GROWTH OF BRITISH COLUMBIAN NATIVE INDIAN CHILDREN AS ASSESSED FROM ANTHROPOMETRIC MEASUREMENTS

by

SONYA RABENECK

B.Sc., University of British Columbia, 1974

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in the Division

of

HUMAN NUTRITION

SCHOOL OF HOME ECONOMICS

We accept this thesis as conforming to the required standard.

THE UNIVERSITY OF BRITISH COLUMBIA

May, 1976

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the Head of my Department or by his representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of HUMAN NUTRITION
SCHOOL OF HOME ECONOMICS
The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date MAY 3, 1976.

ABSTRACT

A cross-sectional growth study was designed to obtain information on the growth patterns of British Columbian Native Indian children. The object of the study was to establish whether growth patterns of B.C. Native Indian children living in student residences correspond to those of non-Indian reference children. The study sample consisted of all children 6 to 17 years attending the six student residences administered by the Department of Indian and Northern Affairs. The total sample size was 734 children, representing 77 reserves in the province. Standing height, sitting height, weight, arm circumference, four skinfold thicknesses (triceps, subscapular, biceps and suprailiac), and head circumference were measured according to the recommendations of the International Biological Program (Weiner and Lourie, 1969). Arm muscle diameter, circumference and area were derived according to the method of Frisancho (1974). Individual findings were plotted as scatter diagrams against standard reference curves, data for which was obtained from Caucasian children.

Results indicate a considerable growth deficit in standing and sitting height in younger children which appears to be somewhat corrected by adolescence. Weight

measurements, although falling predominantly below the Iowa mean, generally reflect adequate gain with age. Arm measurements indicate well maintained musculature throughout the age-range studied, with relatively low degrees of triceps adipose tissue. Head circumference displays an initial deficit in younger children which is largely corrected by adolescence. It was concluded that protein nutritional status of B.C. Native Indian children living in student residences may be relatively better than calorie nutritional status.

ACKNOWLEDGEMENTS

To my research director Dr. Melvin Lee, I extend my sincere thanks for his guidance, and encouragement so generously offered throughout the course of this project. In addition, I would like to express my appreciation to Dr. K. Damji and to Dr. B. Alfred for their help in the preparation of this thesis. I would especially like to thank Mr. Edward R. Powell for his very kind help in developing computer programs for the data analysis.

I am grateful to the Medical Services Branch (Pacific Region) of the Department of National Health and Welfare, and to the administrators and staff of the six residential schools visited, for their assistance and cooperation in the data collection. Finally, I would like to thank the children who participated in this study; without their enthusiasm and cheerful cooperation, my thesis could not have been accomplished.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

REVIEW OF LITERATURE

Anthropometric Parameters

Nutritional anthropometry deals with the measurement of body composition and dimension, at different levels of nutritional status, from birth to adulthood. It is well accepted that growth and therefore potential body size are largely determined by genetic factors, however, a number of environmental influences are seen to act upon this potential for growth. Among these is nutrition. Retardation of growth and development is one of the consequences of nutritional deprivation, while altered growth patterns are observed in the overnourished. Thus, anthropometric measurements are a valuable tool in the assessment of growth and development and reflect adequacy of the nutritional state.

Anthropometric techniques are widely used in the assessment of growth and development of both the individual, and of groups of individuals. Alterations of body size and composition during the growth period of an individual can be assessed by serial measurement of one or more parameters (allowing conclusions to be drawn about

the rate of growth) or by single measurement of attained dimension which is subsequently compared with standard values. Two important points are well recognized in the interpretation of such information, as stressed by Falkner (1962). First, standard curves, by nature of their construction, do not show the individual patterns of each child, and are therefore presented as smooth curves with few dramatic changes. In comparison, the growth chart of an individual child will display some irregularities while the child is growing normally. Second, although the range of average limits (or distribution of percentile curves) gives points within which we can expect the measurements of a healthy individual to fall, there is no well defined criterion for abnormal growth of the individual. Thus, while a child's measurements falling outside established limits provides some value in assessing his progress, interpretation of the adequacy of growth is to be made with caution.

In the assessment of growth and development of a group of individuals, although the parameters measured and techniques employed are similar to those in individual assessment, conclusions regarding growth status are made in other ways. In group analysis, information can be obtained on the general growth trends of the group which mean values are compared statistically with means of a well-nourished population. Thus, for example, mean height values

for a group of individuals might indicate generally taller or shorter stature, at certain ages or throughout the growth period, as compared with the mean height values of reference children. In addition, information relevant to the proportion of individuals within the sample who show inadequate growth status can be obtained. Findings of this nature can then be interpreted in the light of information regarding certain nutritional factors known to affect the study sample.

Although numerous anthropometric measurements are recognized, certain of them are recommended as being of particular value in the assessment of growth and development of a population. Growth in linear dimension is commonly measured by standing height and sitting height. Measurement of sitting height allows determination of the relative contribution of head and trunk to total stature, through determination of the sitting height/standing height ratio. Measurement of weight provides information on the total body mass, although this is a gross measure of size.

More specific information can be obtained on the growth of various regions of the body. Arm circumference and head circumference measurements are widely used for this purpose, while measurement of chest circumference is considered important for preschool children. Changes in specific body compartments during growth can also be obtained with anthropometric techniques. Skinfold measurements

in certain well defined regions of the body provide information regarding deposition of subcutaneous adipose tissue; while arm muscle diameter, circumference and area (arithmetically derived from triceps skinfold and arm circumference measurements) provide useful information on growth of upper arm muscle.

1. Standing height and sitting height. In part, because it is growth cumulative and in part, because the measuring error is relatively small, Garn (1973) considers the simple measurement of standing height "a more sensitive group indicator of nutritional status during the growing period than anything we conveniently measure in the serum or recover from the urine." This author considers standing height, or recumbent length in the infant to be the most frequently measured parameter of body size during the growing period. It is well documented that children from well nourished populations stand consistently taller than children from poorly nourished groups, and that boys and girls of the middle and upper socioeconomic classes are taller than those of the lower classes. This has been shown for populations from Nigeria (Rea, 1971; Janes, 1974), Ethiopia (Ekmyr, 1970), Costa Rica (Villarejos et al., 1971), Tunisia (Lowenstein and O'Connell, 1974), Iran (Amirhakimi, 1974), Guatemala (Johnston et al., 1973), Turkey (Neyzi et al., 1973), and Nepal (Farquharson, 1976). Thus in developing countries, where the children of the

highest socioeconomic group are less likely to be burdened with severe nutritional deficiencies, the stresses of disease (Scrimshaw et al., 1968), and of other detrimental social conditions (Christiansen et al., 1975), growth in height is greater than in less advantaged children.

Data from developed countries show that stature is similarly related to economic level. The Ten State Nutrition Survey (1968-1970) revealed that mean heights for white children and adolescents were greater for the high-income-ratio group than for the low-income-ratio group. This was observed within various subsamples though at somewhat different levels for blacks, whites and Meso-Americans. Similarly, Owen et al. (1974), in the Preschool Nutritional Status Survey, reports that height expressed in terms of age- and sex-specific Z-scores, increases over the four Warner Ranks used to categorize socioeconomic status. Further, Jose and Welsh (1970) have reported that among preschool Australian children, those of high socioeconomic status have greater mean heights than those of the low socioeconomic group. Social class differences in height have also been established for English children. Goldstein (1971) reported a difference in height for both sexes, between the highest and lowest social class, of 1.3 cm (favoring the advantaged child) for 7 year olds after allowing for the effects of parity, mother's height and number of siblings. The authors state that this difference reflects

other influences related to social class.

Height measurements generally show less variability than do some other anthropometric parameters when taken on a group of individuals. Gwynn and Sanjur (1974) have shown that standing height measurement of malnourished Colombian children display much smaller deviations from standard values of reference children than do other parameters measured. As stated by the authors, the self-evident explanation for this may be that height, once gained cannot be lost, while the opposite is true for other anthropometric parameters such as weight. Thus standing height measurement can be considered a less discriminating parameter for the assessment of growth, although low height for age, coincident with normal weight for height, has been used as a dependable indicator of past chronic protein-calorie malnutrition (Seone and Latham, 1971).

Body proportion, as determined by the relative contribution of sitting height to stature and by sexual dimorphism in stature in poorly nourished groups, however, displays little difference from that of well-fed populations. Stini (1972) has shown, in a comparison of data on various populations living in a wide range of environments, that these body proportions are relatively constant among the groups. The authors state that this is due to differential growth rates in males and females; males growing more slowly but for a longer period of time under stress. Thus,

in a protein-deficient Colombian population cross-sectional data indicate that a delay in skeletal maturation in males far exceeded that observed in females (Stini, 1969). Despite its lack of variability, measurement of sitting height among groups of individuals allows further description of physique during the growing period, and is valuable in group assessment.

2. Body weight. Growth and development during childhood and adolescence is reflected in a systematic and characteristic gain in body weight, which is well correlated to dimensional changes throughout the body (Tanner, 1962). On an individual basis a serial weight record gives the earliest objective evidence of malnutrition (Church and Stanfield, 1971) and the child's weight graph has been demonstrated to be a most useful aid in children's clinics in developing countries (Cole-King, 1975; Yankauer, 1975). In group assessment, measurement of body weight is an indispensable parameter of anthropometry. According to Jelliffe (1967), weight measurements in poorly nourished groups should be combined with clinical examination or with other appropriate measurements. Body weight when considered in relation to the expected weight for height, provides a means of assessing the degree of harmony between these two measurements. Addy (1970) has shown that weight-for-height is less affected than weight-for-age and may probably be a better indicator of the actual nutritional process occurring in the

child. Alternatively, they may be reflecting different stages of the nutritional state since there is a low degree of correlation between these two measurements in malnourished children (Dugdale et al., 1970; Gwynn and Sanjur, 1974).

It is known that body weight is vulnerable to nutritional insult of both short and long duration, and is affected in states of disease, such as infection (Cravioto et al., 1967). This effect is due in part to inhibition of nutrient utilization, enhanced tissue breakdown or a combination of both. Despite this apparent lability of body weight, however, Sohar et al. (1973) have shown, in a study sample of 404 children in Tel Aviv, that there is a high degree of correlation between body weight of each child at age 6 to 7 and at age 13 to 14; a correlation which exists for both obese and nonobese children. Similarly, the persistence of excess body weight from infancy to adulthood has been emphasized (Mullins, 1958; Eid, 1970). Thus, body weight measurement, as a tool in the assessment of growth, provides a composite index of a population, reflecting both the current nutritional status and the general pattern of weight accruement.

3. Skinfold thickness. Since various components of the human body respond differentially to nutritional adequacy or deprivation during growth and development, anthropometric measurements more specific in nature are of value in the assessment of these processes. The measurement of skinfold

thickness is based on the assumption that increased subcutaneous fat, due either to low energy expenditure or high calorie intake, or to a combination of both, reflects a greater energy reserve. A number of studies have been made of the correlation between skinfold measurements and total body fat as determined by other methods (Hammond, 1955; Brozek and Keys, 1951; Pascale et al., 1956; Hermansen and Dobeln, 1971). These studies show correlations of between 0.50 to 0.98. However, it is stressed by Ward et al. (1975) that one cannot expect to know the actual amount of body fat, as is possible with animal studies, and that one is limited to comparison of methods of prediction. These are useful procedures, however, since in some large populations the prevalence of obesity due to overnutrition is a major concern.

Durnin and Rahaman (1967) have shown that the relationship between body density, and hence body fat, and skinfold thickness is sufficiently uniform to allow construction of regression equations and tables to calculate percentage of body weight as fat, on this basis. In a further study (Durnin and Womersley, 1974), these workers showed that the measurement of a single skinfold (triceps) provides predictive power equal to that of four total skinfolds.

Skinfold measurement in the neonate has further shown to be a useful method for noninvasive investigation of

perinatal body composition and nutrition (Brans et al., 1974). Decrease in the proportion of body weight attributable to water, and fat deposition in subcutaneous and internal body stores are seen to be normal changes in body composition during fetal life. Further, lower fat stores and expansion of all body water compartments result from intrauterine growth retardation. This has allowed the suggestion, by these authors, that skinfold thickness measurement recorded at various times after application (with changes noted due to compressibility) of the calipers provides an estimation of both fat stores and subcutaneous interstitial water.

Children of greater adiposity for their age are both taller and developmentally more advanced than average children (Garn and Haskell, 1960). This is supported by animal experimental studies demonstrating that overnutrition brings earlier skeletal maturity and greater dimensional growth (Hammond, 1954). However, because measurement of skinfold thickness of children of poorly nourished groups reveals less subcutaneous fat, it has been suggested that evaluation of growth based upon skinfold thickness is less sensitive among such populations. Thus Frisancho and Garn (1971) report that only those children with triceps skinfold below the 5th or above the 95th percentile show systematic differences in standing height in a sample of Guatemalan rural children. In other words, the relationship

between degree of adiposity and growth is not linear, and skinfold thickness is not a valuable correlate of growth for studies among these children. This does not appear to be due to differences in distribution of fat deposition since the same results were obtained from measurement of subscapular skinfold. Similar data have been reported among children from Costa Rica (Frisancho et al., 1971) and Honduras (Frisancho and Garn, 1971). However, skinfold measurements, particularly those taken at the triceps and subscapular, are considered by Jelliffe (1966) to be of great importance in the assessment of nutritional status of a community.

4. Arm circumference. Measurement of upper arm circumference has received much attention in the literature as being an important tool in anthropometry. Many studies have been made to assess the validity of measuring arm circumference as a means of determining the nutritional status of a population, as summarized by Loewenstein and Phillips (1973). Comparing results of arm circumference measurement with clinical evaluation and with other anthropometric parameters (such as weight, weight/age and weight/height), the authors concluded that arm circumference measurement is of value for three purposes: 1) rapid assessment of nutritional status of a geographic area, 2) screening of a large group for those individuals requiring immediate attention, 3) evaluation of the effectiveness of ongoing programs

designed to improve the nutritional status of a group. Similarly, Jelliffe (1969) has stressed its value in identification and classification of children with various degrees of protein-calorie malnutrition.

Frisancho (1974) has shown that, compared with height and weight, arm circumference shows very little change between ages 1 and 5 years (as indicated by Burgess and Burgess, 1969) and that exact knowledge of chronological age may not be necessary for evaluation of nutritional status based upon this measurement.

5. Arm muscle measurements. Other soft tissues of the body, most notably muscle, display specific changes during nutritional deprivation as well as characteristic patterns during normal growth and development and provide useful measurement in group assessment. Studies by Waterlow and Mendes (1957) show that reduction of body weight in infants on a protein-deficient diet is exceeded by a decrease in muscle mass, as determined through either limb measurement or creatinine output. According to work carried out on six children hospitalized with kwashiorkor, and then verified in the laboratory rat, Castellanos and Arroyave (1961) have shown that this reduction in muscle size provides amino acids for gluconeogenesis and protein synthesis in the liver. In addition, with nutritional rehabilitation the calculated increase in muscle size is significantly correlated with increased urinary outputs of

creatinine, considered the most direct biochemical index of muscle mass (Standard et al., 1959).

Frisancho (1974) provides data showing that muscle size, when expressed as muscle diameter or circumference for children age 1 to 12 years tend to underestimate the magnitude of tissue growth, compared with trends displayed by increase in muscle area. Further, greater muscularity is related to greater stature and thus arm muscle measurements can be considered an acceptable general index of growth.

In summary, nutritional anthropometry provides a useful means of assessing body dimensional changes of an individual or population during growth and development and during various stages of nutritional adequacy or deprivation.

Assessment of Native Indian Populations

1. U.S. Native Indians

Although there is an established need for information concerning the adequacy of growth among British Columbian Indian children, and of Canadian Indian children, in general, few studies are available in the literature. More attention has been given Indian groups in the United States, however much of this information is based upon small samples (Vavich et al., 1954; Perkins and Church, 1960) or limited age range (French, 1967; Mayberry and Lindeman, 1963; Wenberg et al., 1965).

Height and weight were measured in a sample of 1,200

children between 6 and 11 years of age in the Blackfoot Indian Reservation Nutrition Survey (1964), a study carried out by the Interdepartmental Committee on Nutrition for National Defense (ICNND). The sample was divided according to sex, and between 31 and 63 children were in each one year group. Heights and weights closely approximated those of Iowa reference children. In the same study, mean heights of 82 preschool boys from the same reserve were compared with Iowa standards for height. Values were consistently more than one standard deviation below the Iowa mean after age 1. Mean weight fell below the Iowa mean after 6 months of life. Among a sample of 85 preschool girls mean heights and weights were between the Iowa mean and 1 standard deviation below the mean throughout the age range studied.

Children from the Fort Belknap Indian Reservation (1964) showed similar growth patterns. These data were derived from equal numbers of Gros Ventres and Assiniboin Indian children in north central Montana. The sample was divided according to sex and between 14 and 28 children were measured in each one year group. Average height and weight values were consistently at or above Iowa means for both sexes, with boys of 9 to 11 years tending to weigh more than reference boys. The preschool children, however, showed a marked growth deficit.

In a more recent study carried out in 1973 on the Blackfoot Reservation (Nichaman et al., 1975), growth data

were obtained from 1,261 children, aged 6 to 17 years. Height-for-age distributions, when compared with Iowa standards, were found to be normal. Weight-for-height, however, was skewed toward the higher percentiles, as was weight-for-age. Utilizing the method of classification of Waterlow (1972), 6.7 percent were found to be retarded in height-for-age while 0.8 percent were acutely malnourished and a further 11.5 percent of the group were overweight.

Owen et al. (1972) completed an important growth study of 201 preschool children from 125 families, members of the White Mountain Apache Tribe in Arizona. These authors found that 38 percent of the heights were below the 10th percentile for reference children, although skeletal maturation was normal, while 3 percent fell above the 90th percentile. Weight measurements revealed 18 percent to be below the 10th percentile while 7 percent were above the 90th percentile for reference children. When compared with Negro preschool children in low-income rural areas of Mississippi (Owen et al., 1969), the Apache children are seen to be considerably shorter; among the Negro group 24 percent had heights below the 10th percentile. Head circumferences of Apache children, of both sexes, were below average values of reference children of Nellhaus (1968).

Comparatively more data are available for Navajo Indian children than for other Indian groups in the United

States. This group is now the largest within the boundaries of the United States. Darby et al. (1956) reported average height and weight of school-aged children, compared to a Canadian sample (Pett, 1955) and revealed that Canadians were consistently taller by 3 to 4 inches for children from 10 years of age to late adolescence. Until the age of 10 years there was no significant difference in height between the groups regardless of sex. Comparison of average weight similarly favoured the Canadian child; from 8 years of age onwards the Navajo boys weighed 3 to 22 pounds less than their Canadian counterparts. When expressed as 'percent of standard' using the Baldwin-Wood tables (Bigwood, 1939) for U.S. children, increasing age, for both sexes, was associated with an increasing percentage of subjects less than 90 percent of standard. For males, about 20 percent of the sample were less than 90 percent of standard at 5 years while almost 35 percent were less than 90 percent of standard at 15 years. For females, the proportion less than 90 percent increased from 15 percent of sample at 5 years to about 20 percent at 15 years.

A recent study of 944 Navajo children between the ages of 4 and 7 years, on the Head Start program, from all parts of the reservation (Van Duzen et al., 1969),revealed that nearly one third of them were below the 3rd percentile of Iowa standards for height, while one tenth were below the 3rd percentile for weight. In all cases, the differences

between observed and expected height and weight were statistically significant ($P < 0.01$). The authors felt that this retardation in growth was the end result of chronic calorie and protein malnutrition, and repeated bacterial and viral infections.

Similar findings among preschoolers as well as older children also from the Navajo group were obtained in a study by Reisinger et al. (1972). All age groups for both sexes had a considerable excess of individuals below the 50th percentile for height and weight when compared with National Health Examination Survey standards (Hamill et al., 1970). Thus, 20 percent of boys and 15 percent of girls between 2 and 4 years of age were below the 3rd percentile for weight. For children between 5 and 9 years of age, the percentage of boys and girls below the 3rd percentile for weight was 16 and 11, respectively. The authors comment that although this may represent catch-up growth in that these proportions decrease (no statistical test on these trends was offered), the percent below the 50th percentile does not change significantly. The authors stress that the slower rate of growth and development observed in the Navajo group, as compared with reference children, may be caused wholly or in part by nutritional differences.

No other notable studies are available concerning growth patterns of American Indian children, indeed several major nutrition surveys carried out in the United States

exclude an Indian subsample. The National Health Examination Survey (1967), designed to provide information on the nutritional status of American children, based on a probability sample of noninstitutionalized children in the United States, excluded children living on reservation lands set aside for use of American Indians. This was due to operational problems encountered early in the survey. The Ten State Nutrition Survey (1968-1970), the first comprehensive attempt to assess the nutritional status of Americans, reports no anthropometric measurements taken on Indian children. Similarly, the Health and Nutrition Examination Survey (Abraham et al., 1975), part of a program designed to measure the nutritional status of the United States population and to minitor changes in status over time, does not report on findings specific to Indian children. The Preschool Nutrition Survey (Owen et al., 1974) included a total of 159 American Indian preschool children between 1 and 4 years of age, representing 1 percent of overall subjects. Although the authors state that survey sampling was designed to provide a realistic basis for comparisons between subsets of the sample population, meaningful results are not available nor is discussion directed to Indian children on the basis of this inadequate sample size.

2. Canadian Native Indians

With respect to Canadian Indian children, there is a

similar scarcity of information. Studies carried out in central and eastern Canada several decades ago evidenced undesirable growth patterns, similar to those already discussed for U.S. Indians. Vivian et al. (1948) reported anthropometric measurements of adolescents 10 to 19 years of age in the James Bay area. Between one half and two thirds of the girls and about one third of the boys in the two bands studied were 10 to 30 pounds underweight for height, as compared with the standards of Pett (1955). The authors suggest that the prevalence of this degree of underweight is indicative of nutritional failure. Among children under 9 years of age, most showed satisfactory growth. However, in one band studied (Attawapiskat), 40 percent of girls between 6 and 9 were 6 to 14 pounds lighter than expected.

In contrast, a later study (Best and Gerrard, 1959) of two Indian groups in Saskatchewan reported heights and weights of 30 boys and 44 girls in relation to those of non-Indian school children in Saskatoon. Results show good agreement between Indian and non-Indian children.

More recent research begun in 1972 (Coodin et al., 1975) reports on the growth of infants and preschool children in two isolated Indian communities in northern Manitoba; Cross Lake Reserve and Gardin Hill Reserves. Heights compared well with Iowa standards, with weights generally greater than those of reference children. Mean head

circumferences closely approximated the standards of Nellhaus (1968).

Regarding British Columbian Indian children, anthropometric measurements were carried out at two Indian Reserves, Ahousat and Anaham, as part of a comprehensive nutritional status assessment of these two groups (Birkbeck et al., 1971). Standing and sitting height, weight, head circumference, arm circumference and triceps skinfold thickness were measured. Standing height displayed a lag at 2 years when compared with Iowa standards and with a non-Indian group from the Vancouver area. This growth deficit was greater for the Anaham population than for the Ahousat group, although the Anaham females showed a catch-up growth effect subsequent to an initial height of significantly less than standard. (This being a cross-sectional study, catch-up growth could not be demonstrated although differences among age groups were clear.) The authors stress that insufficient data were obtained for the two periods of most rapid growth, namely infancy and adolescence, to permit speculation on the meaning of the findings.

Sitting height measurements, when compared with standards of Simmons (1944) showed a deficit at both reserves until age 10. A catch-up growth phase was again observed; despite this, however, the Anaham group failed to reach standard throughout childhood.

Body weight measurement showed that both males and females from Ahousat compare well with standards throughout childhood and into adolescence, although females from Anaham fall in the lower percentiles of standard. Head circumference of children when compared with standards of Watson and Lowry (1967), revealed all children from Ahousat to be within standard range, while younger females in the Anaham group were below standard. This was corrected, however, by later childhood. Arm circumference showed a close correlation with body mass although no comment was offered of its adequacy with reference to standards in either group sampled. Triceps skinfold thickness measurements among children showed an adequate subcutaneous fat layer when compared with the standards of Tanner and Whitehouse (1962).

The authors stress caution in ascribing these growth patterns to nutritional differences between the two groups studied, although the generally better trends displayed by Ahousat children were coincident with superior diet (Lee et al., 1971).

Additional anthropometric data were obtained from Indian children at Fort St. John and at two communities in the Yukon Territory by the same authors (Lee, 1975). Children in all three areas fell in the lower percentiles of standard and tended to show increasing deficit in weight for age, as compared with standards. At the three locations studied, head circumference and other anthropometric

parameters were similar to those for reference children.

No other growth data are available for Canadian, and more specifically, British Columbian Indian children. Although anthropometric measurements were collected on Indian children by the Nutrition Canada Survey (1973), these data are, as yet, unavailable.

CHAPTER II

INTRODUCTION

The Native Indian population of British Columbia, consisting of about 52,000 people (Canada, 1971a) is characterized in several important ways as being a group whose need for public health education and need for health services in general is greater than that of the provincial population as a whole. This is supported by demographic and social characteristics, as well as cultural and health patterns of the Native Indians in this province, as will be discussed.

Although the demographic data for B.C. Native Indians, as for Canadian Indians generally, is somewhat inadequate, estimates of vital statistics reflect a situation distinctly different from that of the non-Indian population of B.C. and of Canada (Piche and George, 1973). The infant mortality rate for B.C. Indians is very high, and despite a substantial reduction in recent years, is still more than twice that of the total Canadian population. Indeed, infant mortality rates for B.C. Indians are higher than those for any other provincial Indian groups, with the exception of the Yukon and North West Territories. The birth rate of

B.C. Indians, although displaying a decline in recent years, in keeping with the Canadian population as a whole, is relatively high: 35.4 per 1000 population in 1970 as compared to an all-Canada rate of 17.4.

Mortality rates among B.C. Indians, although declining, are the highest of all provincial Indian groups, which are in turn higher than the Canadian population as a whole. With a declining mortality rate and relatively high birth rate, the Indian population in Canada is increasing rapidly (3.0 percent in 1970 as compared with 1.0 percent for the general Canadian population). The rate of annual increase for B.C. Indians is 2.7 percent. Thus the Canadian Indian population and the B.C. Indian group are in demographic transition. Further, the proportion of total B.C. Indians under the age of 14 is much greater than that for the general provincial population: census data show this statistic to be 47 percent and 13.8 percent respectively (Canada, 1971b). The Indian population of B.C. therefore displays demographic characteristics of a developing nation.

Other factors have some bearing on the need for community health and education services. There is an increasing rate of migration from reserves to urban areas, with accompanying changes in style of life. Although there is, admittedly, difficulty in assessing health related problems consequent to this shift, successful adaptation to the stresses of city living is clearly dependent upon adequate

health education services. Also, with continued rapid expansion of the transportation and communication systems throughout the province, bringing Indians on reserve lands into close contact with the non-Indian population, the Native Indians have specific educational requirements in order to meet these changes.

Among those aspects of health education that are of particular importance to Native Indians is that of nutrition, insofar as improvement of dietary patterns is amenable to education and public health programs. Given that sound programming is dependent upon adequate data pertaining to the health status of a group, it is essential that specific and appropriate information be available as a basis for such planning.

Relatively little information is available on the nutritional status of B.C. Native Indians, indeed such is the case for the Canadian and North American Indian in general. The Nutrition Canada Survey (1973) reports on the nutritional status of Canadian Indians on the basis of dietary, biochemical and clinical evaluation. Generally, results confirm that the nutritional status of Canadian Indians is inferior to that of the general population. Thus, vitamin C status of Native Indian infants and children from remote areas was less satisfactory than for the general population as a whole. Poor vitamin A status, inadequate calcium intake, low iron reserves and poor urinary

riboflavin values were also found among this age group.

Among adolescents, caloric intakes for Indians were consistently lower than those of the same age group of the national population. A significant percentage of adolescents had urinary thiamin excretions in the range of "moderate risk". Vitamin A status of adults was found to be of some concern,relative to that of the general population. Indians had lower dietary intakes than the national sample and lower median serum vitamin A levels with a corresponding increase in the proportion of serum values classified as "moderate risk". It was concluded that liver stores of Indians were poor. Both calcium and vitamin D intakes were consistently lower among Native Indians. A relatively larger proportion of Indian adolescent girls had low iron stores as judged by transferrin saturation values. Adult Indians, especially in remote areas, had a higher prevalence of low serum vitamin C levels, and lower intakes of calcium and vitamin D than did the general population. Among pregnant women, poor vitamin C status, low serum vitamin A levels, marginal calcium and vitamin D intakes, marginal median iron intakes, and low serum folate values characterized the Native Indian population.

In view of these findings, a sound scientific basis has been provided for further research into the nutritional status of this segment of the Canadian population. Further, in recognizing the need for more information on Canadian

Native Indians in general, consideration should be given to provincial groups. Among the 29 bands participating in the Nutrition Canada Survey, 7 were located in British Columbia, although the survey did not report specifically on the nutritional status of Native Indians from B.C.

There are several aspects of nutritional status investigation of a population. Dietary evaluation is useful in determining patterns of food consumption and nutrient intakes, while clinical assessment allows detection of nutritional deficiency signs. Nutritional anthropometry, encompassing certain techniques for the assessment of attained physical dimension provides information on growth patterns of an individual or group of individuals. Although growth is affected by a large number of factors, it is well established that certain growth patterns are characteristic of an optimally nourished population, while suboptimal nutrition adversely affects the growth status of a population.

As discussed in the review of literature, studies reporting anthropometric data on Canadian Indian populations are of very limited sample size, are limited in terms of their representation of the B.C. Native Indian children population as a whole and are limited in terms of the actual measurements taken. Indeed, there is no study available aimed specifically at B.C. Native Indian children with a view to assessing their growth patterns. Thus, the need for a study of larger sample size and of greater scope is clear.

The present research project therefore was designed to obtain information on the growth patterns of B.C. Native Indian children living in student residences. The objective of the study was to establish whether the growth patterns of B.C. Native Indian children living in student residences correspond to those of non-Indian reference children. The study sample consists of all children, aged 6 to 17 years, attending the six student residences for Native Indian children in British Columbia. Total sample size is 734 children, representing approximately 4.3 percent (Canada, 1970) of the entire population of Native Indian children in British Columbia. The study is cross-sectional in design, utilizing standard anthropometric techniques for the assessment of standing and sitting height, body weight, arm and head circumference, and skinfold thicknesses. Arm muscle dimensions are also reported. The children live in an institutional environment; adequate meals are made available on a regular basis. It was expected therefore that those anthropometric parameters sensitive to past nutritional problems would be affected to a greater extent than those which reflect current nutritional status.

CHAPTER III

MATERIALS AND METHODS

A cross-sectional growth study was designed to obtain information on the growth patterns of Native British Columbian Indian children living in student residences. The objective of the study was to establish whether the growth patterns of B.C. Native Indian children living in student residences correspond to those of non-Indian reference children. Anthropometric measurements were carried out on all Native Indian children from age 6 to 17 attending the six B.C. student residences administered by the Department of Indian and Northern Affairs. The total sample size was 368 boys and 366 girls, representing 77 reserves in the province. The study was carried out with the cooperation of Medical Services Branch (Pacific Region) of the Department of National Health and Welfare, and with the assistance of the administrators of the student residences. The student residences were situated in the following locations: Sechelt (Sechelt Student Residence), Mission (St. Mary's Student Residence), Kamloops (Kamloops Student Residence), Williams Lake (Cariboo Student Residence), Lejac (Lejac Student Residence) and Lytton (St. George's Student Residence).

The name, birthdate and band number of each child was obtained from residence records. Table I shows the distribution according to age-sex grouping, as well as the percentage of total British Columbian Native Indian children in each age-sex grouping represented in the study sample.

TABLE I

Number of subjects in each age-sex grouping and as % of total B.C. Native Indian children in each group

Age Group	Females		Males	
	Number	%*	Number	%*
6.00- 6.99	31	4.1	28	3.5
7.00- 7.99	27	3.1	23	2.9
8.00- 8.99	30	3.6	29	3.6
9.00- 9.99	32	4.2	33	4.1
10.00-10.99	30	3.8	38	4.8
11.00-11.99	35	4.5	38	5.4
12.00-12.99	35	5.0	42	6.1
13.00-13.99	42	6.3	37	5.7
14.00-14.99	43	6.9	38	6.5
15.00-15.99	30	5.0	30	4.9
16.00-16.99	30	5.1	32	5.3
Total	366	4.2	368	4.7

* Number in study sample reported as % of total number of B.C. Native Indian children in each eage group.

These figures are calculated from data collected in 1969. Each percentage is based upon the total number of Indian children in the province for the age group 6 years younger than that of the study sample.

All anthropometric measurements were done according to the International Biological Program recommendations (1969). The children were clothed only in undergarments, and all

anthropometric measurements were done in the afternoon, before the evening meal. These included standing height, sitting height, body weight, four skinfold measurements (triceps, subscapular, biceps and suprailiac), midupper arm circumference and head circumference.

Standing height was measured to the nearest 0.1 cm with a portable stadiometer; the measuring board was equipped with a digital readout in order to eliminate parallax. The "stretching upward" technique of Tanner and Whitehouse (1966) was not used. Sitting height was similarly measured to the nearest 0.1 cm; a stool of known height was used and actual sitting height subsequently obtained by subtraction. Body weight was measured to the nearest 0.05 kg with a portable beam-type platform balance. No correction was made for clothing.

Triceps, subscapular, biceps and suprailiac skinfolds were measured with Harpenden Skinfold Calipers (Skin Fold Calipers, Holtain Ltd., Pembrokeshire, Wales), which read to 0.1 mm accuracy. These calipers exert a constant pressure of 10 g/mm^2 through the whole range of skinfold thicknesses at all distances of jaw separation. This was verified by the method described by World Health Organization (1968). All skinfold measurements were taken on the left side of the body. The accuracy of the measurements was such that duplicate readings agreed to within $\pm$ 5% in two thirds or more of all repeated measurements. The method

was validated in this manner on a group of 12 children, prior to the data collection period.

Arm circumference was measured to the nearest 0.1 cm, using a steel tape measure, with the arm in a relaxed position. Compression of soft tissue was avoided. The measurement was taken at the point midway between the acromion process of the scapula and the olecranon process of the ulna.

Upper arm muscle diameter, circumference and area were derived as described by Frisancho (1974), as follows:

(1) $UAMD = \frac{AC}{\pi} - TC$

(2) $UAMC = AC - \pi TC$

(3) $UAMA = \frac{\pi}{4} [UAMD^2]$

where UAMD = upper arm muscle diameter (mm)

UAMC = upper arm muscle circumference (mm)

UAMA = upper arm muscle area (mm^2)

TC = triceps skinfold thickness (mm)

AC = arm circumference (mm)

Head circumference was measured by placing the tape firmly around the frontal bones, just superior to the supraorbital ridges, passing it around the head at the same level on each side, and over the maximum occipital prominence at the back.

Data were recorded on the "Nutritional Status Investigation Form" of the School of Home Economics. The coded sheets were read by the IBM 1232 Optical Mark reader at Simon Fraser University and key punched onto cards. The

data were then treated by a utility computer program and preliminary scatter plots of selected variables were made to assist in the detection of obvious errors. Data analysis was carried out with the IBM 370/168 computer. Scatter diagrams of individual findings were prepared with the CALCOMP plotter together with standard reference curves.

CHAPTER IV

RESULTS

All anthropometric parameters are displayed graphically (pages 45 to 64), against chronological age, with the exception of biceps and suprailiac skinfold thickness. These two parameters, as well as sitting height/standing height ratio, are listed in the Appendix.

1. Standing Height. Figures I-1 and I-2 show standing heights for males and females, respectively. Standard curves are those of Jackson and Kelly (1945), derived from the Iowa growth data, measurements taken several decades ago on Caucasian children predominantly from the higher socioeconomic group. In using standards derived from a group both culturally and genetically distinct from the study sample, it is recognized that interpretation of results is somewhat limited. Standard curves therefore are presented as a reference only.

Throughout the age range studied, most individuals fall between the mean and 2 standard deviations below the mean. In males, 79% percent of the study sample fall in this range. Eleven percent are above the mean. While none are more than 2 standard deviations above the mean, 10 percent

of males are more than 2 standard deviations below the mean. Those more than 2 standard deviations below the mean are not evenly distributed throughout the age range studied for males between 6 and 8 years old, 23 percent are more than 2 standard deviations below the mean, while for older males, between 14 and 16 years, this percentage has decreased to 8.8.

In females, 70 percent of all individuals are between the mean and 2 standard deviations below the mean. Twenty-five percent of females are above the mean. While none are more than 2 standard deviations above the mean, 5 percent of females are more than 2 standard deviations below the mean. Of the females between 6 and 8 years old, 15.5 percent are more than 2 standard deviations below the mean while for older females between 14 and 16 years this percentage has decreased to 3 percent. Thus the proportion of females who have low height for age, as compared with reference children, decreases with increasing age, as with males.

2. Sitting height. As previously mentioned, sitting height/standing height ratio was computed; individual findings are listed in the Appendix since standards are not available for this parameter. Only sitting height is displayed graphically (Figures II-1 and II-2). The standards of Simmons (1944) are used (mean $\pm$ 2 standard deviations).

These standards are based upon measurements taken several decades ago on Caucasian children. This parameter indicates growth of the head and trunk.

In general, the pattern of sitting height is similar to that of standing height. In both males and females, most individuals fall between the mean and 2 standard deviations below the mean. Among males, 66 percent are in this range. Only 12 percent are above the mean. While none are more than 2 standard deviations above the mean, 22 percent of males are more than 2 standard deviations below the mean. For those males between 6 and 8 years old, 60 percent are more than 2 standard deviations below the mean. However, for older males, between 14 and 16 years, this percentage decreases to 0.8 percent.

Among females, 66 percent of all individuals are between the mean and 2 standard deviations below the mean. Ten percent of females are above the mean. While none are more than 2 standard deviations above the mean, 24 percent of females are more than 2 standard deviations below the mean. For those females between 6 and 8 years old, 40 percent fall more than 2 standard deviations below the mean. Among older females, between 14 and 16 years, this percentage decreases to 27 percent. Thus, for both sexes, the proportion of children with a deficit in sitting height decreases with increasing age.

3. Body weight. Figures III-1 and III-2 show body weight plotted against chronological age. Standard curves are those of Jackson and Kelly (1945). Mean, 3rd and 97th percentiles are presented. Most individuals are between the 3rd and 97th percentiles, although for both males and females, the majority are between the mean and 3rd percentile. Thus, 79 percent and 78 percent of males and females respectively are between the mean and the 3rd percentile.

Among males, 18 percent are above the mean for body weight, including one individual (less than 1 percent of all males) above the 97th percentile. Three percent of males are below the 3rd percentile. Among females, 21 percent are above the mean, including one individual (less than 1 percent of all females) above the 97th percentile. One percent of females are below the 3rd percentile.

These results are interesting in view of the large proportion of children of both sexes who show deficits in standing and sitting height.

4. Skinfold thickness. Figures IV-1 to IV-4 display triceps and subscapular skinfold thicknesses for males and females. Percentile curves are those of Tanner and Whitehouse (1975), and are derived from cross-sectional data on London school children taken in 1966. These percentile curves have been smoothed graphically. Since values obtained by skinfold measurements give a non-gaussian frequency distribution, the appropriate logarithmic transformation, as described by these authors has been employed for

both skinfolds, and transformed values plotted against age.

