm	37.8 in.
25%	86.3 cm	34.0 in.	90%	97.8 cm	38.5 in.
30%	87.1 cm	34.3 in.	95%	101.2 cm	39.8 in.
35%	87.8 cm	34.6 in.	97%	103.5 cm	40.7 in.
40%	88.5 cm	34.8 in.	98%	105.5 cm	41.5 in.
45%	89.2 cm	35.1 in.	99%	108.5 cm	42.7 in.
50%	89.8 cm	35.4 in.			

CHEST CIRCUMFERENCE (EXPANDED)

Range: 78 to 124 cm.
30.7 to 48.8 in.

N = 3323

Mean: 93.70 ± .10 cm ; 36.89 ± .04 in.

Standard Deviation: 5.96 ± .07 cm ; 2.35 ± .03 in.

Coefficient of Variation: 6.36 ± .08 %

Percentile Values

1%	82.1 cm	32.3 in.	55%	93.7 cm	36.9 in.
2%	83.1 cm	32.7 in.	60%	94.5 cm	37.2 in.
3%	83.9 cm	33.0 in.	65%	95.2 cm	37.5 in.
5%	84.4 cm	33.2 in.	70%	96.1 cm	37.8 in.
10%	85.5 cm	33.7 in.	75%	97.1 cm	38.2 in.
15%	87.6 cm	34.5 in.	80%	98.1 cm	38.6 in.
20%	88.6 cm	34.9 in.	85%	99.3 cm	39.1 in.
25%	89.4 cm	35.2 in.	90%	101.2 cm	39.8 in.
30%	90.2 cm	35.5 in.	95%	104.2 cm	41.0 in.
35%	90.9 cm	35.8 in.	97%	106.3 cm	41.9 in.
40%	91.6 cm	36.1 in.	98%	107.9 cm	42.5 in.
45%	92.3 cm	36.3 in.	99%	110.5 cm	43.5 in.
50%	93.0 cm	36.6 in.			

WAIST CIRCUMFERENCE

Range: 59 to 119 cm
23.2 to 46.9 in.

N = 3325

Mean: 77.02 ± .12 cm ; 30.32 ± .05 in.

Standard Deviation: 6.93 ± .08 cm ; 2.73 ± .03 in.

Coefficient of Variation: 8.99 ± .11 %

Percentile Values

1%	65.2 cm	25.7 in.	55%	76.6 cm	30.2 in.
2%	66.4 cm	26.1 in.	60%	77.3 cm	30.4 in.
3%	67.2 cm	26.5 in.	65%	78.0 cm	30.7 in.
5%	68.4 cm	26.9 in.	70%	78.9 cm	31.1 in.
10%	69.8 cm	27.5 in.	75%	79.9 cm	31.5 in.
15%	70.9 cm	27.9 in.	80%	81.2 cm	32.0 in.
20%	71.6 cm	28.2 in.	85%	82.9 cm	32.6 in.
25%	72.6 cm	28.6 in.	90%	85.4 cm	33.6 in.
30%	73.3 cm	28.9 in.	95%	90.1 cm	35.5 in.
35%	74.0 cm	29.1 in.	97%	93.6 cm	36.9 in.
40%	74.7 cm	29.4 in.	98%	96.5 cm	38.0 in.
45%	75.3 cm	29.6 in.	99%	101.1 cm	39.8 in.
50%	75.9 cm	29.9 in.			

BUTTOCKS CIRCUMFERENCE

Range: 74 to 122 cm
29.1 to 48.0 in.

N = 3324

Mean: 92.27 ± .11 cm ; 36.33 ± .04 in.

Standard Deviation: 6.13 ± .08 cm ; 2.41 ± .03 in.

Coefficient of Variation: 6.64 ± .08 %

Percentile Values

1%	81.0 cm	31.9 in.	55%	92.1 cm	36.2 in.
2%	82.2 cm	32.4 in.	60%	92.9 cm	36.6 in.
3%	82.9 cm	32.6 in.	65%	93.7 cm	36.9 in.
5%	83.9 cm	33.0 in.	70%	94.6 cm	37.3 in.
10%	85.4 cm	33.6 in.	75%	95.6 cm	37.6 in.
15%	86.5 cm	34.1 in.	80%	96.7 cm	38.1 in.
20%	87.4 cm	34.4 in.	85%	98.1 cm	38.6 in.
25%	88.1 cm	34.7 in.	90%	100.0 cm	39.4 in.
30%	88.8 cm	34.9 in.	95%	103.4 cm	40.7 in.
35%	89.4 cm	35.2 in.	97%	106.0 cm	41.7 in.
40%	90.1 cm	35.5 in.	98%	108.1 cm	42.5 in.
45%	90.7 cm	35.7 in.	99%	111.2 cm	43.8 in.
50%	91.4 cm	36.0 in.			

THIGH CIRCUMFERENCE

Range: 37 to 82 cm
14.6 to 32.3 in.

N = 3321

Mean: 54.37 ± .09 cm ; 21.41 ± .04 in.

Standard Deviation: 5.18 ± .06 cm ; 2.04 ± .03 in.

Coefficient of Variation: 9.52 ± .12 %

Percentile Values

1%	45.3 cm	17.8 in.		55%	54.2 cm	21.3 in.
2%	46.1 cm	18.1 in.		60%	54.8 cm	21.6 in.
3%	46.6 cm	18.3 in.		65%	55.5 cm	21.9 in.
5%	47.4 cm	18.7 in.		70%	56.2 cm	22.1 in.
10%	48.6 cm	19.1 in.		75%	57.0 cm	22.4 in.
15%	49.4 cm	19.4 in.		80%	58.1 cm	22.9 in.
20%	50.1 cm	19.7 in.		85%	59.4 cm	23.4 in.
25%	50.7 cm	20.0 in.		90%	61.3 cm	24.1 in.
30%	51.3 cm	20.2 in.		95%	64.0 cm	25.2 in.
35%	51.9 cm	20.4 in.		97%	65.9 cm	25.9 in.
40%	52.4 cm	20.6 in.		98%	67.3 cm	26.5 in.
45%	53.0 cm	20.9 in.		99%	69.7 cm	27.4 in.
50%	53.6 cm	21.1 in.				

LOWER THIGH CIRCUMFERENCE

Range: 26 to 53 cm
10.2 to 20.9 in.

N = 3328

Mean: 37.83 ± .05 cm ; 14.89 ± .02 in.

Standard Deviation: 3.14 ± .04 cm ; 1.24 ± .01 in.

Coefficient of Variation: 8.30 ± .10 %

Percentile Values

1%	32.1 cm	12.6 in.	55%	37.8 cm	14.9 in.
2%	32.4 cm	12.8 in.	60%	38.2 cm	15.0 in.
3%	32.7 cm	12.9 in.	65%	38.7 cm	15.2 in.
5%	33.3 cm	13.1 in.	70%	39.1 cm	15.4 in.
10%	34.3 cm	13.5 in.	75%	39.6 cm	15.6 in.
15%	34.8 cm	13.7 in.	80%	40.2 cm	15.8 in.
20%	35.2 cm	13.9 in.	85%	40.9 cm	16.1 in.
25%	35.6 cm	14.0 in.	90%	41.9 cm	16.5 in.
30%	36.0 cm	14.2 in.	95%	43.4 cm	17.1 in.
35%	36.4 cm	14.3 in.	97%	44.7 cm	17.6 in.
40%	36.7 cm	14.5 in.	98%	45.4 cm	17.9 in.
45%	37.1 cm	14.6 in.	99%	46.8 cm	18.4 in.
50%	37.5 cm	14.8 in.			

CALF CIRCUMFERENCE

Range: 20 to 46 cm
7.9 to 18.1 in.

N = 3327

Mean: 35.25 ± .05 cm ; 13.88 ± .02 in.

Standard Deviation: 2.66 ± .03 cm ; 1.05 ± .01 in.

Coefficient of Variation: 7.55 ± .09 %

Percentile Values

1%	30.0 cm	11.8 in.		55%	35.5 cm	14.0 in.
2%	30.5 cm	12.0 in.		60%	35.8 cm	14.1 in.
3%	30.9 cm	12.2 in.		65%	36.1 cm	14.2 in.
5%	31.4 cm	12.3 in.		70%	36.5 cm	14.4 in.
10%	32.1 cm	12.7 in.		75%	36.9 cm	14.5 in.
15%	32.7 cm	12.9 in.		80%	37.4 cm	14.7 in.
20%	33.1 cm	13.0 in.		85%	38.0 cm	14.9 in.
25%	33.5 cm	13.2 in.		90%	38.7 cm	15.3 in.
30%	33.9 cm	13.3 in.		95%	39.9 cm	15.7 in.
35%	34.2 cm	13.5 in.		97%	40.6 cm	16.0 in.
40%	34.5 cm	13.6 in.		98%	41.2 cm	16.2 in.
45%	34.8 cm	13.7 in.		99%	42.3 cm	16.6 in.
50%	35.1 cm	13.8 in.				

