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A Comparative Study of Anthropometrical Measurements of Caucasian and Negro Boys and Girls.

Nemour Bernard Delaneuville Jr
Louisiana State University and Agricultural & Mechanical College

A COMPARATIVE STUDY OF ANTHROPOMETRICAL MEASUREMENTS OF CAUCASIAN AND NEGRO BOYS AND GIRLS

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Nemour Bernard DeLaneuville, Jr.
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M.S., Northwestern State University, 1961
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DEDICATION

To my Father and Mother

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ABSTRACT

The primary purpose of this study was to compare the following anthropometric measurements of Caucasian and Negro boys and girls: standing height, sitting height, weight, length of the arm, length of the forearm, length of the hand, length of the upper extremity, length of the thigh, length of the leg, and length of the lower extremity. The secondary purpose of this study was to determine whether there were any differences in the standing broad jump, medicine ball put, and zigzag run performances of Caucasian and Negro boys and girls.

A total of nine hundred subjects from the following schools: Leon Godchaux Grammar, Rosenwald Elementary, and St. Peter Parochial, Reserve, Louisiana; Garyville Elementary and Sixth Ward Elementary, Garyville, Louisiana; and Woodland Elementary, John L. Ory Elementary, and La Place Elementary, La Place, Louisiana, served as subjects for this study. The selection included seventy-five Caucasian boys, seventy-five Caucasian girls, seventy-five Negro boys, and seventy-five Negro girls from each of the following

age groups: six year olds, eight year olds, and ten year olds. The anthropometric measures and achievement tests, as listed in the preceding paragraph, were administered to the subjects.

Coefficients of correlation were employed to determine the reliability of the anthropometrical measures. A factorial analysis of variance was utilized in treating the data to determine if there were significant differences between six year old, eight year old, and ten year old subjects; boys and girls; Caucasians and Negroes in each of the variables studied; and whether there were any significant interactions between age, sex, and race.

Based on the findings of this study, the following conclusions were made:

1. At the six, eight, and ten year levels boys differed from girls in most anthropometric measurements; however, there were no differences in standing height, leg, and lower extremity length.

2. Boys were superior to girls in performance of power and agility events at the six, eight, and ten year levels.

3. The differences between boys and girls in anthropometric measurements were not consistent at all age levels.

4. Negro boys and girls had longer appendages and were taller than Caucasians.

5. Longer appendages, in favor of the Negro boys and girls, had no influence on their performance in events of power and agility.

6. Differences in anthropometric measurements between the races were consistent at all age levels.

7. Although there are significant anthropometric differences between boys and girls and Negro and Caucasian, these differences do not warrant separation by race and/or sex for purposes of educational instruction.

CHAPTER I

INTRODUCTION

In the 1920's, researchers in physical education began to show an increase in interest in anthropometric differences between white and Negro athletes. Anthropometric studies revealed differences in height, weight, body composition in terms of bone, muscle, and fat; and in measurements of arm and hand, leg and foot, and trunk.[1]

Although the races may differ in actual stature, the manner in which they attain their stature is very similar. Most male children between six and seven years of age of different races grow at a rapid rate. After seven years of age this rate of growth diminishes until the age of 10.5 years, when there is again an increase in the rate of growth for the races lasting until 14.5 years. At 10.5 years there is minimum growth for the races and at 14.5 there is maximum growth. This similarity of growth of the races is important, since

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[1]James H. Jordan, "Physiological and Anthropometrical Comparisons of Negroes and Whites," Journal of Health, Physical Education, and Recreation, 40 (November-December, 1969), 93.

most studies of races have emphasized racial differences.[2]

The physical anthropologist is aware of an association between certain types of body builds and selected track and field events. Contrasts are quite obvious. Large, heavily muscled endomorphs put the shot and throw the hammer, and tall, lean young men high jump. The leading high hurdlers are tall, and the distance men have medium to slender builds. In other running and field events distinctive types of body builds are not as obvious. In a few specialized events a particular body build may give an advantage which cannot be overcome by training and technique on the part of a person who has a different somatotype. Great body weight is an advantage in throwing the shot and a handicap to a high jumper. Tallness is an advantage to both weight men and high jumpers. However, among sprinters and long jumpers a diversity of somatotypes is apparent.[3]

The spectators of college and professional athletics have noticed the large number of Negro

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[2]Morris Steggerda and Christine E. Petty, "An Anthropometric Study of Negro and White College Women," The Research Quarterly, 11 (October, 1940), 110.