Males are predominantly below the 50th percentile at all ages for triceps skinfold thickness. Eighteen percent of males are above the 50th percentile and this generally follows the preadolescent fat wave: slow apposition, followed around age 13 by a slight decrease in thickness as described by Garn and Haskell (1960). Tanner and Whitehouse (1975) consider those individuals below the 3rd percentile to be at risk, being perhaps undernourished. Several males in this study sample are considerably below that percentile, while none exceed the 97th percentile.

Triceps skinfold thickness in females (Figure IV-2) is generally below the 75th percentile of Tanner and Whitehouse. More females than males are below the 3rd percentile (9.5 percent of females compared to 4 percent of males), however similar proportions are above the 75th percentile (2 percent of females compared to 3.5 percent of males). No females reach the 90th percentile. The general trend of gain in adiposity over the age range studied adheres to that of the reference curves: increased triceps subcutaneous fat with age, which continues (unlike that of males) throughout childhood and into adolescence.

Figure IV-3 depicts subscapular skinfold thickness of males. Most individuals (92 percent) are between the 10th and 75th percentiles. No males studied are at the upper extreme for subscapular skinfold thickness and only

two individuals are below the 3rd percentile. The trend of increase in subscapular adipose tissue with age, as indicated by standard percentile curves, is seen in the study sample. Subscapular fat apposition, unlike that in the triceps region, continues to increase through adolescence in males.

Figure IV-4 shows subscapular skinfold thickness of females. Eighty-two percent of females are between the 10th and 75th percentile. More females than males appear in the extreme lower percentile range: 11 percent of females are below the 10th percentile compared with 3.5 percent of males. Tanner and Whitehouse (1975) consider those individuals at the 97th percentile to be obese. Only one female in this study can be so considered on that basis.

For females, it is clear that increase in subscapular adipose tissue follows that indicated by the standard curves, with a gradual increase in thickness from childhood into adolescence. Throughout this period of growth, females have greater subscapular fat than do males, as the standard curves indicate.

5. Arm circumference. Figures V-1 and V-2 show arm circumference measurements of males and females respectively. Standard percentile curves are those of Frisancho (1974), and are based on a cross-sectional sample of white subjects derived from the United States Ten State Nutrition Survey of 1968-1970. These standard curves are from measurements

taken on the right arm.

As can be seen from Figure V-1, most males (82 percent) have arm circumferences that are between the 15th and 85th percentile. Only 2 percent of individuals are above the 85th percentile, while 16 percent are below the 15th percentile. Arm circumference in the group as a whole is seen to increase throughout the age-range studied, despite the decrease in triceps skinfold thickness beginning at age 12.

Individual findings for females (Figure V-2) have a very similar distribution across standard percentile curves to males, with the study sample as a whole weighted toward the lower percentiles. Eighty percent of females have arm circumferences between the 15th and 85th percentile. Only 3 percent of females are above the 85th percentile, while 17 percent are below the 15th percentile.

Increase in arm circumference occurs at a slightly slower rate in females than in males, as the standard curves show. However, at age 14 the rate of increase is decelerated in females while male arm circumference continues to increase with age.

6. Upper arm muscle diameter. Figures VI-1 and VI-2 show upper arm muscle diameter measurements, derived as described earlier, together with the standard percentile curves of Frisancho (1974). Eighty-five percent of males

are between the 15th and 85th percentiles, indicating that arm muscle diameter is well maintained in the study sample as a whole. This parameter closely approximates that of the reference group and increases throughout the age range studied. Arm circumference and triceps skinfold thickness, as described earlier, are weighted toward the lower percentile curves. It seems apparent, therefore, that the increase in arm circumference with age is due primarily to growth in muscle tissue.

Eighty-three percent of upper arm muscle diameter measurements of females (Figure VI-2) are between the 15th and the 85th percentile. This group, as a whole, is weighted toward the upper percentile curves: 15 percent of females are above the 85th percentile while 2 percent are below the 15th. For males, these proportions are 5 percent and 8 percent respectively. No female in the study is below the 5th percentile. This is notable in the light of arm circumference and triceps skinfold which are weighted towards the lower percentile. Thus, upper arm musculature is well maintained despite generally lesser increases in upper arm adipose tissue.

Rate of increase in upper arm muscle diameter is slower in females than in males. A plateau is achieved at age 15 in females, while in males this measurement continues to increase throughout adolescence.

7. Upper arm muscle circumference. Figures VI-3 and VI-4 show upper arm muscle circumference of males and females respectively, together with the percentile curves of Frisancho (1974). The distribution of individual values across standard percentile curves, as well as the general pattern of muscle growth with age is similar to that of upper arm muscle diameter for both sexes.

8. Upper arm muscle area. Figures VI-5 and VI-6 display upper arm muscle area of males and females respectively. Males are predominantly between the 15th and 85th percentiles (88 percent are in this range), being well distributed about the mean (6 percent of males are above the 85th percentile, and 6 percent are below the 15th percentile). Increase in this dimension with age continues throughout the age range studied. This trend is not noticeable when muscle size is expressed in terms of diameter or circumference.

Upper arm muscle area measurements in females (Figure VI-6) are predominantly between the 15th and 85th percentile (82 percent of all females are in this range), with more values above the 85th percentile than below the 15th (16 percent and 2 percent respectively). Growth in this dimension occurs into adolescence, however it is slowed after age 12. Thus, it is at this age when the greatest differences in upper arm muscle area between males and females occur.

9. Head circumference. Head circumference measurements are reported in Figures VII-1 and VII-2 of males and females respectively. The results are plotted against the standard curves of Watson and Lowry (1967). These standards present the mean $\pm$ 2 standard deviations and are not sex-specific. They are derived from measurements on Caucasian children.

Most males are within $\pm$ 2 standard deviations of the mean; only 8 percent are outside these limits. As age increases more individuals are above the mean. Thus, in males between 6 and 8 years, 25 percent are above the mean while 75 percent are below the mean. For older children between 14 and 16 years, these percentages are 82 and 18 percent respectively.

Females display a similar growth pattern in head circumference. Most females are within $\pm$ 2 standard deviations of the mean; only 6 percent are outside these limits. A similar pattern also is noted with increasing age as with males. In females, between 6 and 8 years 1 percent are above the mean while 99 percent are below the mean. Between 14 and 16 years these percentages are 32 percent and 68 percent respectively.

In summary, a growth lag is observed in standing and sitting height in both sexes, which is partially corrected during adolescence. This is apparent since there is a decrease in proportion of children more than 2 standard deviations below the mean as age increases. Body weight measurements

more closely approximate standards than do standing and sitting height. The deficit in stature is therefore not reflected by a similar deficit in body weight. Growth patterns in arm circumference follow the expected trends in both sexes, although individual findings as a whole are weighted below the mean. Triceps skinfold measurements indicate less subcutaneous adipose tissue than expected when compared with those of reference children. Arm muscle diameter, circumference and area approximate standard curves.

Subscapular skinfolds generally approximate standards more closely than do triceps with fewer individuals below the 3rd percentile, for both sexes. As expected, less adipose tissue is found at this site, although increase with age continues into adolescence. Head circumference measurements for both sexes display a growth trend similar to that of standing and sitting height. An initial deficit is observed, as compared to standards, with large proportions of both males and females below the mean of reference children. This is largely corrected during adolescence, an effect more distinct in females than in males.

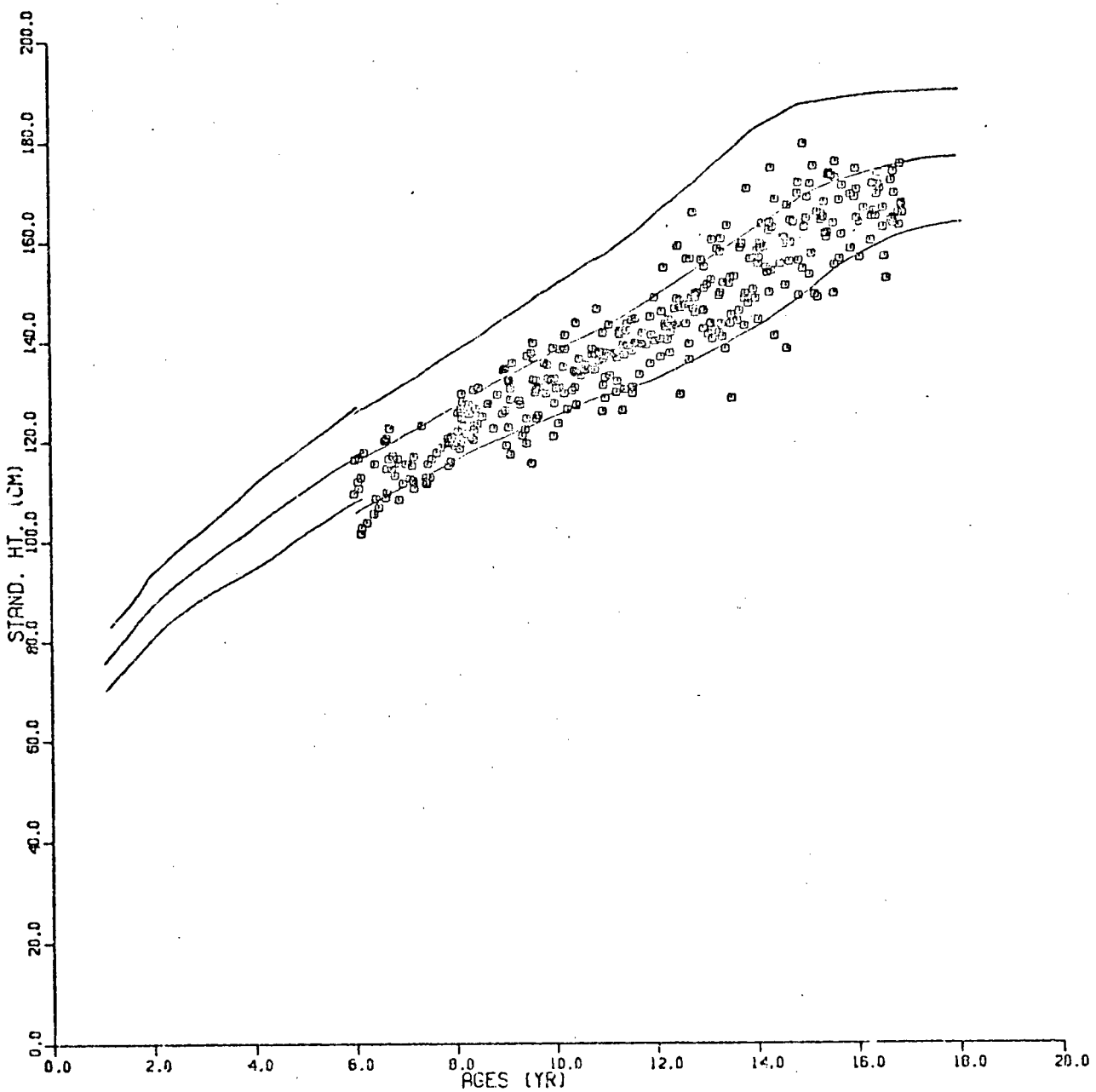

Figure I-1. Standing height of males. Iowa standard curves are displayed as the mean + 2 standard deviations (Jackson and Kelly, 1945).

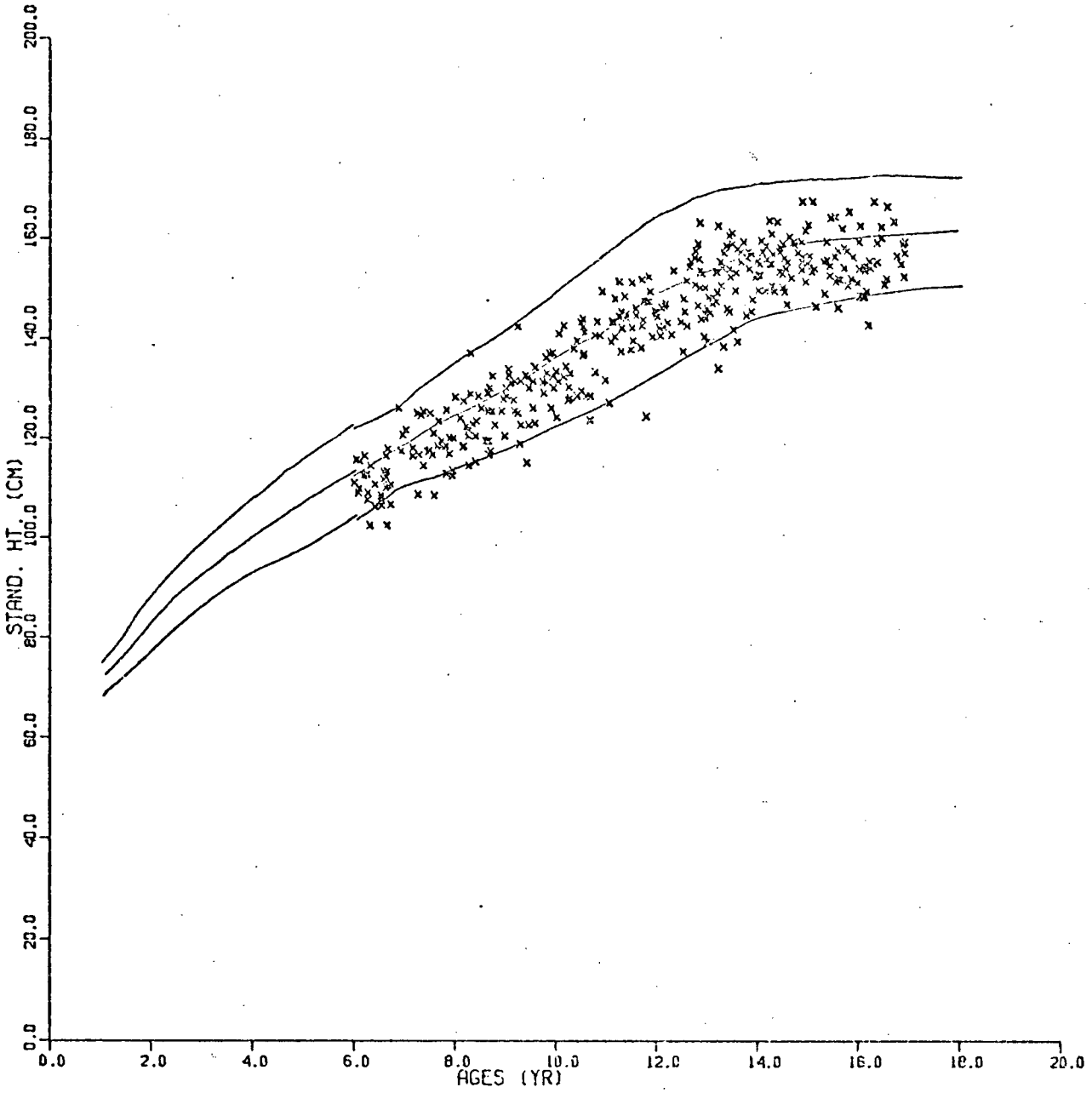

Figure I-2. Standing height of females. Iowa standard curves are displayed as the mean + 2 standard deviations (Jackson and Kelly, 1945).

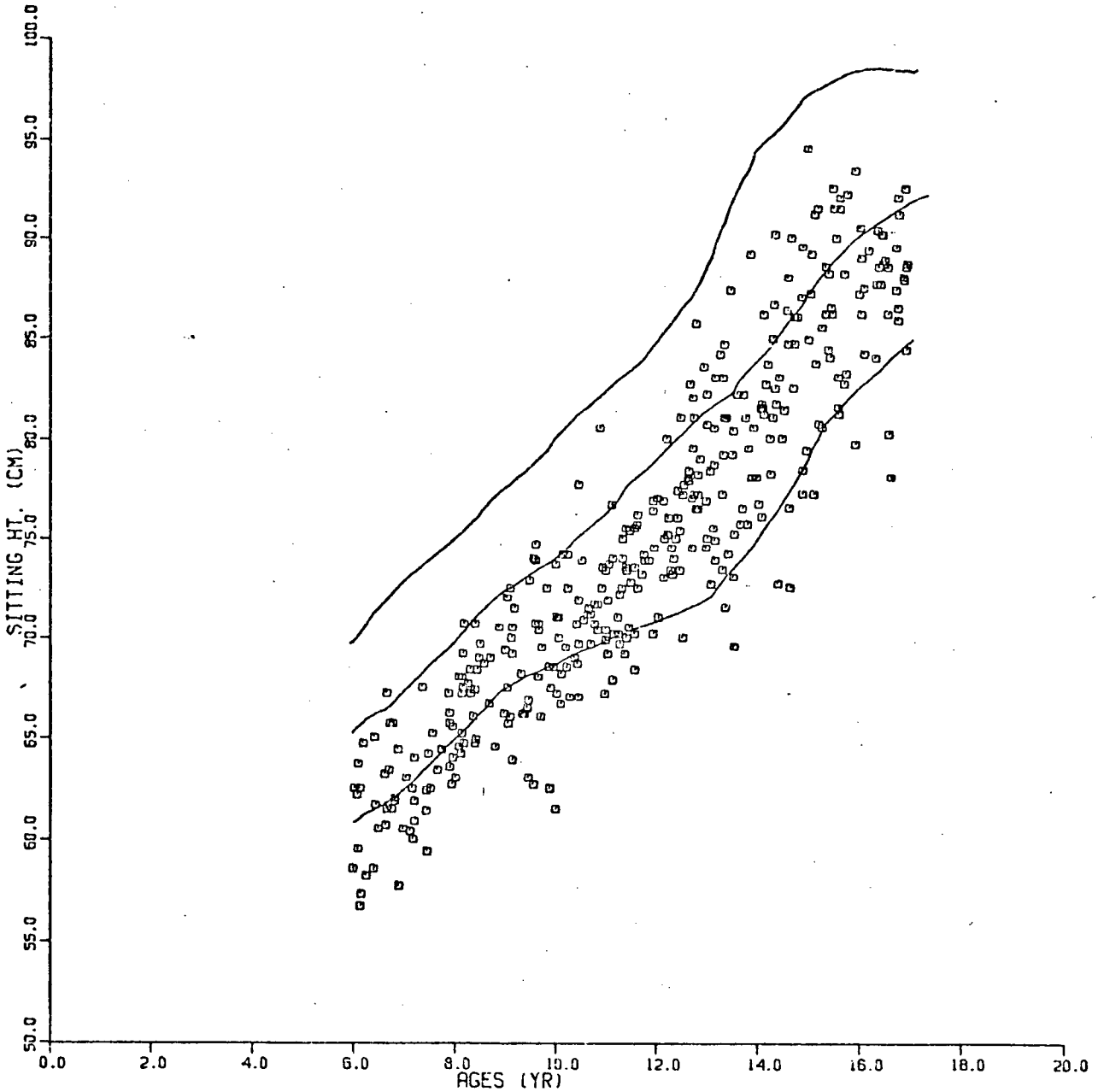

Figure II-1. Sitting height of males. Standard curves are displayed as the mean ± 2 standard deviations (Simmons, 1944).

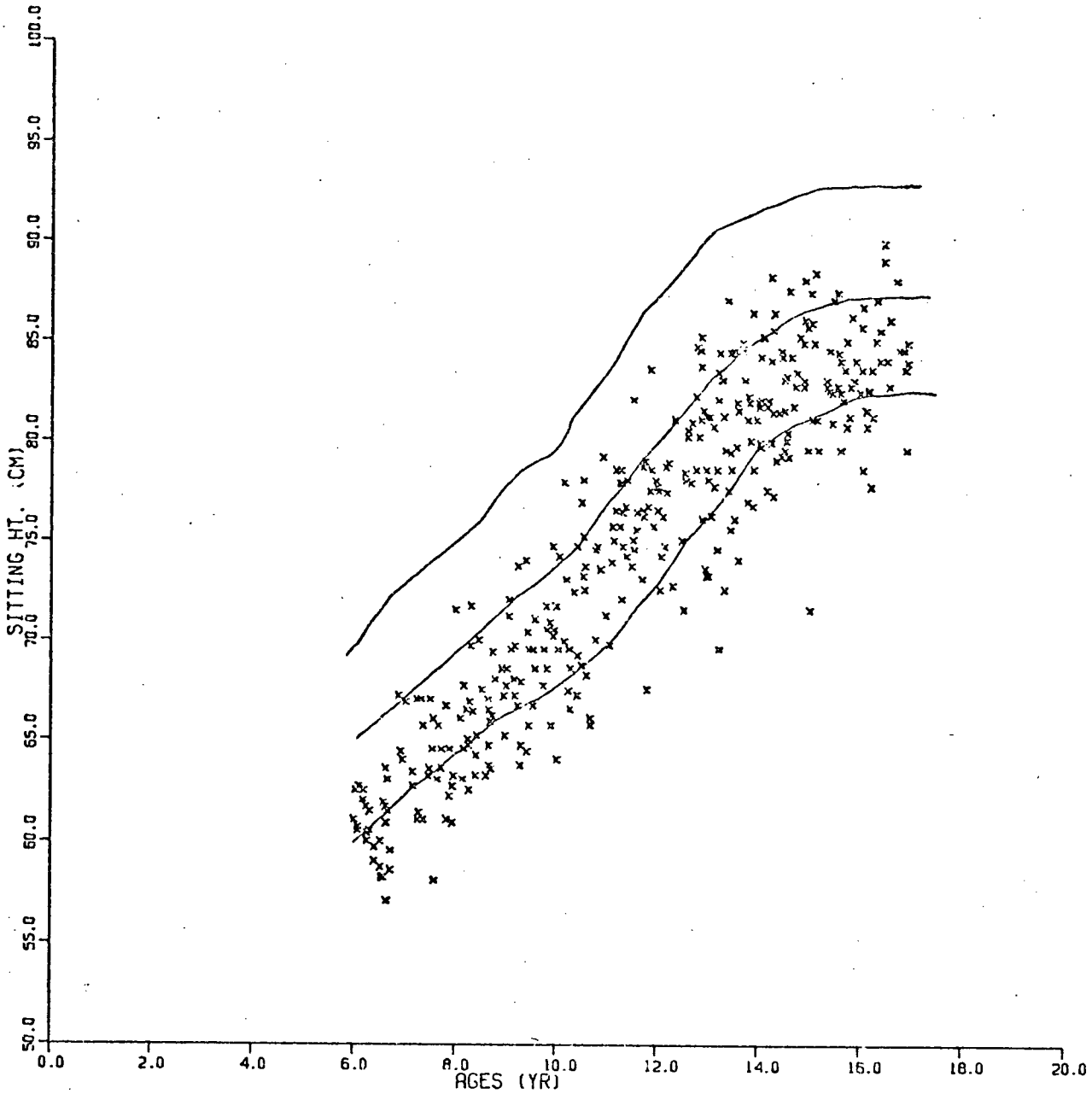

Figure II-2. Sitting height of females. Standard curves are displayed as the mean ± 2 standard deviations (Simmons, 1944).

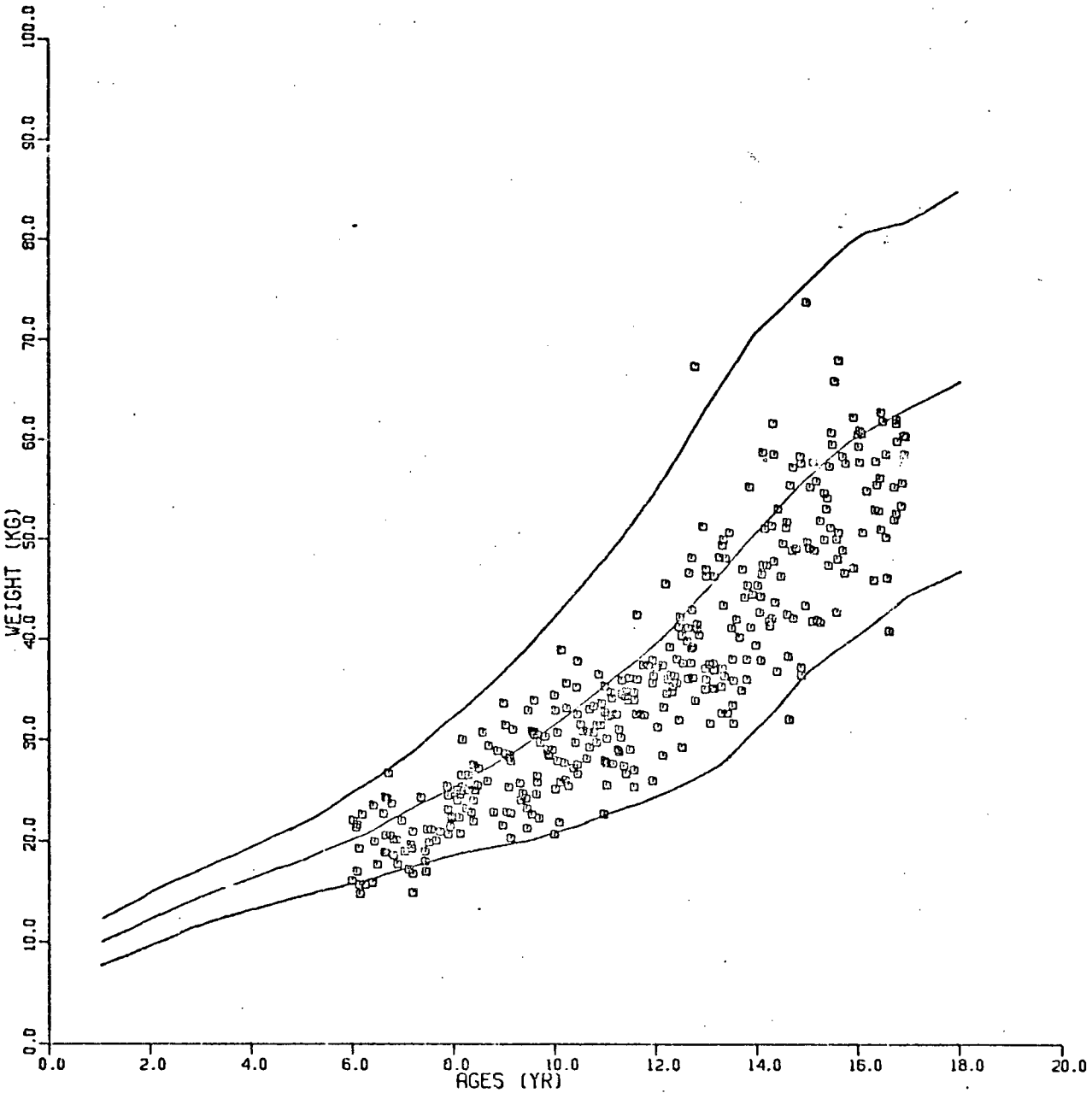

Figure III-1. Weight of males. Iowa standard curves are displayed as the 3rd, 50th and 97th percentiles (Jackson and Kelly, 1945).

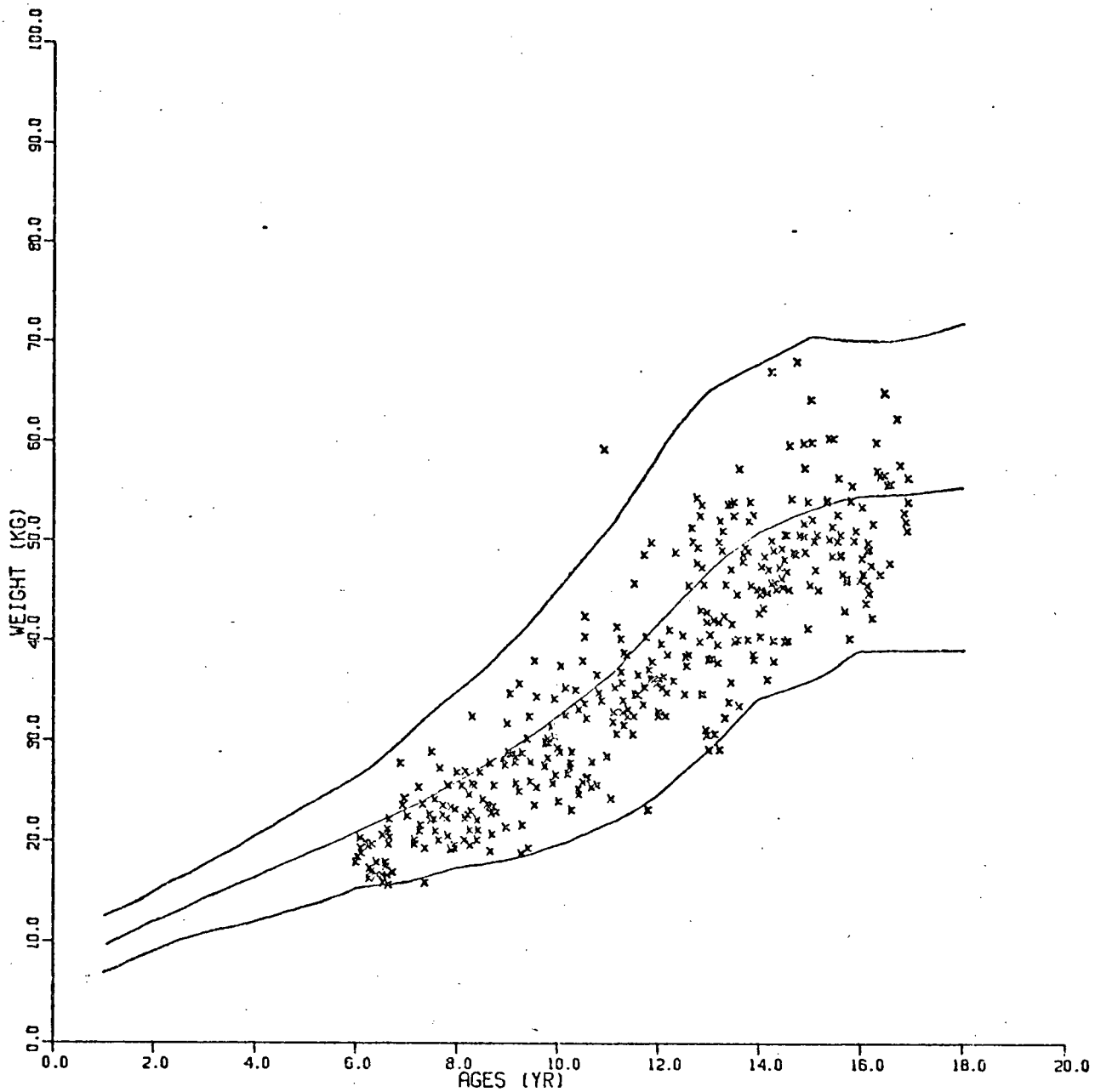

Figure III-2. Weight of females. Iowa standard curves are displayed as the 3rd, 50th and 97th percentiles (Jackson and Kelly, 1945).

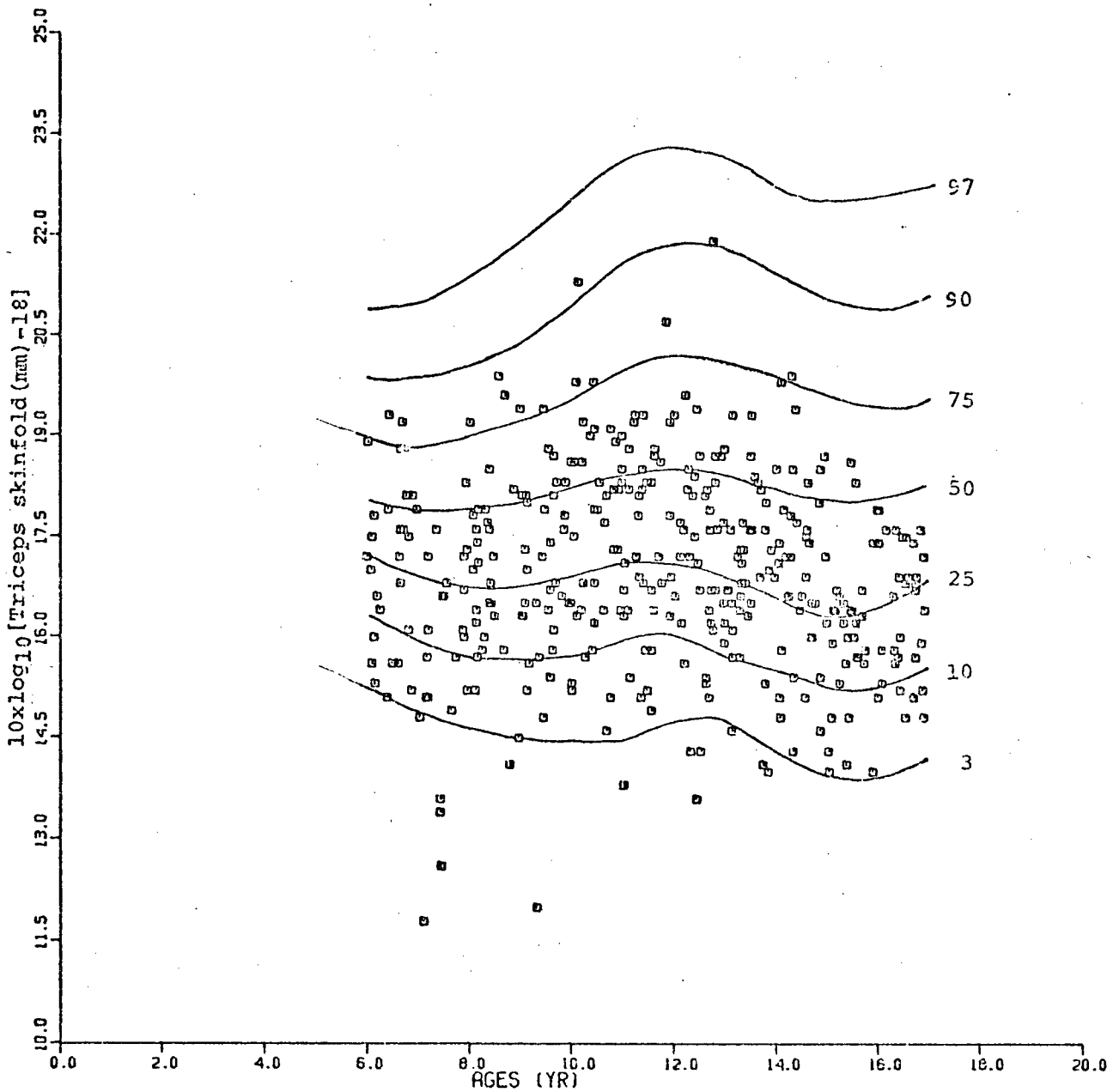

Figure IV-1. Triceps skinfold thickness of males. Standard percentile curves are from Tanner and Whitehouse (1975).

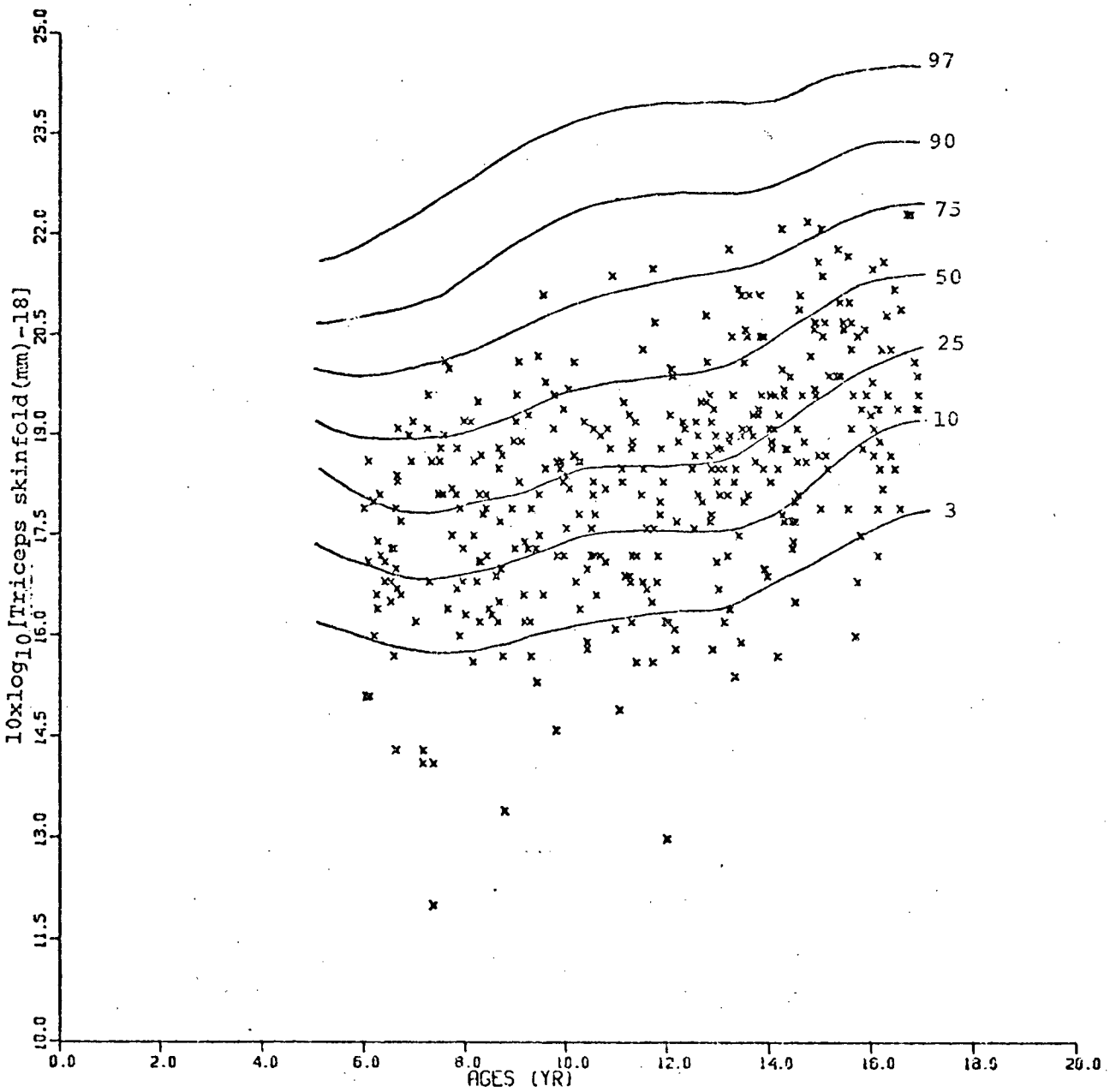

Figure IV-2. Triceps skinfold thickness of females. Standard percentile curves are from Tanner and Whitehouse (1975).