ANKLE CIRCUMFERENCE

Range: 18 to 33 cm
7.1 to 13.0 in.

N = 3326

Mean: 22.39 ± .03 cm ; 8.81 ± .01 in.

Standard Deviation: 1.49 ± .02 cm ; .59 ± .01 in.

Coefficient of Variation: 6.67 ± .08 %

Percentile Values

1%	19.4 cm	7.64 in.		55%	22.5 cm	8.85 in.
2%	19.7 cm	7.77 in.		60%	22.6 cm	8.91 in.
3%	19.9 cm	7.85 in.		65%	22.8 cm	8.98 in.
5%	20.2 cm	7.96 in.		70%	23.0 cm	9.06 in.
10%	20.6 cm	8.13 in.		75%	23.3 cm	9.18 in.
15%	21.0 cm	8.25 in.		80%	23.5 cm	9.25 in.
20%	21.2 cm	8.35 in.		85%	23.8 cm	9.36 in.
25%	21.4 cm	8.43 in.		90%	24.2 cm	9.53 in.
30%	21.6 cm	8.51 in.		95%	24.9 cm	9.79 in.
35%	21.8 cm	8.58 in.		97%	25.3 cm	9.98 in.
40%	22.0 cm	8.65 in.		98%	25.8 cm	10.15 in.
45%	22.1 cm	8.71 in.		99%	26.6 cm	10.46 in.
50%	22.3 cm	8.78 in.				

ARM SCYE

Range: 20 to 60 cm
7.9 to 23.6 in.

N = 3325

Mean: 42.66 ± .06 cm ; 16.80 ± .03 in.

Standard Deviation: 3.68 ± .05 cm ; 1.45 ± .02 in.

Coefficient of Variation: 8.63 ± .11 %

Percentile Values

1%	33.8 cm	13.3 in.	55%	43.0 cm	16.9 in.
2%	35.8 cm	14.1 in.	60%	43.4 cm	17.1 in.
3%	36.6 cm	14.4 in.	65%	43.8 cm	17.2 in.
5%	37.5 cm	14.8 in.	70%	44.3 cm	17.4 in.
10%	38.6 cm	15.2 in.	75%	44.8 cm	17.6 in.
15%	39.4 cm	15.5 in.	80%	45.4 cm	17.9 in.
20%	39.9 cm	15.7 in.	85%	46.2 cm	18.2 in.
25%	40.4 cm	15.9 in.	90%	47.2 cm	18.6 in.
30%	40.9 cm	16.1 in.	95%	47.9 cm	18.9 in.
35%	41.3 cm	16.3 in.	97%	49.6 cm	19.5 in.
40%	41.7 cm	16.4 in.	98%	50.1 cm	19.7 in.
45%	42.2 cm	16.6 in.	99%	51.5 cm	20.3 in.
50%	42.6 cm	16.8 in.			

AXILLARY ARM CIRCUMFERENCE

Range: 20 to 51 cm
7.9 to 20.1 in.

N = 3329

Mean: 31.59 ± .06 cm ; 12.44 ± .02 in.

Standard Deviation: 3.24 ± .04 cm ; 1.28 ± .02 in.

Coefficient of Variation: 10.26 ± .13 %

Percentile Values

1%	24.8 cm	9.8 in.	55%	31.6 cm	12.5 in.
2%	26.1 cm	10.3 in.	60%	32.0 cm	12.6 in.
3%	26.6 cm	10.5 in.	65%	32.4 cm	12.8 in.
5%	27.2 cm	10.7 in.	70%	32.8 cm	12.9 in.
10%	28.0 cm	11.0 in.	75%	33.3 cm	13.1 in.
15%	28.5 cm	11.2 in.	80%	33.8 cm	13.3 in.
20%	29.0 cm	11.4 in.	85%	34.5 cm	13.6 in.
25%	29.5 cm	11.6 in.	90%	35.4 cm	13.9 in.
30%	29.9 cm	11.8 in.	95%	36.9 cm	14.5 in.
35%	30.2 cm	11.9 in.	97%	38.1 cm	15.0 in.
40%	30.6 cm	12.0 in.	98%	39.3 cm	15.5 in.
45%	30.9 cm	12.2 in.	99%	41.6 cm	16.4 in.
50%	31.3 cm	12.3 in.			

BICEPS CIRCUMFERENCE (FLEXED)

Range: 20 to 43 cm
7.9 to 16.9 in.

N = 3326

Mean: 30.88 ± .05 cm ; 12.16 ± .02 in.

Standard Deviation: 2.79 ± .03 cm ; 1.10 ± .01 in.

Coefficient of Variation: 9.02 ± .11 %

Percentile Values

1%	25.1 cm	9.9 in.	55%	31.1 cm	12.2 in.
2%	25.8 cm	10.1 in.	60%	31.4 cm	12.4 in.
3%	26.2 cm	10.3 in.	65%	31.7 cm	12.5 in.
5%	26.7 cm	10.5 in.	70%	32.1 cm	12.6 in.
10%	27.6 cm	10.9 in.	75%	32.5 cm	12.8 in.
15%	28.2 cm	11.1 in.	80%	32.9 cm	13.0 in.
20%	28.7 cm	11.3 in.	85%	33.5 cm	13.2 in.
25%	29.1 cm	11.4 in.	90%	34.3 cm	13.5 in.
30%	29.5 cm	11.6 in.	95%	35.7 cm	14.0 in.
35%	29.8 cm	11.7 in.	97%	36.7 cm	14.5 in.
40%	30.1 cm	11.8 in.	98%	37.3 cm	14.7 in.
45%	30.4 cm	12.0 in.	99%	38.5 cm	15.1 in.
50%	30.7 cm	12.1 in.			

ELBOW CIRCUMFERENCE (FLEXED)

Range: 20 to 40 cm
7.9 to 15.7 in.

N = 1459

Mean: 29.89 ± .06 cm ; 11.77 ± .02 in.

Standard Deviation: 2.20 ± .04 cm ; .86 ± .02 in.

Coefficient of Variation: 7.34 ± .14 %

Percentile Values

1%	25.3 cm	9.96 in.	55%	29.9 cm	11.77 in.
2%	26.1 cm	10.28 in.	60%	30.2 cm	11.89 in.
3%	26.4 cm	10.39 in.	65%	30.5 cm	12.01 in.
5%	26.9 cm	10.59 in.	70%	30.8 cm	12.13 in.
10%	27.5 cm	10.83 in.	75%	31.1 cm	12.24 in.
15%	27.9 cm	10.98 in.	80%	31.4 cm	12.36 in.
20%	28.2 cm	11.10 in.	85%	31.8 cm	12.52 in.
25%	28.5 cm	11.22 in.	90%	32.3 cm	12.72 in.
30%	28.8 cm	11.34 in.	95%	33.3 cm	13.11 in.
35%	29.0 cm	11.42 in.	97%	34.2 cm	13.46 in.
40%	29.2 cm	11.50 in.	98%	35.2 cm	13.86 in.
45%	29.5 cm	11.61 in.	99%	37.6 cm	14.80 in.
50%	29.7 cm	11.69 in.			

LOWER ARM CIRCUMFERENCE (FLEXED)

Range: 16 to 38 cm
6.3 to 15.0 in.

N = 1298

Mean: 27.08 ± .06 cm ; 10.66 ± .02 in.

Standard Deviation: 2.18 ± .04 cm ; .86 ± .02 in.

Coefficient of Variation: 8.04 ± .15 %

Percentile Values

1%	21.9 cm	8.64 in.	55%	27.3 cm	10.75 in.
2%	23.0 cm	9.06 in.	60%	27.5 cm	10.83 in.
3%	23.5 cm	9.25 in.	65%	27.8 cm	10.94 in.
5%	24.0 cm	9.45 in.	70%	28.0 cm	11.02 in.
10%	24.7 cm	9.72 in.	75%	28.3 cm	11.14 in.
15%	25.1 cm	9.88 in.	80%	28.7 cm	11.30 in.
20%	25.5 cm	10.04 in.	85%	29.1 cm	11.46 in.
25%	25.8 cm	10.16 in.	90%	29.6 cm	11.65 in.
30%	26.0 cm	10.24 in.	95%	30.5 cm	12.01 in.
35%	26.3 cm	10.35 in.	97%	31.0 cm	12.20 in.
40%	26.6 cm	10.47 in.	98%	31.5 cm	12.40 in.
45%	26.8 cm	10.55 in.	99%	32.3 cm	12.72 in.
50%	27.0 cm	10.63 in.			