[3]W. Montague Cobb, "Race and Runners," The Journal of Health and Physical Education, 7 (January, 1936), 3.

athletes in football, basketball, baseball, and track which is well above their population proportion of 12 percent in the United States. The reason for this has been attributed partly to social opportunity, economic limitations, and certain significant biological variances between the Negro and the white athlete.

Olympic records have indicated that Negroes have dominated the shorter foot races, the jumps, and the hurdles. They have also excelled in boxing and basketball, which call for quickness of hand and foot and explosive burst of power. However, Negroes have been absent from the list of leaders in the marathon, long distance runs, and swimming. White athletes have dominated the competition in rowing, fencing, sailing, and swimming.

Many observers attribute the domination of certain athletic events by a specific race to cultural and sociological factors, including variances in education, interest, motivation, family and neighborhood traditions, and economic opportunity.

> This is true in some cases, but nonetheless, the fact that there are physical differences between the races, plus the apparent correlation of body build to achievement in sports, has raised a provocative question among coaches, physical educators, and sports observers in this country: Are there specific differences between the Negro and white in body structure and function that would tend to give one or the other an advantage in certain sports?[4]

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[4]Jordan, op. cit., p. 93.

In professional athletics, a survey in 1967 revealed that 74 Negroes and 66 whites were on the rosters of the National Basketball Association. This indicated fifty-three percent of the players in the league was Negroes. In professional football, 177, or 27.7 percent, of the total number of players in the National Football League were Negro. In the American Football League, 105 players, or 29.2 percent, of the players were Negro. In professional baseball, 167 Negroes constituted 33.4 percent of the total number of players in the National and American Leagues. More than one-fourth of all professional football players, one-third of all professional baseball players, and over one-half of all professional basketball players were Negroes.[5] On the 1969-1970 professional all-star teams, 36 percent of the baseball players, 44 percent of the football players, and 63 percent of the basketball players were Negroes.[6]

A physical anthropologist would find the world's most varied assortment of human species, in all shapes, sizes, and colors at the Olympic Games. By applying his

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[5]"Where Negroes Have 'Struck It Rich,'" U.S. News and World Report, 63 (December 11, 1967), 71.

[6]Martin Kane, "An Assessment of 'Black Is Best,'" Sports Illustrated, 34 (January 18, 1971), 73-74.

knowledge of physiological and anatomical differences among the athletes, he could possibly predict Olympic results. Past performances in the Olympics seem to show an anthropological pattern of achievement.

On the 1964 United States track and field team at Tokyo, eighteen of sixty-seven men and fifteen of twenty women were Negroes. The ten-man boxing squad was composed of nine Negroes and one white, and the twelve man basketball team consisted of five Negroes and seven whites.

Scientific facts point out basic physical differences between races of people and an apparent correlation of body build to achievement in sports. Many questions have been left unanswered because of the controversial implications involved in the research. Most physical anthropologists conduct growth and blood group analysis studies, but shy away from other aspects of racial research.

> Anthropologists are a long way from piecing together a complete natural history of the races of man, but over the years they have come up with increasing evidence of man's varying physical characteristics. Any discussion of the role of race in athletics threatens controversy. But the scientific inquiry goes on. The anthropologists supply us with fascinating data; and the coaches and sports experts and the sociologists will continue to argue their significance. In the end, of course, there is no dispute at all. Every athletic performance depends on what the individual brings to the contest. The sprinter, tense in the

> starting blocks, must rely upon a whole complex of human factors to take him across the finish line--muscle and sinew, and mind and heart, too.[7]

STATEMENT OF THE PROBLEM

Integration of schools throughout the country has raised many questions concerning education. The physical education classes have been integrated and this may cause changes in the program because of possible anthropometrical and performance differences of the races. It is important to know whether these differences exist and what changes, if any, would have to be made in the physical education curriculum.