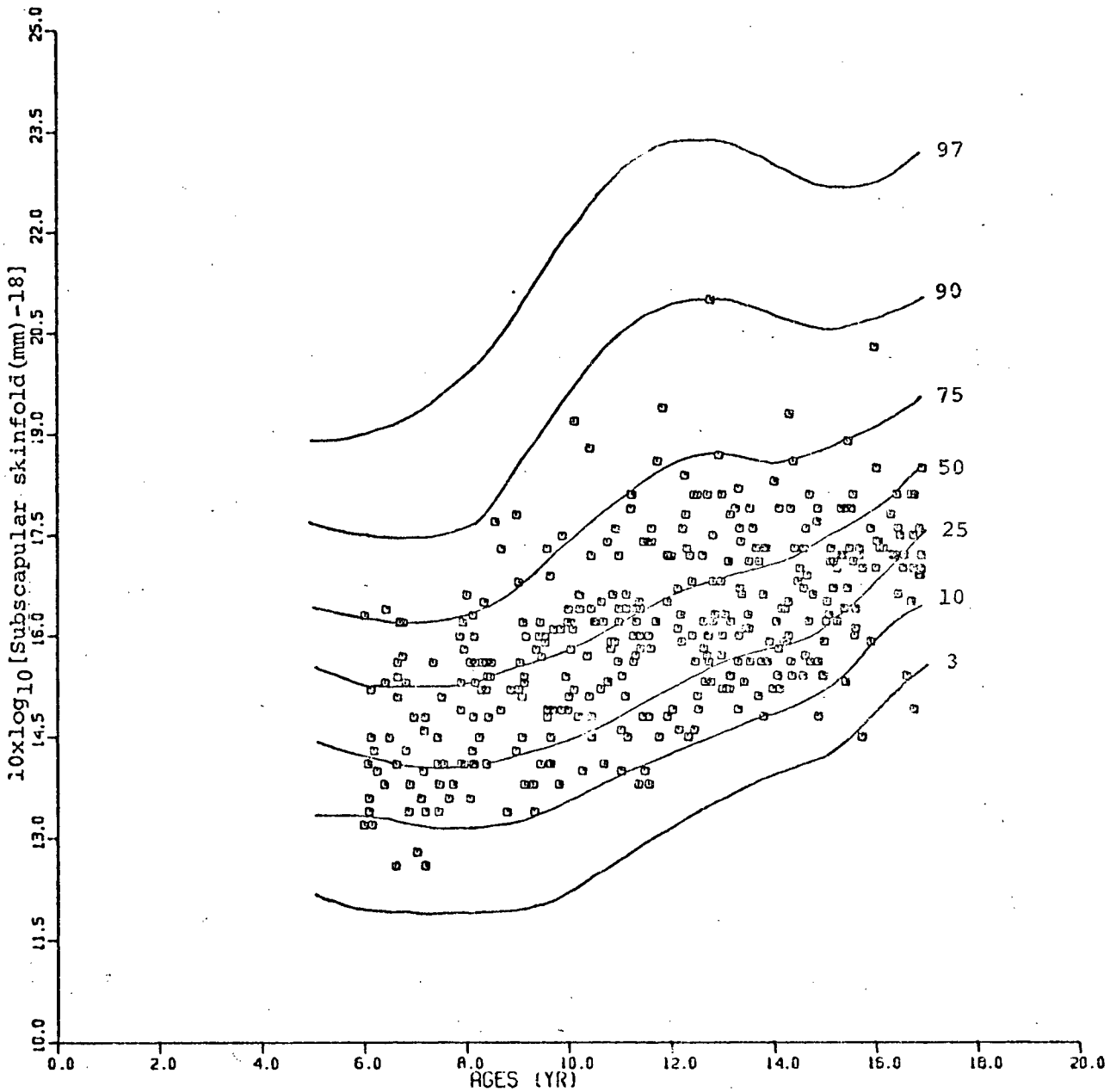

Figure IV-3. Subscapular skinfold thickness of males. Standard percentile curves are from Tanner and Whitehouse (1975).

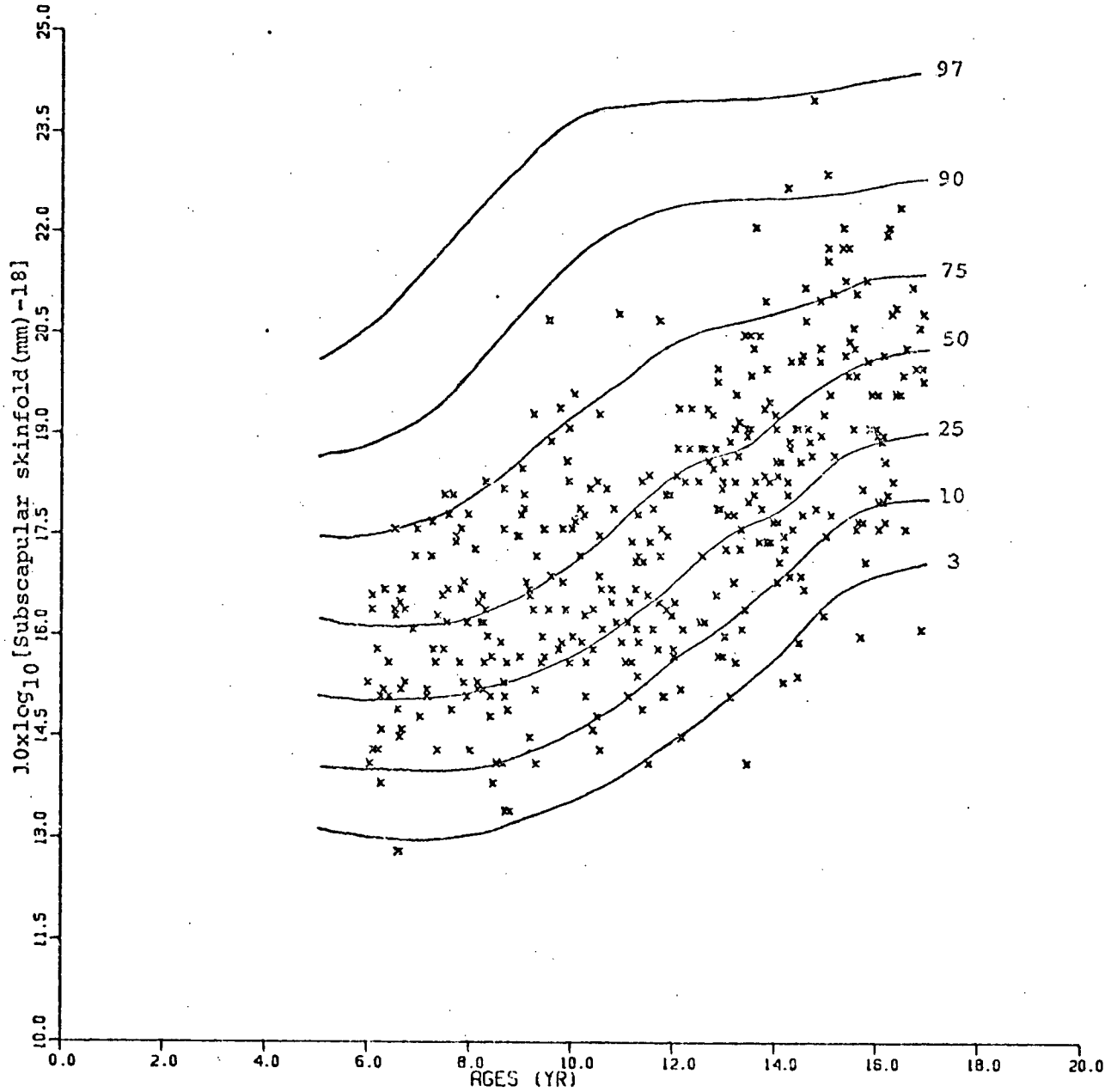

Figure IV-4. Subscapular skinfold thickness of females. Standard percentile curves are from Tanner and Whitehouse (1975).

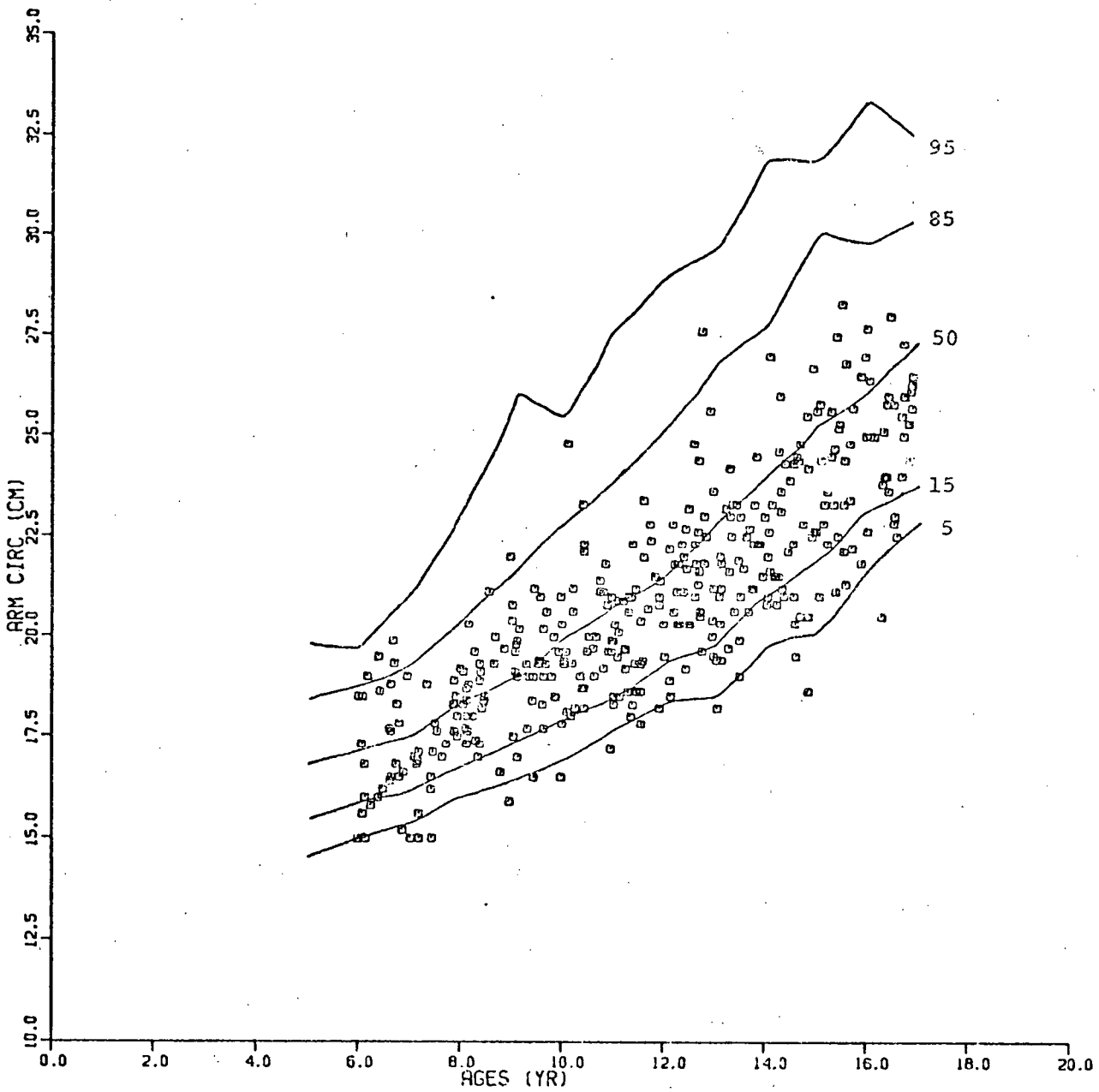

Figure V-1. Arm circumference of males.
Standard percentile curves are from Frisancho (1974).

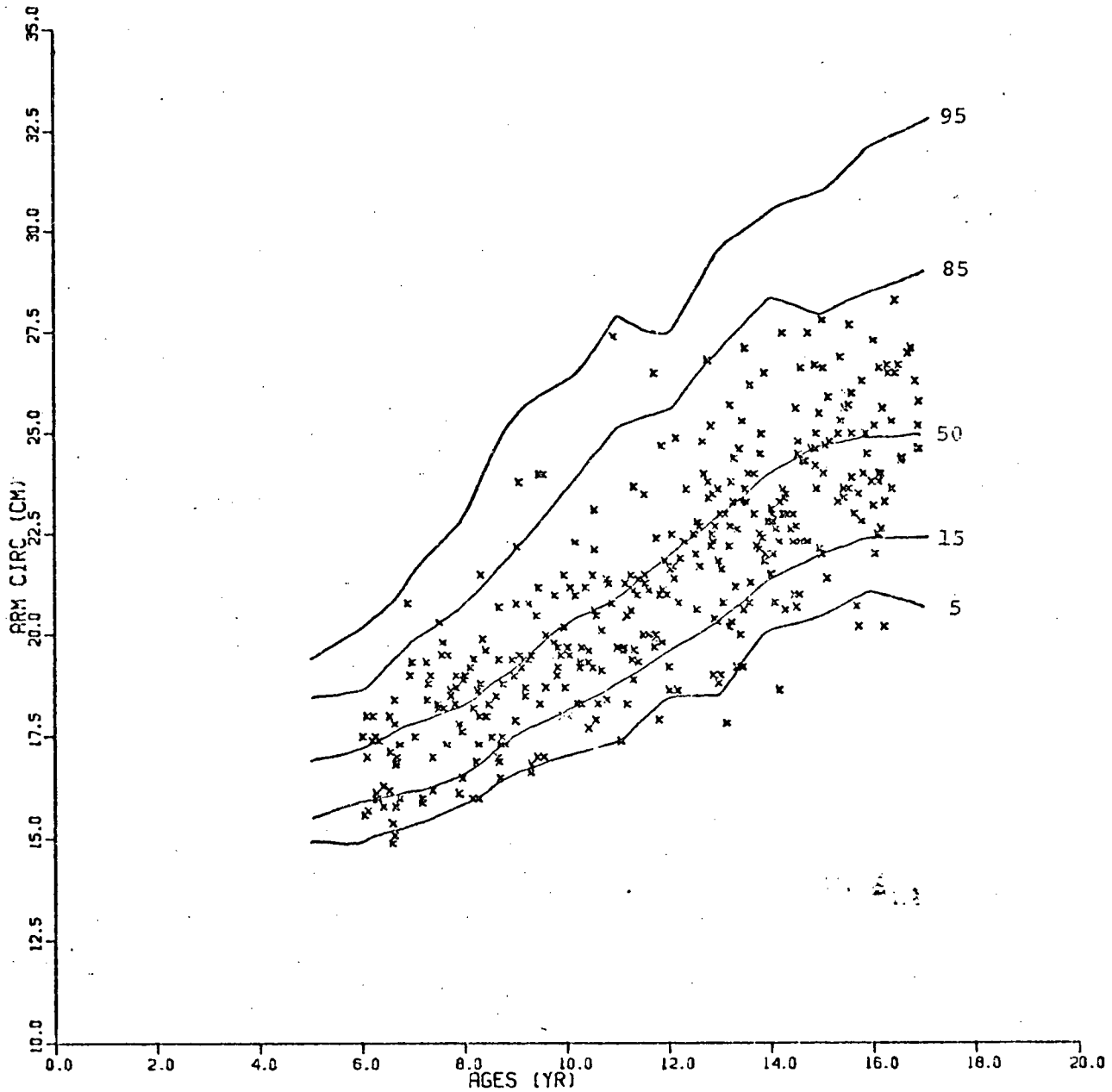

Figure V-2. Arm circumference of females.
Standard percentile curves are from Frisancho (1974).

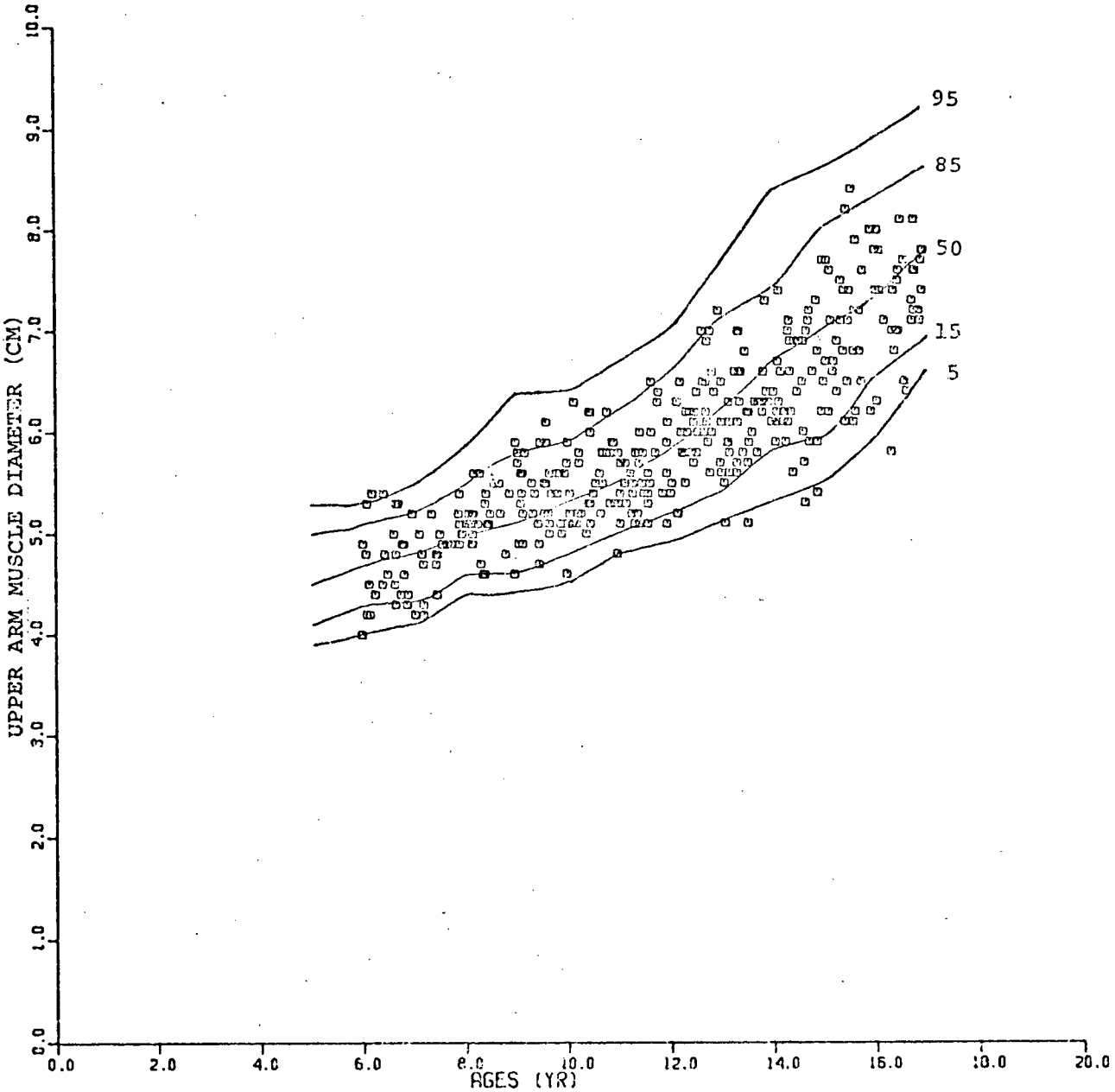

Figure VI-1. Upper arm muscle diameter of males. Standard percentile curves are from Frisancho (1974).

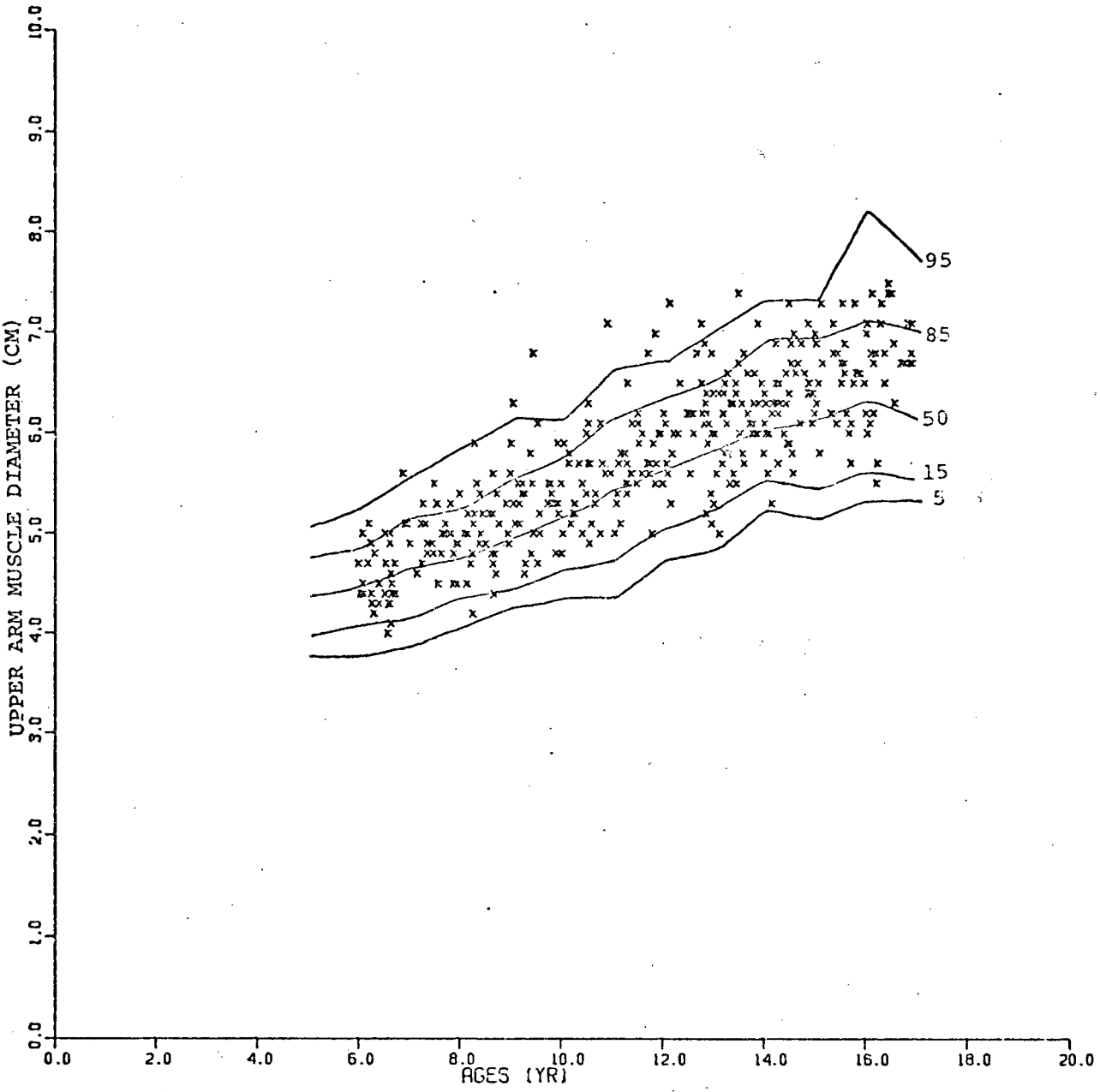

Figure VI-2. Upper arm muscle diameter of females. Standard percentile curves are from Frisancho (1974).

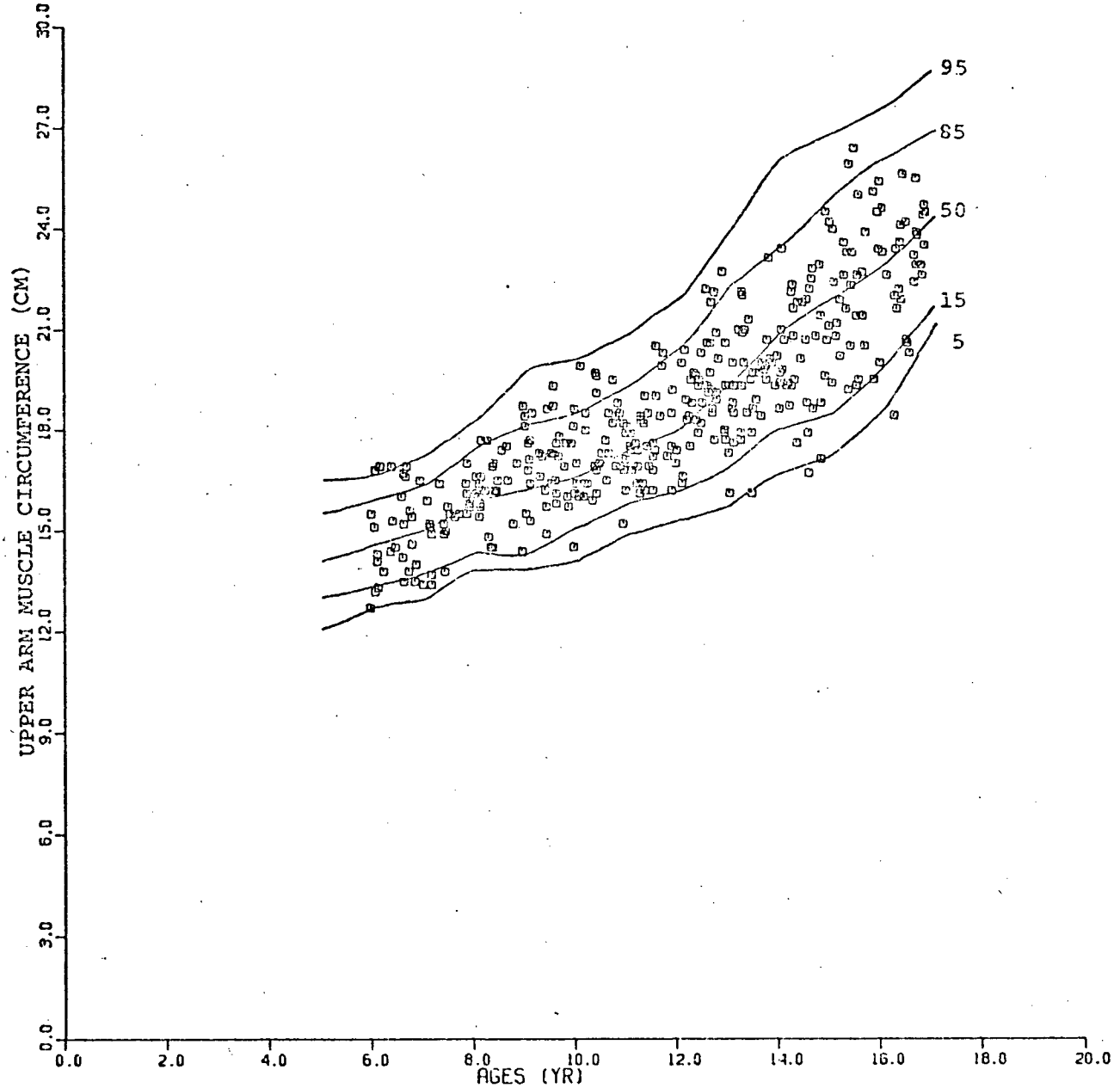

Figure VI-3. Upper arm muscle circumference of males. Standard percentile curves are from Frisancho (1974).

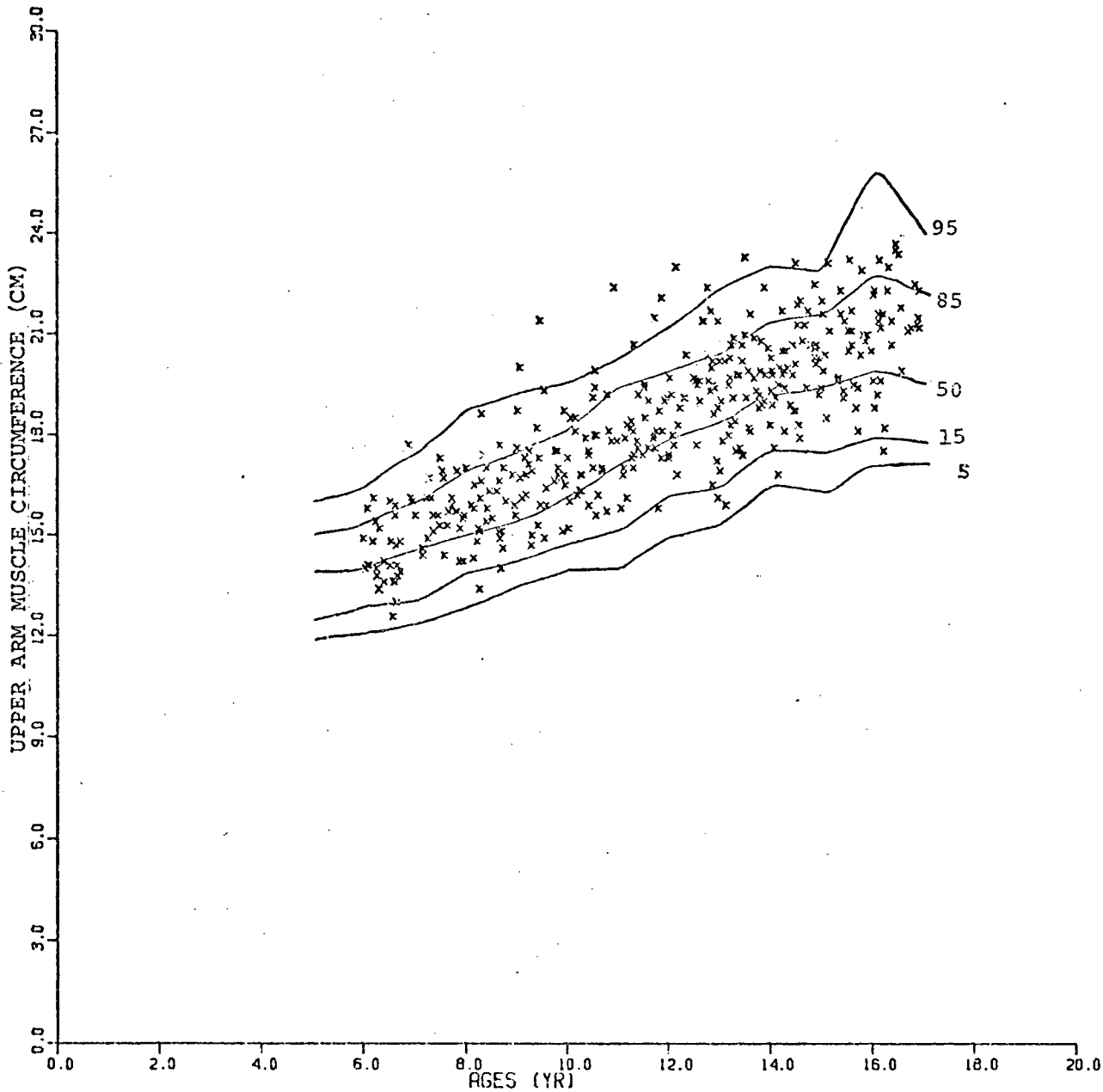

Figure VI-4. Upper arm muscle circumference of females. Standard percentile curves are from Frisancho (1974).

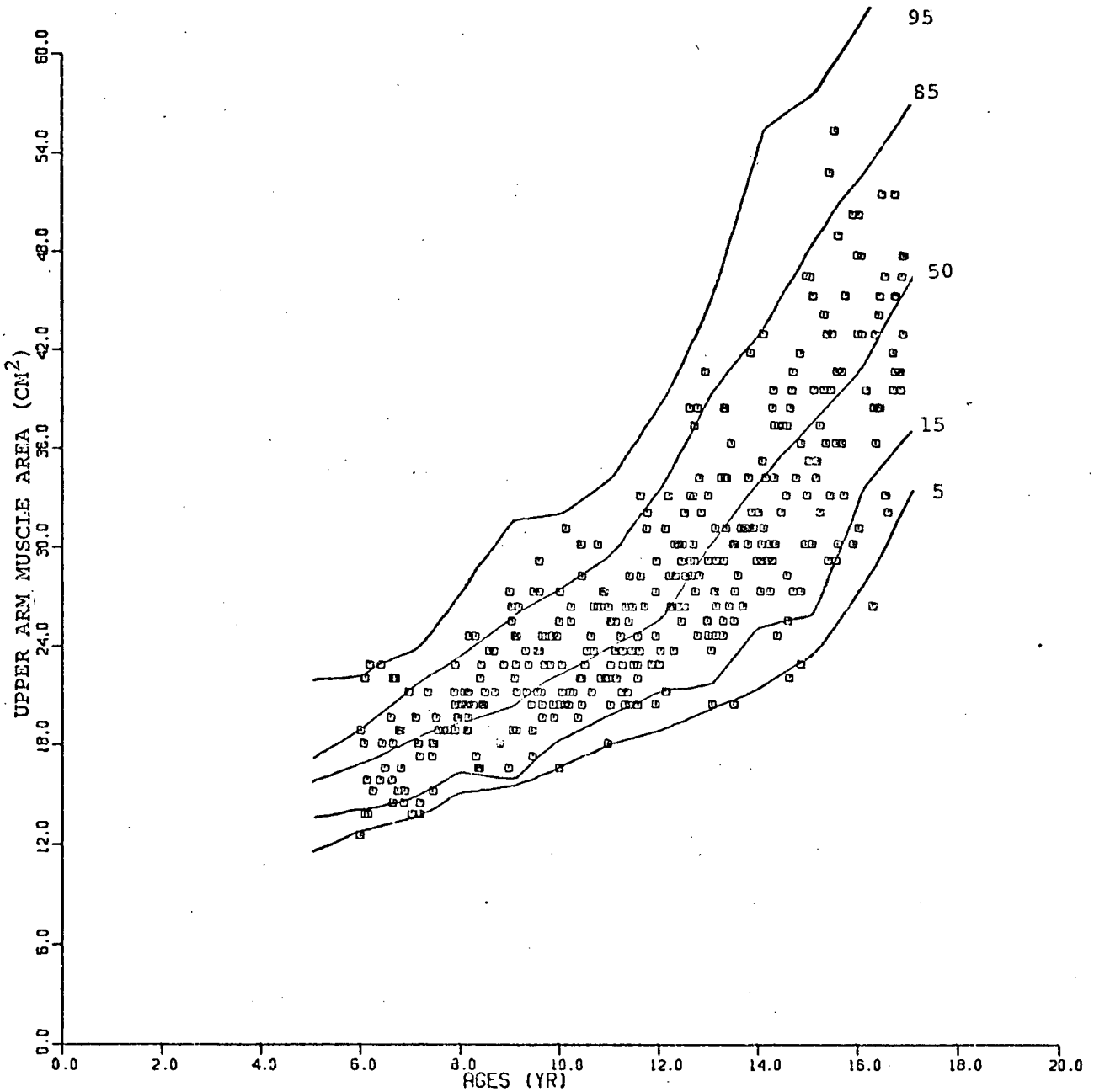

Figure VI-5. Upper arm muscle area of males. Standard percentile curves are from Frisancho (1974).

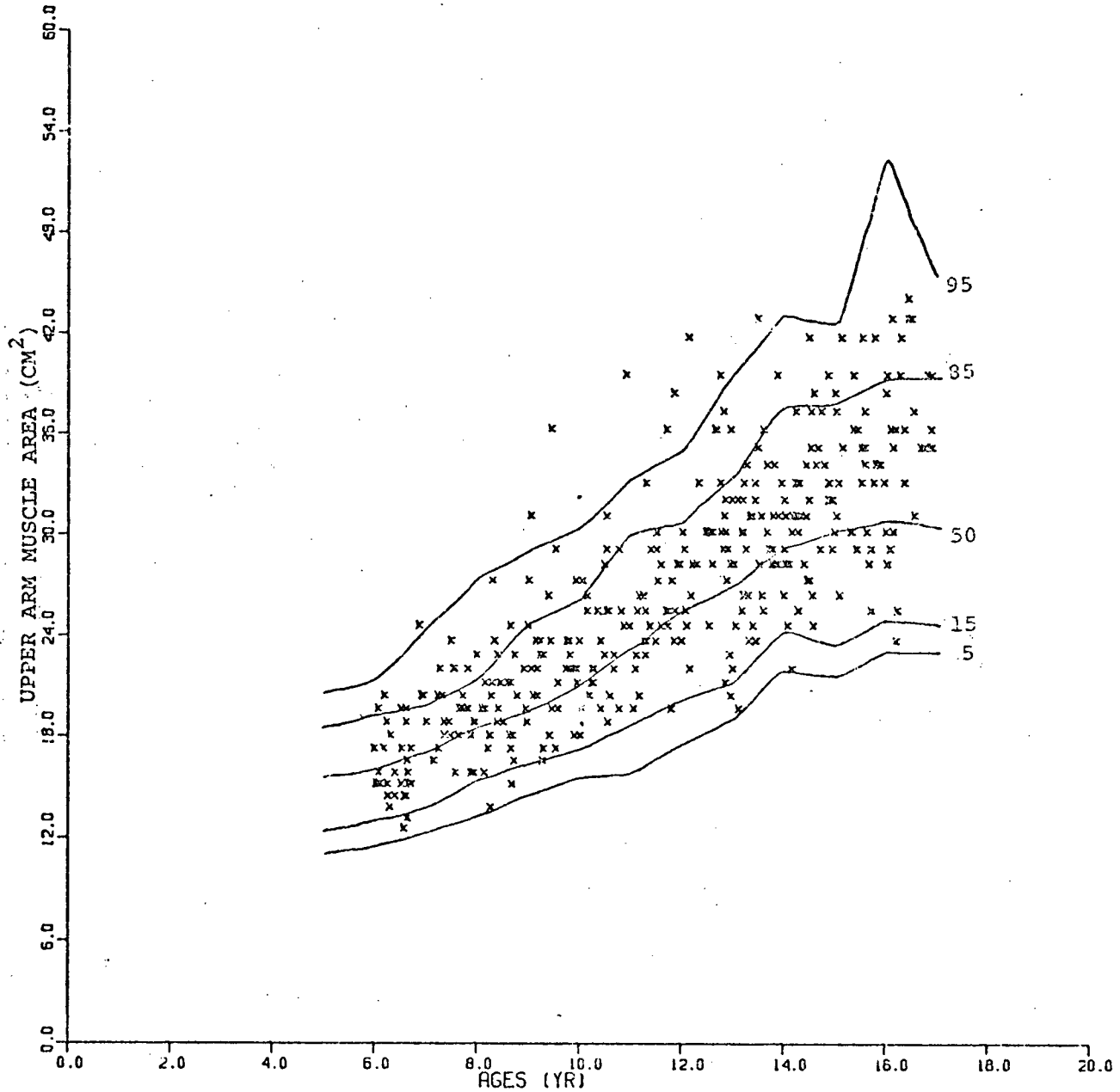

Figure VI-6. Upper arm muscle area of females. Standard percentile curves are from Frisancho (1974).