WRIST CIRCUMFERENCE

Range: 14 to 23 cm
5.5 to 9.1 in.

N = 3326

Mean: 17.46 ± .02 cm ; 6.87 ± .01 in.

Standard Deviation: 1.02 ± .01 cm ; .40 ± 01 in.

Coefficient of Variation: 5.83 ± .07 %

Percentile Values

1%	15.4 cm	6.07 in.		55%	17.6 cm	6.94 in.
2%	15.6 cm	6.15 in.		60%	17.8 cm	6.99 in.
3%	15.8 cm	6.20 in.		65%	17.9 cm	7.05 in.
5%	16.0 cm	6.28 in.		70%	18.1 cm	7.11 in.
10%	16.3 cm	6.41 in.		75%	18.2 cm	7.17 in.
15%	16.5 cm	6.49 in.		80%	18.4 cm	7.23 in.
20%	16.7 cm	6.57 in.		85%	18.6 cm	7.31 in.
25%	16.8 cm	6.63 in.		90%	18.9 cm	7.43 in.
30%	17.0 cm	6.68 in.		95%	19.3 cm	7.58 in.
35%	17.1 cm	6.74 in.		97%	19.5 cm	7.69 in.
40%	17.3 cm	6.79 in.		98%	19.7 cm	7.76 in.
45%	17.4 cm	6.84 in.		99%	20.0 cm	7.85 in.
50%	17.5 cm	6.89 in.				

SLEEVE INSEAM

Range: 27 to 60 cm
10.6 to 23.6 in.

N = 3313

Mean: 47.84 ± .05 cm ; 18.83 ± .02 in.

Standard Deviation: 3.14 ± .04 cm ; 1.24 ± .02 in.

Coefficient of Variation: 6.57 ± .08 %

Percentile Values

1%	40.9 cm	16.1 in.	55%	48.2 cm	19.0 in.
2%	41.7 cm	16.4 in.	60%	48.5 cm	19.1 in.
3%	42.2 cm	16.6 in.	65%	48.9 cm	19.3 in.
5%	42.9 cm	16.9 in.	70%	49.4 cm	19.4 in.
10%	44.0 cm	17.3 in.	75%	49.9 cm	19.6 in.
15%	44.7 cm	17.6 in.	80%	50.4 cm	19.8 in.
20%	45.3 cm	17.8 in.	85%	51.0 cm	20.1 in.
25%	45.8 cm	18.0 in.	90%	51.8 cm	20.4 in.
30%	46.2 cm	18.2 in.	95%	53.0 cm	20.9 in.
35%	46.6 cm	18.4 in.	97%	53.9 cm	21.2 in.
40%	47.0 cm	18.5 in.	98%	54.7 cm	21.5 in.
45%	47.4 cm	18.7 in.	99%	55.5 cm	21.9 in.
50%	47.8 cm	18.8 in.			

SLEEVE LENGTH

Range: 68 to 98 cm
26.8 to 38.6 in.

N = 1999

Mean: 80.56 ± .08 cm ; 31.72 ± .03 in.

Standard Deviation: 3.76 ± .06 cm ; 1.48 ± .02 in.

Coefficient of Variation: 4.66 ± .08 %

Percentile Values

1%	72.1 cm	28.4 in.		55%	81.0 cm	31.9 in.
2%	73.2 cm	28.8 in.		60%	81.4 cm	32.0 in.
3%	73.8 cm	29.1 in.		65%	81.9 cm	32.2 in.
5%	74.7 cm	29.4 in.		70%	82.4 cm	32.4 in.
10%	76.0 cm	29.9 in.		75%	83.0 cm	32.7 in.
15%	76.8 cm	30.2 in.		80%	83.7 cm	33.0 in.
20%	77.5 cm	30.5 in.		85%	84.1 cm	33.1 in.
25%	78.1 cm	30.7 in.		90%	85.5 cm	33.7 in.
30%	78.7 cm	31.0 in.		95%	87.1 cm	34.3 in.
35%	79.1 cm	31.1 in.		97%	88.1 cm	34.7 in.
40%	79.6 cm	31.3 in.		98%	88.6 cm	34.9 in.
45%	80.0 cm	31.5 in.		99%	89.4 cm	35.2 in.
50%	80.5 cm	31.7 in.				

SHOULDER LENGTH

Range: 11 to 24 cm
4.3 to 9.4 in.

N = 3304

Mean: 17.75 ± .03 cm ; 6.99 ± .01 in.

Standard Deviation: 1.72 ± .02 cm ; .68 ± .01 in.

Coefficient of Variation: 9.70 ± .19 %

Percentile Values

1%	13.90 cm	5.47 in.	55%	17.94 cm	7.06 in.
2%	14.36 cm	5.65 in.	60%	18.15 cm	7.15 in.
3%	14.65 cm	5.77 in.	65%	18.36 cm	7.23 in.
5%	15.03 cm	5.92 in.	70%	18.60 cm	7.32 in.
10%	15.63 cm	6.15 in.	75%	18.86 cm	7.43 in.
15%	16.03 cm	6.31 in.	80%	19.13 cm	7.53 in.
20%	16.33 cm	6.43 in.	85%	19.50 cm	7.68 in.
25%	16.60 cm	6.54 in.	90%	19.89 cm	7.83 in.
30%	16.84 cm	6.63 in.	95%	20.54 cm	8.09 in.
35%	17.04 cm	6.71 in.	97%	20.96 cm	8.25 in.
40%	17.27 cm	6.80 in.	98%	21.32 cm	8.39 in.
45%	17.49 cm	6.89 in.	99%	21.77 cm	8.57 in.
50%	17.70 cm	6.97 in.			

BIACROMIAL ARC

Range: 36 to 62 cm
14.2 to 24.4 in.

N = 1421

Mean: 50.46 ± .11 cm ; 19.83 ± .04 in.

Standard Deviation: 3.96 ± .07 cm ; 1.52 ± .03 in.

Coefficient of Variation: 7.67 ± .14 %

Percentile Values

1%	41.1 cm	16.2 in.	55%	50.9 cm	20.0 in.
2%	42.3 cm	16.7 in.	60%	51.4 cm	20.2 in.
3%	43.1 cm	17.0 in.	65%	51.9 cm	20.4 in.
5%	44.1 cm	17.4 in.	70%	52.4 cm	20.6 in.
10%	45.5 cm	17.9 in.	75%	52.9 cm	20.8 in.
15%	46.6 cm	18.3 in.	80%	53.6 cm	21.1 in.
20%	47.3 cm	18.6 in.	85%	54.4 cm	21.4 in.
25%	47.8 cm	18.8 in.	90%	55.2 cm	21.7 in.
30%	48.5 cm	19.1 in.	95%	56.5 cm	22.2 in.
35%	48.9 cm	19.3 in.	97%	57.4 cm	22.6 in.
40%	49.4 cm	19.4 in.	98%	58.1 cm	22.9 in.
45%	49.9 cm	19.6 in.	99%	59.3 cm	23.3 in.
50%	50.4 cm	19.8 in.			

WAIST BACK

Range: 36 to 59 cm
14.2 to 23.2 in.

N = 1995

Mean: 46.78 ± .07 cm ; 18.42 ± .03 in.

Standard Deviation: 3.11 ± .05 cm ; 1.22 ± .02 in.

Coefficient of Variation: 6.64 ± .11 %

Percentile Values

1%	39.9 cm	15.7 in.	55%	47.1 cm	18.5 in.
2%	40.7 cm	16.0 in.	60%	47.5 cm	18.7 in.
3%	41.2 cm	16.2 in.	65%	47.9 cm	18.8 in.
5%	41.9 cm	16.5 in.	70%	48.2 cm	19.0 in.
10%	43.0 cm	16.9 in.	75%	48.7 cm	19.2 in.
15%	43.7 cm	17.2 in.	80%	49.2 cm	19.4 in.
20%	44.3 cm	17.4 in.	85%	49.7 cm	19.6 in.
25%	44.9 cm	17.7 in.	90%	50.5 cm	19.9 in.
30%	45.3 cm	17.8 in.	95%	52.0 cm	20.5 in.
35%	45.7 cm	18.0 in.	97%	53.2 cm	20.9 in.
40%	46.1 cm	18.1 in.	98%	54.1 cm	21.3 in.
45%	46.3 cm	18.2 in.	99%	55.7 cm	21.9 in.
50%	46.8 cm	18.4 in.			