PURPOSE OF THE STUDY

The primary purpose of this study was to compare the following anthropometric measurements of Caucasian and Negro boys and girls: standing height, sitting height, weight, length of the arm, length of the forearm, length of the hand, length of the upper extremity, length of the thigh, length of the leg, and length of the lower extremity.

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[7] Marshall Smith, "Giving the Olympics an Anthropological Once-Over," Life, 57 (October 23, 1964), 81-84.

The secondary purpose of this study was to determine whether there were any differences in agility and power of Caucasian and Negro boys and girls.

SIGNIFICANCE OF THE STUDY

Supervisors engaged in planning the physical education curriculum need information concerning anthropometric measures, growth, and performance of Caucasian and Negro boys and girls. The survey of literature indicated that only a few studies concerning anthropometric measures have been conducted in the elementary schools. This study may assist supervisory personnel in planning, organizing, and administering physical education programs that will better meet the needs of Caucasian and Negro boys and girls.

DELIMITATION OF THE STUDY

A total of nine hundred subjects from eight schools in St. John the Baptist Parish served as subjects for this study. The selection included seventy-five Caucasian boys, seventy-five Caucasian girls, seventy-five Negro boys, and seventy-five Negro girls from each of the following age groups: six year olds, eight year olds, and ten year olds.

LIMITATIONS OF THE STUDY

In taking anthropometric measures, the clothing of the student may have affected the measures slightly, but due to the nature of the measures and the sexes involved, this was difficult to remedy.

DEFINITION OF TERMS

Agility. Agility was defined as the ability of the body or parts of the body to change directions rapidly and accurately.

Muscular power. Muscular power was defined as the ability to release maximum muscular force in the shortest period of time.[8]

Anthropometry. Anthropometry was defined as the conventional art or system of measuring the human body and its parts.[9]

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[8]H. Harrison Clarke, Application of Measurement to Health and Physical Education, (Englewood Cliffs: Prentice-Hall, 1959), p. 222.

[9]Alex Hrdlicka, Anthropometry, (Philadelphia: Wistar Institute of Anatomy and Biology, 1920), p. 7.

CHAPTER II

REVIEW OF THE LITERATURE

The review of the literature for this study was limited to studies involving Caucasian and Negro boys and girls. The studies reviewed were classified into the following categories: (1) general studies related to Caucasian and Negro boys and girls; and (2) anthropometric studies related to Caucasian and Negro boys and girls.

GENERAL STUDIES RELATED TO CAUCASIAN AND NEGRO BOYS AND GIRLS

Browne,[1] in a study involving 82 white and 81 Negro subjects, investigated whether or not a difference existed between the races in the patellar tendon reflex time. The mean reflex times of the groups were as follows: white group, .0861 seconds and Negro group, .0774 seconds. He found the mean patellar tendon reflex time of the Negro group was significantly shorter than that of the white group.

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[1]Robert L. Browne, "A Comparison of the Patellar Tendon Reflex Time of Whites and Negroes," The Research Quarterly, 6 (May, 1935), 121-126.

Moore,[2] conducted a study involving 43 white boys and 49 white girls and 39 Negro boys and 42 Negro girls, to determine the speed of reaction on a eye-hand coordination test. The subjects used in this study were six and seven year olds. He found that white girls responded faster than did the Negro girls and white boys were superior to Negro boys in speed of reaction. The white girls were superior to the white boys and the Negro boys excelled the Negro girls in speed of reaction as measured by the eye-hand coordination test.

Harsch[3] conducted a study involving twenty-seven Negro athletes, forty-three white athletes, and thirty white non-athletes at the State University of Iowa, to compare simple reaction time, choice reaction time, choice response time, and multiple response time. His research resulted in the following conclusions: (1) Negro athletes do not react or respond more quickly than white athletes; (2) Negro or white athletes react and respond more quickly than do white non-athletes; and (3) the relationship between length of arm span and response time is not significant.