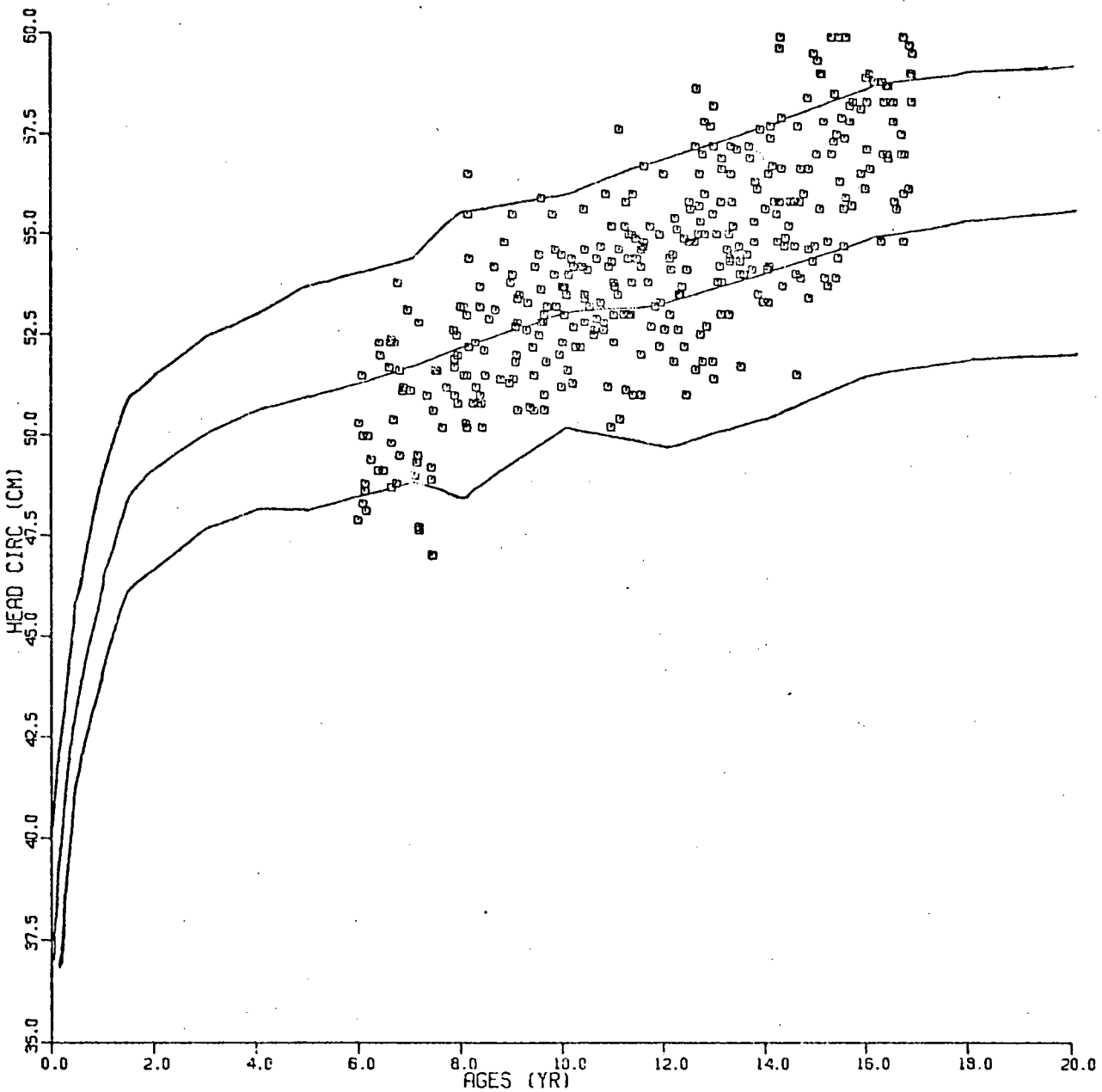

Figure VII-1. Head circumference of males. Standard curves are displayed as the mean ± 2 standard deviations (Watson and Lowry, 1967).

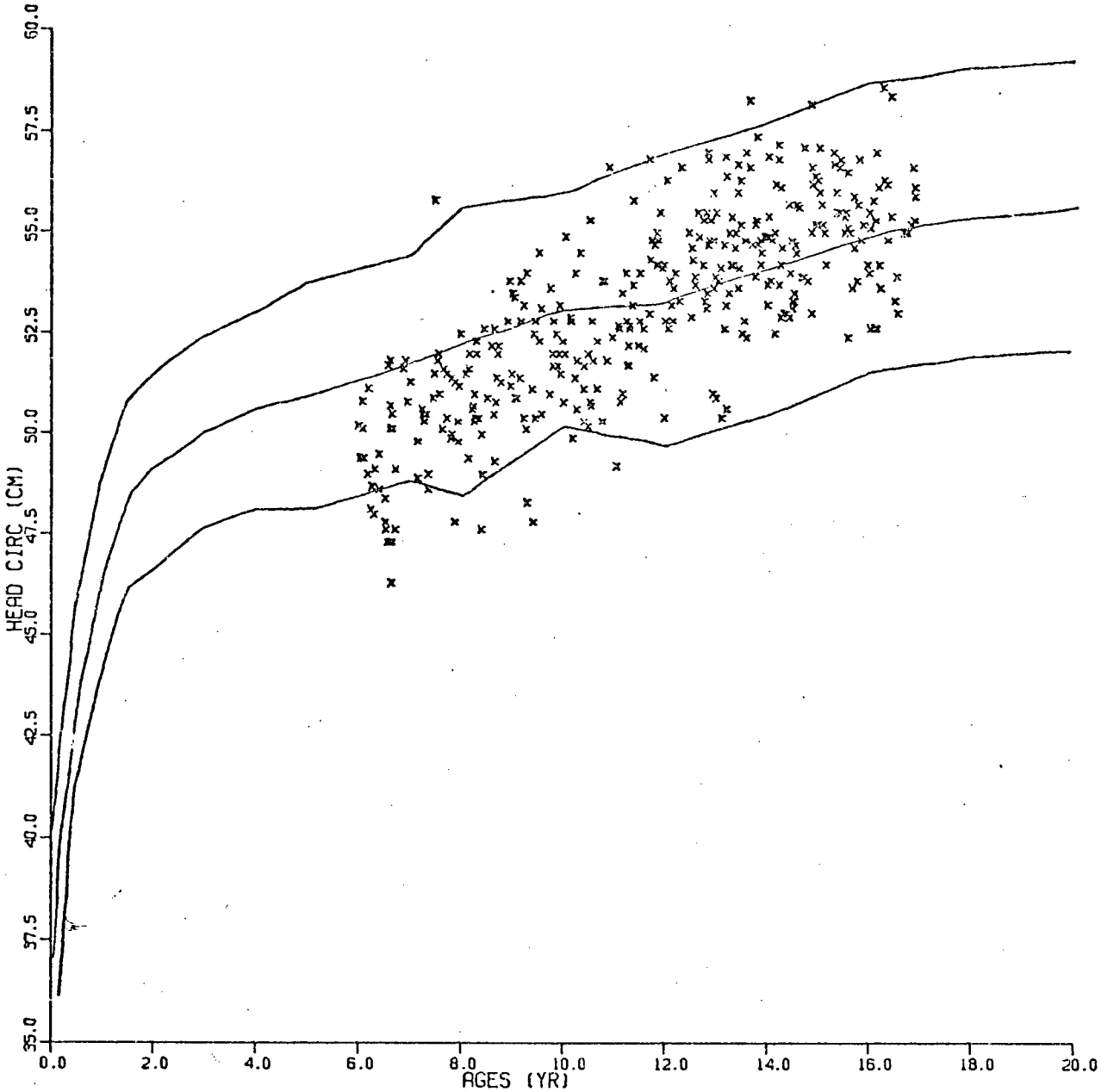

Figure VII-2. Head circumference of females. Standard curves are displayed as the mean + 2 standard deviations (Watson and Lowry, 1967).

CHAPTER V

DISCUSSION

The use of anthropometric data for the assessment of nutritional status is constrained by the well recognized fact that many factors, both environmental and genetic, affect the rate, potential and pattern of growth. Therefore, deviations from standard may be due to one or more causes or to a more complex interaction of several. In interpreting growth data in nutritional terms without information regarding actual nutrient intakes, one is hesitant in assigning certain observations to nutritional causes, except by reference to other studies.

The objective of the study, as stated earlier, was to establish whether the growth patterns of British Columbia Native Indian children living in student residences correspond to those of non-Indian reference children. The study was cross-sectional in nature; anthropometric data were gathered using a different sample of individuals at each point within the age range studied. Implicit in this design are certain restrictions in the interpretation of data on the basis of growth patterns.

In a cross-sectional study, one is actually assessing

the body size of children at various ages rather than the patterns of change in body size and dimension of a single sample of children followed through time (longitudinal study). Any anthropometric parameter reflects to a greater or lesser degree, certain genetic and environmental (including nutritional) factors affecting an individual's growth. However, conclusions cannot justifiably be drawn on the patterns of growth of an individual or group on the basis of measurements taken on independent samples. Thus, although the cross-sectional growth study is of value in assessing various parameters of body size and dimension of children at different ages during their growing period, the actual process of growth is not evaluated. The longitudinal study is more amenable to such interpretation, allowing conclusions to be drawn on the rate and velocity of growth as well as catch-up growth. Longitudinal studies have the major disadvantage of a considerable time requirement for data collection.

There are other well-recognized shortcomings of cross-sectional data analysis. As described by Prahl-Anderson and Kowalski (1973), the chronological age variable is confounded with the cohort variable in cross-sectional studies. With reference to the present study, differences observed, for example, in standing height between 6 year old males and 16 year old males reflect age changes as well as dissimilarities in environmental and cultural pressures. These authors suggest that the repeated findings of substantial

discrepancies between inferences made on the basis of cross-sectional and longitudinal data for anthropometric variables (Damon, 1965) point to the important role the cohort effect may play. Baltes (1968) has stated that both cross-sectional and longitudinal designs have such an absence of control as to be of very little scientific value. In view of the disadvantages of both cross-sectional and longitudinal designs to the study of growth and development, Prahl-Anderson and Kowalski (1973) have described a mixed-longitudinal type with overlapping cohorts, as a convenient compromise. However, its applicability and usefulness in the assessment of populations has not yet been explored.

Despite the limitations of the cross-sectional design and of interpretation of cross-sectional data, useful information on the growth status of children is available with this approach.

In the present study, a deficit in standing height is demonstrated by the large percentage, in both sexes, falling below the Iowa mean (89 percent and 75 percent respectively for males and females). The decrease in the percentage with heights more than 2 standard deviations below the mean during childhood as compared with later adolescence, for both sexes, is similar to that reported by Lee et al. (1971) for children from the Anaham and Ahousat Reserves. The authors suggest that a catch-up effect is observed, in that rate of growth is increased after the initial deficit,

providing some compensation. This is uncertain, however, since their data were cross-sectional.

Reisinger et al. (1972) reported similar findings among Navajo Indian children between 5 and 14 years from the Lower Greasewood Reserve in Arizona. In that study 83 percent of males and 81 percent of females were below the 50th percentile for height of Iowa reference children. In males, the percentage below the 3rd percentile decreased from 19 percent for those between 5 and 9 years to 10 percent for those between 10 and 14 years. The authors do not comment on the statistical significance of this finding. A similar decrease was not observed among females. The authors suggest that this may represent catch-up growth. Diet evaluations in that study suggest that many of the study subjects had inadequate food intakes which could account for the growth retardation.

Height measurements reported by Darby et al. (1955) on Navajo children, in comparison with Canadian data, reveal Navajo children to be shorter than Canadians after age 10. The authors comment that since 1910 various influences (including nutrition) have resulted in taller Canadians, but that these influences are not noticeable among the Navajo.

The study on preschool Navajo children of Van Duzen et al. (1969), reported nearly one-third of the sample below the 3rd percentile of Iowa standards for height. The authors suggested that the observed retardation in growth

was caused by chronic calorie and protein malnutrition as well as certain disease factors.

In contrast to these findings, both ICNND studies (1964, 1964) carried out in the U.S. (on Native Indian children of the Fort Belknap and Blackfoot Reservations) report average standing heights almost entirely at or above Iowa means for both sexes.

Growth in head and trunk is observed as increase in sitting height with increasing age. Although the same tendencies toward a decreased percentage of individuals below 2 standard deviations, with age, is noticeable in this parameter, as with standing height, conclusions drawn regarding body proportion and relative contribution of head and trunk to standing height are not justified. For this purpose, sitting height/standing height ratio should be analyzed. From the data, it is clear that sitting height in most children is less than expected when compared with standards. Thus 88 percent of males and 90 percent of females are below the mean of reference children. Similar findings were reported in British Columbian Indian children by Birkbeck et al. (1971).

Although these two parameters, standing and sitting height, indicate a growth lag in the study sample as a whole, a comparable deficit is not seen in body weight measurements. As described earlier, males and females fall largely within the two extremes of Iowa standards, and increase in body weight with age follows normal pattern. Thus,

body weight is generally adequate despite short stature.

Body weight is more vulnerable to immediate nutritional insult, and is more adversely affected during times of nutritional deprivation than are some other parameters. However, attained body stature is reflective of past growth rate; it is a cumulative index of growth. Therefore, the possibility that the observed lag in statural growth has a nutritional basis is open. All children in the study sample were residing in student residences where adequate nutrition was made available. The institutional setting could well provide the opportunity for deficits in weight to be corrected, through proper nutrition while the deficit in stature would not be so immediately affected.

Dietary data on B.C. Native Indians suggests that the intakes of certain nutrients is below optimal for children. Data collected by 24-hour recall on the Anaham Reserve by Lee et al. (1971) showed that a number of children had intakes of calories, calcium and vitamin A less than two thirds of the Canadian Dietary Standards. In addition, a number of teenagers, of both sexes, had low iron intakes. Of the present study sample, 61 children measured, representing 8 percent of total, were from the Anaham Reserve; this is the largest number of children from a single reserve. The seven reserves located in B.C. surveyed by Nutrition Canada (1973) (results of which are discussed in the Introduction) contributed 46 children to the present study, representing 6 percent of the total sample. Nutrition Canada

documented poorer nutritional status of the Canadian Indian population as compared to the general population.

Although figures are not presented, most older children had attended residences for several years and have been afforded adequate nutrition for a greater proportion of time than have younger children who show greatest deficits in stature. Thus, the possibility for a catch-up phase subsequent to the lag in growth is present.

In a similar study, carried out among extremely poor children in Peru by Andrianzen et al. (1973) found a significant lag in linear growth while body weight as a whole was much less severely affected. The authors postulate that these children experienced periods of recovery from malnutrition with easy weight gain but incomplete return to normal of the mechanisms necessary for linear growth. Although it is not likely that children of the present study sample have undergone severe nutritional insult, a similar situation could be present.

Heller et al. (1967) observed height deficits coincident with adequate body weight (as compared with Iowa data) in Alaskan Eskimo preschoolers. The authors state that these patterns could be explained by inherited factors or by persistent environmental influences, although they felt that a nutritional explanation was unlikely. This sample was re-examined several years later and a cross-tabulation of the measurements of the original cohort of

children during their first two years of life, as proposed by Waterlow (1972), was carried out by Nichaman et al. (1975). It was shown that the occurrence of moderate and severe growth retardation was at least six times more prevalent than acute under nutrition.

It is possible that Native Indian children are of shorter stature, and of relatively greater body weight than Caucasians, as a result of genetic factors. However, Habicht et al. (1974) have shown that the genetic effect of mean growth in height and weight in children is small compared with environmental effects. Thus, 3 percent of differences in height and 6 percent of differences in weight were attributable to differences in ethnic background. The importance of this study is that the authors have collected a wider range of information and made scientific comparisons more precisely than heretofore. Implicit in these results is the suggestion that one set of growth standards should be appropriate for evaluation of data from all ethnic groups.

Jelliffe and Jelliffe (1975) point out the difficulties in selection of standards for universal use; primarily due to problems in delineating the genetic "mainstream of mankind". Thus, for example, it seems unlikely that optimally fed infants belonging to a genetically short group would achieve the "universal standard". However, growth data on Japanese children (Takahashi, 1966) shows that

this group is now heavier and taller than previous generations, approximating the Western overfed model. It is unclear which standards represent the optimum as regards present and future health and survival and which represent the overnourished with potential or actual risks of obesity.

Garn (1965), however, suggests that differences in stature as well as body build and fat-free mass complicate the universal application of simple standards of height and weight. This author advocates the use of parent-specific or parent-corrected size standards for growing children. Further, it is suggested that reference standards should be appropriate to the population in question, making use of the economically advantaged group to provide an indication of optimum growth.

In a more recent report Garn and Clark (1975) outline the problems in the nutritional assessment of black individuals, when compared with standards of white reference children, due to consistent differences in standing height, and body weight as well as skeletal mass and bone density. They conclude that failure to employ appropriate standards will result in underestimating the dimensional, radiographic and radiogrammetric effects of undernutrition in blacks after the second year of life. Their conclusions are based on data from several large-scale nutrition and growth studies, including the Preschool Nutrition Survey (Owen et al., 1974), the National Collaborative Survey (Garn et al., 1974), the Ten-State Nutrition Survey (Garn et al., 1973), Kaiser-Permanente Survey (Winegerd et al.,

1973) and the National Health Examination Survey (Hamill et al., 1970).

Although it is plausible that a similar case could be made for the interpretation of Native Indian data, sufficient information is simply not available. By and large, relatively few studies have been carried out on North American Indian children, as discussed earlier. So that while comparison of present data with that of reference children, both culturally and genetically distinct, might be inappropriate for correct interpretation, more suitable standards are not available.

Coincident with the observed statural growth lag and relatively adequate body weight increase with age, the results show a tendency toward less subcutaneous adipose tissue than expected on the basis of comparison with the standards of Tanner and Whitehouse (1975). Thus, 82 percent of males and 87 percent of females are below the 50th percentile for tricepts skinfold thickness; in addition 68 percent of males and 65 percent of females are below the 50th percentile for subscapular skinfold thickness. Tanner and Whitehouse state that the percentiles reported as standards imply nothing as to the desirability or undesirability of a group or population having a similar distribution of subcutaneous fat.

Racial differences in amount and distribution of body fat have been observed. Malina (1966) has shown that

black American children have consistently less triceps and subscapular adipose tissue than do white children. Robson et al. (1971) reports that the ratio of triceps skinfold to subscapular skinfold thickness mainly in black infants and children from Dominica was substantially less than that of white children from Britain. Ashcroft (1972) argues that it is necessary to measure other skinfolds in order to estimate body fat adequately and to make assumptions relative to dietary adequacy.

Mean skinfold thicknesses of children in developing countries are generally found to be smaller than those of children in developed countries, an effect which is in part due to differences in nutritional status. Thus Malina et al. (1974) reports that mean skinfold thickness of rural Guatemalan Ladino children are low when compared with the standards of Tanner and Whitehouse (1962). They are likewise smaller than those of urban children in upper socioeconomic strata of developing countries (Mora Parra et al., 1970).

Interestingly, the Guatemalan data shows a larger deficit in triceps skinfold than in subscapular skinfold as does the present data. Thus, mean values for triceps are at or below the 10th percentile of standard between 6 months and 7 years, while mean values for subscapular, during that age range, vary between the 25th and 50th percentile. The authors state that differential fat reduction

on the extremities and trunk in marginal nutritional status may be implied.

In nutritional terms, less body fat, as reflected by less subcutaneous adipose tissue, means a smaller calorie reserve available to the individual. Tanner and Whitehouse regard children at either extreme to be at risk. In the present study sample, 9.5 percent of females and 4 percent of males would be considered undernourished, by the criteria of these authors. However, since other body measurements were not correlated with triceps skinfolds in these particular children and since dietary histories are not available, one is hesitant to draw conclusions regarding their nutritional status.

Whether the generally lower degree of subcutaneous adipose tissue in B.C. Native Indian children living in residence is due to ethnic origin, to certain environmental factors or specifically to nutritional causes, is unclear.

Upper arm muscle in both sexes was observed to be well maintained; it is growth of this tissue mass which makes the greatest contribution toward overall increase in arm circumference. Similar findings were reported by Gurney et al. (1972) among Jamaican infants and preschool children. Eight percent had arm circumferences below the 3rd percentile while 21.4 percent had triceps skinfold thicknesses which were below this percentile of standard values. The

authors concluded that their diet may be lacking in total calories rather than in protein.

Martorell et al. (1976), who reported findings on a group of rural Guatemalan preschool children, drew similar conclusions. It was found that although these children had a reduced arm muscle and fat area, the relative reduction in arm fat area was greater than in arm muscle area. Comparison was made with the standards of Frisancho (1974). It was suggested that lack of energy rather than protein deficiency is the main nutritional problem in this group.

It is tempting to assign the present observations to similar dietary patterns, although both of the above studies were carried out on preschool children. Indeed, Nutrition Canada Survey (1973) reported that caloric intakes of adolescent Indians were consistently lower than those of the adolescents of the national population, while protein intakes for this group were more than adequate. Very few individuals were classified as at risk on the basis of serum protein values. However, the present study sample may be largely removed from these dietary patterns. One is justified in concluding from these data, however, that protein nutritional status of B.C. Indian children living in residences may be relatively better than calorie nutritional status.

Although the effects of nutritional status upon growth in head circumference are seen predominantly in early childhood,

these effects may be reflected by subsequent growth pattern. Thus, as shown by Malina (1975), smaller mean head circumferences in later childhood apparently reflect growth retardation during the first two years of life. Most rapid growth in head circumference occurs during early infancy with a substantial decrease in velocity by age 6. Thus the magnitude of change in head circumference over the age-range studied is not great. However, those children who fall at or below the lower extremes may have experienced some nutritional insult in the past.

Thus, it is difficult to ascribe a catch-up growth effect to the observed improvement with age in head circumference relative to standard. Similar results were obtained by Birkbeck et al. (1972) on Native Indians from the Anaham and Ahousat reserves. It is interesting to note that although there is an increasing dissociation between head circumference and stature as children grow older (Malina et al., 1975), the pattern of growth in this measurement in the present study is very similar to that of growth in standing height.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

Summary

Growth patterns of British Columbian Native Indian children living in student residences were studied utilizing nutritional anthropometric techniques on 734 children aged 6 to 17 years attending six student residences. The study was cross-sectional in design and results were compared with standard reference data. The objective of the study was to establish whether the growth pattern of B.C. Native Indian children living in student residences correspond to those of non-Indian reference children.

A considerable growth deficit was demonstrated in younger children which appears to be somewhat corrected by adolescence. The study sample as a whole are short when compared with Iowa standards. Stature, as indicated by standing and sitting height, was more severely affected than weight. Upper arm measurements were found to indicate less adipose tissue than expected as compared with standards, while skeletal muscle is well maintained in comparison with standard percentile curves. It is concluded that protein nutritional status of B.C. Indian children living in student residences may be relatively better than calorie nutritional

status. The growth pattern of head circumference reflects that of stature, particularly in females.

It is possible that these patterns are due to nutritional factors, although interpretation of the results on that basis is not wholly justifiable in view of the lack of dietary information.

Recommendations

Following interpretation of the results, several recommendations can be made:

1. A study to obtain growth data on preschool Native Indian children should be undertaken in order to determine the growth status of this age group. Since the results of the present study indicate a growth deficit in B.C. Native Indian children, particularly in children of the younger age groups studied, the need for information on preschool children is clear.
2. Growth data on Native Indian children living on reserves should be obtained in conjunction with dietary data in order to determine growth patterns of those children living in the home environment, as related to nutritional factors. In comparison with results of the present study, the effects of residence diets upon growth patterns could be delineated.
3. Health personnel at the student residences should keep serial height and weight charts on those children who are undersized, in order to assess their growth patterns in the school environment.

BIBLIOGRAPHY

Abraham, S., Lowenstein, F.W. and O'Connell, D.E. Preliminary findings of the First Health and Nutrition Examination Survey, 1971-1972. U.S. Department of Health, Education and Welfare. Public Health Service. Health Resources Administration. National Center for Health Statistics. DHEW Pub. No. (HRA) 75-1229, Rockville, Maryland, 1975.

Addy, N. Nutritional anthropometry and its implications to the identification of malnourished children in Bogata, Columbia. Master's Thesis, Cornell University, 1970.

Amirhakimi, G.H. Growth from birth to two years of rich urban and poor rural Iranian children compared with Western norms. Ann. Hum. Biol. 1(4):427-442, 1974.

Andrianzen, T.B., Baertl, J.M. and Graham, G.G. Growth of children from extremely poor families. Am. J. Clin. Nutr. 26:926-930, 1973.

Ashcroft, M.T. Triceps skinfold measurements in nutritional assessment of Jamaican children. Trans. Roy. Soc. Trop. Med. & Hyg. 66(6):953-954, 1972.

Bakwin, H. and Bakwin, R.M. Body build in infants, II. The proportions of the external dimensions of the healthy infant during the first year of life. J. Clin. Invest. 10:377-394, 1931.

Baldwin, B.T. and Wood, T.D. Height-weight-age tables. Tables for boys and girls of school age. Mother Child 4:3-21, 1923.

Baltes, P.G. Longitudinal and cross-sectional sequences in the study of age and generation effects. Human Dev. 11:145-171, 1968.

Best, S.C. and Gerrard, J.W. The Pine House (Saskatchewan) Nutrition Project. Canad. Med. Assoc. J. 81:915-917, 1959.

Bigwood, E.J. Guiding principles for studies on nutrition of populations. Geneva, League of Nations Health Organization, Technical Commission on Nutrition, Part I, pp. 20-27, 1939.

Birkbeck, J.A., Lee, M., Meyers, G.S. and Alfred, B.M. Nutritional status of British Columbian Indians. II. Anthropometric measurements, physical and dental examinations at Ahousat and Anaham. Canad. J. Public Health 62:403-414,1971.

Brans, Y.W., Summers, J.E., Dweck, H.S. and Cassady, G. A noninvasive approach to body composition in the neonate: dynamic skinfold measurements. Pediatr. Res. 8:215-222,1974.

Brozek, J. and Keys, A. The evaluation of leanness-fatness in man: norms and interrelationships. Brit. J. Nutr. 5:194-206,1951.

Burgess, H.J.L. and Burgess, A.P. The arm circumference as a public health index of protein-calorie malnutrition of early childhood. II. A modified standard for midupper arm circumference in young children. J. Trop. Ped. 15(3):189-192, 1969.

Canada. Department of Indian Affairs and Northern Development. Statistics Division. Registered Indian population by age-sex, residence, province, 1969-1970..

Canada. Census of Canada. Population: Ethnic Groups. Bulletin 1.3-2, 1971a.

Canada. Census of Canada. Population: Age Groups. Bulletin 1.2-3, 1971b.

Castellanos, H. and Arroyave, G. Role of the adrenal cortical system in the response of children to severe protein malnutrition. Am. J. Clin. Nutr. 9:186-195, 1961.

Christensen, N., Mora, J.D. and Herrera, M.G. Family social characteristics related to physical growth of young children. Brit. J. Prev. Soc. Med. 29: 121-130,1975.

Church, M.A. and Stanfield, J.P. The weight chart: an invaluable aid in nutrition rehabilitation. J. Trop. Ped. 17(1):61-66,1971.

Cole-King, S.M. Under-fives clinic in Malawi. The development of a national programme. J. Trop. Ped. 21(4): 183-191,1975.

Coodin, F.J., Dilling, L.A. and Haworth, J.C. The Cross Lake Study. In: Nutrition of Indian and Eskimo Children. Report of the Second Canadian Ross Conference on Paediatric Research. Haworth, J.C., ed. Montreal, Quebec, Ross Laboratories, 1975, pp. 62-66.

Cravioto, J., Birch, H.G., De Licardie, E.R. and Rosales, L. The ecology of infant weight gain in a pre-industrial society. Acta. Paediat. Scand. 56:71-84, 1967.

Damon, A. Discrepancies between findings of longitudinal and cross-sectional studies in adult life: physique and physiology. Human Dev. 8:16-22, 1965.

Darby, W.D., Salsbury, C.G., McGanity, W.J., Johnson, J.F., Bridgforth, E.B. and Sandstead, H.R. A study of the dietary background and nutriture of the Navajo Indian. J. Nutr. 60 (Suppl. 2):3-85, 1956.

Dugdale, A.E., Chen, S.T. and Hewitt, G. Patterns of growth and nutrition in childhood. Am. J. Clin. Nutr. 23: 1280-1287, 1970.

Durnin, J.V.G.A., and Rahaman, M.M. The assessment of the amount of fat in the human body from measurements of skinfold thickness. Brit. J. Nutr. 21:681-689, 1967.

Durnin, J.V.G.A. and Womersley, J. Body fat assessed from total body density and its estimation from skinfold thickness: measurements on 481 men and women aged from 16-72 years. Brit J. Nutr. 32:77-97, 1974.

Eid, E.E. Follow-up study of physical growth of children who had excessive weight gain in first six months of life. Brit. Med. J. 2:74-84, 1970.

Ekmyr, R. Anthropometry in privileged Ethiopian preschool children. Acta Paediat. Scand. 59:157-165, 1970.

Falkner, F. The physical development of children. A guide to interpretation of growth-charts and development assessments; and a commentary on contemporary and future problems. Pediatrics 29:448-466, 1962.

Farquharson, S.M. Growth patterns and nutrition in Nepali children. Arch. Dis. Child. 51:3-10, 1976.

French, J.G. Relationship of morbidity to the feeding patterns of Navajo children from birth through twenty-four months. Am. J. Clin. Nutr. 20:375-385, 1967.

Frisancho, A.R. Triceps skinfold and upper arm muscle size norms for assessment of nutritional status. Am. J. Clin. Nutr. 27:1052-1058, 1974.

Frisancho, A.R., and Garn, S.M. Skinfold thickness and muscle size: implications for developmental status and nutritional evaluation of children from Honduras. Am. J. Clin. Nutr. 24:541-546, 1971.

Frisancho, A.R. and Garn, S.M. The implications of skinfolds and muscle size to developmental and nutritional status of Central American children. III. Guatemala. Trop. Geog. Med. 23:167-172, 1971.

Frisancho, A.R., Garn, S.M. and McCreery, L.D. Relationship of skinfolds and muscle size to growth in children. I. Costa Rica. Am. J. Phys. Anthrop. 35:85-90, 1971.

Garn, S.M. The applicability of North American growth standards in developing countries. Canad. Med. Ass. J. 93:914-919, 1965.

Garn, S.M. Stature norms and nutritional surveys. Ecol. Fd. Nutr. 2:79-81, 1973.

Garn, S.M. and Clark, D.C. Problems in the national assessment of black individuals. Am. J. Pub. Health 66(3):262-267, 1976.

Garn, S.M., Clark, D.C. and Trowbridge, F.L. Tendency toward greater stature in American black children. Am. J. Dis. Child. 126:164-166, 1973.

Garn, S.M. and Haskell, J.A. Fat thickness and developmental status in childhood and adolescence. Am. J. Dis. Child. 99:746-751, 1960.

Garn, S.M., Owen, G.M. and Clark, D.C. The question of race differences in stature norms. Ecol. Fd. Nutr. 3:319-320, 1974.

Goldstein, H. Factors influencing the height of seven year old children--results from the National Child Development Study. Human Biol. 43(1):92-111, 1971.

Green, L.J. The interrelationships among height, weight and chronological, dental and skeletal ages. Ange Orthodont. 31:189-193, 1961.

Gurney, J.M., Fox, F., and Neill, J. A rapid survey to assess the nutrition of Jamaican infants and young children in 1970. Trans. R. Soc. Trop. Med. Hyg. 66:653-655, 1972.

Gwynn, E.R. and Sanjur, D. Nutritional anthropometry, diet and health related correlates among preschool children in Bogata, Columbia. Ecol. Fd. Nutr. 3:273-282, 1974.

Habicht, J.P., Yarbrough, C., Martorell, R., Malina, R.M., and Klein, R.E. Height and weight standards for preschool children. How relevant are ethnic differences in growth potential? Lancet 1:611-615, 1974.

Hamill, P.V., Johnston, F.E. and Grams, W. Height and weight of children: United States Vital and Health Statistics, Series 11, No. 104, Department of Health, Education and Welfare, Public Health Services, 1970.

Hammond, J. Progress in the physiology of farm animals. Butterworths. London, 1954.

Hammond, W.H. Measurement and interpretation of subcutaneous fat with norms for children and young adult males. Br. J. Prev. Soc. Med. 9:201-210, 1955.

Heller, C.A., Scott, E.M., and Hammes, L.M. Height, weight and growth of Alaskan Eskimos. Amer. J. Dis. Child. 113:338-344, 1967.

Hermansen, L. and Dobeln, W.V. Body fat and skinfold measurements. Scand. J. Clin. Lab. Invest. 23:315-319, 1971.

Interdepartmental Committee on Nutrition for National Defense and the Division of Indian Health, PHS. Fort Belknap Indian Reservation Nutrition Survey, August-October, 1966. Washington, GPO, 1964.

Interdepartmental Committee on Nutrition for National Defense and the Division of Indian Health, PHS. Blackfoot Indian Reservation Nutrition Survey, August-September, 1961. Washington, GPO, 1964.

Jackson, R.L. and Kelly, H.G. Growth charts for use in pediatric practice. J. Pediat. 27:215-229, 1945.

Janes, M.D. Physical growth of Nigerian Yoruba children. Trop. Geog. Med. 26:389-398, 1974.

Jelliffe, D.B. and Jelliffe, E.F.P. Letter: Universal growth standards for preschool children. Lancet 2:47, 1974.

Jelliffe, D.B. The assessment of nutritional status of the community. World Health Organization. Monograph ser. No. 53, Geneva, 1966.

Jelliffe, D.B. Approaches to village-level infant feeding. II. Detection of early protein-calorie malnutrition. J. Trop. Ped. 13(2):67-69, 1967.

Johnston, F.E., Borden, M. and MacVean, R.B. Height, weight, and their growth velocities in Guatemalan private school children of high socioeconomic class. Human Biol. 45(4):627-641, 1973.

Jose, D.G. and Welsh, J.C. Growth retardation, anaemia and infection, with malabsorption and infestation of the bowel. The syndrome of protein-calorie malnutrition in Australian Aboriginal children. Med. J. Aust. 1: 349-356, 1970.

Lee, M. Nutrition of the Canadian Indian Child: The British Columbia Study. In: Nutrition of Indian and Eskimo Children. Report of the Second Canadian Ross Conference on Paediatric Research. Haworth, J.C., ed. Montreal, Quebec, Ross Laboratories, 1975, pp. 56-61.

Lee, M., Reyburn, R. and Carrow, A. Nutritional status of British Columbia Indians. I. Dietary studies at Ahousat and Anaham Reserves. Canad. J. Public Health 62:285-296, 1971.

Loewenstein, M.S. and Phillips, J.F. Evaluation of arm circumference measurement for determining nutritional status of children and its use in an acute epidemic of malnutrition: Owerri, Nigeria, following the Nigerian Civil War. Am. J. Clin. Nutr. 26:226-233, 1973.

Lowenstein, F.W., and O'Connell, D.E. Selected body measurements in boys ages 6-11 years from six villages in Southern Tunisia: an international comparison. Human Biol. 46(3):471-482, 1974.

Malina, R.M. Patterns of development in skinfolds of Negro and White Philadelphia children. Human Biol. 38: 89-103, 1966.

Malina, R.M., Habicht, J.P., Martorell, R., Lechtig, A., Yarbrough, C., and Klein, R.E. Head and chest circumferences in rural Guatemalan Ladino children, birth to seven years of age. Am. J. Clin. Nutr. 28: 1061-1070, 1975.

Malina, R.M., Habicht, J.P., Yarbrough, C., Martorell, R., and Klein, R.E. Skinfold thicknesses at seven sites in rural Guatemalan Ladino children birth through seven years of age. Human Biol. 46(3):453-469, 1974.

Mayberry, R.H. and Lindeman, R.D. A survey of chronic disease and diet in Seminole Indians in Oklahoma. Am. J. Clin. Nutr. 13:127-134, 1963.

McFie, J. and Welbourn, H.F. Effect of malnutrition in infancy on the development of bone, muscle and fat. J. Nutr. 76:97-105, 1962.

Mora Parra, J.O., Luna-Jaspe, H., Tellez, F.P., Macias, J.A., and Rueda-Williamson, R. Estudio seccional de crecimiento, desarrollo y nutricion en 12,138 ninos de Bogata, Colombia. VI. Pliegue cutaneo y circunferencia muscular en ninos menores de seis anos de clases socioeconomicas alta y muy baja. Arch Latinoamericanos de Nutricion 20:263-280, 1970.

Mullins, A.G. The progress of juvenile obesity. Arch. Dis. Child. 33:307-313, 1958.

National Center for Health Statistics. Plan, operation and response results of a program of children's examinations. Vital and Health Statistics. PHS Pub. No. 1000-Series 1-No. 5. Public Health Service. Washington, U.S. Government Printing Office, 1967.

Nellhaus, G. Head circumference from birth to eighteen years. Practical composite international and interracial groups. Pediatr. 41(1):106-114, 1968.

Neyzi, O., Yalcindag, A. and Alp, H. Heights and weights of Turkish children. J. Trop. Ped. 19(1):5-13, 1973.

Nichaman, M.Z., Bender, T.R. and Burks, J.M. Nutritional status among Native Americans: Alaskan Eskimos and Blackfeet Indians. In: Nutrition of Indian and Eskimo Children. Report of the Second Canadian Ross Conference on Paediatric Research. Haworth, J.C., ed. Montreal, Quebec, Ross Laboratories, 1975, pp. 45-55.

Nutrition Canada Survey. Nutrition: A National Priority. A Report by Nutrition Canada to the Department of National Health and Welfare. Ottawa, 1973.

Owen, G.M., Garry, P.J., Kram, K.M., Nelson, C.E. and Montalvo, J.M. Nutritional status of Mississippi preschool children. A pilot study. Am. J. Clin. Nutr. 22:1444-1458, 1969.

Owen, G.M., Kram, K.M., Garry, P.J., Love, J.E. and Lubin, A.H. A study of nutritional status of preschool children in the United States, 1968-1970. Pediatr. 53(Suppl.), (4, Part II):597-646, 1974.

Owen, G.M., Nelson, C.E., Kram, K.M. and Garry, P.J. Nutritional survey of White Mountain Apache Preschool children. In: Nutrition, Growth and Development of North American Indian Children. Moore, W.M., Silverberg, M.M. and Read, M.S., eds. Washington, D.C. DHEW Pub. No. (NIH) 72-96, 1972, pp. 91-112.

Pascale, L.R., Grossman, M.I., Sloane, H.S., and Frankel, T. Correlations between thickness of skinfolds and body density in 88 soldiers. Human Biol. 28:165-176, 1956.

Perkins, G.B. and Church, G.M. Report of pediatric evaluations of a sample of Indian children--Wind River Indian Reservation, 1957. Am. J. Public Health 50: 181-188, 1960.

Pett, L.B. A Canadian table of average weights for height, age and sex. Am. J. Public Health 45:862-866, 1955.

Pett, L.B. and Ogilvie, G.F. Report on Canadian average weights and skinfolds. Can. Bull. Nutr. 5(1):81-88, 1957.

Piche, V. and George, M.V. Estimates of vital rates for the Canadian Indians, 1960-1970. Dept. of Indian Affairs and Northern Development. Statistics Division. 1973.

Prahl-Andersen, B. and Kowalski, C.J. A mixed longitudinal, interdisciplinary study of the growth and development of Dutch children. Growth 37:281-295, 1973.

Rea, J.N. Social and economic influences on the growth of preschool children in Lagos. Human Biol. 43:46-63, 1971.

Reisinger, K., Rogers, K.O., Johnson, O. Nutritional survey of lower Greasewood, Arizona Navajos. In: Nutrition, Growth and Development of North American Indian children. Moore, W.M., Silverberg, M.M. and Read, M.S. eds. Washington, D.C. DHEW Pub. No. (NIH) 72-96, 1972, p. 65.

Robson, J.R.K., Bazin, M., and Soderstrom, R. Ethnic differences in skinfold thickness. Am. J. Clin. Nutr. 34:864-868, 1971.

Scrimshaw, N.S., Guzman, M.A., Flores, M. and Gordon, J.E. Nutrition and infection field study in Guatemalan villages, 1959-1964. Arch. Envir. Health 16:223-234, 1968.

Seoane, N. and Latham, M.C. Nutritional anthropometry in the identification of malnutrition in childhood. J. Trop. Ped. 17(3):98-104, 1971.

Simmons, K. The Brush Foundation Study of Child Growth and Development. II. Physical growth and development. Monogr. Soc. Res. Child. Devel. 9:1-87, 1944.

Sohar, E., Scapa, E. and Ravid, M. Constancy of relative body weight in children. Arch. Dis. Child. 48:389-392, 1973.

Standard, K.L., Willis, V.G. and Waterlow, J.C. Indirect indicators of muscle mass in malnourished infants. Am. J. Clin. Nutr. 7:271-279, 1959.

Stini, W.A. Malnutrition, body size and proportion. Ecol. Fd. Nutr. 1:121-126, 1972.

Takahashi, E. Growth and environmental factors in Japan. Human Biol. 38:112-130, 1966.