WAIST FRONT TO CERVICALE

Range: 40 to 72 cm
15.7 to 28.3 in.

N = 2758

Mean: 55.92 ± .06 cm ; 22.02 ± .02 in.

Standard Deviation: 3.18 ± .04 cm ; 1.25 ± .02 in.

Coefficient of Variation: 5.69 ± .08 %

Percentile Values

1%	47.0 cm	18.5 in.	55%	56.2 cm	22.1 in.
2%	49.5 cm	19.5 in.	60%	56.5 cm	22.2 in.
3%	50.3 cm	19.8 in.	65%	56.9 cm	22.4 in.
5%	51.2 cm	20.2 in.	70%	57.3 cm	22.6 in.
10%	52.3 cm	20.6 in.	75%	57.8 cm	22.8 in.
15%	53.2 cm	20.9 in.	80%	58.3 cm	23.0 in.
20%	53.6 cm	21.1 in.	85%	58.9 cm	23.2 in.
25%	54.1 cm	21.3 in.	90%	59.8 cm	23.5 in.
30%	54.5 cm	21.5 in.	95%	61.0 cm	24.0 in.
35%	54.8 cm	21.6 in.	97%	61.8 cm	24.3 in.
40%	55.2 cm	21.7 in.	98%	62.5 cm	24.6 in.
45%	55.5 cm	21.9 in.	99%	63.7 cm	25.1 in.
50%	55.9 cm	22.0 in.			

GLUTEAL ARC

Range: 20 to 36 cm
7.9 to 14.2 in.

N = 2012

Mean: 26.26 ± .05 cm ; 10.34 ± .02 in.

Standard Deviation: 2.05 ± .03 cm ; .81 ± .01 in.

Coefficient of Variation: 7.80 ± .12 %

Percentile Values

1%	21.9 cm	8.62 in.	55%	26.4 cm	10.39 in.
2%	22.4 cm	8.82 in.	60%	26.7 cm	10.51 in.
3%	22.6 cm	8.90 in.	65%	27.0 cm	10.63 in.
5%	23.1 cm	9.09 in.	70%	27.3 cm	10.75 in.
10%	23.8 cm	9.37 in.	75%	27.6 cm	10.87 in.
15%	24.2 cm	9.53 in.	80%	28.0 cm	11.02 in.
20%	24.5 cm	9.65 in.	85%	28.4 cm	11.18 in.
25%	24.9 cm	9.80 in.	90%	28.9 cm	11.38 in.
30%	25.1 cm	9.88 in.	95%	29.7 cm	11.69 in.
35%	25.4 cm	10.00 in.	97%	30.2 cm	11.89 in.
40%	25.6 cm	10.08 in.	98%	30.5 cm	12.01 in.
45%	25.9 cm	10.20 in.	99%	31.0 cm	12.20 in.
50%	26.2 cm	10.31 in.			

CROTCH LENGTH

Range: 41 to 90 cm
16.1 to 35.4 in.

N = 1458

Mean: 67.33 ± .15 cm ; 26.51 ± .06 in.

Standard Deviation: 5.65 ± .10 cm ; 2.22 ± .04 in.

Coefficient of Variation: 8.39 ± .16 %

Percentile Values

1%	53.8 cm	21.2 in.	55%	67.6 cm	26.6 in.
2%	55.7 cm	21.9 in.	60%	68.2 cm	26.9 in.
3%	56.9 cm	22.4 in.	65%	68.7 cm	27.0 in.
5%	58.5 cm	23.0 in.	70%	69.4 cm	27.3 in.
10%	60.8 cm	23.9 in.	75%	70.4 cm	27.7 in.
15%	61.9 cm	24.4 in.	80%	71.4 cm	28.1 in.
20%	62.9 cm	24.8 in.	85%	72.7 cm	28.6 in.
25%	63.7 cm	25.1 in.	90%	74.5 cm	29.3 in.
30%	64.5 cm	25.4 in.	95%	77.3 cm	30.4 in.
35%	65.2 cm	25.7 in.	97%	79.8 cm	31.4 in.
40%	65.8 cm	25.9 in.	98%	81.3 cm	32.0 in.
45%	66.4 cm	26.1 in.	99%	83.4 cm	32.8 in.
50%	67.1 cm	26.4 in.			

VERTICAL TRUNK CIRCUMFERENCE

Range: 140 to 189 cm
55.1 to 74.4 in.

N = 1457

Mean: 160.46 ± .20 cm ; 63.17 ± .08 in.

Standard Deviation: 7.74 ± .14 cm ; 3.05 ± .06 in.

Coefficient of Variation: 4.82 ± .09 %

Percentile Values

1%	144.4 cm	56.9 in.		55%	161.2 cm	63.5 in.
2%	146.0 cm	57.5 in.		60%	162.2 cm	63.9 in.
3%	147.2 cm	58.0 in.		65%	163.2 cm	64.3 in.
5%	148.5 cm	58.5 in.		70%	164.3 cm	64.7 in.
10%	150.7 cm	59.3 in.		75%	165.4 cm	65.1 in.
15%	152.3 cm	60.0 in.		80%	166.7 cm	65.6 in.
20%	153.8 cm	60.6 in.		85%	168.0 cm	66.1 in.
25%	155.2 cm	61.1 in.		90%	170.1 cm	67.0 in.
30%	156.3 cm	61.5 in.		95%	173.7 cm	68.4 in.
35%	157.3 cm	61.9 in.		97%	176.1 cm	69.3 in.
40%	158.3 cm	62.3 in.		98%	178.4 cm	70.2 in.
45%	159.3 cm	62.7 in.		99%	180.8 cm	71.2 in.
50%	160.1 cm	63.0 in.				

INTERSCYE (SITTING)

Range: 34 to 63 cm
13.4 to 24.8 in.

N = 3325

Mean: 48.09 ± .06 cm ; 18.93 ± .03 in.

Standard Deviation: 3.70 ± .05 cm ; 1.46 ± .02 in.

Coefficient of Variation: 7.70 ± .09 %

Percentile Values

1%	40.0 cm	15.7 in.	55%	48.5 cm	19.1 in.
2%	40.9 cm	16.1 in.	60%	48.9 cm	19.3 in.
3%	41.4 cm	16.3 in.	65%	49.4 cm	19.5 in.
5%	42.2 cm	16.6 in.	70%	50.0 cm	19.7 in.
10%	43.5 cm	17.1 in.	75%	50.5 cm	19.9 in.
15%	44.2 cm	17.4 in.	80%	51.2 cm	20.1 in.
20%	45.0 cm	17.7 in.	85%	51.9 cm	20.4 in.
25%	45.6 cm	18.0 in.	90%	52.8 cm	20.8 in.
30%	46.2 cm	18.2 in.	95%	54.2 cm	21.4 in.
35%	46.7 cm	18.4 in.	97%	55.2 cm	21.7 in.
40%	47.1 cm	18.6 in.	98%	56.0 cm	22.0 in.
45%	47.6 cm	18.7 in.	99%	57.5 cm	22.6 in.
50%	48.0 cm	18.9 in.			

INTERSCYE MAXIMUM

Range: 40 to 69 cm
15.7 to 27.2

N = 3331

Mean: 54.28 ± .07 cm ; 21.37 ± .03 in.

Standard Deviation: 4.07 ± .05 cm ; 1.60 ± .02 in.

Coefficient of Variation: 7.50 ± .09 %

Percentile Values

1%	45.3 cm	17.8 in.		55%	54.5 cm	21.5 in.
2%	46.4 cm	18.3 in.		60%	55.1 cm	21.7 in.
3%	47.1 cm	18.5 in.		65%	55.7 cm	21.9 in.
5%	48.0 cm	18.9 in.		70%	56.3 cm	22.2 in.
10%	49.4 cm	19.4 in.		75%	56.9 cm	22.4 in.
15%	50.2 cm	19.8 in.		80%	57.6 cm	22.7 in.
20%	50.9 cm	20.0 in.		85%	58.4 cm	23.0 in.
25%	51.5 cm	20.3 in.		90%	59.5 cm	23.4 in.
30%	52.0 cm	20.5 in.		95%	61.2 cm	24.1 in.
35%	52.5 cm	20.7 in.		97%	62.3 cm	24.5 in.
40%	53.0 cm	20.9 in.		98%	63.2 cm	24.9 in.
45%	53.5 cm	21.1 in.		99%	64.7 cm	25.5 in.
50%	54.0 cm	21.3 in.				