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[2]Joseph E. Moore, "A Comparison of Negro and White Children in Speed of Reaction on an Eye-Hand Coordination Test," The Journal of Genetic Psychology, 59 (September, 1941), 225-228.

[3]Larry A. Harsch, "A Comparative Study of the Reaction-times and Response-times of Negro and White Athletes" (unpublished Master's thesis, State University of Iowa, Iowa City, 1959).

Ferguson[4] conducted a study dealing with twenty white varsity track athletes from Oklahoma State University and twenty Negro varsity track athletes from Langston University, to determine reaction time, body movement time, and 60-yard dash time. He made the following conclusions: (1) the Negro group had faster mean reaction times, movement times, and 60-yard dash times, but the differences were not statistically significant; (2) the Negro group had positive and significant correlations among the three variables; and (3) the Negro superiority in the 60-yard dash times could not be attributed to superior reaction times.

Harmon,[5] in a study dealing with 133 children, investigated whether or not racial differences were apparent in the simple reaction time of children. Most of the children were from lower socioeconomic groups. The Miles Reaction Time Board was the apparatus used to measure the reaction time of the children. Alternate trials were made with each hand until twenty had been recorded. From the results of the study, Harmon made the following conclusions: (1) Italians reacted more

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[4]Don P. Ferguson, "Racial Comparisons and Relationships of Reaction Time, Body Movement Time, and Sixty-Yard Dash Performances" (unpublished Master's thesis, Oklahoma State University, Stillwater, 1967).

[5]Catherine Harmon, "Racial Differences in Reaction Time at the Preschool Level," Child Development, 8 (September, 1937), 279-281.

quickly than any of the other groups; (2) Indians were slower than any of the other groups; (3) Jews were slower than any group except the Indians; and (4) Negroes reacted more quickly than any other group except the Italians.

Laeding[6] tested all the male sophomores of Saginaw High School on the vertical jump, 30-foot shuttle run, pull-ups, and reaction time. Subjects of Mexican descent and those who were not fifteen or sixteen years of age were eliminated. He found the performances of the Negroes were significantly greater on the vertical jump. No significant differences existed between the races on the 30-foot shuttle run, pull-ups, and reaction time.

Huntinger,[7] in a study involving 792 fourth, fifth, and sixth grade boys and girls, investigated the differences in speed between American Negro and white children as measured by performance in the 35-yard dash. The Negro boys and girls had lower mean scores at

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[6]Lawrence Laeding, "Assessment of the Difference in Power, Agility, Strength, and Reaction Time of Negro and White Male Subjects at the Tenth Grade Level" (unpublished Master's thesis, Michigan State University, East Lansing, 1964).

[7]Paul W. Huntinger, "Differences in Speed Between American Negro and White Children in Performance of the 35-Yard Dash," The Research Quarterly, 30 (October, 1959), 366-367.

each grade level. The Negro girls had significantly faster times in the 35-yard dash at the fourth, fifth, and sixth grade levels while Negro boys had significantly faster times at the fourth and fifth grade levels. Huntinger concluded that the Negro children were superior to white children in speed of running.

Espenschade,[8] in a study dealing with 161 white and 115 Negro fourth grade children, investigated the effect of race and sex on the performance of the Kraus-Weber Test. The results were as follows: (1) white boys: 52 per cent passed, 36 per cent failed flexibility, and 12 per cent failed one strength item or two or more items; (2) white girls: 71 per cent passed, 14 per cent failed flexibility, and 15 per cent failed one strength, or two or more items; (3) Negro boys: 68 per cent passed, 24 per cent failed flexibility, and 8 per cent failed one strength, or two or more items; and (4) Negro girls: 81 per cent passed, 12 per cent failed flexibility, and 7 per cent failed one strength or two or more test items. She found that significantly more Negro boys and both Negro and white girls passed the Kraus-Weber test than did white boys, and when the flexibility item of the test was omitted, no significant sex or race difference in performance was found.

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[8]Anna Espenschade, "Fitness of Fourth Grade Children," The Research Quarterly, 29 (October, 1958), 274-278.