Tanner, J.M. Growth at Adolescence. Blackwell Scientific Publishers, 2nd ed., Oxford, 1962.

Tanner, J.M., and Whitehouse, R.H. Standards for subcutaneous fat in British children. Percentiles for thickness of skinfolds over triceps and below scapula. Brit. Med. J. I:446-450, 1962.

Ten State Nutrition Survey. U.S. Department of Health, Education and Welfare. Health Services and Mental Health Administration Center for Disease Control. DHEW Pub. No. (HSM) 72-8130, Atlanta, Georgia, 1968-1970.

Van Duzen, J., Carter, J.P., Secondi, J., and Federspiel, C. Protein and calorie malnutrition among preschool Navajo Indian children. Am. J. Clin. Nutr. 22:1362-1370, 1969.

Vavich, M.G., Kemmerer, A.R. and Hirsch, J.S. The nutritional status of Papago Indian children. J. Nutr. 54:121-132, 1954.

Villarejos, V.M., Osborne, J.A., Payne, F.J. and Arguedas, J.A. Heights and weights of children in urban and rural Costa Rica. J. Trop. Pediatr. 17(1):31-43, 1971.

Vivian, R.P., McMillan, C., Moore, P.E., Robertson, E.C., Sebrell, W.H., Tisdall, F.F. and McIntosh, W.G. The nutrition and health of the James Bay Indian. Canad. Med. Assoc. J. 59:505-518, 1948.

Ward, G.M., Kryzywicki, H.J., Rahman, D.P., Quaas, R.L., Nelson, R.A. and Consolazio, C.F. Relationship of anthropometric measurements to body fat as determined by densitometry, potassium-40, and body water. Am. J. Clin. Nutr. 28(2):162-169, 1975.

Waterlow, J.C. Protein, nutrition and enzyme changes in man. Fed. Proc. 18:19-24, 1959.

Waterlow, J.C. Classification and definition of protein-calorie malnutrition. Br. Med. J. 3:566-569, 1972.

Waterlow, J.C. and Mendes, C.B. Composition of muscle in malnourished human infants. Nature 180:1361-1368, 1957.

Watson, E.H. and Lowrey, G.H. Growth and Development of Children. Year Book, 5th, Chicago, 1967.

Weiner, J.S. and Lourie, J.A. Human Biology: A guide to field methods. IBP Handbook No. 9. Blackwell Scientific Publishers, Oxford, 1969.

Wenberg, B.G., Boedeker, M.T. and Schuck, C. Nutriture value of diets in Indian boarding schools in the Dakotas. Observations of growth and development of adolescent Sioux Indian girls. J. Amer. Diet. Assoc. 46:96-101, 1965.

Wingerd, J., Solomon, I.L. and Schoen, E.J. Parent-specific height standards for preadolescent children of three racial groups, with method for rapid determination. Pediatrics 52:556-560, 1973.

World Health Organization. Nutritional Status of Populations: A Manual on Anthropometric Appraisal of Trends. WHO/Nutr 70.129, 1968, p. 12.

Yankauer, A. An evaluation of nutrition classes for mothers in a pediatric clinic setting. J. Trop. Ped. 21(2):90-92, 1975.

APPENDICES

Legends to Appendices

LEGEND TO STUDENT RESIDENCE

00	Sechelt Student Residence, Sechelt, B.C.
01	St. Mary's Student Residence, Mission, B.C.
02	Kamloops Student Residence, Kamloops, B.C.
03	Cariboo Student Residence, Williams Lake, B.C.
04	Lejac Student Residence, Lejac, B.C.
10	St. George's Student Residence, Lytton, B.C.

LEGEND TO RESERVE CODES

Reserve	Code	Reserve	Code
Adams Lake	1	Hope	24
Alexandria	2	Kanaka Bar	25
Alexis Creek	3	Kitwancool	26
Alkali Lake	4	Klahoose	27
Anaham	5	Kluskus	28
Anderson Lake	6	Kwawkewlth	29
Boothroyd	7	Lake Babine	30
Bridge River	8	Lillooet	31
Burrard	9	Lower Nicola	32
Canim Lake	10	Lt. Shuswap	33
Canoe Creek	11	Lytton	34
Chehalis	12	Matsqui	35
Chemainus	13	McLeod Lk.	36
Cheslatta	14	Moricetown	37
Clinton	15	Mount Currie	38
Coldwater	16	Musqueum	39
Cook's Ferry	17	Nanaimo	40
Cowichan	18	Nazko	41
Deadman's Creek	19	Necoslie	42
Douglas	20	Nemiah Valley	43
Fountain	21	Neskainleth	44
Hazelton	22	Nicomen	45
Homalco	23	Nimpkish	46

Reserve	Code	Reserve	Code
Nooaitch	47	Soda Creek	63
North Thompson	48	Spallumcheen	64
Ohamil	49	Squamish	65
Pavilion	50	Squiala	66
Penelukut	51	Stellaquo	67
Penticton	52	Stone	68
Port Douglas	53	Stuart Lake	69
Samahquam	54	Takla Lake	70
Seabird	55	Toosey	71
Sechelt	56	Tsaw	72
Seton Lake	57	Ulkatcho	73
Shakan	58	Upper Nicola	74
Shuswap	59	Westbank	75
Skookumchuk	60	Williams Lake	76
Skwah	61	Yale	77
Sliammon	62	Non status	88

APPENDIX A

STANDING HEIGHT, SITTING HEIGHT, SITTING HEIGHT/STANDING HEIGHT RATIO AND WEIGHT

(sorted according to sex and age)

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
411	3	02	M	6.00	109.5	58.6	0.536	16.19
78	55	01	M	6.02	116.3	62.6	0.539	22.15
71	60	01	M	6.08	112.0	62.3	0.556	21.41
390	3	02	M	6.09	110.5	59.6	0.540	17.01
407	43	02	M	6.10	116.8	63.8	0.546	21.80
656	34	10	M	6.13	112.8	62.6	0.556	19.36
68	23	00	M	6.14	101.6	56.8	0.559	15.71
408	5	02	M	6.15	102.8	57.4	0.558	14.81
378	43	02	M	6.19	117.8	64.8	0.550	22.79
383	5	02	M	6.25	103.8	58.3	0.563	15.80
410	76	02	M	6.40	105.5	58.6	0.556	15.99
76	38	01	M	6.41	115.5	65.1	0.564	23.61
84	55	01	M	6.44	108.5	61.8	0.570	20.04
385	76	02	M	6.49	106.8	60.6	0.567	17.75
406	76	02	M	6.61	120.1	63.3	0.527	22.86
73	38	01	M	6.63	108.8	60.8	0.558	18.94
659	7	10	M	6.65	109.8	61.6	0.562	18.94
666	25	10	M	6.65	120.6	67.3	0.559	24.44
409	3	02	M	6.66	114.5	61.6	0.538	20.66
81	65	01	M	6.70	116.6	63.5	0.545	24.40
541	42	03	M	6.72	122.6	65.8	0.537	26.84
384	3	02	M	6.75	114.5	61.6	0.539	20.66
74	60	01	M	6.77	117.1	65.8	0.563	23.89
404	63	02	M	6.81	113.1	62.0	0.548	20.24
395	2	02	M	6.82	115.5	62.1	0.539	18.66
387	3	02	M	6.87	116.6	64.5	0.553	20.24
658	88	10	M	6.89	108.3	57.8	0.534	17.80
75	24	01	M	6.97	111.6	60.6	0.543	22.11
413	3	02	M	7.03	115.5	63.1	0.546	19.05
419	76	02	M	7.11	112.5	60.5	0.538	17.29
417	5	02	M	7.15	115.1	62.6	0.543	19.80
83	55	01	M	7.17	112.1	60.1	0.537	19.40
539	32	03	M	7.19	117.0	64.1	0.549	21.10
412	5	02	M	7.20	110.6	61.0	0.551	15.00
386	5	02	M	7.20	111.8	62.0	0.555	16.81
63	62	00	M	7.35	123.1	67.6	0.549	24.44
394	10	02	M	7.44	112.8	62.5	0.554	19.05
416	10	02	M	7.44	111.8	61.5	0.550	18.04
418	5	02	M	7.45	111.5	59.5	0.534	17.01
414	71	02	M	7.47	115.5	64.3	0.557	21.21
536	1	03	M	7.52	112.8	62.6	0.556	20.00
392	71	02	M	7.56	116.5	65.3	0.561	21.21
415	11	02	M	7.65	117.8	63.5	0.539	20.11
393	11	02	M	7.74	118.8	64.5	0.543	21.10
87	12	01	M	7.87	120.6	67.3	0.558	25.54
661	26	10	M	7.89	119.6	66.3	0.554	23.30
660	26	10	M	7.89	120.0	65.8	0.549	24.64
376	5	02	M	7.90	115.1	63.6	0.553	20.79
70	38	00	M	7.94	116.0	62.8	0.541	21.60
389	43	02	M	7.96	121.0	65.6	0.542	22.35
69	46	00	M	7.96	120.5	64.1	0.532	22.51
537	21	03	M	8.01	119.1	63.1	0.530	24.95
402	28	02	M	8.07	125.8	68.1	0.541	25.19
400	3	02	M	8.08	122.0	64.6	0.530	24.20
538	16	03	M	8.12	118.5	64.3	0.543	22.44

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
399	3	02	M	8.13	119.5	65.3	0.547	20.86
544	74	03	M	8.13	126.5	67.3	0.533	24.79
657	25	10	M	8.14	126.0	68.1	0.540	25.10
67	6	00	M	8.15	124.3	67.6	0.543	25.19
72	38	01	M	8.16	129.5	69.3	0.536	26.64
85	65	01	M	8.17	123.3	64.8	0.526	25.45
77	60	01	M	8.18	128.0	70.8	0.553	30.14
377	28	02	M	8.25	121.5	67.8	0.559	23.34
60	38	00	M	8.30	127.3	68.5	0.538	26.64
667	34	10	M	8.31	125.5	67.3	0.537	25.19
669	34	10	M	8.36	120.8	66.1	0.547	22.95
662	58	10	M	8.39	120.3	67.5	0.561	22.04
397	43	02	M	8.40	123.1	64.8	0.527	24.20
79	55	01	M	8.40	130.3	70.8	0.543	27.65
543	73	03	M	8.41	122.3	65.0	0.531	25.19
374	71	02	M	8.44	126.6	68.5	0.541	25.19
86	55	01	M	8.48	123.5	69.1	0.560	25.61
379	68	02	M	8.50	130.8	69.8	0.533	27.35
540	74	03	M	8.58	125.0	68.8	0.550	30.84
542	59	03	M	8.67	127.5	66.8	0.524	26.05
82	60	01	M	8.70	127.5	69.1	0.543	29.59
403	5	02	M	8.80	122.6	64.6	0.526	22.95
545	33	03	M	8.87	129.3	70.6	0.546	29.04
664	34	10	M	8.97	125.5	66.3	0.528	21.65
54	62	00	M	8.99	134.3	69.5	0.517	33.79
102	24	01	M	9.03	134.5	72.1	0.537	31.59
551	57	03	M	9.04	126.1	67.6	0.536	28.75
373	43	02	M	9.05	119.1	65.8	0.553	22.99
553	1	03	M	9.09	122.8	66.1	0.538	25.50
665	7	10	M	9.10	132.3	72.6	0.549	28.40
57	65	00	M	9.12	132.1	70.1	0.531	28.64
405	10	02	M	9.13	128.3	70.6	0.551	22.90
80	60	01	M	9.14	130.5	69.3	0.531	28.05
61	38	00	M	9.14	117.3	64.0	0.546	20.39
550	57	03	M	9.18	135.8	71.6	0.527	31.20
673	45	10	M	9.31	128.1	68.3	0.533	25.89
396	5	02	M	9.33	127.3	66.3	0.520	24.16
388	5	02	M	9.37	121.1	66.3	0.548	24.86
380	2	02	M	9.43	122.3	66.6	0.544	24.35
62	38	00	M	9.45	119.5	63.1	0.528	23.34
552	16	03	M	9.46	124.6	67.0	0.537	21.34
56	56	00	M	9.48	137.1	73.0	0.532	33.04
668	34	10	M	9.55	137.8	74.1	0.538	30.95
65	62	00	M	9.55	115.6	62.8	0.543	22.75
92	18	01	M	9.59	139.8	74.8	0.535	30.69
672	37	10	M	9.59	136.8	74.0	0.541	34.10
436	43	02	M	9.59	132.3	70.8	0.535	31.00
375	5	02	M	9.64	129.8	68.1	0.525	24.71
663	34	10	M	9.65	130.3	70.8	0.544	30.69
671	26	10	M	9.65	124.6	68.1	0.547	26.60
382	3	02	M	9.66	132.1	70.5	0.534	25.96
535	8	03	M	9.70	125.1	66.1	0.529	22.35
401	28	02	M	9.72	130.8	69.6	0.532	29.85
91	38	01	M	9.82	135.8	72.6	0.534	30.45
420	5	02	M	9.86	129.5	68.6	0.531	29.15

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
429	63	02	M	9.87	135.3	62.6	0.463	28.75
64	38	00	M	9.89	132.6	67.6	0.510	28.60
549	57	03	M	9.96	132.1	68.6	0.520	29.15
39	23	00	M	10.00	138.8	73.8	0.532	34.54
534	21	03	M	10.00	121.0	61.6	0.510	20.75
422	41	02	M	10.01	132.6	71.1	0.536	33.04
391	41	02	M	10.02	127.6	67.3	0.528	25.30
708	34	10	M	10.05	130.5	71.1	0.545	30.84
670	34	10	M	10.05	130.5	70.1	0.538	28.05
398	68	02	M	10.10	123.6	66.8	0.541	21.96
110	18	01	M	10.11	130.8	68.3	0.523	25.96
55	72	00	M	10.13	138.5	74.3	0.537	39.09
95	60	01	M	10.20	135.0	69.6	0.516	27.81
58	38	00	M	10.22	129.6	68.6	0.530	26.16
59	65	00	M	10.23	141.3	74.3	0.527	35.79
631	69	04	M	10.24	138.5	72.6	0.525	33.24
431	3	02	M	10.28	126.3	67.1	0.531	25.54
108	60	01	M	10.37	130.1	69.1	0.531	27.39
435	41	02	M	10.41	134.1	70.8	0.528	29.81
548	57	03	M	10.43	130.8	68.8	0.527	35.40
49	9	00	M	10.45	133.8	72.0	0.538	32.65
40	62	00	M	10.45	127.3	67.1	0.527	26.71
104	12	01	M	10.46	143.8	77.8	0.541	37.99
445	3	02	M	10.46	127.1	69.8	0.550	27.61
714	34	10	M	10.51	136.6	74.0	0.541	31.66
107	60	01	M	10.56	133.1	71.0	0.533	31.00
450	41	02	M	10.64	134.3	71.3	0.531	28.25
709	34	10	M	10.65	135.3	71.6	0.530	30.91
704	34	10	M	10.69	134.3	71.3	0.531	33.20
425	11	02	M	10.70	134.5	69.8	0.519	29.35
36	56	00	M	10.77	137.6	70.8	0.515	30.84
434	43	02	M	10.78	138.5	71.8	0.518	33.44
430	5	02	M	10.83	134.3	70.5	0.525	31.59
424	43	02	M	10.84	137.6	71.8	0.523	29.81
121	60	01	M	10.88	146.6	80.6	0.550	36.70
106	60	01	M	10.92	136.1	72.6	0.534	31.59
710	34	10	M	10.93	138.0	73.6	0.533	33.79
94	31	01	M	10.98	126.0	67.3	0.535	22.75
51	46	00	M	10.99	141.8	73.5	0.518	35.44
446	28	02	M	10.99	136.5	70.5	0.516	32.85
105	35	01	M	10.99	131.1	70.0	0.534	28.01
96	24	01	M	11.03	137.1	72.0	0.525	30.29
93	35	01	M	11.03	128.6	69.3	0.540	25.61
437	28	02	M	11.04	132.8	69.3	0.522	27.90
454	5	02	M	11.06	137.8	73.8	0.536	32.45
702	26	10	M	11.12	143.3	76.8	0.536	34.85
97	60	01	M	11.14	137.6	74.1	0.539	34.30
444	3	02	M	11.14	133.1	68.0	0.511	32.60
555	21	03	M	11.16	137.1	70.3	0.513	27.74
98	55	01	M	11.23	137.8	71.1	0.517	32.65
66	29	00	M	11.26	129.8	70.3	0.541	29.15
119	38	01	M	11.27	136.8	72.3	0.529	31.11
421	5	02	M	11.28	132.0	69.8	0.530	29.00
554	8	03	M	11.32	141.8	72.6	0.512	30.36
50	38	00	M	11.33	141.3	74.1	0.525	34.61

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
573	50	03	M	11.33	142.1	75.1	0.529	36.10
452	3	02	M	11.37	126.1	69.3	0.550	27.54
632	69	04	M	11.39	139.3	75.6	0.543	34.50
120	65	01	M	11.40	139.3	73.6	0.529	34.50
42	23	00	M	11.41	130.3	70.1	0.539	26.80
53	38	00	M	11.41	137.3	73.5	0.535	34.96
556	15	03	M	11.46	142.1	70.6	0.497	34.06
113	31	01	M	11.48	143.6	75.5	0.525	36.30
423	10	02	M	11.49	139.1	72.9	0.524	29.15
101	60	01	M	11.57	129.6	70.3	0.542	25.50
432	5	02	M	11.58	130.8	68.5	0.524	27.15
448	11	02	M	11.58	144.3	75.6	0.524	34.10
449	5	02	M	11.58	138.1	73.6	0.534	34.85
428	73	02	M	11.61	139.3	75.8	0.544	32.65
31	38	00	M	11.63	139.8	72.6	0.520	36.19
546	57	03	M	11.63	144.6	76.3	0.527	42.59
90	55	01	M	11.72	133.3	73.3	0.551	32.69
52	9	00	M	11.75	139.6	74.3	0.533	37.51
89	65	01	M	11.77	141.8	74.0	0.521	32.60
706	34	10	M	11.85	139.3	74.0	0.531	37.60
433	10	02	M	11.94	135.6	70.3	0.518	26.05
112	60	01	M	11.94	145.0	76.5	0.528	35.71
558	33	03	M	11.94	145.0	77.0	0.531	38.10
628	69	04	M	11.95	141.3	74.6	0.528	36.50
627	36	04	M	12.01	148.8	77.1	0.518	37.40
123	60	01	M	12.04	140.1	71.1	0.508	31.39
707	22	10	M	12.13	140.5	77.0	0.548	37.55
443	68	02	M	12.14	137.0	73.1	0.534	28.60
115	61	01	M	12.15	146.0	75.1	0.515	33.31
117	55	01	M	12.20	154.8	80.1	0.517	45.69
711	45	10	M	12.21	143.6	75.3	0.525	34.61
118	55	01	M	12.23	143.0	76.1	0.532	36.15
705	34	10	M	12.28	140.3	73.5	0.524	39.40
116	66	01	M	12.29	144.3	74.6	0.517	36.54
567	16	03	M	12.31	137.8	73.3	0.532	34.85
440	5	02	M	12.33	142.0	74.1	0.522	35.40
560	1	03	M	12.37	143.1	75.1	0.526	36.41
427	5	02	M	12.41	143.3	76.1	0.531	38.19
426	5	02	M	12.42	146.5	77.5	0.529	35.75
693	34	10	M	12.45	143.5	73.5	0.512	32.10
699	88	10	M	12.46	148.6	75.5	0.508	41.40
465	11	02	M	12.47	159.1	81.1	0.510	42.31
103	55	01	M	12.51	129.3	70.1	0.543	29.39
471	68	02	M	12.52	148.1	77.3	0.522	40.46
451	68	02	M	12.54	146.8	77.8	0.530	37.71
629	70	04	M	12.62	147.3	78.1	0.531	40.00
43	27	00	M	12.64	143.6	78.5	0.546	36.15
630	30	04	M	12.64	147.3	78.0	0.529	41.21
700	34	10	M	12.66	156.6	82.8	0.529	46.71
479	4	02	M	12.69	139.6	74.6	0.535	37.71
439	73	02	M	12.69	136.3	77.1	0.566	39.25
565	57	03	M	12.71	156.6	82.1	0.525	43.05
473	5	02	M	12.71	147.8	79.6	0.538	48.25
698	58	10	M	12.73	148.8	81.1	0.545	39.40
561	21	03	M	12.73	148.5	77.3	0.521	36.26

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
438	71	02	M	12.77	146.5	76.6	0.523	33.95
568	75	03	M	12.78	165.8	85.8	0.517	67.50
703	37	10	M	12.82	145.8	77.3	0.530	41.60
447	41	02	M	12.82	148.8	76.6	0.515	41.01
695	34	10	M	12.82	149.6	78.3	0.523	41.56
88	65	01	M	12.85	149.8	79.1	0.528	40.46
634	69	04	M	12.93	156.3	83.6	0.536	51.39
32	38	00	M	12.97	142.6	74.6	0.523	35.09
547	48	03	M	12.98	146.1	77.0	0.527	37.20
712	34	10	M	12.99	155.0	82.3	0.531	47.06
647	30	04	M	12.99	150.6	80.8	0.537	46.40
694	34	10	M	13.00	146.3	75.1	0.513	36.10
696	34	10	M	13.05	151.3	78.5	0.519	37.51
713	34	10	M	13.07	141.6	72.8	0.514	31.66
99	60	01	M	13.12	143.8	75.6	0.526	35.20
633	30	04	M	13.14	143.5	78.8	0.549	37.64
572	16	03	M	13.14	152.3	80.6	0.530	37.05
35	56	00	M	13.15	160.3	83.1	0.519	46.40
474	10	02	M	13.15	142.1	74.0	0.520	35.16
453	71	02	M	13.15	140.6	75.0	0.533	36.96
747	22	10	M	13.26	158.6	84.3	0.532	48.29
442	11	02	M	13.30	141.8	73.5	0.518	32.69
697	34	10	M	13.30	149.1	77.3	0.519	35.40
141	55	01	M	13.31	149.8	79.3	0.530	37.20
640	69	04	M	13.31	158.0	83.1	0.526	49.50
743	34	10	M	13.33	160.6	84.8	0.528	50.09
37	62	00	M	13.34	143.6	81.1	0.565	43.41
559	74	03	M	13.36	141.0	71.6	0.508	36.34
134	55	01	M	13.38	151.8	81.1	0.534	48.20
566	16	03	M	13.41	138.6	74.3	0.537	32.69
648	30	04	M	13.46	163.1	87.5	0.536	50.80
124	60	01	M	13.50	151.6	79.3	0.523	41.14
466	5	02	M	13.51	152.8	80.5	0.526	38.10
122	31	01	M	13.51	143.6	73.1	0.509	33.44
441	61	02	M	13.53	145.3	75.3	0.519	35.99
114	38	01	M	13.53	128.6	69.6	0.541	31.70
111	55	01	M	13.59	153.0	82.3	0.538	42.04
562	21	03	M	13.65	144.1	75.8	0.526	40.26
154	38	01	M	13.70	146.1	76.6	0.524	34.96
462	3	02	M	13.71	158.8	82.3	0.518	47.10
639	70	04	M	13.76	159.5	81.1	0.508	44.24
564	6	03	M	13.80	143.1	75.8	0.530	36.10
459	5	02	M	13.80	148.5	75.8	0.511	38.06
463	5	02	M	13.81	149.6	79.6	0.532	45.41
476	5	02	M	13.85	170.5	89.3	0.524	55.35
100	38	01	M	13.88	147.6	78.1	0.529	41.21
470	28	02	M	13.91	156.5	80.6	0.516	44.59
646	42	04	M	13.98	150.3	78.1	0.519	39.49
156	60	01	M	14.02	148.6	76.8	0.517	45.41
483	71	02	M	14.06	158.1	81.6	0.516	42.75
145	60	01	M	14.08	155.6	81.8	0.526	44.31
30	23	00	M	14.08	144.3	76.1	0.528	37.95
461	5	02	M	14.09	156.8	81.6	0.521	46.51
748	34	10	M	14.11	159.5	86.3	0.541	58.81
484	28	02	M	14.12	158.6	81.3	0.513	47.50

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
571	57	03	M	14.16	163.6	82.8	0.506	51.15
749	7	10	M	14.20	159.0	83.8	0.528	47.45
742	34	10	M	14.24	154.8	80.1	0.518	41.84
478	28	02	M	14.25	153.8	78.3	0.509	41.36
155	60	01	M	14.30	149.8	81.1	0.541	42.15
635	30	04	M	14.30	162.1	85.1	0.526	51.50
569	57	03	M	14.32	163.8	86.8	0.530	61.80
649	30	04	M	14.34	154.1	82.6	0.536	47.81
588	57	03	M	14.34	174.8	90.3	0.517	58.61
458	3	02	M	14.36	162.8	81.8	0.502	43.80
563	21	03	M	14.39	141.1	72.8	0.516	36.89
744	34	10	M	14.41	168.3	83.1	0.493	53.11
641	70	04	M	14.48	156.8	80.1	0.511	46.31
741	22	10	M	14.51	155.6	81.5	0.559	49.65
638	70	04	M	14.58	160.8	86.5	0.538	51.30
557	16	03	M	14.59	160.8	88.1	0.548	51.81
701	34	10	M	14.59	159.5	84.8	0.532	42.55
472	5	02	M	14.62	151.1	76.6	0.507	38.35
133	77	01	M	14.64	138.5	72.6	0.524	32.01
151	54	01	M	14.66	167.1	90.1	0.539	55.59
457	5	02	M	14.69	156.0	82.6	0.529	48.99
750	34	10	M	14.71	164.1	86.1	0.525	57.40
642	37	04	M	14.72	159.8	84.8	0.531	42.15
469	54	02	M	14.78	163.8	86.1	0.526	49.19
593	8	03	M	14.86	169.5	87.1	0.514	58.50
139	38	01	M	14.87	156.1	78.5	0.503	37.29
456	5	02	M	14.88	171.8	89.6	0.522	57.79
146	12	01	M	14.88	149.1	77.3	0.519	36.50
140	18	01	M	14.96	154.6	79.5	0.514	43.49
33	23	00	M	14.98	179.6	94.6	0.527	73.81
570	50	03	M	14.99	162.8	85.0	0.522	49.74
464	5	02	M	15.04	164.5	87.3	0.531	49.15
651	30	04	M	15.05	168.8	89.3	0.530	55.31
467	5	02	M	15.10	153.3	77.3	0.505	41.84
652	42	04	M	15.11	171.5	91.3	0.532	57.90
596	16	03	M	15.14	157.5	83.8	0.533	48.99
460	88	02	M	15.18	175.1	91.6	0.523	55.95
598	21	03	M	15.20	149.3	80.8	0.541	41.91
148	51	01	M	15.25	165.8	85.6	0.516	51.94
637	70	04	M	15.26	148.8	80.6	0.542	41.80
597	38	03	M	15.33	165.3	86.3	0.522	50.01
734	34	10	M	15.33	164.1	88.6	0.541	54.80
739	34	10	M	15.38	164.8	84.5	0.513	53.20
590	57	03	M	15.39	167.8	88.3	0.527	54.30
138	49	01	M	15.42	161.6	84.1	0.521	47.45
34	23	00	M	15.44	160.8	86.6	0.539	57.44
153	62	01	M	15.46	161.8	86.3	0.533	51.26
149	60	01	M	15.47	173.3	92.6	0.535	60.81
477	5	02	M	15.49	173.8	91.6	0.527	59.64
152	39	01	M	15.54	173.1	90.1	0.520	66.00
480	5	02	M	15.57	163.6	83.1	0.509	50.01
650	70	04	M	15.58	149.6	81.6	0.546	42.79
482	4	02	M	15.59	155.3	81.3	0.524	48.09
468	71	02	M	15.61	172.8	91.6	0.530	50.80
736	34	10	M	15.62	176.0	92.1	0.523	68.09

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
587	38	03	M	15.70	156.5	82.8	0.530	48.95
733	34	10	M	15.70	168.1	88.3	0.525	58.41
455	41	02	M	15.73	161.3	83.3	0.517	46.64
589	33	03	M	15.76	171.1	92.3	0.539	57.71
740	22	10	M	15.91	169.3	93.5	0.552	62.39
481	41	02	M	15.92	158.5	79.8	0.503	47.15
135	66	01	M	16.00	168.8	87.3	0.517	60.65
644	36	04	M	16.01	174.6	90.6	0.519	59.44
591	57	03	M	16.02	170.3	89.1	0.523	61.05
751	45	10	M	16.03	164.6	86.3	0.525	57.90
645	69	04	M	16.08	163.8	87.6	0.535	60.74
745	22	10	M	16.09	156.8	84.3	0.538	50.80
753	57	10	M	16.18	166.5	89.5	0.538	55.00
475	63	02	M	16.30	160.1	84.1	0.526	45.96
595	16	03	M	16.32	165.0	87.8	0.533	53.04
737	16	10	M	16.35	171.6	90.5	0.527	57.99
594	57	03	M	16.37	166.0	88.6	0.534	55.59
752	16	10	M	16.42	165.0	87.8	0.532	53.00
643	36	04	M	16.43	169.3	90.3	0.533	56.25
735	34	10	M	16.44	173.8	90.3	0.520	62.85
586	21	03	M	16.45	171.3	88.8	0.519	51.04
754	57	10	M	16.50	170.5	89.0	0.522	62.00
147	39	01	M	16.55	162.8	86.3	0.531	50.29
585	21	03	M	16.56	166.5	88.6	0.532	58.61
131	9	01	M	16.57	157.0	80.3	0.512	46.16
129	38	01	M	16.62	152.5	78.1	0.513	40.81
157	60	01	M	16.71	164.1	87.5	0.533	55.31
755	21	10	M	16.72	172.1	89.6	0.521	52.01
655	69	04	M	16.75	163.5	86.6	0.530	61.71
636	70	04	M	16.75	164.6	86.0	0.522	52.65
127	23	01	M	16.76	174.0	92.1	0.529	62.15
653	36	04	M	16.78	169.5	91.3	0.539	59.99
126	23	01	M	16.85	165.6	88.1	0.532	53.50
592	38	03	M	16.87	163.1	88.0	0.539	55.75
654	36	04	M	16.88	175.5	92.6	0.528	60.50
323	21	02	M	16.92	167.6	88.6	0.528	58.61
142	55	01	M	16.92	167.1	84.5	0.506	60.54
137	18	01	M	16.93	165.5	88.8	0.537	60.50
160	38	01	F	6.01	111.1	61.1	0.551	18.00
270	3	02	F	6.05	115.8	62.6	0.541	18.46
269	43	02	F	6.09	109.1	60.8	0.558	20.31
262	2	02	F	6.10	110.0	60.6	0.551	19.40
281	68	02	F	6.12	115.5	62.8	0.544	18.85
488	74	03	F	6.20	112.6	62.1	0.552	19.91
268	63	02	F	6.21	116.5	62.6	0.537	19.84
159	65	01	F	6.26	112.8	61.8	0.548	19.60
265	28	02	F	6.27	107.8	60.1	0.558	16.35
245	71	02	F	6.28	109.1	60.5	0.555	17.36
267	3	02	F	6.32	102.5	60.6	0.591	17.01
501	74	03	F	6.33	114.5	61.6	0.538	19.80
171	60	01	F	6.42	106.3	59.1	0.556	16.70
237	3	02	F	6.42	110.8	59.8	0.539	17.95
489	16	03	F	6.54	107.8	60.1	0.558	16.70
263	5	02	F	6.54	108.6	58.8	0.541	20.66
266	3	02	F	6.55	106.6	58.3	0.547	15.99

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
286	41	02	F	6.59	111.8	58.3	0.522	18.00
243	11	02	F	6.60	113.3	62.0	0.547	17.60
272	63	02	F	6.64	116.5	63.6	0.546	20.86
264	28	02	F	6.64	112.3	61.0	0.543	16.61
280	43	02	F	6.64	110.1	61.8	0.562	21.30
38	23	00	F	6.66	102.6	57.1	0.557	15.80
283	71	02	F	6.66	113.3	61.0	0.538	19.80
676	25	10	F	6.67	118.0	63.1	0.535	22.24
238	3	02	F	6.68	110.5	61.6	0.558	20.46
246	5	02	F	6.73	106.8	58.6	0.548	16.94
261	10	02	F	6.74	110.8	59.6	0.538	16.94
29	65	01	F	6.89	126.1	67.3	0.534	27.90
163	55	01	F	6.94	117.5	64.5	0.549	23.69
500	1	03	F	6.97	120.8	64.1	0.531	24.40
164	55	01	F	7.03	121.8	67.0	0.550	22.51
257	5	02	F	7.17	118.1	63.5	0.537	20.11
258	5	02	F	7.17	116.5	62.8	0.540	19.80
682	34	10	F	7.26	125.1	67.1	0.537	25.50
284	5	02	F	7.27	108.8	61.1	0.562	21.05
487	13	03	F	7.29	116.8	61.5	0.527	21.69
158	65	01	F	7.34	124.8	67.1	0.538	23.80
256	68	02	F	7.38	114.5	61.1	0.534	15.99
166	24	01	F	7.38	125.5	65.8	0.525	19.40
244	68	02	F	7.47	117.3	63.3	0.540	22.75
678	34	10	F	7.50	117.8	63.6	0.540	22.20
506	57	03	F	7.51	125.1	67.1	0.537	28.91
275	5	02	F	7.56	116.8	64.6	0.553	22.24
168	38	01	F	7.58	121.1	66.1	0.546	24.24
259	11	02	F	7.59	108.6	58.1	0.535	21.01
172	60	01	F	7.65	118.6	63.1	0.532	20.20
250	71	02	F	7.68	123.6	65.8	0.532	27.35
276	3	02	F	7.74	119.5	64.6	0.541	23.69
260	3	02	F	7.74	118.5	63.6	0.537	22.70
680	7	10	F	7.82	118.6	66.8	0.563	22.31
44	23	00	F	7.84	113.0	61.1	0.541	20.55
46	38	00	F	7.84	125.8	66.8	0.531	25.61
677	34	10	F	7.89	117.0	62.3	0.533	19.25
249	76	02	F	7.90	120.1	64.6	0.538	23.41
47	38	00	F	7.95	112.6	62.8	0.557	19.69
253	2	02	F	7.96	113.5	61.0	0.537	19.40
502	8	03	F	7.98	120.1	63.3	0.527	23.21
170	12	01	F	8.01	128.3	71.6	0.558	26.95
279	11	02	F	8.11	124.1	66.1	0.533	25.70
274	5	02	F	8.16	118.3	63.1	0.534	20.20
162	60	01	F	8.17	118.5	64.6	0.546	22.31
278	28	02	F	8.18	127.6	67.8	0.531	27.06
239	5	02	F	8.23	122.5	66.6	0.544	22.66
251	61	02	F	8.26	121.6	65.1	0.535	24.71
674	32	10	F	8.27	120.6	64.8	0.538	21.14
247	3	02	F	8.28	114.5	62.6	0.547	19.65
248	10	02	F	8.29	121.8	67.0	0.550	23.10
24	65	00	F	8.31	129.0	69.8	0.542	25.89
511	42	03	F	8.32	137.1	71.8	0.523	32.41
27	62	00	F	8.36	123.0	66.5	0.541	25.65
679	34	10	F	8.41	115.3	63.3	0.549	20.15

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
675	45	10	F	8.42	120.5	64.3	0.534	22.15
164	55	01	F	8.43	123.5	65.3	0.529	21.14
241	28	02	F	8.47	128.5	70.1	0.546	26.95
236	11	02	F	8.53	126.1	67.6	0.537	24.24
505	15	03	F	8.62	119.5	63.3	0.531	23.76
254	41	02	F	8.66	129.1	67.1	0.521	23.54
271	88	02	F	8.67	125.5	66.6	0.531	27.81
285	5	02	F	8.67	119.5	64.8	0.542	23.45
176	51	10	F	8.68	116.8	63.8	0.546	19.10
683	25	10	F	8.70	130.1	66.0	0.507	22.86
169	60	01	F	8.71	117.5	63.6	0.541	20.75
509	32	03	F	8.74	125.5	66.3	0.528	23.54
681	34	10	F	8.75	132.6	69.5	0.524	25.70
282	68	02	F	8.80	122.8	68.1	0.555	22.99
28	56	00	F	8.93	125.6	68.6	0.546	28.40
499	57	03	F	8.97	128.0	67.3	0.527	27.65
161	55	01	F	8.99	120.6	65.3	0.541	21.49
604	14	04	F	9.02	130.1	67.8	0.521	31.75
20	38	00	F	9.03	128.5	68.6	0.535	29.00
41	72	00	F	9.07	134.0	71.3	0.533	34.76
25	23	00	F	9.08	132.8	72.1	0.543	28.80
296	41	02	F	9.12	131.1	69.6	0.531	28.75
273	3	02	F	9.17	127.8	68.1	0.533	27.94
188	12	01	F	9.19	131.5	69.8	0.531	28.49
311	43	02	F	9.19	125.6	67.3	0.536	25.81
304	5	02	F	9.25	125.1	66.8	0.534	25.06
495	42	03	F	9.26	142.6	73.8	0.518	35.79
242	5	02	F	9.30	119.0	63.8	0.536	18.85
167	38	01	F	9.31	131.5	68.0	0.517	28.84
277	3	02	F	9.31	122.8	64.8	0.529	21.65
291	10	02	F	9.41	132.8	74.1	0.559	30.29
252	10	02	F	9.43	115.1	64.5	0.560	19.40
179	39	01	F	9.45	132.1	70.5	0.534	32.49
48	23	00	F	9.47	122.8	65.8	0.536	26.09
292	10	02	F	9.48	130.1	69.6	0.536	27.94
191	38	01	F	9.56	131.5	69.6	0.530	38.10
315	11	02	F	9.56	126.1	66.8	0.531	23.69
516	50	03	F	9.60	134.3	71.1	0.530	34.50
290	3	02	F	9.60	123.1	68.6	0.557	25.45
23	53	00	F	9.76	131.3	67.8	0.517	27.54
313	71	02	F	9.77	129.1	69.6	0.539	29.85
289	11	02	F	9.82	136.3	71.8	0.526	28.36
684	34	10	F	9.83	131.3	70.6	0.538	30.21
607	14	04	F	9.83	133.1	68.6	0.515	29.90
497	32	03	F	9.89	137.1	71.0	0.517	31.50
300	3	02	F	9.92	126.1	65.8	0.521	25.85
512	75	03	F	9.95	137.3	74.8	0.545	34.25
494	21	03	F	9.96	132.6	70.3	0.531	30.49
298	3	02	F	9.97	130.1	70.6	0.543	26.64
496	59	03	F	10.02	133.5	71.8	0.538	29.39
498	50	03	F	10.03	124.3	64.1	0.516	24.05
685	34	10	F	10.06	131.5	69.6	0.530	29.00
26	56	00	F	10.08	141.1	74.3	0.527	37.60
308	5	02	F	10.17	142.8	78.0	0.546	35.35
503	52	03	F	10.17	132.3	70.0	0.529	32.56