HIP CIRCUMFERENCE (SITTING)

Range: 83 to 137 cm
32.7 to 53.9 in.

N = 3323

Mean: 100.50 ± .13 cm ; 39.57 ± .05 in.

Standard Deviation: 7.36 ± .09 cm ; 2.90 ± .04 in.

Coefficient of Variation: 7.32 ± .09 %

Percentile Values

1%	87.5 cm	34.5 in.		55%	100.4 cm	39.5 in.
2%	88.8 cm	34.9 in.		60%	101.1 cm	39.8 in.
3%	89.6 cm	35.3 in.		65%	101.9 cm	40.1 in.
5%	90.8 cm	35.7 in.		70%	102.8 cm	40.5 in.
10%	92.4 cm	36.4 in.		75%	103.9 cm	40.9 in.
15%	93.5 cm	36.8 in.		80%	105.3 cm	41.5 in.
20%	94.5 cm	37.2 in.		85%	107.1 cm	42.2 in.
25%	95.5 cm	37.6 in.		90%	109.7 cm	43.2 in.
30%	96.4 cm	38.0 in.		95%	114.3 cm	45.0 in.
35%	97.3 cm	38.3 in.		97%	117.8 cm	46.4 in.
40%	98.2 cm	38.6 in.		98%	120.3 cm	47.4 in.
45%	99.0 cm	39.0 in.		99%	123.7 cm	48.7 in.
50%	99.7 cm	39.3 in.				

KNEE CIRCUMFERENCE (SITTING)

Range: 25 to 53 cm
9.8 to 20.9 in

N = 3329

Mean: 38.38 ± .05 cm ; 15.11 ± .02 in.

Standard Deviation: 2.67 ± .03 cm ; 1.05 ± .01 in.

Coefficient of Variation: 6.96 ± .09 %

Percentile Values

1%	32.5 cm	12.8 in.	55%	38.5 cm	15.2 in.
2%	33.6 cm	13.2 in.	60%	38.8 cm	15.3 in.
3%	34.1 cm	13.4 in.	65%	39.1 cm	15.4 in.
5%	34.7 cm	13.7 in.	70%	39.4 cm	15.5 in.
10%	35.5 cm	14.0 in.	75%	39.8 cm	15.7 in.
15%	36.1 cm	14.2 in.	80%	40.3 cm	15.9 in.
20%	36.5 cm	14.4 in.	85%	40.8 cm	16.1 in.
25%	36.8 cm	14.5 in.	90%	41.6 cm	16.4 in.
30%	37.1 cm	14.6 in.	95%	43.0 cm	16.9 in.
35%	37.4 cm	14.7 in.	97%	43.9 cm	17.3 in.
40%	37.7 cm	14.9 in.	98%	44.6 cm	17.6 in.
45%	38.0 cm	15.0 in.	99%	45.7 cm	18.0 in.
50%	38.2 cm	15.0 in.			

FOOT LENGTH

Range: 22.1 to 31.2 cm
8.7 to 12.3 in.

N = 3331

Mean: 26.26 ± .02 cm ; 10.34 ± .01 in.

Standard Deviation: 1.27 ± .02 cm ; .50 ± .01 in.

Coefficient of Variation: 4.84 ± .06 %

Percentile Values

1%	23.3 cm	9.2 in.	55%	26.4 cm	10.4 in.
2%	23.7 cm	9.3 in.	60%	26.5 cm	10.5 in.
3%	23.9 cm	9.4 in.	65%	26.7 cm	10.5 in.
5%	24.2 cm	9.5 in.	70%	26.9 cm	10.6 in.
10%	24.7 cm	9.7 in.	75%	27.1 cm	10.7 in.
15%	24.9 cm	9.8 in.	80%	27.3 cm	10.8 in.
20%	25.2 cm	9.9 in.	85%	27.5 cm	10.8 in.
25%	25.4 cm	10.0 in.	90%	27.9 cm	11.0 in.
30%	25.6 cm	10.1 in.	95%	28.5 cm	11.2 in.
35%	25.7 cm	10.1 in.	97%	28.8 cm	11.3 in.
40%	25.9 cm	10.2 in.	98%	29.0 cm	11.4 in.
45%	26.1 cm	10.3 in.	99%	29.3 cm	11.5 in.
50%	26.2 cm	10.3 in.			

INSTEP LENGTH

Range: 141 to 226 mm
5.6 to 8.9 in.

N = 2766

Mean: 176.74 ± .19 mm , 6.96 ± .01 in.

Standard Deviation: 10.19 ± .14 mm ; .40 ± .01 in.

Coefficient of Variation: 5.77 ± .08 %

Percentile Values

1%	154.6 mm	6.09 in.		55%	177.4 mm	6.98 in.
2%	157.0 mm	6.18 in.		60%	178.7 mm	7.04 in.
3%	158.5 mm	6.24 in.		65%	180.0 mm	7.09 in.
5%	160.8 mm	6.33 in.		70%	181.4 mm	7.14 in.
10%	164.3 mm	6.47 in.		75%	183.0 mm	7.20 in.
15%	167.5 mm	6.59 in.		80%	184.9 mm	7.28 in.
20%	168.9 mm	6.65 in.		85%	187.1 mm	7.37 in.
25%	170.2 mm	6.70 in.		90%	189.9 mm	7.48 in.
30%	171.5 mm	6.75 in.		95%	193.2 mm	7.61 in.
35%	172.6 mm	6.80 in.		97%	196.7 mm	7.74 in.
40%	173.7 mm	6.84 in.		98%	199.4 mm	7.85 in.
45%	174.9 mm	6.89 in.		99%	203.5 mm	8.01 in.
50%	176.1 mm	6.93 in.				

FOOT WIDTH

Range: 82 to 128 mm.
3.2 to 5.1 in.

N = 3327

Mean: 101.88 ± .11 mm.; 4.01 ± .00 in.

Standard Deviation: 6.31 ± .08 mm.; .25 ± .00 in.

Coefficient of Variation: 6.20 ± .08 %

Percentile Values

1%	88.6 mm	3.49 in.	55%	102.1 mm	4.02 in.
2%	90.0 mm	3.54 in.	60%	103.0 mm	4.06 in.
3%	90.9 mm	3.58 in.	65%	103.8 mm	4.09 in.
5%	92.1 mm	3.63 in.	70%	104.6 mm	4.12 in.
10%	94.0 mm	3.70 in.	75%	105.7 mm	4.16 in.
15%	95.3 mm	3.75 in.	80%	106.9 mm	4.21 in.
20%	96.3 mm	3.79 in.	85%	108.2 mm	4.26 in.
25%	97.3 mm	3.83 in.	90%	110.0 mm	4.33 in.
30%	98.2 mm	3.87 in.	95%	112.6 mm	4.43 in.
35%	99.1 mm	3.90 in.	97%	114.6 mm	4.51 in.
40%	99.8 mm	3.93 in.	98%	116.1 mm	4.57 in.
45%	100.6 mm	3.96 in.	99%	118.5 mm	4.67 in.
50%	101.3 mm	3.99 in.			

HEEL WIDTH

Range: 52 to 84 mm
2.0 to 3.3 in.

N = 2020

Mean: 67.21 ± .10 mm ; 2.65 ± .01 in.

Standard Deviation: 4.27 ± .07 mm ; .17 ± .01 in.

Coefficient of Variation: 6.31 ± .10 %

Percentile Values

1%	57.1 mm	2.25 in.	55%	67.4 mm	2.65 in.
2%	58.4 mm	2.30 in.	60%	67.9 mm	2.67 in.
3%	59.2 mm	2.33 in.	65%	68.9 mm	2.71 in.
5%	60.2 mm	2.37 in.	70%	69.4 mm	2.73 in.
10%	61.7 mm	2.43 in.	75%	69.8 mm	2.75 in.
15%	62.7 mm	2.47 in.	80%	70.4 mm	2.77 in.
20%	63.4 mm	2.50 in.	85%	71.2 mm	2.80 in.
25%	64.0 mm	2.52 in.	90%	72.4 mm	2.85 in.
30%	64.6 mm	2.54 in.	95%	74.2 mm	2.92 in.
35%	65.2 mm	2.57 in.	97%	75.4 mm	2.97 in.
40%	65.7 mm	2.59 in.	98%	76.2 mm	3.00 in.
45%	66.3 mm	2.61 in.	99%	77.7 mm	3.06 in.
50%	66.8 mm	2.63 in.			

BALL OF FOOT CIRCUMFERENCE

Range: 21 to 34 cm
8.3 to 13.4 in.

N = 3322

Mean: 25.04 ± .02 cm ; 9.86 ± .01 in.