Ponthieux and Barker[9] conducted a study involving 633 children enrolled in the fifth and sixth grades of public elementary schools of a central Texas county, to determine the relationship of race to motor abilities and physical fitness. The American Association for Health, Physical Education, and Recreation Youth Fitness Test Battery was used for this study. According to Ponthieux and Barker, the results of the correlation analysis of relationships between race and physical fitness revealed that the Negro boys exceeded the white boys significantly in pull-ups, standing broad jump, 50-yard dash, softball throw, and 600-yard run-walk; and there were no significant differences between their performances on sit-ups and shuttle run. The Negro girls surpassed the white girls significantly on the shuttle run, 50-yard dash, softball throw, 600-yard run-walk; the white girls exceeded the Negro girls on modified pull-ups, and sit-ups; and there was no significant difference on the standing broad jump. The authors concluded there were relationships between race and physical fitness. Most relationships favored Negro children over white.

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[9]N. A. Ponthieux and D. G. Barker, "Relationships Between Race and Physical Fitness," The Research Quarterly, 36 (December, 1965), 468-472.

Using 633 children enrolled in the fifth and sixth grades as subjects, Barker and Ponthieux[10] investigated the relationships between race and measure of physical fitness, with the variable of socioeconomic status partialled out. The authors found Negro boys' scores remained significantly higher on pull-ups, standing broad jump, 50-yard dash, softball throw, and 600-yard run-walk. The correlation between race and performance on the shuttle run was statistically significant in favor of the Negro boys. The Negro girls remained significantly higher on the shuttle run, standing broad jump, 50-yard dash, softball throw, and 600-yard run-walk. After partialling out socioeconomic status, the Negro girls' performance on the standing broad jump was statistically significant. After partialling out status, the white girls' performance on modified pull-ups was statistically better; but the performance of the white girls on sit-ups was no longer significant. It was found that Negro boys and girls had better performances than white children on selected measures of physical fitness, and the observed correlation between race and physical fitness could not be attributed to socioeconomic status.

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[10]D. G. Barker and N. A. Ponthieux, "Partial Relationships Between Race and Fitness with Socioeconomic Status Controlled," The Research Quarterly, 39 (October, 1968), 773-775.

Berger and Paradis,[11] in a study dealing with thirty white boys and thirty Negro boys in the seventh grade, conducted an investigation to determine whether there was a difference in physical fitness among white and Negro children. The two groups were matched on age and socioeconomic levels. The physical fitness of the subjects was evaluated by the AAHPER Youth Fitness Test. The mean measurements and scores of the boys were as follows: (1) height, white, 63.30 inches and Negro, 62.53 inches; (2) weight, white, 109.70 pounds and Negro, 102.23 pounds; (3) pull-ups, white, 5.93 and Negro, 4.66; (4) sit-ups, white, 78.97 and Negro, 84.10; (5) shuttle run, white, 10.72 seconds and Negro, 10.22 seconds; (6) standing broad jump, white, 70.87 inches and Negro, 74.10 inches; (7) 50-yard dash, white, 7.21 seconds and Negro, 6.90 seconds; (8) softball throw, white, 150.50 feet and Negro, 160.00 feet; (9) 600-yard run-walk, white 137.97 seconds and Negro, 130.57 seconds; and (10) compositive score, white 331.47 and Negro, 400.73. They found the Negro boys scored better than the white boys on all test items except the pull-ups and had significantly better scores on the shuttle run, 50-yard dash, 600-yard run-walk, and the composite score.

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[11]Richard A. Berger and Robert L. Paradis, "Comparison of Physical Fitness Scores of White and Black Seventh Grade Boys of Similar Socioeconomic Level," The Research Quarterly, 40 (December, 1969), 666-669.

Terrell,[12] in a study dealing with fifty pre- and post puberty Caucasian and Negro females of junior high school age, investigated the relationships between anthropometric measurements and physical fitness. She made the following conclusions: (1) there was no relationship between anthropometric measurements and physical fitness; (2) Negroes have a significantly longer leg, longer arm and hand, longer foot, a wider shoulder girdle, and a narrower pelvic girdle than Caucasians; and (3) the performance of Negroes was superior to that of Caucasians on the 50-yard dash and in the softball throw for distance.