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
606	69	04	F	10.21	134.6	73.1	0.544	26.71
295	41	02	F	10.26	127.8	67.5	0.528	27.46
690	7	10	F	10.27	130.3	69.6	0.534	27.90
22	23	00	F	10.29	128.1	66.6	0.520	23.14
486	1	03	F	10.30	133.1	68.6	0.515	28.91
1	65	00	F	10.37	138.1	72.5	0.525	35.20
505	16	03	F	10.43	128.5	67.3	0.525	25.30
183	38	01	F	10.44	139.8	74.8	0.535	33.15
288	5	02	F	10.44	128.5	69.3	0.540	24.75
513	73	03	F	10.52	143.3	77.0	0.537	38.06
186	12	01	F	10.52	129.6	68.8	0.531	26.00
178	62	01	F	10.55	136.8	73.3	0.535	33.79
692	22	10	F	10.56	142.5	78.1	0.548	42.55
605	67	04	F	10.56	144.1	75.3	0.523	40.46
293	28	02	F	10.58	137.1	72.6	0.529	26.25
4	56	00	F	10.59	141.3	73.8	0.522	32.21
287	5	02	F	10.62	128.5	68.3	0.532	26.44
490	8	03	F	10.69	123.8	66.1	0.534	25.45
485	74	03	F	10.70	128.6	65.8	0.512	27.94
314	71	02	F	10.80	133.3	70.1	0.526	25.61
599	70	04	F	10.80	140.8	74.6	0.529	36.70
491	33	03	F	10.84	143.6	74.8	0.521	34.85
299	11	02	F	10.89	140.8	73.6	0.522	34.10
691	34	10	F	10.94	149.5	79.3	0.530	59.25
294	10	02	F	11.00	131.8	71.3	0.541	28.45
307	10	02	F	11.08	127.1	69.8	0.550	24.24
343	3	02	F	11.12	139.5	74.0	0.530	31.86
306	41	02	F	11.13	143.5	75.8	0.528	32.85
510	75	03	F	11.16	143.5	75.1	0.524	35.35
301	71	02	F	11.19	140.6	76.6	0.544	30.69
18	62	00	F	11.20	148.1	78.6	0.530	41.49
514	64	03	F	11.27	151.5	78.0	0.515	40.26
508	59	03	F	11.28	144.5	75.8	0.525	36.96
312	68	02	F	11.29	151.5	78.6	0.519	35.90
687	7	10	F	11.32	137.6	72.1	0.524	32.85
602	14	04	F	11.32	145.6	78.0	0.535	34.10
7	62	00	F	11.33	142.1	76.5	0.538	38.90
492	13	03	F	11.33	142.3	74.8	0.526	31.59
689	45	10	F	11.39	148.5	76.8	0.518	38.61
333	5	02	F	11.41	144.3	74.3	0.516	32.41
608	30	04	F	11.42	145.1	78.1	0.539	33.15
305	5	02	F	11.51	138.0	73.8	0.535	30.65
12	65	00	F	11.54	151.3	82.1	0.543	45.89
5	62	00	F	11.54	142.3	75.1	0.527	32.45
303	28	02	F	11.55	139.8	74.6	0.534	34.61
533	57	03	F	11.61	146.1	75.6	0.517	34.61
310	58	02	F	11.62	144.8	76.5	0.528	36.61
309	68	02	F	11.72	138.3	73.1	0.529	33.66
686	34	10	F	11.73	152.0	78.8	0.519	35.44
16	38	00	F	11.73	142.8	76.6	0.537	48.75
531	16	03	F	11.75	144.0	76.3	0.530	35.31
194	60	01	F	11.77	147.8	79.1	0.536	40.46
187	12	01	F	11.81	124.5	67.6	0.544	23.14
181	56	01	F	11.83	147.5	76.8	0.521	37.16
688	34	10	F	11.87	147.6	77.6	0.526	36.30

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
526	57	03	F	11.87	152.6	83.6	0.548	49.94
532	8	03	F	11.89	149.6	78.6	0.525	37.91
517	38	03	F	11.94	140.5	75.8	0.540	36.15
603	70	04	F	11.98	145.8	78.1	0.536	35.71
515	21	03	F	12.01	145.5	77.8	0.535	32.85
297	5	02	F	12.02	145.1	76.6	0.528	32.49
318	10	02	F	12.04	144.5	77.6	0.538	36.30
190	38	01	F	12.07	142.3	72.6	0.511	39.71
601	42	04	F	12.09	140.8	74.3	0.528	35.31
319	15	02	F	12.12	146.3	76.3	0.522	36.50
302	41	02	F	12.16	142.5	74.8	0.526	32.45
600	30	04	F	12.18	146.6	78.8	0.538	34.85
189	38	01	F	12.20	147.1	77.5	0.526	38.61
3	62	00	F	12.23	143.3	79.0	0.551	41.14
518	74	03	F	12.31	141.0	72.8	0.516	36.10
729	34	10	F	12.35	153.8	81.1	0.527	48.91
717	34	10	F	12.50	143.5	75.1	0.523	40.55
15	38	00	F	12.54	137.6	71.6	0.521	34.69
722	7	10	F	12.55	148.1	78.5	0.530	38.50
177	60	01	F	12.57	145.6	78.1	0.536	37.55
623	14	04	F	12.61	151.8	80.3	0.529	45.65
330	3	02	F	12.62	142.8	80.6	0.564	38.70
184	24	01	F	12.67	154.5	78.0	0.505	51.50
326	5	02	F	12.70	155.5	81.0	0.521	50.09
17	62	00	F	12.77	156.3	82.3	0.527	54.45
493	57	03	F	12.78	151.0	78.6	0.521	47.81
619	69	04	F	12.79	157.8	84.8	0.537	49.50
2	38	00	F	12.83	146.8	80.3	0.548	39.91
523	57	03	F	12.84	159.1	84.6	0.531	52.69
19	65	00	F	12.85	156.1	84.6	0.542	43.14
339	3	02	F	12.87	150.3	81.1	0.540	34.65
618	30	04	F	12.87	163.3	85.3	0.522	53.75
520	38	03	F	12.88	153.8	83.8	0.546	47.45
335	28	02	F	12.90	144.1	76.1	0.528	34.69
528	73	03	F	12.92	153.1	81.6	0.533	45.76
195	20	01	F	12.96	140.5	73.6	0.525	31.04
320	10	02	F	12.98	144.3	78.6	0.545	42.94
331	3	02	F	12.98	150.3	81.3	0.541	41.95
334	5	02	F	12.98	145.1	73.3	0.505	30.60
611	37	04	F	13.01	146.1	78.1	0.535	38.19
325	5	02	F	13.02	139.6	73.3	0.525	29.04
193	60	01	F	13.04	148.5	81.3	0.548	40.70
727	34	10	F	13.07	145.3	76.3	0.525	38.30
11	62	00	F	13.12	147.1	80.8	0.550	42.11
316	3	02	F	13.13	148.6	77.8	0.524	30.69
525	50	03	F	13.19	153.5	78.6	0.513	39.64
180	77	01	F	13.19	147.5	74.6	0.506	37.84
9	38	00	F	13.22	149.3	83.5	0.559	41.95
507	8	03	F	13.22	153.6	82.1	0.535	50.01
6	88	00	F	13.23	134.1	69.6	0.519	29.11
328	28	02	F	13.24	162.8	84.5	0.519	52.14
217	23	01	F	13.28	155.6	83.1	0.534	49.19
720	22	10	F	13.29	150.8	83.1	0.551	51.15
715	34	10	F	13.32	154.3	81.3	0.527	42.59
317	43	02	F	13.34	138.5	72.6	0.525	32.30

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
527	33	03	F	13.35	157.3	79.6	0.506	45.76
617	70	04	F	13.40	158.8	87.1	0.549	53.75
324	11	02	F	13.41	146.1	77.6	0.531	33.90
621	67	04	F	13.46	154.1	79.5	0.516	47.26
524	50	03	F	13.46	160.8	84.5	0.525	53.86
322	63	02	F	13.46	145.6	75.6	0.520	35.90
730	34	10	F	13.48	152.6	78.6	0.515	41.80
530	13	03	F	13.51	159.1	84.5	0.531	54.05
346	73	02	F	13.51	161.3	84.6	0.524	52.69
182	35	01	F	13.54	142.0	76.1	0.536	40.00
14	6	00	F	13.58	149.8	79.8	0.533	44.75
341	68	02	F	13.59	153.3	82.0	0.535	40.19
716	34	10	F	13.62	158.1	81.6	0.517	57.31
343	68	02	F	13.62	139.6	74.1	0.531	33.44
583	74	03	F	13.69	157.6	84.6	0.537	48.80
213	18	01	F	13.69	155.5	85.0	0.547	48.09
529	21	03	F	13.74	159.5	83.1	0.521	49.50
321	28	02	F	13.79	144.8	77.0	0.532	40.19
723	34	10	F	13.80	156.5	81.1	0.518	49.06
210	18	01	F	13.81	156.3	82.3	0.527	52.14
329	11	02	F	13.83	157.6	82.0	0.520	54.05
368	3	02	F	13.85	154.1	80.1	0.519	45.61
192	60	01	F	13.89	145.6	76.8	0.527	38.70
13	65	00	F	13.90	157.1	86.5	0.551	52.80
357	5	02	F	13.91	148.0	78.6	0.531	38.19
613	70	04	F	13.97	152.5	81.1	0.532	45.21
337	3	02	F	14.01	155.8	82.0	0.526	42.90
625	69	04	F	14.03	152.8	81.8	0.536	44.79
225	60	01	F	14.03	149.8	80.0	0.534	40.50
579	44	03	F	14.05	152.8	79.8	0.522	45.06
327	41	02	F	14.06	155.1	82.1	0.530	47.54
372	68	02	F	14.06	153.0	84.3	0.552	45.30
353	71	02	F	14.09	159.8	85.3	0.534	43.34
522	21	03	F	14.12	157.6	85.3	0.541	48.51
350	68	02	F	14.17	149.8	77.6	0.518	36.19
235	24	01	F	14.18	158.8	81.8	0.515	44.95
363	11	02	F	14.20	156.1	82.1	0.526	47.26
574	1	03	F	14.25	163.8	88.3	0.540	67.14
10	62	00	F	14.26	155.1	84.1	0.542	45.85
355	4	02	F	14.26	149.8	80.0	0.534	50.16
201	18	01	F	14.29	155.1	81.5	0.525	40.04
610	70	04	F	14.30	161.1	85.6	0.532	49.15
367	3	02	F	14.30	150.8	77.3	0.513	37.91
205	9	01	F	14.32	157.1	86.5	0.550	45.96
719	25	10	F	14.35	149.5	79.1	0.530	45.25
234	18	01	F	14.41	163.6	81.5	0.498	47.41
615	70	04	F	14.46	157.5	84.6	0.537	46.35
345	41	02	F	14.46	153.6	79.3	0.516	49.39
352	5	02	F	14.48	158.3	84.3	0.533	45.50
338	11	02	F	14.51	153.1	79.6	0.521	48.29
354	5	02	F	14.52	159.1	83.1	0.523	40.00
332	10	02	F	14.52	150.3	81.6	0.544	50.80
228	62	01	F	14.55	156.3	80.1	0.512	50.80
8	23	00	F	14.56	149.6	83.3	0.557	47.10
340	68	02	F	14.58	154.1	80.5	0.522	40.04

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
185	60	01	F	14.60	147.0	79.3	0.539	45.21
718	22	10	F	14.61	155.6	87.6	0.563	59.71
620	70	04	F	14.65	160.6	84.3	0.525	54.34
580	21	03	F	14.69	152.3	81.8	0.538	48.99
521	50	03	F	14.73	159.6	82.8	0.519	48.71
724	34	10	F	14.76	159.0	83.5	0.525	68.20
200	39	01	F	14.82	157.3	85.3	0.542	50.64
222	40	01	F	14.89	159.6	85.0	0.532	59.95
622	69	04	F	14.90	154.0	82.8	0.538	50.60
624	69	04	F	14.90	155.5	83.1	0.535	51.81
232	60	01	F	14.91	167.5	88.1	0.527	57.44
351	11	02	F	14.92	156.6	86.1	0.550	48.99
216	55	01	F	14.97	161.8	85.8	0.530	54.01
220	12	01	F	14.97	151.5	79.6	0.526	41.21
336	15	02	F	15.02	155.3	71.6	0.461	45.61
212	49	01	F	15.03	163.0	87.5	0.537	64.31
344	3	02	F	15.05	156.8	86.0	0.548	60.10
173	20	01	F	15.06	154.5	81.1	0.526	52.29
207	40	01	F	15.10	153.5	85.0	0.554	50.09
728	58	10	F	15.12	167.5	88.5	0.528	47.19
206	9	01	F	15.15	154.1	81.1	0.526	50.75
202	38	01	F	15.18	146.5	79.6	0.544	45.14
175	60	10	F	15.34	155.6	83.1	0.535	54.01
348	41	02	F	15.35	149.1	82.8	0.556	54.21
581	6	03	F	15.39	159.6	82.6	0.518	60.46
609	36	04	F	15.40	156.0	84.6	0.542	50.25
174	24	01	F	15.45	152.8	81.0	0.530	51.59
229	38	01	F	15.45	154.8	82.5	0.533	48.51
366	73	02	F	15.47	164.3	87.1	0.531	60.50
577	19	03	F	15.55	164.6	87.5	0.531	52.76
575	16	03	F	15.55	156.6	82.8	0.528	50.01
198	23	01	F	15.57	151.6	84.5	0.557	56.41
359	10	02	F	15.61	146.3	79.6	0.544	48.55
349	68	02	F	15.61	157.8	84.1	0.533	48.71
226	60	01	F	15.61	152.1	82.5	0.542	50.71
616	42	04	F	15.65	152.0	82.1	0.541	46.71
371	5	02	F	15.70	162.1	83.6	0.516	43.01
726	34	10	F	15.74	158.3	85.1	0.537	46.05
224	60	01	F	15.74	154.3	80.8	0.523	46.31
347	5	02	F	15.79	157.8	81.3	0.515	40.26
614	70	04	F	15.81	150.8	82.8	0.549	54.14
369	11	02	F	15.84	165.6	86.3	0.521	55.66
219	60	01	F	15.88	152.1	83.1	0.546	50.20
223	60	01	F	15.91	156.5	84.1	0.538	51.11
358	11	02	F	16.00	151.3	82.5	0.545	46.16
731	34	10	F	16.03	159.5	85.8	0.538	48.40
360	5	02	F	16.04	154.1	83.6	0.543	53.55
626	70	04	F	16.05	148.8	78.6	0.528	46.75
578	57	03	F	16.05	162.8	86.8	0.533	46.79
519	21	03	F	16.10	148.5	81.6	0.550	43.89
365	5	02	F	16.14	154.3	80.8	0.524	49.19
356	5	02	F	16.14	148.6	81.6	0.550	45.61
362	43	02	F	16.15	153.8	82.6	0.537	49.94
230	60	01	F	16.18	149.5	82.6	0.553	44.90
214	27	01	F	16.18	154.8	82.6	0.534	49.30

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	STANDING HEIGHT (CM)	SITTING HEIGHT (CM)	SIT/ST RATIO	WEIGHT (KG)
203	38	01	F	16.22	143.0	77.8	0.544	47.70
221	20	01	F	16.23	155.8	83.6	0.537	42.35
725	34	10	F	16.24	154.3	81.3	0.527	51.90
233	18	01	F	16.30	155.1	85.1	0.549	60.10
218	56	01	F	16.33	167.6	87.1	0.520	57.20
370	76	02	F	16.38	159.3	85.6	0.537	46.75
231	60	01	F	16.39	155.5	84.1	0.541	56.69
215	18	01	F	16.47	160.3	90.0	0.561	65.05
227	39	01	F	16.47	162.5	89.1	0.549	56.80
21	23	00	F	16.52	151.0	84.1	0.557	55.79
364	68	02	F	16.57	152.1	82.8	0.545	47.89
576	57	03	F	16.59	166.6	86.1	0.517	55.86
197	65	01	F	16.71	163.5	88.1	0.539	62.46
612	70	04	F	16.78	156.8	84.6	0.540	57.79
361	28	02	F	16.85	155.1	84.6	0.546	53.00
208	56	01	F	16.89	159.1	83.6	0.525	52.01
584	33	03	F	16.91	152.6	79.6	0.522	51.15
721	25	10	F	16.93	159.6	84.0	0.526	54.01
209	12	01	F	16.93	157.3	85.0	0.540	56.45

APPENDIX B

SKINFOLD THICKNESSES

(sorted according to sex and age)

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
411	3	02	M	6.00	7.1	173	3.9	133	4.8	4.2
78	55	01	M	6.02	9.5	189	6.1	164	8.5	6.9
71	60	01	M	6.08	6.8	170	4.4	142	4.3	4.5
390	3	02	M	6.09	7.4	175	4.1	137	5.0	4.4
407	43	02	M	6.10	5.4	156	4.0	135	4.0	6.3
656	34	10	M	6.13	7.8	178	5.1	152	5.6	5.6
68	23	00	M	6.14	5.8	161	4.6	145	4.8	5.2
408	5	02	M	6.15	5.2	154	3.9	133	3.9	4.0
378	43	02	M	6.19	6.4	167	4.5	144	4.3	7.3
383	5	02	M	6.25	6.2	165	4.3	140	4.3	4.2
410	76	02	M	6.40	5.0	151	4.2	139	3.1	4.6
76	38	01	M	6.41	8.0	180	5.2	154	6.0	6.1
84	55	01	M	6.44	10.4	194	6.2	165	6.5	7.1
385	76	02	M	6.49	5.4	156	4.6	145	3.4	4.8
406	76	02	M	6.61	5.4	156	3.6	126	3.5	4.3
73	38	01	M	6.63	7.0	172	4.4	142	5.0	5.0
659	7	10	M	6.65	7.6	177	5.0	151	4.4	5.4
666	25	10	M	6.65	6.6	169	5.3	155	3.9	4.8
409	3	02	M	6.66	9.3	188	5.4	156	3.8	5.8
81	65	01	M	6.70	10.2	193	6.0	163	7.1	10.3
541	42	03	M	6.72	7.5	176	6.0	163	4.7	8.0
384	3	02	M	6.75	9.4	189	5.5	157	3.9	5.9
74	60	01	M	6.77	8.3	182	6.0	163	6.1	6.8
404	63	02	M	6.81	7.4	175	5.2	154	5.0	7.2
395	2	02	M	6.82	5.9	162	4.5	144	5.3	5.0
387	3	02	M	6.87	5.1	152	4.0	135	3.5	4.5
658	88	10	M	6.89	8.2	181	4.2	139	4.9	4.8
75	24	01	M	6.97	7.9	179	4.8	148	4.5	5.2
413	3	02	M	7.03	4.8	148	3.7	128	3.3	4.3
419	76	02	M	7.11	3.3	118	4.1	137	3.1	4.8
417	5	02	M	7.15	5.0	151	4.3	140	3.9	4.2
83	55	01	M	7.17	5.5	157	4.7	147	3.0	4.5
539	32	03	M	7.19	7.0	172	4.8	148	5.0	4.8
412	5	02	M	7.20	5.0	151	3.6	126	3.5	4.1
386	5	02	M	7.20	5.9	162	4.0	135	3.9	4.4
63	62	00	M	7.35	7.5	176	5.4	156	5.7	6.0
394	10	02	M	7.44	4.1	137	4.6	145	3.8	4.6
416	10	02	M	7.44	4.0	135	4.4	142	3.5	4.4
418	5	02	M	7.45	3.6	126	4.0	135	3.0	4.1
414	71	02	M	7.47	6.4	167	4.2	139	4.6	4.3
536	1	03	M	7.52	6.4	167	5.0	151	4.0	5.2
392	71	02	M	7.56	6.6	169	4.4	142	4.5	4.9
415	11	02	M	7.65	4.9	150	4.1	137	3.0	3.7
393	11	02	M	7.74	5.5	157	4.2	139	3.1	4.0
87	12	01	M	7.87	5.9	162	5.8	161	5.4	5.5
661	26	10	M	7.89	6.5	168	5.2	154	4.2	6.0
660	26	10	M	7.89	7.0	172	4.9	150	4.3	6.0
376	5	02	M	7.90	5.8	161	4.4	142	4.2	4.6
70	38	00	M	7.94	8.5	183	6.0	163	6.1	8.4
389	43	02	M	7.96	7.2	174	5.6	158	5.1	5.4
69	46	00	M	7.96	5.1	152	4.4	142	4.9	5.8
537	21	03	M	8.01	10.1	192	6.4	167	6.0	7.0
402	28	02	M	8.07	7.8	178	4.1	137	4.5	5.2
400	3	02	M	8.08	6.8	170	5.4	156	3.5	4.7

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
538	16	03	M	8.12	5.1	152	4.5	144	4.0	4.4
399	3	02	M	8.13	6.0	163	4.4	142	4.1	3.9
544	74	03	M	8.13	7.6	177	6.1	164	7.0	6.0
657	25	10	M	8.14	6.2	165	4.8	148	4.5	5.6
67	6	00	M	8.15	7.3	175	5.8	161	7.3	6.0
72	38	01	M	8.16	5.5	157	4.4	142	4.0	4.4
85	65	01	M	8.17	6.9	171	5.2	154	6.8	6.5
77	60	01	M	8.18	8.0	180	5.4	156	6.4	7.3
377	28	02	M	8.25	5.6	158	4.6	145	3.2	4.2
60	38	00	M	8.30	5.8	161	5.1	152	3.4	5.8
667	34	10	M	8.31	8.0	180	5.4	156	4.7	5.2
669	34	10	M	8.36	7.7	178	6.3	166	5.0	7.4
662	58	10	M	8.39	8.9	186	5.1	152	6.3	5.5
397	43	02	M	8.40	6.3	166	4.4	142	3.4	5.0
79	55	01	M	8.40	7.5	176	5.4	156	5.1	5.7
543	73	03	M	8.41	6.6	169	5.3	155	4.4	5.6
374	71	02	M	8.44	6.3	166	4.8	148	5.1	4.9
86	55	01	M	8.48	7.0	172	5.3	155	6.4	5.4
379	68	02	M	8.50	6.1	164	5.4	156	3.9	5.9
540	74	03	M	8.58	11.6	200	7.7	178	6.8	7.9
542	59	03	M	8.67	5.6	158	4.9	150	5.6	5.5
82	60	01	M	8.70	11.0	197	7.2	174	7.2	10.6
403	5	02	M	8.80	4.4	142	4.0	135	2.5	4.4
545	33	03	M	8.87	8.4	182	5.1	152	4.8	5.6
664	34	10	M	8.97	4.6	145	4.5	144	3.4	5.3
54	62	00	M	8.99	10.5	194	7.8	178	7.0	7.9
102	24	01	M	9.03	6.1	164	5.1	152	3.2	4.7
551	57	03	M	9.04	8.3	182	6.6	169	3.3	5.3
373	43	02	M	9.05	6.1	164	5.4	156	4.4	4.6
553	1	03	M	9.09	7.2	174	5.0	151	3.7	4.9
665	7	10	M	9.10	6.3	166	4.6	145	3.4	5.4
57	65	00	M	9.12	8.3	182	6.0	163	5.7	6.6
405	10	02	M	9.13	6.8	170	5.3	155	4.0	5.9
80	60	01	M	9.14	8.1	180	5.2	154	4.9	6.8
61	38	00	M	9.14	5.1	152	4.2	139	2.9	4.4
550	57	03	M	9.18	5.4	156	5.8	161	3.6	4.8
673	45	10	M	9.31	6.3	166	4.2	139	3.9	5.0
396	5	02	M	9.33	3.4	121	4.0	135	3.0	3.5
388	5	02	M	9.37	5.5	157	5.6	158	5.0	7.2
380	2	02	M	9.43	7.0	172	5.8	161	4.1	7.7
62	38	00	M	9.45	10.5	194	6.0	163	7.2	9.6
552	16	03	M	9.46	4.8	148	4.4	142	2.9	5.1
56	56	00	M	9.48	8.0	180	5.5	157	5.0	5.1
668	34	10	M	9.55	9.4	189	5.7	160	4.8	7.0
65	62	00	M	9.55	6.2	165	5.8	161	4.8	6.1
92	18	01	M	9.59	6.5	168	4.8	148	3.8	5.2
672	37	10	M	9.59	7.3	175	7.2	174	5.2	8.6
436	43	02	M	9.59	5.3	155	4.9	150	4.2	5.4
375	5	02	M	9.64	5.6	158	4.4	142	3.6	4.5
663	34	10	M	9.65	8.2	181	6.7	170	4.0	9.4
671	26	10	M	9.65	9.2	187	4.6	145	5.0	6.3
382	3	02	M	9.66	5.9	162	4.4	142	5.0	4.7
535	8	03	M	9.70	6.6	169	4.9	150	5.1	5.2
401	28	02	M	9.72	8.6	184	5.9	162	6.0	8.1

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
91	38	01	M	9.82	6.4	167	4.2	139	3.6	4.4
420	5	02	M	9.86	7.5	176	5.9	162	6.3	8.6
429	63	02	M	9.87	7.8	178	4.9	150	3.5	6.7
64	38	00	M	9.89	8.6	184	7.4	175	6.9	13.4
549	57	03	M	9.96	6.3	166	5.3	155	4.6	5.5
39	23	00	M	10.00	9.0	186	6.0	163	5.1	6.4
534	21	03	M	10.00	6.3	166	4.9	150	3.0	4.2
422	41	02	M	10.01	5.2	154	6.2	165	4.5	6.2
391	41	02	M	10.02	5.1	152	5.0	151	3.5	5.4
708	34	10	M	10.05	9.0	186	5.6	158	4.4	7.4
670	34	10	M	10.05	7.4	175	6.0	163	5.0	8.9
398	68	02	M	10.10	11.3	198	5.9	162	5.5	8.4
110	18	01	M	10.11	6.1	164	5.1	152	4.3	6.4
55	72	00	M	10.13	15.4	214	10.2	193	10.8	15.6
95	60	01	M	10.20	6.2	165	4.8	148	4.0	5.2
58	38	00	M	10.22	9.0	186	6.4	167	7.2	6.0
59	65	00	M	10.23	10.1	192	6.2	165	6.9	8.4
631	69	04	M	10.24	6.6	169	6.4	167	5.4	5.4
431	3	02	M	10.28	5.5	157	4.3	140	3.0	4.0
108	60	01	M	10.37	9.8	191	5.5	157	5.8	5.9
435	41	02	M	10.41	5.6	158	5.0	151	4.2	4.3
548	57	03	M	10.43	11.3	198	9.4	189	7.3	10.3
49	9	00	M	10.45	7.9	179	6.2	165	5.6	10.0
40	62	00	M	10.45	6.6	169	4.8	148	4.9	5.0
104	12	01	M	10.46	10.0	192	7.1	173	5.8	5.7
445	3	02	M	10.46	6.0	163	4.6	145	6.3	5.2
714	34	10	M	10.51	8.0	180	6.0	163	5.4	6.0
107	60	01	M	10.56	8.5	183	6.0	163	6.2	6.3
450	41	02	M	10.64	6.2	165	5.1	152	4.5	5.3
709	34	10	M	10.65	7.7	178	6.3	166	4.8	7.6
704	34	10	M	10.69	8.3	182	6.0	163	4.4	6.2
425	11	02	M	10.70	4.7	147	4.4	142	3.4	6.1
36	56	00	M	10.77	10.0	192	7.3	175	6.6	12.5
434	43	02	M	10.78	5.0	151	5.2	154	3.6	5.7
430	5	02	M	10.83	8.4	182	5.6	158	3.6	5.7
424	43	02	M	10.84	7.2	174	5.7	160	5.2	5.2
121	60	01	M	10.88	9.5	189	6.4	167	8.3	8.9
106	60	01	M	10.92	7.2	174	5.7	160	4.4	5.7
710	34	10	M	10.93	8.4	182	7.6	177	5.5	6.5
94	31	01	M	10.98	6.2	165	5.4	156	3.3	5.3
51	46	00	M	10.99	8.8	185	6.0	163	5.4	8.4
446	28	02	M	10.99	8.5	183	7.0	172	5.7	8.8
105	35	01	M	10.99	9.7	190	6.2	165	6.1	6.3
96	24	01	M	11.03	6.1	164	4.3	140	2.8	4.7
93	35	01	M	11.03	6.5	168	4.7	147	4.3	4.3
437	28	02	M	11.04	4.2	139	4.3	140	3.0	4.5
454	5	02	M	11.06	6.9	171	5.3	155	6.2	6.1
702	26	10	M	11.12	6.2	165	5.0	151	4.4	6.3
97	60	01	M	11.14	9.4	189	6.4	167	6.9	7.4
444	3	02	M	11.14	8.4	182	6.2	165	5.0	5.7
555	21	03	M	11.16	5.3	155	4.6	145	4.0	4.8
98	55	01	M	11.23	10.2	193	8.0	180	6.0	8.3
66	29	00	M	11.26	10.3	193	8.2	181	9.6	10.2
119	38	01	M	11.27	7.1	173	5.4	156	6.2	5.7

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
421	5	02	M	11.28	7.1	173	5.8	161	3.5	6.7
554	8	03	M	11.32	7.8	178	5.5	157	4.1	6.6
50	38	00	M	11.33	8.3	182	6.2	165	6.6	9.0
573	50	03	M	11.33	6.7	170	6.0	163	4.4	6.2
452	3	02	M	11.37	5.0	151	4.2	139	4.3	4.5
632	69	04	M	11.39	8.4	182	6.3	166	6.1	7.9
120	65	01	M	11.40	8.9	186	5.8	161	7.7	7.6
42	23	00	M	11.41	6.6	169	5.6	158	4.6	6.8
53	38	00	M	11.41	10.3	193	6.2	165	8.4	7.5
556	15	03	M	11.46	5.6	158	4.8	148	2.8	6.0
113	31	01	M	11.48	8.5	183	7.3	175	7.0	9.4
423	10	02	M	11.49	5.1	152	4.3	140	3.3	4.4
101	60	01	M	11.57	5.6	158	4.2	139	2.6	4.2
432	5	02	M	11.58	4.9	150	5.8	161	4.0	5.7
448	11	02	M	11.58	6.5	168	4.8	148	4.1	7.1
449	5	02	M	11.58	8.6	184	7.3	175	4.4	7.8
428	73	02	M	11.61	6.2	165	5.6	158	4.5	5.2
31	38	00	M	11.63	9.4	189	7.5	176	7.2	14.4
546	57	03	M	11.63	9.2	187	7.3	175	6.0	7.6
90	55	01	M	11.72	7.1	173	6.0	163	4.2	6.2
52	9	00	M	11.75	9.0	186	9.1	187	7.8	14.2
89	65	01	M	11.77	6.6	169	4.6	145	3.2	4.2
706	34	10	M	11.85	13.5	207	10.6	195	7.3	8.4
433	10	02	M	11.94	6.1	164	4.8	148	3.9	5.6
112	60	01	M	11.94	10.2	193	6.3	166	7.5	7.7
558	33	03	M	11.94	7.8	178	7.0	172	4.8	9.3
628	69	04	M	11.95	6.7	170	7.0	172	4.8	6.8
627	36	04	M	12.01	10.4	194	7.0	172	4.8	7.5
123	60	01	M	12.04	6.4	167	4.9	150	5.0	5.5
707	22	10	M	12.13	7.0	172	6.5	168	5.3	7.6
443	68	02	M	12.14	7.7	178	5.9	162	5.1	6.2
115	61	01	M	12.15	6.0	163	4.7	147	5.7	4.2
117	55	01	M	12.20	7.5	176	6.1	164	5.1	7.7
711	45	10	M	12.21	5.4	156	5.7	160	3.4	6.6
118	55	01	M	12.23	11.0	197	7.5	176	5.6	6.4
705	34	10	M	12.28	8.4	182	8.7	184	6.8	10.7
116	66	01	M	12.29	8.9	186	7.8	178	8.0	7.1
567	16	03	M	12.31	7.1	173	7.2	174	5.0	9.1
440	5	02	M	12.33	4.5	144	4.6	145	3.4	4.8
560	1	03	M	12.37	8.2	181	7.1	173	5.0	9.5
427	5	02	M	12.41	7.4	175	6.6	169	6.1	8.6
426	5	02	M	12.42	8.7	184	5.8	161	5.8	6.8
693	34	10	M	12.45	4.1	137	4.7	147	3.0	4.9
699	88	10	M	12.46	10.6	195	8.3	182	8.2	12.3
465	11	02	M	12.47	6.9	171	5.4	156	3.5	5.7
103	55	01	M	12.51	6.5	168	5.0	151	3.3	4.9
471	68	02	M	12.52	9.2	187	8.2	181	4.3	10.4
451	68	02	M	12.54	4.5	144	4.9	150	2.9	5.2
629	70	04	M	12.62	8.2	181	7.0	172	4.8	7.4
43	27	00	M	12.64	5.2	154	5.6	158	4.1	6.4
630	30	04	M	12.64	5.3	155	6.0	163	4.8	6.6
700	34	10	M	12.66	8.4	182	5.2	154	6.0	7.8
479	4	02	M	12.69	5.0	151	5.5	157	3.3	6.0
439	73	02	M	12.69	6.2	165	5.5	157	6.1	5.9

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Supra iliac (mm)
565	57	03	M	12.71	7.6	177	5.8	161	4.0	6.4
473	5	02	M	12.71	8.0	180	8.3	182	6.2	9.8
698	58	10	M	12.73	6.0	163	5.4	156	3.3	6.0
561	21	03	M	12.73	6.5	168	5.8	161	4.0	7.1
438	71	02	M	12.77	5.9	162	5.2	154	3.5	6.3
568	75	03	M	12.78	17.3	220	14.4	211	11.6	22.4
703	37	10	M	12.82	6.5	168	7.4	175	4.5	8.5
447	41	02	M	12.82	8.5	183	6.0	163	6.0	8.6
695	34	10	M	12.82	9.2	187	6.6	169	5.5	8.0
88	65	01	M	12.85	7.5	176	6.1	164	4.4	7.1
634	69	04	M	12.93	9.2	187	9.2	187	5.6	15.8
32	38	00	M	12.97	6.3	166	5.5	157	3.9	6.5
547	48	03	M	12.98	7.7	178	6.6	169	4.0	9.3
712	34	10	M	12.99	6.0	163	5.8	161	3.4	7.0
647	30	04	M	12.99	9.3	188	8.3	182	6.3	8.3
694	34	10	M	13.00	5.7	160	5.1	152	3.4	6.8
696	34	10	M	13.05	6.5	168	6.1	164	4.8	6.9
713	34	10	M	13.07	6.5	168	5.1	152	4.2	5.3
99	60	01	M	13.12	7.6	177	6.9	171	6.7	7.6
633	30	04	M	13.14	6.3	166	5.1	152	3.2	5.8
572	16	03	M	13.14	4.7	147	5.3	155	3.9	6.5
35	56	00	M	13.15	5.9	162	6.0	163	4.8	7.5
474	10	02	M	13.15	5.5	157	5.3	155	3.4	5.6
453	71	02	M	13.15	10.4	194	7.8	178	7.8	13.6
747	22	10	M	13.26	7.0	172	8.0	180	3.6	7.6
442	11	02	M	13.30	5.5	157	4.9	150	3.6	4.6
697	34	10	M	13.30	6.2	165	5.4	156	3.9	6.4
141	55	01	M	13.31	7.2	174	5.8	161	5.5	6.6
640	69	04	M	13.31	6.4	167	8.4	182	4.4	9.3
743	34	10	M	13.33	6.6	169	6.5	168	4.2	7.9
37	62	00	M	13.34	6.9	171	7.6	177	6.6	11.5
559	74	03	M	13.36	7.7	178	7.3	175	5.0	7.3
134	55	01	M	13.38	7.2	174	6.4	167	4.3	7.6
566	16	03	M	13.41	6.6	169	5.2	154	3.4	5.5
648	30	04	M	13.46	6.1	164	5.9	162	3.7	6.0
124	60	01	M	13.50	7.5	176	6.1	164	5.2	7.8
466	5	02	M	13.51	6.3	166	5.9	162	3.1	5.6
122	31	01	M	13.51	9.2	187	6.9	171	6.7	8.1
441	61	02	M	13.53	7.5	176	5.4	156	4.0	6.8
114	38	01	M	13.53	10.4	194	8.0	180	7.4	9.0
111	55	01	M	13.59	8.7	184	7.6	177	6.3	9.5
562	21	03	M	13.65	8.6	184	7.2	174	4.7	9.6
154	38	01	M	13.70	6.7	170	5.0	151	4.8	4.9
462	3	02	M	13.71	8.4	182	6.9	171	5.6	7.8
639	70	04	M	13.76	4.4	142	5.4	156	3.0	5.2
564	6	03	M	13.80	5.2	154	4.8	148	3.1	5.7
459	5	02	M	13.80	7.6	177	6.4	167	5.1	9.9
463	5	02	M	13.81	8.1	180	7.2	174	4.7	7.8
476	5	02	M	13.85	4.3	140	7.2	174	3.5	8.7
100	38	01	M	13.88	6.8	170	5.4	156	3.7	5.4
470	28	02	M	13.91	7.2	174	5.7	160	5.2	7.2
646	42	04	M	13.98	6.7	170	5.1	152	3.3	5.7
156	60	01	M	14.02	8.8	185	8.5	183	6.7	9.5
483	71	02	M	14.06	6.9	171	6.0	163	3.0	6.1

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
145	60	01	M	14.08	7.3	175	5.3	155	4.0	6.1
30	23	00	M	14.08	5.0	151	5.3	155	4.5	5.7
461	5	02	M	14.09	4.8	148	5.6	158	3.4	7.2
748	34	10	M	14.11	11.4	199	8.0	180	7.1	11.0
484	28	02	M	14.12	5.6	158	5.1	152	2.9	5.4
571	57	03	M	14.16	8.0	180	6.2	165	4.0	10.3
749	7	10	M	14.20	7.0	172	5.7	160	4.0	7.0
742	34	10	M	14.24	6.4	167	6.2	165	4.3	6.4
478	28	02	M	14.25	6.4	167	5.7	160	3.9	6.2
155	60	01	M	14.30	7.0	172	6.3	166	4.6	5.0
635	30	04	M	14.30	7.8	178	5.8	161	5.5	6.8
569	57	03	M	14.32	11.5	199	10.4	194	4.4	18.2
649	30	04	M	14.34	4.5	144	5.4	156	3.3	5.4
588	57	03	M	14.34	8.8	185	8.0	180	4.1	8.3
458	3	02	M	14.36	5.3	155	5.3	155	3.0	4.4
563	21	03	M	14.39	10.6	195	9.1	187	6.0	11.0
744	34	10	M	14.41	7.7	178	7.2	174	5.7	10.0
641	70	04	M	14.48	6.2	165	6.6	169	3.9	7.2
741	22	10	M	14.51	6.4	167	6.8	170	3.6	7.0
638	70	04	M	14.58	5.0	151	5.3	155	3.7	6.0
557	16	03	M	14.59	7.4	175	7.2	174	3.7	6.9
701	34	10	M	14.59	6.7	170	6.5	168	4.4	6.1
472	5	02	M	14.62	7.6	177	5.5	157	3.6	7.0
133	77	01	M	14.64	8.6	184	7.6	177	5.1	9.0
151	54	01	M	14.66	7.3	175	6.7	170	4.0	5.5
457	5	02	M	14.69	5.8	161	6.0	163	6.1	6.8
750	34	10	M	14.71	6.3	166	8.2	181	4.4	8.0
642	37	04	M	14.72	5.8	161	5.4	156	4.3	6.1
469	54	02	M	14.78	6.3	166	6.4	167	4.0	9.9
593	8	03	M	14.86	8.1	180	7.7	178	5.5	10.0
139	38	01	M	14.87	4.7	147	4.8	148	3.9	4.6
456	5	02	M	14.88	8.9	186	8.0	180	5.6	10.6
146	12	01	M	14.88	5.3	155	5.4	156	3.7	6.1
140	18	01	M	14.96	9.2	187	5.3	155	5.0	7.0
33	23	00	M	14.98	7.0	172	5.3	155	10.7	15.8
570	50	03	M	14.99	6.0	163	5.7	160	3.5	7.8
464	5	02	M	15.04	4.5	144	6.0	163	3.0	7.0
651	30	04	M	15.05	4.3	140	6.3	166	3.7	6.2
467	5	02	M	15.10	4.8	148	6.1	164	3.3	5.6
652	42	04	M	15.11	5.7	160	6.9	171	3.8	7.3
596	16	03	M	15.14	6.2	165	7.2	174	3.4	6.4
460	88	02	M	15.18	6.2	165	6.5	168	4.2	5.7
598	21	03	M	15.20	6.5	168	6.9	171	4.4	13.4
148	51	01	M	15.25	5.2	154	6.0	163	3.5	6.1
637	70	04	M	15.26	6.4	167	6.8	170	4.3	13.3
597	38	03	M	15.33	6.3	166	7.1	173	3.5	6.2
734	34	10	M	15.33	6.0	163	7.9	179	3.8	6.6
739	34	10	M	15.38	5.4	156	7.0	172	3.8	7.1
590	57	03	M	15.39	4.4	142	6.2	165	3.5	6.3
138	49	01	M	15.42	5.8	161	5.2	154	3.5	5.2
34	23	00	M	15.44	4.8	148	8.0	180	4.2	13.0
153	62	01	M	15.46	6.2	165	6.5	168	3.2	9.3
149	60	01	M	15.47	9.0	186	9.6	190	5.2	9.6
477	5	02	M	15.49	6.2	165	7.2	174	4.1	8.8