Standard Deviation: 1.36 ± .02 cm ; .53 ± .01 in.

Coefficient of Variation: 5.42 ± .07 %

Percentile Values

1%	22.1 cm	8.71 in.		55%	25.2 cm	9.91 in.
2%	22.5 cm	8.84 in.		60%	25.3 cm	9.97 in.
3%	22.7 cm	8.92 in.		65%	25.5 cm	10.04 in.
5%	22.9 cm	9.03 in.		70%	25.7 cm	10.11 in.
10%	23.4 cm	9.20 in.		75%	25.9 cm	10.19 in.
15%	23.7 cm	9.32 in.		80%	26.1 cm	10.28 in.
20%	23.9 cm	9.41 in.		85%	26.4 cm	10.39 in.
25%	24.1 cm	9.50 in.		90%	26.7 cm	10.53 in.
30%	24.3 cm	9.58 in.		95%	27.3 cm	10.73 in.
35%	24.5 cm	9.65 in.		97%	27.6 cm	10.88 in.
40%	24.7 cm	9.72 in.		98%	27.9 cm	10.99 in.
45%	24.8 cm	9.78 in.		99%	28.4 cm	11.17 in.
50%	25.0 cm	9.84 in.				

HAND LENGTH

Range: 163 to 222 mm
6.42 to 8.74 in.

N = 3328

Mean: 191.57 ± .17 mm ; 7.54 ± .01 in.

Standard Deviation: 9.64 ± .12 mm ; .38 ± .01 in.

Coefficient of Variation: 5.03 ± .06 %

Percentile Values

1%	169.5 mm	6.67 in.	55%	192.5 mm	7.58 in.
2%	171.7 mm	6.76 in.	60%	193.5 mm	7.62 in.
3%	173.4 mm	6.83 in.	65%	194.6 mm	7.66 in.
5%	176.3 mm	6.94 in.	70%	195.9 mm	7.71 in.
10%	179.8 mm	7.08 in.	75%	197.6 mm	7.78 in.
15%	182.0 mm	7.17 in.	80%	199.6 mm	7.86 in.
20%	183.7 mm	7.23 in.	85%	201.5 mm	7.93 in.
25%	185.1 mm	7.29 in.	90%	203.7 mm	8.02 in.
30%	186.5 mm	7.34 in.	95%	207.7 mm	8.18 in.
35%	187.9 mm	7.40 in.	97%	210.6 mm	8.29 in.
40%	189.1 mm	7.44 in.	98%	212.9 mm	8.38 in.
45%	190.3 mm	7.49 in.	99%	216.1 mm	8.51 in.
50%	191.5 mm	7.54 in.			

HAND BREADTH AT METACARPALE

Range: 70 to 105 mm
2.76 to 4.13 in.

N = 3317

Mean: 87.49 ± .08 mm ; 3.44 ± .01 in.

Standard Deviation: 4.55 ± .06 mm ; .18 ± .01 in.

Coefficient of Variation: 5.20 ± .06 %

Percentile Values

1%	77.1 mm	3.04 in.	55%	88.1 mm	3.47 in.
2%	78.3 mm	3.08 in.	60%	88.7 mm	3.49 in.
3%	79.0 mm	3.11 in.	65%	89.2 mm	3.51 in.
5%	80.0 mm	3.15 in.	70%	89.7 mm	3.53 in.
10%	81.5 mm	3.21 in.	75%	90.3 mm	3.55 in.
15%	82.6 mm	3.25 in.	80%	91.0 mm	3.58 in.
20%	83.5 mm	3.29 in.	85%	91.8 mm	3.61 in.
25%	84.2 mm	3.32 in.	90%	92.9 mm	3.66 in.
30%	84.9 mm	3.34 in.	95%	94.7 mm	3.73 in.
35%	85.5 mm	3.37 in.	97%	96.0 mm	3.78 in.
40%	86.1 mm	3.39 in.	98%	96.9 mm	3.82 in.
45%	86.8 mm	3.42 in.	99%	98.5 mm	3.88 in.
50%	87.5 mm	3.45 in.			

HAND BREADTH AT THUMB

Range: 81 to 128 mm
3.2 to 5.0 in.

N = 3316

Mean: 104.67 ± .11 mm ; 4.12 ± .01 in.

Standard Deviation: 6.35 ± .08 mm ; .25 ± .01 in.

Coefficient of Variation: 6.07 ± .07 %

Percentile Values

1%	89.2 mm	3.51 in.	55%	105.4 mm	4.15 in.
2%	91.3 mm	3.59 in.	60%	106.2 mm	4.18 in.
3%	92.6 mm	3.65 in.	65%	107.0 mm	4.21 in.
5%	94.2 mm	3.71 in.	70%	108.0 mm	4.25 in.
10%	96.6 mm	3.80 in.	75%	109.0 mm	4.29 in.
15%	98.1 mm	3.86 in.	80%	110.1 mm	4.33 in.
20%	99.4 mm	3.91 in.	85%	111.4 mm	4.39 in.
25%	100.4 mm	3.95 in.	90%	113.0 mm	4.45 in.
30%	101.4 mm	3.99 in.	95%	115.2 mm	4.54 in.
35%	102.2 mm	4.02 in.	97%	116.7 mm	4.59 in.
40%	103.0 mm	4.06 in.	98%	117.8 mm	4.64 in.
45%	103.8 mm	4.09 in.	99%	119.8 mm	4.72 in.
50%	104.6 mm	4.12 in.			

THICKNESS OF METACARPALE III

Range: 20 to 40 mm
.79 to 1.57 in.

N = 2019

Mean: 30.32 ± .05 mm ; 1.19 ± .01 in.

Standard Deviation: 2.32 ± .04 mm ; .09 ± .01 in.

Coefficient of Variation: 7.65 ± .12 %

Percentile Values

1%	24.8 mm	.98 in.	55%	30.6 mm	1.43 in.
2%	25.6 mm	1.01 in.	60%	30.9 mm	1.22 in.
3%	26.1 mm	1.03 in.	65%	31.2 mm	1.23 in.
5%	26.7 mm	1.05 in.	70%	31.6 mm	1.24 in.
10%	27.6 mm	1.09 in.	75%	31.9 mm	1.26 in.
15%	28.1 mm	1.11 in.	80%	32.3 mm	1.27 in.
20%	28.6 mm	1.13 in.	85%	32.7 mm	1.29 in.
25%	28.9 mm	1.14 in.	90%	33.4 mm	1.31 in.
30%	29.2 mm	1.15 in.	95%	34.3 mm	1.35 in.
35%	29.5 mm	1.16 in.	97%	35.0 mm	1.38 in.
40%	29.8 mm	1.17 in.	98%	35.5 mm	1.40 in.
45%	30.1 mm	1.19 in.	99%	36.4 mm	1.43 in.
50%	30.4 mm	1.20 in.			

PALM LENGTH

Range: 82 to 134 mm
3.23 to 5.28 in.

N = 3321

Mean: 109.07 ± .11 mm ; 4.29 ± .01 in.

Standard Deviation: 6.26 ± .08 mm ; .25 ± .01 in.

Coefficient of Variation: 5.74 ± .07 %

Percentile Values

1%	93.7 mm.	3.69 in.	55%	109.7 mm	4.32 in.
2%	95.9 mm.	3.78 in.	60%	110.5 mm	4.35 in.
3%	97.6 mm.	3.84 in.	65%	111.3 mm	4.38 in.
5%	99.5 mm.	3.92 in.	70%	112.1 mm	4.41 in.
10%	101.7 mm.	4.00 in.	75%	113.1 mm	4.45 in.
15%	103.1 mm.	4.06 in.	80%	114.1 mm	4.49 in.
20%	104.1 mm.	4.10 in.	85%	115.4 mm	4.54 in.
25%	105.0 mm.	4.13 in.	90%	116.9 mm	4.60 in.
30%	105.6 mm.	4.16 in.	95%	119.5 mm	4.71 in.
35%	106.6 mm.	4.20 in.	97%	121.5 mm	4.78 in.
40%	107.4 mm.	4.23 in.	98%	122.9 mm	4.84 in.
45%	108.2 mm.	4.26 in.	99%	124.7 mm	4.91 in.
50%	108.9 mm.	4.29 in.			

PALM CIRCUMFERENCE

Range: 12 to 32 cm
4.7 to 12.6 in.

N = 3311

Mean: 21.49 ± .03 cm ; 8.46 ± .01 in.

Standard Deviation: 1.48 ± .02 cm ; .58 ± .01 in.

Coefficient of Variation: 6.89 ± .09 %

Percentile Values

1%	18.5 cm	7.28 in.	55%	21.5 cm	8.48 in.
2%	18.9 cm	7.46 in.	60%	21.7 cm	8.54 in.
3%	19.2 cm	7.54 in.	65%	21.9 cm	8.60 in.
5%	19.5 cm	7.67 in.	70%	22.0 cm	8.67 in.
10%	19.9 cm	7.84 in.	75%	22.2 cm	8.74 in.
15%	20.2 cm	7.95 in.	80%	22.4 cm	8.81 in.
20%	20.4 cm	8.04 in.	85%	22.6 cm	8.90 in.
25%	20.6 cm	8.12 in.	90%	22.9 cm	9.02 in.
30%	20.8 cm	8.18 in.	95%	23.5 cm	9.23 in.
35%	20.9 cm	8.24 in.	97%	24.0 cm	9.44 in.
40%	21.1 cm	8.30 in.	98%	24.5 cm	9.65 in.
45%	21.2 cm	8.36 in.	99%	25.5 cm	10.02 in.
50%	21.4 cm	8.42 in.			

FIST CIRCUMFERENCE

Range: 19 to 39 cm
7.5 to 15.3 in.

N = 3300

Mean: 28.74 ± .03 cm ; 11.31 ± .01 in.

Standard Deviation: 1.61 ± .02 cm ; .63 ± .01 in.

Coefficient of Variation: 5.60 ± .07 %

Percentile Values

1%	25.0 cm	9.84 in.	55%	28.9 cm	11.37 in.
2%	25.7 cm	10.12 in.	60%	29.1 cm	11.44 in.
3%	26.0 cm	10.24 in.	65%	29.3 cm	11.52 in.
5%	26.4 cm	10.39 in.	70%	29.5 cm	11.59 in.
10%	26.9 cm	10.59 in.	75%	29.7 cm	11.67 in.
15%	27.2 cm	10.71 in.	80%	30.0 cm	11.81 in.
20%	27.5 cm	10.82 in.	85%	30.3 cm	11.93 in.
25%	27.8 cm	10.94 in.	90%	30.7 cm	12.09 in.
30%	28.0 cm	11.02 in.	95%	31.2 cm	12.28 in.
35%	28.2 cm	11.10 in.	97%	31.6 cm	12.44 in.
40%	28.4 cm	11.18 in.	98%	31.8 cm	12.51 in.
45%	28.5 cm	11.24 in.	99%	32.3 cm	12.72 in.
50%	28.7 cm	11.30 in.			

HEAD LENGTH

Range: 165 to 216 mm
6.50 to 8.50 in.

N = 3317

Mean: 193.97 ± .12 mm.; 7.64 ± .01 in.

Standard Deviation: 7.13 ± .09 mm ; .28 ± .01 in.

Coefficient of Variation: 3.68 ± .05 %

Percentile Values

1%	176.4 mm.	6.95 in.	55%	194.8 mm	7.67 in.
2%	179.0 mm.	7.05 in.	60%	195.6 mm	7.70 in.
3%	180.4 mm.	7.10 in.	65%	196.6 mm	7.74 in.
5%	182.2 mm.	7.17 in.	70%	197.8 mm	7.79 in.
10%	184.6 mm.	7.27 in.	75%	199.0 mm	7.84 in.
15%	186.5 mm.	7.34 in.	80%	200.1 mm	7.88 in.
20%	188.0 mm.	7.40 in.	85%	201.3 mm	7.93 in.
25%	189.3 mm.	7.45 in.	90%	202.9 mm	7.99 in.
30%	190.5 mm.	7.50 in.	95%	205.5 mm	8.09 in.
35%	191.5 mm.	7.54 in.	97%	207.0 mm	8.15 in.
40%	192.4 mm.	7.57 in.	98%	208.1 mm	8.19 in.
45%	193.2 mm.	7.60 in.	99%	209.6 mm	8.25 in.
50%	193.9 mm.	7.63 in.			

HEAD BREADTH

Range: 131 to 183 mm
5.2 to 7.2 in.

N = 2019

Mean: 151.12 ± .13 mm ; 5.95 ± .01 in.

Standard Deviation: 5.92 ± .09 mm ; .23 ± .01 in.

Coefficient of Variation: 3.92 ± .06 %

Percentile Values

1%	137.9 mm	5.43 in.	55%	151.5 mm	5.96 in.
2%	139.4 mm	5.49 in.	60%	152.3 mm	6.00 in.
3%	140.3 mm	5.52 in.	65%	153.0 mm	6.02 in.
5%	141.5 mm	5.57 in.	70%	154.0 mm	6.06 in.
10%	143.5 mm	5.65 in.	75%	154.8 mm	6.09 in.
15%	144.8 mm	5.70 in.	80%	155.8 mm	6.13 in.
20%	146.0 mm	5.75 in.	85%	156.9 mm	6.18 in.
25%	147.0 mm	5.79 in.	90%	158.6 mm	6.24 in.
30%	147.9 mm	5.82 in.	95%	161.1 mm	6.34 in.
35%	148.7 mm	5.85 in.	97%	162.7 mm	6.41 in.
40%	149.5 mm	5.89 in.	98%	163.8 mm	6.45 in.
45%	150.2 mm	5.91 in.	99%	165.5 mm	6.52 in.
50%	150.9 mm	5.94 in.			

HEAD CIRCUMFERENCE

Range: 50 to 64 cm
19.7 to 25.2 in.

N = 3315

Mean: 56.30 ± .03 cm ; 22.16 ± .01 in.

Standard Deviation: 1.61 ± .02 cm ; .63 ± .01 in.

Coefficient of Variation: 2.86 ± .04 %

Percentile Values

1%	52.7 cm	20.7 in.		55%	56.5 cm	22.2 in.
2%	53.1 cm	20.9 in.		60%	56.7 cm	22.3 in.
3%	53.4 cm	21.0 in.		65%	56.9 cm	22.4 in.
5%	53.7 cm	21.2 in.		70%	57.1 cm	22.5 in.
10%	54.3 cm	21.4 in.		75%	57.4 cm	22.6 in.
15%	54.7 cm	21.5 in.		80%	57.6 cm	22.7 in.
20%	55.0 cm	21.6 in.		85%	57.9 cm	22.8 in.
25%	55.2 cm	21.7 in.		90%	58.3 cm	23.0 in.
30%	55.4 cm	21.8 in.		95%	58.9 cm	23.2 in.
35%	55.6 cm	21.9 in.		97%	59.2 cm	23.3 in.
40%	55.8 cm	22.0 in.		98%	59.5 cm	23.4 in.
45%	56.0 cm	22.1 in.		99%	60.0 cm	23.6 in.
50%	56.2 cm	22.1 in.				

SAGITTAL ARC

Range: 28 to 44 cm
11.0 to 17.3 in.

N = 1460

Mean: 37.85 ± .05 cm ; 14.90 ± .02

Standard Deviation: 2.04 ± .04 cm ; .80 ± .01 in.

Coefficient of Variation: 5.38 ± .10 %

Percentile Values

1%	33.4 cm	13.1 in.	55%	38.2 cm	15.0 in.
2%	33.9 cm	13.3 in.	60%	38.4 cm	15.1 in.
3%	34.1 cm	13.4 in.	65%	38.7 cm	15.2 in.
5%	34.5 cm	13.6 in.	70%	39.0 cm	15.4 in.
10%	35.2 cm	13.9 in.	75%	39.3 cm	15.5 in.
15%	35.7 cm	14.1 in.	80%	39.6 cm	15.6 in.
20%	36.1 cm	14.2 in.	85%	40.0 cm	15.7 in.
25%	36.4 cm	14.3 in.	90%	40.5 cm	15.9 in.
30%	36.7 cm	14.4 in.	95%	41.1 cm	16.2 in.
35%	37.1 cm	14.6 in.	97%	41.5 cm	16.3 in.
40%	37.3 cm	14.7 in.	98%	41.7 cm	16.4 in.
45%	37.6 cm	14.8 in.	99%	42.3 cm	16.7 in.
50%	37.9 cm	14.9 in.			

CORONAL ARC

Range: 29 to 40 cm
11.4 to 15.7 in.

N = 3322

Mean: 35.23 ± .03 cm ; 13.87 ± .01 in.

Standard Deviation: 1.47 ± .02 cm ; .58 ± .01 in.