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	log	Subscapular (mm)	log	Biceps (mm)	Supra iliac (mm)
152	39	01	M	15.54	5.8	161	8.0	180	3.6	6.6
480	5	02	M	15.57	8.6	184	8.2	181	5.9	10.2
650	70	04	M	15.58	6.0	163	6.9	171	4.4	13.4
482	4	02	M	15.59	5.5	157	5.8	161	3.3	5.3
468	71	02	M	15.61	5.5	157	5.9	162	3.7	5.9
736	34	10	M	15.62	5.5	157	6.2	165	3.3	6.8
587	38	03	M	15.70	6.1	164	7.0	172	3.3	6.3
733	34	10	M	15.70	6.5	168	7.2	174	4.7	8.5
455	41	02	M	15.73	5.4	156	4.6	145	2.7	4.8
589	33	03	M	15.76	5.6	158	6.8	170	3.7	7.2
740	22	10	M	15.91	4.3	140	5.7	160	3.0	5.0
481	41	02	M	15.92	7.3	175	7.6	177	4.3	9.5
135	66	01	M	16.00	7.9	179	12.6	204	4.5	11.3
644	36	04	M	16.01	5.0	151	6.8	170	4.1	6.5
591	57	03	M	16.02	7.3	175	7.3	175	3.6	12.2
751	45	10	M	16.03	8.0	180	8.8	185	4.5	7.7
645	69	04	M	16.08	5.6	158	7.3	175	4.0	8.0
745	22	10	M	16.09	5.2	154	7.2	174	3.6	5.3
753	57	10	M	16.18	7.6	177	7.2	174	4.7	8.1
475	63	02	M	16.30	6.4	167	7.8	178	3.2	7.6
595	16	03	M	16.32	5.6	158	7.1	173	3.5	9.6
737	16	10	M	16.35	5.4	156	7.0	172	3.8	9.4
594	57	03	M	16.37	7.5	176	7.1	173	4.6	8.0
752	16	10	M	16.42	5.5	157	7.0	172	3.4	9.5
643	36	04	M	16.43	6.7	170	8.2	181	3.6	7.2
735	34	10	M	16.44	5.8	161	7.6	177	3.2	7.0
586	21	03	M	16.45	5.1	152	6.4	167	3.3	5.0
754	57	10	M	16.50	7.4	175	7.4	175	3.7	12.3
147	39	01	M	16.55	6.6	169	6.8	170	4.3	9.4
585	21	03	M	16.56	4.8	148	6.8	170	3.3	7.4
131	9	01	M	16.57	7.4	175	7.0	172	5.2	6.2
129	38	01	M	16.62	6.7	170	5.3	155	4.5	5.7
157	60	01	M	16.71	7.3	175	8.2	181	4.5	11.0
755	21	10	M	16.72	5.0	151	6.3	166	3.2	4.9
655	69	04	M	16.75	5.5	157	7.4	175	4.0	8.0
636	70	04	M	16.75	6.6	169	4.9	150	3.4	5.0
127	23	01	M	16.76	6.5	168	6.8	170	3.4	6.6
653	36	04	M	16.78	6.7	170	8.2	181	3.6	7.2
126	23	01	M	16.85	7.6	177	6.7	170	3.8	7.6
592	38	03	M	16.87	5.7	160	7.5	176	3.6	6.2
654	36	04	M	16.88	5.1	152	6.7	170	4.0	6.6
323	21	02	M	16.92	4.8	148	6.8	170	3.3	7.5
142	55	01	M	16.92	7.0	172	7.0	172	4.2	7.3
137	18	01	M	16.93	6.2	165	8.8	185	3.5	7.8
160	38	01	F	6.01	8.0	180	5.2	154	7.2	6.0
270	3	02	F	6.05	5.0	151	4.4	142	3.4	4.6
269	43	02	F	6.09	6.9	171	6.2	165	6.1	6.0
262	2	02	F	6.10	9.0	186	6.4	167	4.6	6.3
281	68	02	F	6.12	5.0	151	4.5	144	3.6	4.4
488	74	03	F	6.20	8.1	180	5.6	158	6.0	9.5
268	63	02	F	6.21	5.8	161	4.5	144	4.8	5.8
159	65	01	F	6.26	6.4	167	5.0	151	5.0	6.1
265	28	02	F	6.27	6.2	165	4.2	139	5.0	4.0
245	71	02	F	6.28	7.3	175	4.7	147	5.1	4.8

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Suprailiac (mm)
267	3	02	F	6.32	8.2	181	5.1	152	6.1	5.1
501	74	03	F	6.33	7.0	172	6.5	168	8.6	7.0
171	60	01	F	6.42	6.9	171	5.0	151	6.2	6.8
237	3	02	F	6.42	6.6	169	5.4	156	4.5	5.3
489	16	03	F	6.54	6.6	169	6.2	165	5.1	7.4
263	5	02	F	6.54	6.3	166	7.6	177	6.6	9.1
266	3	02	F	6.55	7.2	174	6.1	164	5.0	5.6
286	41	02	F	6.59	7.2	174	4.9	150	5.0	6.9
243	11	02	F	6.60	5.5	157	3.7	128	3.8	4.2
272	63	02	F	6.64	6.8	170	4.6	145	4.8	5.9
264	28	02	F	6.64	4.5	144	3.7	128	3.8	4.0
280	43	02	F	6.64	7.9	179	6.3	166	6.5	6.8
38	23	00	F	6.66	6.5	168	6.5	168	5.6	7.5
283	71	02	F	6.66	8.7	184	5.1	152	5.3	7.6
676	25	10	F	6.67	8.6	184	4.7	147	5.4	7.0
238	3	02	F	6.68	10.0	192	6.5	168	4.7	6.3
246	5	02	F	6.73	7.7	178	6.2	165	5.0	5.7
261	10	02	F	6.74	6.4	167	5.2	154	4.4	5.3
29	65	01	F	6.89	9.7	190	5.9	162	8.8	10.6
163	55	01	F	6.94	9.1	187	7.0	172	6.2	9.7
500	1	03	F	6.97	10.2	193	7.6	177	6.4	7.7
164	55	01	F	7.03	6.0	163	4.8	148	7.0	5.3
257	5	02	F	7.17	4.5	144	5.1	152	3.6	5.0
258	5	02	F	7.17	4.4	142	5.0	151	3.5	4.9
682	34	10	F	7.26	10.0	192	7.0	172	7.0	9.9
284	5	02	F	7.27	11.0	197	7.7	178	5.6	7.1
487	13	03	F	7.29	6.6	169	5.6	158	5.8	8.3
158	65	01	F	7.34	9.0	186	5.4	156	6.0	7.5
256	68	02	F	7.38	3.4	121	6.1	164	2.3	5.2
166	24	01	F	7.38	4.4	142	4.5	144	4.6	5.4
244	68	02	F	7.47	8.3	182	6.4	167	5.1	7.0
678	34	10	F	7.50	9.0	186	5.6	158	6.1	5.8
506	57	03	F	7.51	9.3	188	8.2	181	7.6	9.6
275	5	02	F	7.56	8.2	181	6.0	163	6.3	8.0
168	38	01	F	7.58	9.8	191	6.5	168	5.6	9.2
259	11	02	F	7.59	12.0	201	7.8	178	5.7	7.1
172	60	01	F	7.65	6.2	165	4.9	150	6.6	6.1
250	71	02	F	7.68	11.8	201	8.3	182	8.3	9.3
276	3	02	F	7.74	8.4	182	7.4	175	5.2	8.0
260	3	02	F	7.74	7.4	175	7.3	175	5.1	7.9
680	7	10	F	7.82	8.2	181	5.4	156	5.1	5.9
44	23	00	F	7.84	9.4	189	7.6	177	7.2	11.4
46	38	00	F	7.84	6.5	168	6.5	168	8.2	11.6
677	34	10	F	7.89	5.8	161	5.2	154	3.2	6.2
249	76	02	F	7.90	8.0	180	6.6	169	5.7	7.4
47	38	00	F	7.95	6.6	169	6.0	163	6.2	7.2
253	2	02	F	7.96	7.2	174	5.0	151	4.0	5.2
502	8	03	F	7.98	10.2	193	7.8	178	8.4	8.0
170	12	01	F	8.01	6.1	164	4.5	144	5.2	6.2
279	11	02	F	8.11	10.2	193	7.2	174	4.8	7.3
274	5	02	F	8.16	5.4	156	5.2	154	3.7	5.1
162	60	01	F	8.17	7.4	175	5.1	152	6.1	4.8
278	28	02	F	8.18	9.1	187	6.3	166	6.9	8.5
239	5	02	F	8.23	6.6	169	6.0	163	5.0	6.3

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Supra iliac (mm)
251	61	02	F	8.26	10.8	196	6.4	167	4.0	8.4
674	32	10	F	8.27	6.9	171	5.1	152	3.7	5.4
247	3	02	F	8.28	8.2	181	6.0	163	7.2	7.7
248	10	02	F	8.29	6.0	163	5.4	156	4.5	6.7
24	65	00	F	8.31	6.9	171	6.2	165	7.0	12.0
511	42	03	F	8.32	9.2	187	8.6	184	7.4	8.9
27	62	00	F	8.36	7.8	178	5.8	161	5.3	6.8
679	34	10	F	8.41	8.0	180	4.8	148	3.8	4.6
675	45	10	F	8.42	8.2	181	5.0	151	5.1	5.2
164	55	01	F	8.43	7.0	172	5.5	157	6.8	6.8
241	28	02	F	8.47	6.2	165	4.2	139	4.0	5.0
236	11	02	F	8.53	6.1	164	4.4	142	3.8	4.2
505	15	03	F	8.62	6.7	170	5.7	160	5.6	7.4
254	41	02	F	8.66	6.0	163	4.4	142	3.4	4.4
271	88	02	F	8.67	9.4	189	7.5	176	5.8	8.2
285	5	02	F	8.67	8.8	185	8.4	182	6.2	7.6
176	51	10	F	8.68	6.3	166	5.2	154	4.1	3.1
683	25	10	F	8.70	7.7	178	5.0	151	4.6	6.8
169	60	01	F	8.71	6.8	170	4.0	135	5.1	4.2
509	32	03	F	8.74	9.2	187	5.4	156	5.0	7.0
681	34	10	F	8.75	5.5	157	4.9	150	4.1	5.5
282	68	02	F	8.80	4.0	135	4.0	135	3.5	3.7
28	56	00	F	8.93	8.0	180	7.4	175	7.2	8.3
499	57	03	F	8.97	9.6	190	7.4	175	5.9	8.4
161	55	01	F	8.99	7.2	174	5.5	157	6.5	5.5
604	14	04	F	9.02	10.1	192	7.8	178	7.0	12.8
20	38	00	F	9.03	11.0	197	8.8	185	10.0	14.0
41	72	00	F	9.07	12.0	201	8.2	181	11.6	16.5
25	23	00	F	9.08	8.6	184	7.9	179	9.8	12.0
296	41	02	F	9.12	9.6	190	6.6	169	4.3	10.2
273	3	02	F	9.17	6.4	167	6.5	168	4.5	9.4
188	12	01	F	9.19	6.0	163	4.6	145	5.2	4.7
311	43	02	F	9.19	7.3	175	6.4	167	5.2	7.1
304	5	02	F	9.25	7.2	174	6.2	165	4.3	7.6
495	42	03	F	9.26	10.4	194	10.4	194	7.1	9.8
242	5	02	F	9.30	6.0	163	5.1	152	5.0	6.5
167	38	01	F	9.31	8.0	180	7.0	172	7.7	9.5
277	3	02	F	9.31	5.5	157	4.4	142	4.3	3.8
291	10	02	F	9.41	7.2	174	5.4	156	4.9	9.0
252	10	02	F	9.43	5.2	154	5.8	161	2.9	6.7
179	39	01	F	9.45	12.2	202	7.6	177	10.9	11.0
48	23	00	F	9.47	8.2	181	7.5	176	9.8	10.0
292	10	02	F	9.48	7.4	175	5.5	157	3.8	7.2
191	38	01	F	9.56	14.8	212	13.5	207	11.0	17.0
315	11	02	F	9.56	6.4	167	6.2	165	4.4	6.0
516	50	03	F	9.60	11.3	198	9.5	189	6.6	7.7
290	3	02	F	9.60	8.8	185	6.7	170	6.4	9.2
23	53	00	F	9.76	10.0	192	5.6	158	8.1	8.7
313	71	02	F	9.77	11.0	197	10.6	195	10.9	9.5
289	11	02	F	9.82	4.7	147	5.7	160	4.5	6.1
684	34	10	F	9.83	9.0	186	6.6	169	7.0	7.6
607	14	04	F	9.83	7.0	172	7.5	176	5.1	9.8
497	32	03	F	9.89	8.8	185	6.2	165	6.4	8.0
300	3	02	F	9.92	9.0	186	9.0	186	6.7	12.9

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness * * * * Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Supra iliac (mm)
512	75	03	F	9.95	8.6	184	8.6	184	7.4	8.9
494	21	03	F	9.96	10.6	195	9.9	191	6.1	11.2
298	3	02	F	9.97	7.0	172	5.4	156	4.8	6.7
496	59	03	F	10.02	7.6	177	7.6	177	8.0	8.9
498	50	03	F	10.03	8.7	184	5.8	161	6.2	8.7
685	34	10	F	10.06	11.1	197	11.0	197	7.0	15.0
26	56	00	F	10.08	8.4	182	7.7	178	7.5	10.5
308	5	02	F	10.17	9.2	187	7.0	172	6.6	8.1
503	52	03	F	10.17	12.0	201	8.0	180	6.5	10.2
606	69	04	F	10.21	6.6	169	5.7	160	5.2	5.6
295	41	02	F	10.26	9.0	186	7.8	178	6.5	10.9
690	7	10	F	10.27	7.8	178	6.1	164	3.4	5.8
22	23	00	F	10.29	6.2	165	5.0	151	7.8	7.4
486	1	03	F	10.30	9.0	186	5.4	156	4.7	6.1
1	65	00	F	10.37	10.2	193	8.4	182	6.3	12.9
505	16	03	F	10.43	5.7	160	5.6	158	3.5	6.4
183	38	01	F	10.44	6.8	170	6.2	165	4.2	5.9
288	5	02	F	10.44	5.6	158	4.7	147	4.5	6.4
513	73	03	F	10.52	7.6	177	8.6	184	7.4	8.9
186	12	01	F	10.52	7.0	172	4.8	148	3.8	5.8
178	62	01	F	10.55	8.2	181	6.7	170	5.2	9.3
692	22	10	F	10.56	9.9	191	10.4	194	7.4	12.7
605	67	04	F	10.56	8.5	183	7.4	175	6.4	9.3
293	28	02	F	10.58	7.1	173	4.5	144	3.9	4.6
4	56	00	F	10.59	7.8	178	6.5	168	7.8	10.6
287	5	02	F	10.62	6.4	167	5.9	162	5.2	10.1
490	8	03	F	10.69	7.0	172	5.0	151	5.4	6.4
485	74	03	F	10.70	9.8	191	8.4	182	6.1	10.5
314	71	02	F	10.80	8.4	182	6.3	166	6.3	8.8
599	70	04	F	10.80	6.9	171	6.5	168	5.0	8.2
491	33	03	F	10.84	9.9	191	8.0	180	6.7	10.2
299	11	02	F	10.89	9.3	188	6.0	163	4.7	9.6
691	34	10	F	10.94	15.6	214	13.7	208	12.0	22.0
294	10	02	F	11.00	5.9	162	5.7	160	6.2	9.0
307	10	02	F	11.08	4.9	150	5.4	156	3.0	5.8
343	3	02	F	11.12	8.9	186	6.0	163	5.9	6.5
306	41	02	F	11.13	8.5	183	5.0	151	4.8	7.4
510	75	03	F	11.16	10.8	196	6.3	166	6.4	13.2
301	71	02	F	11.19	6.7	170	5.4	156	4.8	8.0
18	62	00	F	11.20	6.7	170	7.3	175	6.6	10.8
514	64	03	F	11.27	10.3	193	6.5	168	6.3	9.7
508	59	03	F	11.28	6.7	170	6.9	171	6.6	10.0
312	68	02	F	11.29	6.6	169	5.9	162	7.4	7.1
687	7	10	F	11.32	9.3	188	7.8	178	4.9	7.2
602	14	04	F	11.32	6.0	163	5.3	155	4.4	6.7
7	62	00	F	11.33	9.5	189	7.0	172	7.7	10.4
492	13	03	F	11.33	7.0	172	5.7	160	3.7	8.4
689	45	10	F	11.39	10.1	192	8.6	184	6.9	10.5
333	5	02	F	11.41	5.4	156	4.9	150	4.7	5.0
608	30	04	F	11.42	7.0	172	6.9	171	5.5	7.9
305	5	02	F	11.51	8.2	181	6.4	167	4.9	9.4
12	65	00	F	11.54	12.5	203	8.7	184	9.6	14.0
5	62	00	F	11.54	6.6	169	4.4	142	4.0	4.6
303	28	02	F	11.55	8.8	185	7.3	175	4.4	9.5

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Supra iliac (mm)
533	57	03	F	11.61	7.6	177	5.9	162	5.3	9.4
310	58	02	F	11.62	6.5	168	8.0	180	5.6	9.7
309	68	02	F	11.72	6.3	166	5.6	158	4.5	8.4
686	34	10	F	11.73	5.4	156	6.3	166	3.5	9.6
16	38	00	F	11.73	15.8	215	13.6	208	8.6	24.0
531	16	03	F	11.75	7.6	177	7.0	172	5.8	8.2
194	60	01	F	11.77	13.5	207	7.5	176	8.1	12.5
187	12	01	F	11.81	6.6	169	5.0	151	3.7	4.8
181	56	01	F	11.83	7.1	173	5.0	151	4.4	4.3
688	34	10	F	11.87	7.8	178	6.2	165	4.2	7.8
526	57	03	F	11.87	8.1	180	8.2	181	6.4	7.7
532	8	03	F	11.89	9.4	189	7.4	175	6.0	10.5
517	38	03	F	11.94	8.6	184	8.2	181	6.1	9.7
603	70	04	F	11.98	6.0	163	6.1	164	3.1	7.4
515	21	03	F	12.01	6.0	163	5.6	158	4.8	9.1
297	5	02	F	12.02	3.8	131	5.5	157	3.4	5.4
318	10	02	F	12.04	6.0	163	6.3	166	5.2	7.9
190	38	01	F	12.07	10.4	194	8.7	184	5.5	10.7
601	42	04	F	12.09	11.7	200	9.3	188	7.6	10.9
319	15	02	F	12.12	11.6	200	10.5	194	8.5	7.8
302	41	02	F	12.16	5.9	162	5.1	152	3.5	7.3
600	30	04	F	12.18	5.6	158	4.6	145	3.0	4.6
189	38	01	F	12.20	7.7	178	5.9	162	4.3	7.5
3	62	00	F	12.23	9.6	190	8.5	183	7.4	16.1
518	74	03	F	12.31	10.1	192	9.3	188	7.5	10.7
729	34	10	F	12.35	10.0	192	10.5	194	6.7	11.8
717	34	10	F	12.50	8.8	185	8.5	183	7.6	12.0
15	38	00	F	12.54	7.5	176	6.0	163	7.2	8.2
722	7	10	F	12.55	9.2	187	9.4	189	7.5	11.5
177	60	01	F	12.57	10.2	193	7.0	172	9.6	9.2
623	14	04	F	12.61	9.8	191	9.3	188	7.3	13.5
330	3	02	F	12.62	8.3	182	6.0	163	5.5	7.9
184	24	01	F	12.67	10.8	196	10.5	194	5.0	23.0
326	5	02	F	12.70	8.1	180	9.1	187	5.1	10.0
17	62	00	F	12.77	13.8	208	10.3	193	14.4	23.0
493	57	03	F	12.78	10.7	195	8.9	186	6.7	13.2
619	69	04	F	12.79	12.0	201	8.8	185	9.3	10.6
2	38	00	F	12.83	9.2	187	9.3	188	6.2	18.0
523	57	03	F	12.84	11.0	197	9.4	189	4.6	9.7
19	65	00	F	12.85	7.7	178	6.4	167	7.8	8.5
339	3	02	F	12.87	7.8	178	8.0	180	6.6	8.2
618	30	04	F	12.87	10.2	193	11.3	198	8.4	15.7
520	38	03	F	12.88	8.9	186	11.8	201	6.5	12.5
335	28	02	F	12.90	5.6	158	5.5	157	5.8	5.1
528	73	03	F	12.92	10.5	194	7.9	179	6.0	8.0
195	20	01	F	12.96	9.8	191	8.4	182	5.3	9.3
320	10	02	F	12.98	6.9	171	8.6	184	6.3	14.2
331	3	02	F	12.98	9.3	188	8.5	183	8.0	8.9
334	5	02	F	12.98	8.5	183	5.5	157	5.6	6.5
611	37	04	F	13.01	8.8	185	9.0	186	7.3	11.1
325	5	02	F	13.02	6.5	168	5.8	161	4.8	11.5
193	60	01	F	13.04	8.2	181	7.2	174	6.4	7.7
727	34	10	F	13.07	9.3	188	7.8	178	6.1	11.3
11	62	00	F	13.12	8.8	185	9.6	190	6.4	13.2

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Suprailiac (mm)
316	3	02	F	13.13	6.0	163	5.0	151	4.2	6.0
525	50	03	F	13.19	7.0	172	6.6	169	6.0	9.2
180	77	01	F	13.19	8.3	182	7.8	178	6.5	8.9
9	38	00	F	13.22	9.5	189	8.6	184	6.7	11.4
507	8	03	F	13.22	17.0	219	10.0	192	10.3	14.7
6	88	00	F	13.23	6.2	165	5.4	156	6.7	6.9
328	28	02	F	13.24	9.8	191	11.0	197	7.0	14.0
217	23	01	F	13.28	13.1	206	9.2	187	5.6	19.6
720	22	10	F	13.29	11.0	197	10.2	193	6.2	15.1
715	34	10	F	13.32	8.6	184	7.2	174	6.3	8.0
317	43	02	F	13.34	5.3	155	7.5	176	5.6	7.4
527	33	03	F	13.35	8.8	185	5.9	162	5.0	7.8
617	70	04	F	13.40	15.0	213	13.0	205	9.4	22.0
324	11	02	F	13.41	7.4	175	6.2	165	4.7	6.2
621	67	04	F	13.46	9.7	190	10.0	192	6.4	15.0
524	50	03	F	13.46	14.6	211	9.7	190	8.7	13.2
322	63	02	F	13.46	5.7	160	4.4	142	4.4	5.2
730	34	10	F	13.48	10.0	192	8.1	180	5.4	11.5
530	13	03	F	13.51	12.0	201	10.0	192	12.2	13.4
346	73	02	F	13.51	8.1	180	12.9	205	7.0	13.0
182	35	01	F	13.54	13.2	206	11.5	199	8.0	9.5
14	6	00	F	13.58	13.0	205	12.5	203	9.2	19.2
341	68	02	F	13.59	8.2	181	8.3	182	6.0	12.2
716	34	10	F	13.62	14.6	211	17.9	221	6.2	22.0
343	68	02	F	13.62	10.0	192	8.5	183	6.1	11.0
583	74	03	F	13.69	10.4	194	13.1	206	6.8	18.5
213	18	01	F	13.69	9.8	191	7.3	175	7.0	16.3
529	21	03	F	13.74	9.0	186	8.0	180	4.6	8.2
321	28	02	F	13.79	10.3	193	10.5	194	6.0	15.0
723	34	10	F	13.80	10.5	194	8.7	184	5.2	11.4
210	18	01	F	13.81	14.6	211	14.4	211	10.0	15.0
329	11	02	F	13.83	13.1	206	11.8	201	8.2	16.1
368	3	02	F	13.85	11.0	197	7.3	175	7.3	8.0
192	60	01	F	13.89	8.9	186	8.5	183	5.7	9.4
13	65	00	F	13.90	13.0	205	10.8	196	9.6	28.0
357	5	02	F	13.91	6.8	170	7.3	175	3.4	11.0
613	70	04	F	13.97	6.7	170	7.7	178	6.4	14.5
337	3	02	F	14.01	9.9	191	10.4	194	7.1	10.5
625	69	04	F	14.03	8.6	184	10.0	192	7.7	15.6
225	60	01	F	14.03	11.0	197	9.0	186	10.5	17.2
579	44	03	F	14.05	9.6	190	6.6	169	8.1	9.0
327	41	02	F	14.06	9.4	189	7.7	178	7.5	13.8
372	68	02	F	14.06	9.6	190	8.7	184	7.8	10.0
353	71	02	F	14.09	10.0	192	6.9	171	6.5	8.7
522	21	03	F	14.12	11.0	197	9.0	186	9.2	12.6
350	68	02	F	14.17	5.5	157	5.2	154	4.5	7.0
235	24	01	F	14.18	8.8	185	7.4	175	7.8	7.6
363	11	02	F	14.20	10.3	193	7.2	174	6.2	9.0
574	1	03	F	14.25	18.2	222	20.3	227	17.3	22.5
10	62	00	F	14.26	7.8	178	8.2	181	6.2	10.6
355	4	02	F	14.26	11.8	201	8.5	183	9.3	12.6
201	18	01	F	14.29	11.0	197	9.5	189	6.6	10.3
610	70	04	F	14.30	11.2	198	9.3	188	6.3	14.9
367	3	02	F	14.30	7.7	178	6.7	170	6.3	8.3

Code Number	Reserve	Residence	Sex	Age (yrs)	Skinfold Thickness: Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Suprailiac (mm)
205	9	01	F	14.32	9.3	188	12.0	201	6.2	10.0
719	25	10	F	14.35	9.4	189	7.5	176	4.5	11.5
234	18	01	F	14.41	11.6	200	10.0	192	11.7	14.8
615	70	04	F	14.46	7.7	178	5.3	155	3.8	6.6
345	41	02	F	14.46	7.2	174	10.0	192	5.1	9.1
352	5	02	F	14.48	7.3	175	5.7	160	6.0	10.5
338	11	02	F	14.51	8.1	180	9.0	186	5.7	10.4
354	5	02	F	14.52	6.3	166	6.7	170	5.3	6.8
332	10	02	F	14.52	7.7	178	12.1	202	4.4	14.5
228	62	01	F	14.55	10.0	192	7.8	178	6.5	12.0
8	23	00	F	14.56	9.0	186	12.2	202	9.2	26.0
340	68	02	F	14.58	8.3	182	6.5	168	5.7	8.5
185	60	01	F	14.60	14.0	209	15.0	213	9.2	20.2
718	22	10	F	14.61	14.6	211	13.6	208	8.0	23.0
620	70	04	F	14.65	11.0	197	10.0	192	7.0	14.0
580	21	03	F	14.69	9.5	189	9.5	189	8.7	13.5
521	50	03	F	14.73	9.1	187	9.2	187	6.7	12.0
724	34	10	F	14.76	18.4	223	27.0	241	18.6	22.0
200	39	01	F	14.82	12.2	202	8.0	180	5.8	8.5
222	40	01	F	14.89	13.2	206	12.4	203	12.6	22.0
622	69	04	F	14.90	11.2	198	12.0	201	8.2	14.0
624	69	04	F	14.90	13.5	207	14.5	211	7.7	17.7
232	60	01	F	14.91	13.6	208	12.4	203	7.3	19.0
351	11	02	F	14.92	11.0	197	9.8	191	5.8	13.3
216	55	01	F	14.97	16.4	217	10.4	194	10.2	16.1
220	12	01	F	14.97	9.2	187	6.1	164	7.9	10.1
336	15	02	F	15.02	8.0	180	7.4	175	5.2	9.7
212	49	01	F	15.03	18.2	222	21.1	229	9.0	31.0
344	3	02	F	15.05	15.6	214	16.1	216	10.6	15.8
173	20	01	F	15.06	12.9	205	17.1	219	9.6	22.0
207	40	01	F	15.10	13.6	208	11.0	197	6.8	15.5
728	58	10	F	15.12	9.2	187	7.8	178	3.5	12.8
206	9	01	F	15.15	8.8	185	14.6	211	11.2	18.2
202	38	01	F	15.18	11.6	200	9.2	187	6.6	8.2
175	60	10	F	15.34	11.5	199	16.8	218	7.2	18.2
348	41	02	F	15.35	16.8	218	18.0	221	9.3	21.1
581	6	03	F	15.39	14.4	211	12.2	202	6.6	18.0
609	36	04	F	15.40	11.6	200	15.3	214	9.5	14.0
174	24	01	F	15.45	13.4	207	16.8	218	8.4	21.3
229	38	01	F	15.45	13.5	207	11.6	200	9.2	17.0
366	73	02	F	15.47	13.2	206	12.8	205	8.0	20.7
577	19	03	F	15.55	16.5	217	13.3	207	9.4	17.0
575	16	03	F	15.55	7.9	179	10.0	192	6.0	11.7
198	23	01	F	15.57	14.3	210	12.4	203	7.4	19.2
359	10	02	F	15.61	12.4	203	14.6	211	6.7	20.0
349	68	02	F	15.61	10.0	192	7.5	176	6.0	11.0
226	60	01	F	15.61	13.6	208	11.5	199	6.2	17.9
616	42	04	F	15.65	11.0	197	7.7	178	11.7	15.8
371	5	02	F	15.70	5.8	161	5.8	161	4.5	6.9
726	34	10	F	15.74	6.6	169	8.4	182	5.7	11.6
224	60	01	F	15.74	12.9	205	7.7	178	5.9	14.6
347	5	02	F	15.79	7.4	175	6.9	171	3.1	8.3
614	70	04	F	15.81	10.6	195	15.3	214	9.4	23.5
369	11	02	F	15.84	9.4	189	12.0	201	7.7	16.4

Code Number	Reserve	Residence	Sex	Age (yrs)	* * * * Skinfold Thickness * * * * Triceps (mm)	Triceps log	Subscapular (mm)	Subscapular log	Biceps (mm)	Supra iliac (mm)
219	60	01	F	15.88	13.2	206	10.0	192	10.4	19.0
223	60	01	F	15.91	11.0	197	11.0	197	10.2	18.8
358	11	02	F	16.00	10.4	194	10.0	192	5.3	13.8
731	34	10	F	16.03	11.4	199	9.7	190	6.2	13.7
360	5	02	F	16.04	16.0	216	11.0	197	8.4	17.0
626	70	04	F	16.05	9.2	187	8.1	180	6.7	10.3
578	57	03	F	16.05	10.0	192	7.6	177	5.1	10.6
519	21	03	F	16.10	10.5	194	9.5	189	7.1	10.2
365	5	02	F	16.14	7.0	172	8.1	180	6.4	8.4
356	5	02	F	16.14	8.0	180	9.8	191	6.7	13.0
362	43	02	F	16.15	10.6	195	12.3	203	6.7	20.0
230	60	01	F	16.18	9.5	189	7.7	178	7.4	11.0
214	27	01	F	16.18	8.8	185	9.0	186	6.9	15.6
203	38	01	F	16.22	12.5	203	17.7	221	7.8	21.0
221	20	01	F	16.23	8.4	182	8.2	181	7.0	9.1
725	34	10	F	16.24	16.2	216	18.0	221	6.2	23.2
233	18	01	F	16.30	13.8	208	13.8	208	10.5	18.8
218	56	01	F	16.33	11.0	197	8.5	183	6.1	14.4
370	76	02	F	16.38	9.2	187	10.9	196	6.6	14.5
231	60	01	F	16.39	12.4	203	14.0	209	10.8	23.4
215	18	01	F	16.47	15.1	213	19.0	224	7.7	33.0
227	39	01	F	16.47	8.9	186	11.0	197	8.2	12.6
21	23	00	F	16.52	10.5	194	11.5	199	10.8	24.0
364	68	02	F	16.57	7.9	179	7.5	176	6.1	13.4
576	57	03	F	16.59	14.2	210	12.4	203	8.0	15.3
197	65	01	F	16.71	18.6	223	15.0	213	10.5	27.0
612	70	04	F	16.78	18.7	223	11.7	200	11.6	20.8
361	28	02	F	16.85	12.0	201	13.2	206	7.3	20.0
208	56	01	F	16.89	10.5	194	5.9	162	3.2	24.6
584	33	03	F	16.91	11.6	200	11.7	200	6.8	17.8
721	25	10	F	16.93	10.6	195	13.7	208	5.5	21.4
209	12	01	F	16.93	11.0	197	11.3	198	7.3	15.6

APPENDIX C

ARM CIRCUMFERENCE, UPPER ARM MUSCLE DIMENSIONS AND HEAD CIRCUMFERENCE

(sorted according to sex and age)

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
411	3	02	M	6.00	150	40	127	1256	47.9
78	55	01	M	6.02	185	49	155	1885	50.3
71	60	01	M	6.08	173	48	151	1809	51.5
390	3	02	M	6.09	156	42	132	1385	48.3
407	43	02	M	6.10	185	53	168	2206	50.0
656	34	10	M	6.13	168	45	143	1590	48.6
68	23	00	M	6.14	160	45	141	1590	48.8
408	5	02	M	6.15	150	42	133	1385	48.1
378	43	02	M	6.19	190	54	169	2290	50.0
383	5	02	M	6.25	158	44	138	1520	49.4
410	76	02	M	6.40	160	45	144	1590	49.1
76	38	01	M	6.41	195	54	169	2290	52.3
84	55	01	M	6.44	186	48	153	1809	52.0
385	76	02	M	6.49	162	46	145	1661	49.1
406	76	02	M	6.61	177	50	160	1963	51.7
73	38	01	M	6.63	164	45	142	1590	52.3
659	7	10	M	6.65	176	48	152	1809	49.8
666	25	10	M	6.65	188	53	167	2206	52.4
409	3	02	M	6.66	165	43	135	1452	48.7
81	65	01	M	6.70	199	53	166	2206	50.4
541	42	03	M	6.72	193	53	169	2206	52.3
384	3	02	M	6.75	168	44	138	1520	48.8
74	60	01	M	6.77	183	49	156	1885	53.8
404	63	02	M	6.81	178	49	154	1885	51.6
395	2	02	M	6.82	165	46	146	1661	49.5
387	3	02	M	6.87	152	43	135	1452	51.1
658	88	10	M	6.89	166	44	140	1520	51.2
75	24	01	M	6.97	190	52	165	2123	53.1
413	3	02	M	7.03	150	42	134	1385	51.1
419	76	02	M	7.11	170	50	159	1963	49.0
417	5	02	M	7.15	168	48	152	1809	49.3
83	55	01	M	7.17	169	48	151	1809	49.5
539	32	03	M	7.19	171	47	149	1734	52.8
412	5	02	M	7.20	150	42	134	1385	47.6
386	5	02	M	7.20	156	43	137	1452	47.7
63	62	00	M	7.35	188	52	164	2123	51.0
394	10	02	M	7.44	165	48	152	1809	49.2
416	10	02	M	7.44	162	47	149	1734	48.9
418	5	02	M	7.45	150	44	138	1520	47.0
414	71	02	M	7.47	171	48	150	1809	50.6
536	1	03	M	7.52	178	50	157	1963	51.6
392	71	02	M	7.56	176	49	155	1885	51.6
415	11	02	M	7.65	170	49	154	1885	50.2
393	11	02	M	7.74	173	49	155	1885	51.2
87	12	01	M	7.87	183	52	164	2123	52.6
661	26	10	M	7.89	176	49	155	1885	51.7
660	26	10	M	7.89	183	51	161	2042	51.9
376	5	02	M	7.90	189	54	170	2290	51.0
70	38	00	M	7.94	185	50	158	1963	52.5
389	43	02	M	7.96	180	50	157	1963	50.8
69	46	00	M	7.96	175	50	158	1963	52.0
537	21	03	M	8.01	192	51	160	2042	53.2
402	28	02	M	8.07	191	52	166	2123	53.2
400	3	02	M	8.08	183	51	161	2042	51.5
538	16	03	M	8.12	177	51	160	2042	50.3

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
399	3	02	M	8.13	173	49	154	1885	50.2
544	74	03	M	8.13	187	51	163	2042	53.0
657	25	10	M	8.14	184	52	164	2123	51.5
67	6	00	M	8.15	180	49	157	1885	55.5
72	38	01	M	8.16	176	50	158	1963	56.5
85	65	01	M	8.17	188	52	166	2123	52.2
77	60	01	M	8.18	203	56	177	2463	54.4
377	28	02	M	8.25	180	51	162	2042	50.8
60	38	00	M	8.30	196	56	177	2463	52.3
667	34	10	M	8.31	174	47	148	1734	51.2
669	34	10	M	8.36	170	46	145	1661	50.8
662	58	10	M	8.39	173	46	145	1661	53.2
397	43	02	M	8.40	189	53	169	2206	51.0
79	55	01	M	8.40	193	53	169	2206	53.7
543	73	03	M	8.41	191	54	170	2290	50.8
374	71	02	M	8.44	182	51	162	2042	50.2
86	55	01	M	8.48	184	51	162	2042	52.1
379	68	02	M	8.50	185	52	165	2123	51.5
540	74	03	M	8.58	211	55	174	2375	52.9
542	59	03	M	8.67	193	55	175	2375	54.2
82	60	01	M	8.70	200	52	165	2123	53.1
403	5	02	M	8.80	166	48	152	1809	51.4
545	33	03	M	8.87	197	54	170	2290	54.8
664	34	10	M	8.97	159	46	144	1661	51.3
54	62	00	M	8.99	220	59	187	2733	53.8
102	24	01	M	9.03	204	58	184	2642	54.0
551	57	03	M	9.04	208	57	181	2551	55.5
373	43	02	M	9.05	175	49	155	1885	51.4
553	1	03	M	9.09	191	53	168	2206	52.7
665	7	10	M	9.10	196	56	176	2463	51.8
57	65	00	M	9.12	198	54	171	2290	52.0
405	10	02	M	9.13	199	56	177	2463	52.8
80	60	01	M	9.14	190	52	164	2123	53.4
61	38	00	M	9.14	170	49	153	1885	50.6
550	57	03	M	9.18	202	58	185	2642	53.5
673	45	10	M	9.31	193	55	173	2375	52.6
396	5	02	M	9.33	177	52	166	2123	53.3
388	5	02	M	9.37	190	54	172	2290	50.7
380	2	02	M	9.43	184	51	162	2042	52.2
62	38	00	M	9.45	190	49	157	1885	51.5
552	16	03	M	9.46	165	47	149	1734	50.6
56	56	00	M	9.48	212	59	186	2733	54.2
668	34	10	M	9.55	194	52	164	2123	52.5
65	62	00	M	9.55	193	55	173	2375	54.5
92	18	01	M	9.59	194	55	173	2375	52.8
672	37	10	M	9.59	210	59	187	2733	55.9
436	43	02	M	9.59	210	61	193	2922	53.6
375	5	02	M	9.64	183	52	165	2123	52.8
663	34	10	M	9.65	202	56	176	2463	53.0
671	26	10	M	9.65	190	51	161	2042	51.0
382	3	02	M	9.66	177	50	158	1963	50.6
535	8	03	M	9.70	193	54	172	2290	51.8
401	28	02	M	9.72	206	56	178	2463	53.2
91	38	01	M	9.82	190	54	169	2290	55.5
420	5	02	M	9.86	200	56	176	2463	54.0