Coefficient of Variation: 4.17 ± .05 %

Percentile Values

1%	32.1 cm	12.6 in.	55%	35.3 cm	13.9 in.
2%	32.5 cm	12.8 in.	60%	35.5 cm	14.0 in.
3%	32.8 cm	12.9 in.	65%	35.7 cm	14.0 in.
5%	33.1 cm	13.0 in.	70%	35.9 cm	14.1 in.
10%	33.5 cm	13.2 in.	75%	36.1 cm	14.2 in.
15%	33.8 cm	13.3 in.	80%	36.4 cm	14.3 in.
20%	34.0 cm	13.4 in.	85%	36.7 cm	14.4 in.
25%	34.2 cm	13.5 in.	90%	37.0 cm	14.6 in.
30%	34.4 cm	13.5 in.	95%	37.5 cm	14.8 in.
35%	34.6 cm	13.6 in.	97%	38.0 cm	14.9 in.
40%	34.8 cm	13.7 in.	98%	38.3 cm	15.1 in.
45%	35.0 cm	13.8 in.	99%	38.7 cm	15.2 in.
50%	35.1 cm	13.8 in.			

POSTERIOR ARC

Range: 18 to 38 cm
7.1 to 15.0 in.

N = 3351

Mean: 27.60 ± .05 cm ; 10.87 ± .02 in.

Standard Deviation: 2.93 ± .04 cm ; 1.16 ± .01 in.

Coefficient of Variation: 10.63 ± .13 %

Percentile Values

1%	22.7 cm	8.94 in.	55%	27.3 cm	10.75 in.
2%	22.9 cm	9.02 in.	60%	27.6 cm	10.87 in.
3%	23.2 cm	9.13 in.	65%	28.0 cm	11.02 in.
5%	23.6 cm	9.29 in.	70%	28.4 cm	11.18 in.
10%	24.3 cm	9.57 in.	75%	28.8 cm	11.34 in.
15%	24.7 cm	9.72 in.	80%	29.5 cm	11.61 in.
20%	25.1 cm	9.88 in.	85%	30.4 cm	11.97 in.
25%	25.4 cm	10.00 in.	90%	31.5 cm	12.40 in.
30%	25.8 cm	10.16 in.	95%	33.1 cm	13.03 in.
35%	26.1 cm	10.28 in.	97%	33.9 cm	13.35 in.
40%	26.4 cm	10.39 in.	98%	34.6 cm	13.62 in.
45%	26.7 cm	10.51 in.	99%	35.5 cm	13.98 in.
50%	27.0 cm	10.63 in.			

GLOSSARY AND SCHEMATIC OF MARKED POINTS

- Acromion** - The outer end of the transverse spine of the shoulder blade.
- Cervicale** - The projecting tip of the 7th neck vertebra (at the base of the neck).
- Distal** - Towards the extremities.
- Frankfort plane** - A plane of orientation for the head determined by locating the lower edge of the eye socket and the upper edge of the ear hole on a horizontal line.
- Glabella** - The most forward portion in the midline of the head between the brow ridges.
- Gluteal furrow** - The furrow formed by the overhang of the buttock on the back of upper leg.
- Inion** - The tip of the occipital protuberance.
- Lateral Vastus muscle** - The large muscle on the outside of the upper leg just above the knee.
- Medial Vastus muscle** - The large muscle on the inner surface of the upper leg just above the knee.
- Metacarpale bones** - The bones of the palm of the hand.
- Metatarsal bones** - Bones of the instep of the foot.
- Midsagittal plane** - The plane dividing the body into equal right and left hand sections.
- Navicular bone** - One of the small bones of the wrist, in particular the one closest to the hand on the same side as the thumb.
- Nuchal musculature** - Muscles of the neck.
- Occipital region** - The back of the head.
- Patella** - The knee cap.
- Phalanges** - Plural of phalanx.
- Phalanx** - One of the bones of the fingers or toes.
- Radius** - One of the bones of the lower arm running from the inside of the elbow to the thumb side of the wrist.
- Scye points** - The tip of the crease between the arm and the body on the back - this corresponds to the location of the seam between the sleeve and the body of a garment.
- Styloid process (radius)** - The lateral projection at the distal end of the radius.

Styloid process (ulna) - The lateral projection at the distal end of the ulna.

Suprasternale - A point located at the middle of the upper edge of the breastbone.

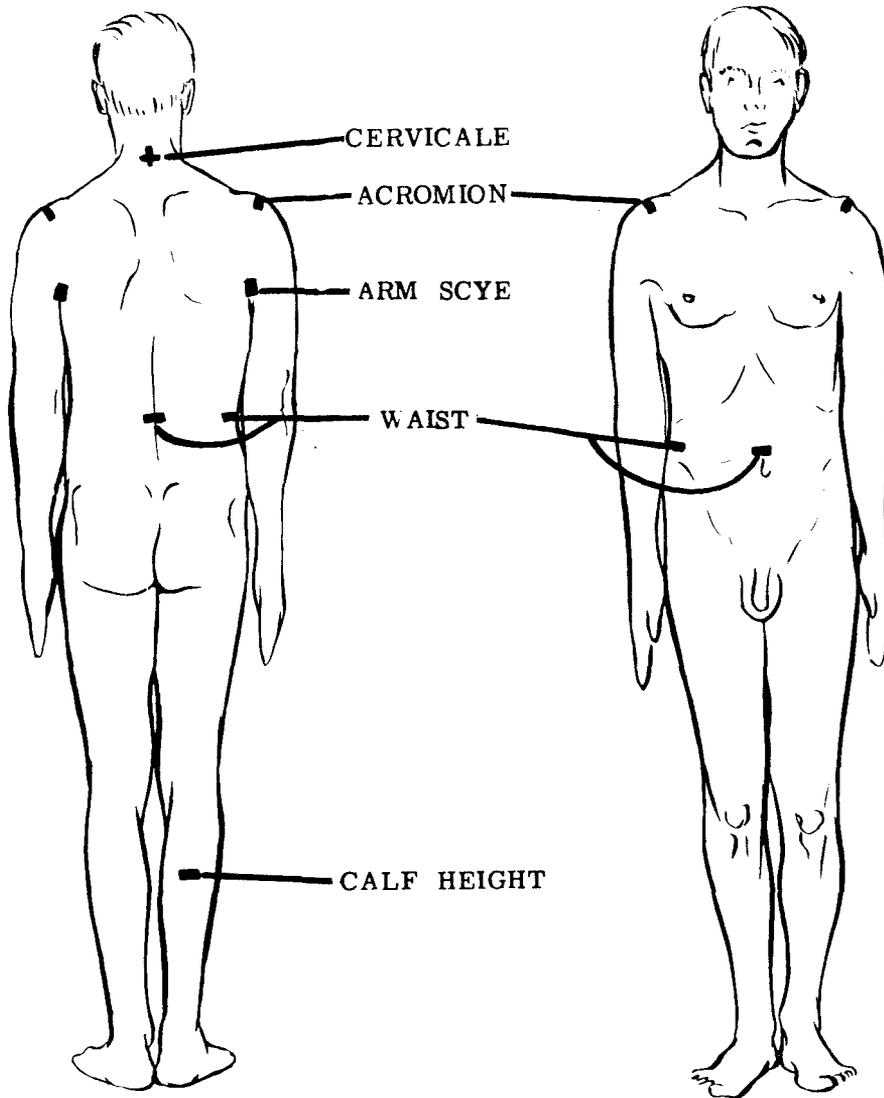


Figure 4 - SCHEMATIC OF MARKED POINTS

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MEASUREMENT (Cont.)	DESCRIPTION Page	STATISTICS Page
Inseam (Crotch Height)	13	42
Instep Length	25	78
Interscye (S)	23	73
Interscye Maximum (S)	23	74
Knee Circumference	24	76
Lower Arm Circumference (Flexed)	19	62
Lower Thigh Circumference	17	55
Marital Status . . . . .	..	4
Metacarpale (Hand Breadth at)	26	83
Metacarpale III	27	85
Neck Circumference	15	48
Palm Circumference	28	87
Palm Length	27	86
Patella Height	13	43
Posterior Arc	30	94
Race . . . . .	..	4
Rank . . . . .	..	3
Religion . . . . .	..	4
Sagittal Arc	29	92
Shoulder Circumference	15	49
Shoulder Length	21	66
Sleeve Inseam	20	64
Sleeve Length	20	65
Stature	11	36
Thickness at Metacarpale III	27	85
Thigh Circumference	17	54
Thigh (Lower) Circumference	17	55
Thumb (Hand Breadth at)	27	84
Trunk Circumference (Vertical)	23	72
Vertical Trunk Circumference	23	72
Waist Back	21	68
Waist Circumference	16	52
Waist Front to Cervicale	22	69
Waist Height	12	40
Weight . . . . .	..	35
Wrist Circumference	20	63