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
429	63	02	M	9.87	185	51	160	2042	54.6
64	38	00	M	9.89	185	50	157	1963	53.2
549	57	03	M	9.96	196	56	176	2463	52.0
39	23	00	M	10.00	210	57	181	2551	54.5
534	21	03	M	10.00	165	46	145	1661	51.2
422	41	02	M	10.01	203	59	186	2733	53.7
391	41	02	M	10.02	178	51	161	2042	52.3
708	34	10	M	10.05	193	52	164	2123	53.0
670	34	10	M	10.05	194	54	170	2290	53.7
398	68	02	M	10.10	196	51	160	2042	53.5
110	18	01	M	10.11	181	51	161	2042	51.6
55	72	00	M	10.13	248	63	199	3117	54.0
95	60	01	M	10.20	180	51	160	2042	54.4
58	38	00	M	10.22	193	52	164	2123	51.3
59	65	00	M	10.23	212	57	180	2551	52.7
631	69	04	M	10.24	206	58	185	2642	54.2
431	3	02	M	10.28	182	52	164	2123	52.2
108	60	01	M	10.37	190	50	159	1963	52.2
435	41	02	M	10.41	187	53	169	2206	54.2
548	57	03	M	10.43	233	62	197	3019	55.6
49	9	00	M	10.45	221	62	196	3019	53.5
40	62	00	M	10.45	182	51	161	2042	52.8
104	12	01	M	10.46	223	60	191	2827	54.6
445	3	02	M	10.46	187	53	168	2206	53.4
714	34	10	M	10.51	196	54	170	2290	54.1
107	60	01	M	10.56	200	55	173	2375	53.2
450	41	02	M	10.64	197	56	177	2463	52.5
709	34	10	M	10.65	190	52	165	2123	52.6
704	34	10	M	10.69	200	55	173	2375	52.9
425	11	02	M	10.70	200	58	185	2642	54.4
36	56	00	M	10.77	214	58	182	2642	53.3
434	43	02	M	10.78	211	62	195	3019	54.7
430	5	02	M	10.83	211	58	184	2642	52.6
424	43	02	M	10.84	192	53	169	2206	52.8
121	60	01	M	10.88	218	59	188	2733	56.0
106	60	01	M	10.92	208	59	185	2733	51.2
710	34	10	M	10.93	196	53	169	2206	54.2
94	31	01	M	10.98	172	48	152	1809	50.2
51	46	00	M	10.99	210	58	182	2642	55.2
446	28	02	M	10.99	196	53	169	2206	54.3
105	35	01	M	10.99	199	53	168	2206	54.3
96	24	01	M	11.03	199	57	179	2551	52.3
93	35	01	M	11.03	183	51	162	2042	53.0
437	28	02	M	11.04	185	54	171	2290	53.8
454	5	02	M	11.06	203	57	181	2551	53.7
702	26	10	M	11.12	195	55	175	2375	53.5
97	60	01	M	11.14	209	57	179	2551	57.6
444	3	02	M	11.14	201	55	174	2375	54.6
555	21	03	M	11.16	185	53	168	2206	50.4
98	55	01	M	11.23	209	56	176	2463	53.0
66	29	00	M	11.26	197	52	164	2123	55.2
119	38	01	M	11.27	192	54	169	2290	55.8
421	5	02	M	11.28	197	55	174	2375	51.1
554	8	03	M	11.32	186	51	161	2042	54.4
50	38	00	M	11.33	210	58	183	2642	55.0

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
573	50	03	M	11.33	206	58	184	2642	53.0
452	3	02	M	11.37	180	52	164	2123	53.0
632	69	04	M	11.39	210	58	183	2642	53.8
120	65	01	M	11.40	210	57	182	2551	55.0
42	23	00	M	11.41	183	51	162	2042	51.0
53	38	00	M	11.41	223	60	190	2827	56.0
556	15	03	M	11.46	193	55	175	2375	54.9
113	31	01	M	11.48	212	58	185	2642	54.9
423	10	02	M	11.49	186	54	169	2290	54.4
101	60	01	M	11.57	186	53	168	2206	52.0
432	5	02	M	11.58	178	51	162	2042	51.0
448	11	02	M	11.58	193	54	172	2290	54.6
449	5	02	M	11.58	204	56	176	2463	54.2
428	73	02	M	11.61	194	55	174	2375	54.7
31	38	00	M	11.63	220	60	190	2827	54.8
546	57	03	M	11.63	234	65	205	3318	56.7
90	55	01	M	11.72	207	58	184	2642	53.8
52	9	00	M	11.75	228	63	199	3117	55.2
89	65	01	M	11.77	224	64	203	3216	52.7
706	34	10	M	11.85	215	54	172	2290	53.2
433	10	02	M	11.94	182	51	162	2042	52.2
112	60	01	M	11.94	208	56	175	2463	55.0
558	33	03	M	11.94	210	59	185	2733	55.0
628	69	04	M	11.95	214	61	192	2922	53.3
627	36	04	M	12.01	203	54	170	2290	56.5
123	60	01	M	12.04	195	55	174	2375	52.6
707	22	10	M	12.13	222	63	200	3117	54.4
443	68	02	M	12.14	189	52	164	2123	53.0
115	61	01	M	12.15	185	52	166	2123	54.1
117	55	01	M	12.20	228	65	204	3318	54.5
711	45	10	M	12.21	206	60	189	2827	51.8
118	55	01	M	12.23	218	58	183	2642	55.4
705	34	10	M	12.28	211	58	184	2642	55.1
116	66	01	M	12.29	203	55	175	2375	52.6
567	16	03	M	12.31	218	62	195	3019	53.5
440	5	02	M	12.33	203	60	188	2827	53.5
560	1	03	M	12.37	223	62	197	3019	53.7
427	5	02	M	12.41	220	62	196	3019	54.9
426	5	02	M	12.42	211	58	183	2642	52.2
693	34	10	M	12.45	192	57	179	2551	51.0
699	88	10	M	12.46	227	61	193	2922	54.1
465	11	02	M	12.47	217	62	195	3019	54.1
103	55	01	M	12.51	203	58	182	2642	54.8
471	68	02	M	12.52	232	64	203	3216	55.8
451	68	02	M	12.54	203	60	188	2827	55.6
629	70	04	M	12.62	248	70	222	3848	54.8
43	27	00	M	12.64	210	61	193	2922	51.6
630	30	04	M	12.64	223	65	206	3318	57.2
700	34	10	M	12.66	218	60	191	2827	58.6
479	4	02	M	12.69	213	62	197	3019	99.9
439	73	02	M	12.69	226	65	206	3318	55.0
565	57	03	M	12.71	216	61	192	2922	56.5
473	5	02	M	12.71	244	69	218	3739	55.7
698	58	10	M	12.73	205	59	186	2733	52.5
561	21	03	M	12.73	206	59	185	2733	55.3

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
438	71	02	M	12.77	196	56	177	2463	51.8
568	75	03	M	12.78	276	70	221	3848	57.0
703	37	10	M	12.82	230	66	209	3421	55.0
447	41	02	M	12.82	218	60	191	2827	56.0
695	34	10	M	12.82	218	60	189	2827	57.8
88	65	01	M	12.85	225	64	201	3216	52.7
634	69	04	M	12.93	256	72	227	4071	57.7
32	38	00	M	12.97	200	57	180	2551	51.8
547	48	03	M	12.98	204	57	179	2551	55.5
712	34	10	M	12.99	212	61	193	2922	57.2
647	30	04	M	12.99	236	65	206	3318	58.2
694	34	10	M	13.00	195	56	177	2463	51.4
696	34	10	M	13.05	194	55	173	2375	55.0
713	34	10	M	13.07	182	51	161	2042	53.8
99	60	01	M	13.12	210	59	186	2733	54.2
633	30	04	M	13.14	220	63	200	3117	53.0
572	16	03	M	13.14	203	59	188	2733	55.8
35	56	00	M	13.15	212	61	193	2922	56.9
474	10	02	M	13.15	194	56	176	2463	53.8
453	71	02	M	13.15	218	58	185	2642	56.6
747	22	10	M	13.26	232	66	210	3421	54.6
442	11	02	M	13.30	197	57	179	2551	53.0
697	34	10	M	13.30	197	56	177	2463	55.0
141	55	01	M	13.31	216	61	193	2922	54.3
640	69	04	M	13.31	242	70	221	3848	54.4
743	34	10	M	13.33	230	66	209	3421	56.5
37	62	00	M	13.34	242	70	220	3848	57.2
559	74	03	M	13.36	225	63	200	3117	55.8
134	55	01	M	13.38	233	66	210	3421	55.2
566	16	03	M	13.41	206	58	185	2642	54.5
648	30	04	M	13.46	233	68	213	3631	57.1
124	60	01	M	13.50	219	62	195	3019	54.7
466	5	02	M	13.51	199	57	179	2551	54.0
122	31	01	M	13.51	190	51	161	2042	54.3
441	61	02	M	13.53	210	59	186	2733	51.7
114	38	01	M	13.53	230	62	197	3019	51.7
111	55	01	M	13.59	217	60	189	2827	54.0
562	21	03	M	13.65	225	63	197	3117	54.5
154	38	01	M	13.70	206	58	184	2642	57.2
462	3	02	M	13.71	227	63	200	3117	56.9
639	70	04	M	13.76	212	63	198	3117	54.1
564	6	03	M	13.80	212	62	195	3019	54.8
459	5	02	M	13.80	223	63	199	3117	55.3
463	5	02	M	13.81	233	66	207	3421	56.3
476	5	02	M	13.85	245	73	231	4185	56.1
100	38	01	M	13.88	223	64	201	3216	53.5
470	28	02	M	13.91	223	63	200	3117	57.6
646	42	04	M	13.98	215	61	193	2922	53.3
156	60	01	M	14.02	230	64	202	3216	55.6
483	71	02	M	14.06	208	59	186	2733	54.1
145	60	01	M	14.08	220	62	197	3019	56.5
30	23	00	M	14.08	210	61	194	2922	53.3
461	5	02	M	14.09	226	67	210	3525	54.2
748	34	10	M	14.11	270	74	234	4300	57.7
484	28	02	M	14.12	216	63	198	3117	57.4

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
571	57	03	M	14.16	233	66	207	3421	56.7
749	7	10	M	14.20	215	61	193	2922	55.8
742	34	10	M	14.24	215	62	194	3019	55.5
478	28	02	M	14.25	208	59	187	2733	54.8
155	60	01	M	14.30	215	61	193	2922	55.8
635	30	04	M	14.30	246	70	221	3848	59.6
569	57	03	M	14.32	260	71	223	3959	59.9
649	30	04	M	14.34	231	69	216	3739	57.9
588	57	03	M	14.34	236	66	208	3421	56.6
458	3	02	M	14.36	212	62	195	3019	53.7
563	21	03	M	14.39	210	56	176	2463	54.7
744	34	10	M	14.41	243	69	218	3739	54.9
641	70	04	M	14.48	221	64	201	3216	55.2
741	22	10	M	14.51	239	69	218	3739	55.8
638	70	04	M	14.58	223	65	207	3318	55.8
557	16	03	M	14.59	243	69	219	3739	55.8
701	34	10	M	14.59	210	60	188	2827	54.7
472	5	02	M	14.62	203	57	179	2551	54.0
133	77	01	M	14.64	195	53	167	2206	51.5
151	54	01	M	14.66	245	70	222	3848	57.7
457	5	02	M	14.69	244	71	225	3959	55.8
750	34	10	M	14.71	248	72	228	4071	56.6
642	37	04	M	14.72	205	59	186	2733	53.9
469	54	02	M	14.78	228	66	208	3421	56.0
593	8	03	M	14.86	255	73	229	4185	58.4
139	38	01	M	14.87	186	54	171	2290	54.6
456	5	02	M	14.88	242	68	214	3631	56.6
146	12	01	M	14.88	205	59	188	2733	53.4
140	18	01	M	14.96	225	62	196	3019	54.3
33	23	00	M	14.98	267	77	245	4656	59.5
570	50	03	M	14.99	226	65	207	3318	54.7
464	5	02	M	15.04	226	67	211	3525	57.0
651	30	04	M	15.05	256	77	242	4656	59.3
467	5	02	M	15.10	210	62	194	3019	55.6
652	42	04	M	15.11	258	76	240	4536	59.0
596	16	03	M	15.14	244	71	224	3959	59.0
460	88	02	M	15.18	228	66	208	3421	57.8
598	21	03	M	15.20	233	67	212	3525	53.9
148	51	01	M	15.25	236	69	219	3739	54.8
637	70	04	M	15.26	223	64	202	3216	53.7
597	38	03	M	15.33	256	75	236	4417	59.9
734	34	10	M	15.33	245	71	226	3959	57.0
739	34	10	M	15.38	233	68	216	3631	57.3
590	57	03	M	15.39	247	74	233	4300	58.5
138	49	01	M	15.42	211	61	192	2922	53.9
34	23	00	M	15.44	275	82	259	5281	57.5
153	62	01	M	15.46	225	65	205	3318	54.4
149	60	01	M	15.47	252	71	223	3959	59.9
477	5	02	M	15.49	253	74	233	4300	56.3
152	39	01	M	15.54	283	84	264	5541	57.9
480	5	02	M	15.57	221	61	193	2922	55.6
650	70	04	M	15.58	233	68	214	3631	54.7
482	4	02	M	15.59	244	72	226	4071	57.4
468	71	02	M	15.61	213	62	195	3019	55.9
736	34	10	M	15.62	268	79	250	4901	59.9

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
587	38	03	M	15.70	234	68	214	3631	58.2
733	34	10	M	15.70	248	72	227	4071	57.8
455	41	02	M	15.73	222	65	205	3318	55.7
589	33	03	M	15.76	257	76	239	4536	58.3
740	22	10	M	15.91	265	80	251	5026	58.1
481	41	02	M	15.92	218	62	195	3019	56.5
135	66	01	M	16.00	270	78	245	4778	56.1
644	36	04	M	16.01	250	74	234	4300	58.9
591	57	03	M	16.02	277	80	254	5026	58.3
751	45	10	M	16.03	226	63	200	3117	57.1
645	69	04	M	16.08	264	78	246	4778	59.0
745	22	10	M	16.09	250	74	233	4300	56.6
753	57	10	M	16.18	250	71	226	3959	58.8
475	63	02	M	16.30	205	58	184	2642	54.8
595	16	03	M	16.32	238	70	220	3848	58.8
737	16	10	M	16.35	251	74	234	4300	57.0
594	57	03	M	16.37	240	68	216	3631	58.3
752	16	10	M	16.42	240	70	222	3848	58.7
643	36	04	M	16.43	258	75	236	4417	57.0
735	34	10	M	16.44	260	76	241	4536	58.7
586	21	03	M	16.45	236	70	219	3848	56.9
754	57	10	M	16.50	280	81	256	5153	58.3
147	39	01	M	16.55	228	65	207	3318	57.8
585	21	03	M	16.56	258	77	242	4656	58.3
131	9	01	M	16.57	230	65	206	3318	55.8
129	38	01	M	16.62	225	64	203	3216	55.6
157	60	01	M	16.71	255	73	232	4185	57.0
755	21	10	M	16.72	240	71	224	3959	57.5
655	69	04	M	16.75	273	81	255	5153	59.9
636	70	04	M	16.75	250	72	229	4071	54.8
127	23	01	M	16.76	260	76	239	4536	56.0
653	36	04	M	16.78	260	76	238	4536	57.0
126	23	01	M	16.85	253	72	229	4071	56.1
592	38	03	M	16.87	244	71	226	3959	59.7
654	36	04	M	16.88	261	77	244	4656	59.0
323	21	02	M	16.92	263	78	247	4778	59.0
142	55	01	M	16.92	257	74	235	4300	58.3
137	18	01	M	16.93	265	78	245	4778	59.5
160	38	01	F	6.01	175	47	149	1734	50.2
270	3	02	F	6.05	156	44	140	1520	49.4
269	43	02	F	6.09	180	50	158	1963	50.8
262	2	02	F	6.10	170	45	141	1590	50.1
281	68	02	F	6.12	157	44	141	1520	49.4
488	74	03	F	6.20	174	47	148	1734	49.0
268	63	02	F	6.21	180	51	161	2042	51.1
159	65	01	F	6.26	175	49	154	1885	48.1
265	28	02	F	6.27	160	44	140	1520	48.7
245	71	02	F	6.28	161	43	138	1452	48.7
267	3	02	F	6.32	160	42	134	1385	48.0
501	74	03	F	6.33	174	48	152	1809	49.1
171	60	01	F	6.42	158	43	136	1452	48.6
237	3	02	F	6.42	163	45	142	1590	49.5
489	16	03	F	6.54	162	44	141	1520	47.8
263	5	02	F	6.54	180	50	160	1963	48.4
266	3	02	F	6.55	171	47	148	1734	47.6

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
286	41	02	F	6.59	149	40	126	1256	47.3
243	11	02	F	6.60	154	43	136	1452	51.7
272	63	02	F	6.64	178	49	156	1885	50.1
264	28	02	F	6.64	151	43	136	1452	50.7
280	43	02	F	6.64	184	50	159	1963	51.8
38	23	00	F	6.66	168	46	147	1661	46.3
283	71	02	F	6.66	158	41	130	1320	47.3
676	25	10	F	6.67	169	45	141	1590	50.5
238	3	02	F	6.68	170	44	138	1520	50.1
246	5	02	F	6.73	173	47	148	1734	47.6
261	10	02	F	6.74	160	44	139	1520	49.1
29	65	01	F	6.89	208	56	177	2463	51.6
163	55	01	F	6.94	190	51	161	2042	51.8
500	1	03	F	6.97	193	51	160	2042	50.8
164	55	01	F	7.03	175	49	156	1885	51.3
257	5	02	F	7.17	159	46	144	1661	48.9
258	5	02	F	7.17	160	46	146	1661	49.8
682	34	10	F	7.26	193	51	161	2042	50.6
284	5	02	F	7.27	184	47	149	1734	50.5
487	13	03	F	7.29	188	53	167	2206	50.3
158	65	01	F	7.34	190	51	161	2042	50.5
256	68	02	F	7.38	162	48	151	1809	49.0
166	24	01	F	7.38	170	49	156	1885	48.6
244	68	02	F	7.47	183	49	156	1885	50.9
678	34	10	F	7.50	182	48	153	1809	51.5
506	57	03	F	7.51	203	55	173	2375	55.8
275	5	02	F	7.56	195	53	169	2206	51.8
168	38	01	F	7.58	198	53	167	2206	52.0
259	11	02	F	7.59	182	45	144	1590	51.0
172	60	01	F	7.65	173	48	153	1809	50.1
250	71	02	F	7.68	195	50	157	1963	51.6
276	3	02	F	7.74	186	50	159	1963	51.5
260	3	02	F	7.74	185	51	161	2042	50.4
680	7	10	F	7.82	183	50	157	1963	49.9
44	23	00	F	7.84	187	50	157	1963	50.0
46	38	00	F	7.84	190	53	169	2206	51.4
677	34	10	F	7.89	161	45	142	1590	47.8
249	76	02	F	7.90	178	48	152	1809	51.3
47	38	00	F	7.95	176	49	155	1885	50.3
253	2	02	F	7.96	165	45	142	1590	49.8
502	8	03	F	7.98	189	49	156	1885	51.2
170	12	01	F	8.01	190	54	170	2290	52.5
279	11	02	F	8.11	192	50	159	1963	51.5
274	5	02	F	8.16	160	45	143	1590	49.4
162	60	01	F	8.17	182	50	158	1963	51.6
278	28	02	F	8.18	194	52	165	2123	52.0
239	5	02	F	8.23	169	47	148	1734	50.6
251	61	02	F	8.26	186	48	152	1809	50.7
674	32	10	F	8.27	173	48	151	1809	50.3
247	3	02	F	8.28	160	42	134	1385	51.0
248	10	02	F	8.29	180	51	161	2042	50.4
24	65	00	F	8.31	188	52	166	2123	52.3
511	42	03	F	8.32	215	59	186	2733	52.0
27	62	00	F	8.36	199	55	174	2375	50.4
679	34	10	F	8.41	180	49	154	1885	47.6

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
675	45	10	F	8.42	196	54	170	2290	50.0
164	55	01	F	8.43	180	50	158	1963	49.0
241	28	02	F	8.47	183	52	163	2123	52.6
236	11	02	F	8.53	175	49	155	1885	50.9
505	15	03	F	8.62	185	52	163	2123	52.2
254	41	02	F	8.66	170	48	151	1809	50.5
271	88	02	F	8.67	207	56	177	2463	52.6
285	5	02	F	8.67	194	52	166	2123	49.3
176	51	10	F	8.68	169	47	149	1734	49.3
683	25	10	F	8.70	165	44	140	1520	50.8
169	60	01	F	8.71	173	48	151	1809	51.4
509	32	03	F	8.74	175	46	146	1661	52.0
681	34	10	F	8.75	188	54	170	2290	52.2
282	68	02	F	8.80	173	51	160	2042	51.3
28	56	00	F	8.93	194	53	168	2206	52.8
499	57	03	F	8.97	190	50	159	1963	53.8
161	55	01	F	8.99	179	49	156	1885	51.2
604	14	04	F	9.02	208	56	176	2463	51.5
20	38	00	F	9.03	222	59	187	2733	53.5
41	72	00	F	9.07	238	63	200	3117	53.4
25	23	00	F	9.08	195	53	167	2206	50.9
296	41	02	F	9.12	192	51	161	2042	50.9
273	3	02	F	9.17	194	55	173	2375	51.4
188	12	01	F	9.19	187	53	168	2206	53.8
311	43	02	F	9.19	185	51	162	2042	52.8
304	5	02	F	9.25	194	54	171	2290	50.4
495	42	03	F	9.26	208	55	175	2375	53.2
242	5	02	F	9.30	166	46	147	1661	50.1
167	38	01	F	9.31	195	54	169	2290	54.0
277	3	02	F	9.31	168	47	150	1734	48.3
291	10	02	F	9.41	205	58	182	2642	51.1
252	10	02	F	9.43	170	48	153	1809	47.8
179	39	01	F	9.45	212	55	173	2375	52.5
48	23	00	F	9.47	240	68	214	3631	50.4
292	10	02	F	9.48	183	50	159	1963	52.8
191	38	01	F	9.56	240	61	193	2922	54.5
315	11	02	F	9.56	170	47	149	1734	52.3
516	50	03	F	9.60	200	52	164	2123	53.1
290	3	02	F	9.60	187	50	159	1963	50.5
23	53	00	F	9.76	198	53	166	2206	51.0
313	71	02	F	9.77	210	55	175	2375	53.6
289	11	02	F	9.82	190	55	175	2375	52.0
684	34	10	F	9.83	197	53	168	2206	52.8
607	14	04	F	9.83	192	54	170	2290	51.7
497	32	03	F	9.89	195	53	167	2206	52.5
300	3	02	F	9.92	180	48	151	1809	51.7
512	75	03	F	9.95	215	59	187	2733	52.0
494	21	03	F	9.96	202	53	168	2206	53.2
298	3	02	F	9.97	187	52	165	2123	51.5
496	59	03	F	10.02	197	55	173	2375	52.3
498	50	03	F	10.03	180	48	152	1809	50.8
685	34	10	F	10.06	195	50	160	1963	52.0
26	56	00	F	10.08	212	59	185	2733	54.9
308	5	02	F	10.17	210	57	181	2551	52.8
503	52	03	F	10.17	223	58	185	2642	52.9

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
606	69	04	F	10.21	183	51	162	2042	49.9
295	41	02	F	10.26	192	52	163	2123	51.4
690	7	10	F	10.27	193	53	168	2206	54.0
22	23	00	F	10.29	183	52	163	2123	50.6
486	1	03	F	10.30	197	53	168	2206	51.8
1	65	00	F	10.37	212	57	179	2551	54.5
505	16	03	F	10.43	193	55	175	2375	51.1
183	38	01	F	10.44	196	55	174	2375	51.7
288	5	02	F	10.44	177	50	159	1963	50.3
513	73	03	F	10.52	215	60	191	2827	52.0
186	12	01	F	10.52	192	54	170	2290	50.2
178	62	01	F	10.55	206	57	180	2551	50.8
692	22	10	F	10.56	231	63	199	3117	55.3
605	67	04	F	10.56	221	61	194	2922	55.3
293	28	02	F	10.58	179	49	156	1885	50.7
4	56	00	F	10.59	205	57	180	2551	52.8
287	5	02	F	10.62	183	51	162	2042	51.8
490	8	03	F	10.69	191	53	169	2206	51.1
485	74	03	F	10.70	201	54	170	2290	52.3
314	71	02	F	10.80	184	50	157	1963	50.3
599	70	04	F	10.80	214	61	192	2922	53.8
491	33	03	F	10.84	213	57	181	2551	53.8
299	11	02	F	10.89	208	56	178	2463	51.8
691	34	10	F	10.94	274	71	224	3959	56.6
294	10	02	F	11.00	197	56	178	2463	52.4
307	10	02	F	11.08	174	50	158	1963	49.2
343	3	02	F	11.12	196	53	168	2206	52.7
306	41	02	F	11.13	197	54	170	2290	52.6
510	75	03	F	11.16	213	57	179	2551	50.8
301	71	02	F	11.19	183	51	161	2042	51.0
18	62	00	F	11.20	205	58	183	2642	53.5
514	64	03	F	11.27	215	58	182	2642	54.0
508	59	03	F	11.28	206	58	184	2642	52.8
312	68	02	F	11.29	194	55	173	2375	51.7
687	7	10	F	11.32	211	57	181	2551	51.7
602	14	04	F	11.32	189	54	170	2290	52.2
7	62	00	F	11.33	237	65	207	3318	52.6
492	13	03	F	11.33	196	55	174	2375	52.7
689	45	10	F	11.39	210	56	178	2463	53.2
333	5	02	F	11.41	193	56	176	2463	53.7
608	30	04	F	11.42	214	61	192	2922	55.8
305	5	02	F	11.51	200	55	174	2375	52.2
12	65	00	F	11.54	235	62	195	3019	54.0
5	62	00	F	11.54	215	61	194	2922	52.8
303	28	02	F	11.55	213	59	185	2733	54.0
533	57	03	F	11.61	200	56	176	2463	52.6
310	58	02	F	11.62	211	60	190	2827	52.1
309	68	02	F	11.72	199	57	179	2551	53.0
686	34	10	F	11.73	197	57	180	2551	53.0
16	38	00	F	11.73	265	68	215	3631	56.8
531	16	03	F	11.75	200	56	176	2463	54.3
194	60	01	F	11.77	224	57	181	2551	54.8
187	12	01	F	11.81	179	50	158	1963	51.4
181	56	01	F	11.83	210	59	187	2733	54.7
688	34	10	F	11.87	198	55	173	2375	54.2

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
526	57	03	F	11.87	247	70	221	3848	55.0
532	8	03	F	11.89	211	57	181	2551	54.8
517	38	03	F	11.94	218	60	190	2827	55.5
603	70	04	F	11.98	210	60	191	2827	54.1
515	21	03	F	12.01	192	55	173	2375	54.2
297	5	02	F	12.02	186	55	174	2375	50.4
318	10	02	F	12.04	216	62	197	3019	52.8
190	38	01	F	12.07	225	61	192	2922	56.3
601	42	04	F	12.09	217	57	180	2551	52.6
319	15	02	F	12.12	214	56	177	2463	53.8
302	41	02	F	12.16	249	73	230	4185	53.2
600	30	04	F	12.18	186	53	168	2206	52.8
189	38	01	F	12.20	208	58	183	2642	53.6
3	62	00	F	12.23	219	60	188	2827	54.0
518	74	03	F	12.31	223	60	191	2827	53.3
729	34	10	F	12.35	236	65	204	3318	56.6
717	34	10	F	12.50	225	62	197	3019	55.0
15	38	00	F	12.54	220	62	196	3019	52.9
722	7	10	F	12.55	206	56	177	2463	54.6
177	60	01	F	12.57	228	62	195	3019	54.3
623	14	04	F	12.61	227	62	196	3019	53.9
330	3	02	F	12.62	217	60	190	2827	53.7
184	24	01	F	12.67	248	68	214	3631	55.5
326	5	02	F	12.70	240	68	214	3631	54.9
17	62	00	F	12.77	268	71	224	3959	54.2
493	57	03	F	12.78	238	65	204	3318	55.3
619	69	04	F	12.79	234	62	196	3019	53.3
2	38	00	F	12.83	222	61	193	2922	53.1
523	57	03	F	12.84	252	69	217	3739	55.5
19	65	00	F	12.85	225	63	200	3117	53.5
339	3	02	F	12.87	190	52	165	2123	54.7
618	30	04	F	12.87	235	64	202	3216	57.0
520	38	03	F	12.88	223	62	195	3019	56.8
335	28	02	F	12.90	204	59	186	2733	54.8
528	73	03	F	12.92	227	61	194	2922	55.3
195	20	01	F	12.96	203	54	172	2290	51.0
320	10	02	F	12.98	236	68	214	3631	54.8
331	3	02	F	12.98	218	60	188	2827	56.0
334	5	02	F	12.98	188	51	161	2042	53.6
611	37	04	F	13.01	230	64	202	3216	53.9
325	5	02	F	13.02	190	53	169	2206	50.9
193	60	01	F	13.04	216	60	190	2827	55.5
727	34	10	F	13.07	208	56	178	2463	53.8
11	62	00	F	13.12	230	64	202	3216	54.1
316	3	02	F	13.13	178	50	159	1963	50.4
525	50	03	F	13.19	202	57	180	2551	52.6
180	77	01	F	13.19	222	62	195	3019	54.7
9	38	00	F	13.22	227	62	197	3019	53.2
507	8	03	F	13.22	257	64	203	3216	56.9
6	88	00	F	13.23	203	58	183	2642	50.6
328	28	02	F	13.24	238	65	207	3318	56.4
217	23	01	F	13.28	233	61	191	2922	53.5
720	22	10	F	13.29	244	66	209	3421	55.0
715	34	10	F	13.32	212	58	184	2642	54.2
317	43	02	F	13.34	192	55	175	2375	55.4

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
527	33	03	F	13.35	226	63	198	3117	54.2
617	70	04	F	13.40	246	63	198	3117	54.6
324	11	02	F	13.41	200	56	176	2463	55.0
621	67	04	F	13.46	233	64	202	3216	56.0
524	50	03	F	13.46	253	65	207	3318	56.7
322	63	02	F	13.46	192	55	174	2375	53.6
730	34	10	F	13.48	206	55	174	2375	54.1
530	13	03	F	13.51	271	74	233	4300	56.3
346	73	02	F	13.51	236	67	210	3525	55.2
182	35	01	F	13.54	233	60	191	2827	52.5
14	6	00	F	13.58	240	63	199	3117	52.8
341	68	02	F	13.59	208	58	182	2642	54.8
716	34	10	F	13.62	262	68	216	3631	57.0
343	68	02	F	13.62	213	57	181	2551	52.4
583	74	03	F	13.69	230	62	197	3019	56.6
213	18	01	F	13.69	240	66	209	3421	58.3
529	21	03	F	13.74	222	61	193	2922	54.7
321	28	02	F	13.79	221	60	188	2827	53.9
723	34	10	F	13.80	225	61	192	2922	55.2
210	18	01	F	13.81	245	63	199	3117	55.3
329	11	02	F	13.83	250	66	208	3421	57.4
368	3	02	F	13.85	224	60	189	2827	54.7
192	60	01	F	13.89	218	60	190	2827	54.8
13	65	00	F	13.90	265	71	224	3959	54.2
357	5	02	F	13.91	220	63	198	3117	54.5
613	70	04	F	13.97	228	65	206	3318	54.9
337	3	02	F	14.01	215	58	183	2642	54.9
625	69	04	F	14.03	231	64	203	3216	53.7
225	60	01	F	14.03	228	61	193	2922	53.2
579	44	03	F	14.05	230	63	199	3117	54.9
327	41	02	F	14.06	228	63	198	3117	55.4
372	68	02	F	14.06	220	60	189	2827	56.9
353	71	02	F	14.09	208	56	176	2463	53.8
522	21	03	F	14.12	226	60	191	2827	54.8
350	68	02	F	14.17	186	53	168	2206	52.5
235	24	01	F	14.18	223	62	195	3019	55.0
363	11	02	F	14.20	233	63	200	3117	56.2
574	1	03	F	14.25	275	69	217	3739	57.2
10	62	00	F	14.26	230	65	205	3318	53.7
355	4	02	F	14.26	236	63	198	3117	56.8
201	18	01	F	14.29	234	63	199	3117	52.9
610	70	04	F	14.30	230	62	194	3019	56.1
367	3	02	F	14.30	206	57	181	2551	54.2
205	9	01	F	14.32	235	65	205	3318	54.6
719	25	10	F	14.35	230	63	200	3117	53.0
234	18	01	F	14.41	226	60	189	2827	53.0
615	70	04	F	14.46	223	63	198	3117	52.9
345	41	02	F	14.46	230	66	207	3421	55.7
352	5	02	F	14.48	210	59	187	2733	54.0
338	11	02	F	14.51	227	64	201	3216	54.8
354	5	02	F	14.52	207	59	187	2733	53.3
332	10	02	F	14.52	256	73	231	4185	53.1
228	62	01	F	14.55	245	67	213	3525	53.3
8	23	00	F	14.56	248	69	219	3739	53.5
340	68	02	F	14.58	210	58	183	2642	54.7

CODE NUMBER	RES-ERVE	RESI-DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
185	60	01	F	14.60	223	56	179	2463	54.5
718	22	10	F	14.61	266	70	220	3848	55.7
620	70	04	F	14.65	243	66	208	3421	55.6
580	21	03	F	14.69	243	67	213	3525	53.9
521	50	03	F	14.73	223	61	194	2922	53.9
724	34	10	F	14.76	275	69	217	3739	57.1
200	39	01	F	14.82	246	66	207	3421	53.8
222	40	01	F	14.89	267	71	225	3959	58.2
622	69	04	F	14.90	242	65	206	3318	53.0
624	69	04	F	14.90	246	64	203	3216	55.0
232	60	01	F	14.91	250	65	207	3318	56.6
351	11	02	F	14.92	236	64	201	3216	56.2
216	55	01	F	14.97	255	64	203	3216	55.2
220	12	01	F	14.97	221	61	192	2922	56.4
336	15	02	F	15.02	220	62	194	3019	55.2
212	49	01	F	15.03	278	70	220	3848	56.3
344	3	02	F	15.05	266	69	216	3739	57.1
173	20	01	F	15.06	240	63	199	3117	56.0
207	40	01	F	15.10	247	65	204	3318	55.7
728	58	10	F	15.12	214	58	185	2642	55.2
206	9	01	F	15.15	259	73	231	4185	55.0
202	38	01	F	15.18	248	67	211	3525	54.2
175	60	10	F	15.34	233	62	196	3019	57.0
348	41	02	F	15.35	250	62	197	3019	56.7
581	6	03	F	15.39	269	71	223	3959	56.0
609	36	04	F	15.40	253	68	216	3631	55.5
174	24	01	F	15.45	234	61	191	2922	55.5
229	38	01	F	15.45	236	61	193	2922	56.6
366	73	02	F	15.47	256	68	214	3631	56.8
577	19	03	F	15.55	257	65	205	3318	55.4
575	16	03	F	15.55	236	67	211	3525	55.0
198	23	01	F	15.57	277	73	232	4185	55.5
359	10	02	F	15.61	250	67	211	3525	52.4
349	68	02	F	15.61	239	66	207	3421	55.1
226	60	01	F	15.61	260	69	217	3739	56.5
616	42	04	F	15.65	230	62	195	3019	55.0
371	5	02	F	15.70	207	60	188	2827	53.6
726	34	10	F	15.74	202	57	181	2551	54.6
224	60	01	F	15.74	235	61	194	2922	55.9
347	5	02	F	15.79	228	65	204	3318	53.8
614	70	04	F	15.81	263	73	229	4185	55.7
369	11	02	F	15.84	240	66	210	3421	56.8
219	60	01	F	15.88	250	66	208	3421	54.8
223	60	01	F	15.91	245	66	210	3421	55.2
358	11	02	F	16.00	238	65	205	3318	54.2
731	34	10	F	16.03	232	62	196	3019	54.0
360	5	02	F	16.04	273	70	222	3848	55.5
626	70	04	F	16.05	252	71	223	3959	52.6
578	57	03	F	16.05	220	60	188	2827	55.1
519	21	03	F	16.10	225	61	192	2922	55.8
365	5	02	F	16.14	238	68	216	3631	54.4
356	5	02	F	16.14	240	68	214	3631	52.6
362	43	02	F	16.15	266	74	232	4300	55.3
230	60	01	F	16.18	226	62	196	3019	57.0
214	27	01	F	16.18	240	67	212	3525	52.6

CODE NUMBER	RES- ERVE	RESI- DENCE	SEX	AGE (YRS)	ARM CIRC (MM)	UPPER ARM MUSCLE DIAM (MM)	UPPER ARM MUSCLE CIRC (MM)	UPPER ARM MUSCLE AREA (MM**2)	HEAD CIRC (CM)
203	38	01	F	16.22	256	68	216	3631	56.1
221	20	01	F	16.23	202	55	175	2375	54.2
725	34	10	F	16.24	233	57	182	2551	53.6
233	18	01	F	16.30	267	71	223	3959	58.6
218	56	01	F	16.33	265	73	230	4185	56.3
370	76	02	F	16.38	236	65	207	3318	54.8
231	60	01	F	16.39	253	68	214	3631	56.2
215	18	01	F	16.47	283	74	235	4300	58.4
227	39	01	F	16.47	265	75	237	4417	55.4
21	23	00	F	16.52	267	74	234	4300	53.3
364	68	02	F	16.57	243	69	218	3739	53.9
576	57	03	F	16.59	244	63	199	3117	53.0
197	65	01	F	16.71	270	67	211	3525	55.0
612	70	04	F	16.78	271	67	212	3525	55.0
361	28	02	F	16.85	263	71	225	3959	55.2
208	56	01	F	16.89	246	67	213	3525	56.6
584	33	03	F	16.91	252	68	215	3631	55.3
721	25	10	F	16.93	246	67	212	3525	56.1
209	12	01	F	16.93	258	71	223	3959	55.9