Martin[13] conducted a study involving fifty Negro and fifty white male tenth grade students to determine whether racial differences existed on anthropometric measures, the vertical jump, and the isometric knee extension strength tests. The groups were of the same age, height, and weight. The Negro

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[12]Ruth E. Terrell, "Relation of Pre- and Post-Puberty Anthropometric Measurements and Physical Fitness Test Scores of American Negro and Caucasian Females as Measured by the AAHPER Physical Fitness Battery" (unpublished Master's thesis, North Texas State University, Denton, 1967).

[13]Ronald M. Martin, "Selected Anthropometric, Strength and Power Characteristics of White and Negro Boys" (unpublished Master's thesis, University of Toledo, Toledo, Ohio, 1966).

group had significantly greater lower leg, thigh, total leg, and foot length, standing-reach height, and vertical jump performance. The white group had greater bi-iliac width. The groups were not significantly different in knee extension.

After testing 226 white male college students and 156 Negro male college students in their performance on the Sargent Jump, Herzstein[14] found the mean of the Negro students to be significantly greater than the mean of the white students.

Thomas,[15] in a study dealing with 150 Job Corps candidates, compared the strength between and within the races. The subjects were divided into two groups. One group included those 16-18 years of age and the other group included those 19-21 years of age. The groups were subdivided into Negro and Caucasian so that comparisons of strength could be made. Thomas made the following conclusions: (1) no statistically significant

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[14]Joseph Norman Herzstein, "A Comparison of the Jumping of American Negro Male College Students with American White Male College Students as Measured by the Sargent Vertical Jump Test" (unpublished Master's thesis, University of Maryland, College Park, 1961).

[15]Lowell Thomas, "A Normative and Comparative Study of Maximum Isometric Strength in Negro and Caucasian Job Corps Candidates" (unpublished Master's thesis, San Jose College, San Jose, California, 1967).

strength differences were found between Caucasian age groups; (2) a significant difference in favor of Negroes was found in right shoulder extension in the 16-18 group; and (3) when comparing Negroes with Negroes, a significant difference was found in right knee extension and in right ankle planter flexion in favor of the 16-18 age group.

Goss,[16] tested 192 children from grades three, six, nine, and twelve to determine whether there was a difference in strength for grade, sex, and ethnic groups. The hand dynamometer registered in pounds was used as the measure of physical strength. The mean hand dynamometer scores for boys were as follows: (1) third grade, white, 34.13 and Negroes, 35.38; (2) sixth grade, white, 51.75 and Negro, 51.13; (3) ninth grade, white, 95.00 and Negro, 81.88; and (4) twelfth grade, white, 140.63 and Negro, 144.50. The mean hand dynamometer scores for girls were as follows: (1) third grade, white, 24.13 and Negro, 26.63; (2) sixth grade,white, 40.38 and Negro, 47.00; (3) ninth grade,white, 61.63 and Negro, 64.50; and (4) twelfth grade, white, 66.25 and Negro, 89.38. His research revealed the following:

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[16]Allen M. Goss, "Estimate Versus Actual Physical Strength in Three Ethnic Groups," Child Development, 39 (March, 1968), 283-290.

(1) actual strength increased across grades and boys in the same grade were stronger than girls; (2) the Negro group had the highest strength measures on the hand dynamometer, due largely to the female Negroes; (3) the Negro girls' mean dynamometer strength was almost nine units higher than that of the white girls; and (4) the white boys' mean dynamometer strength was two units above that of the Negro boys.

Williams and Scott[17] tested 104 Negro babies in an effort to compare gross motor behavior of Negro infants from upper and lower socioeconomic groups and determine the relationship between motor behavior and methods of child care. The two groups consisted of 54 boys and girls and 50 boys and girls from upper and lower socioeconomic classes, respectively. The subjects in the groups were approximately evenly divided as to sex. The gross motor items on the Gesell Development Schedule were administered to each subject. Their research revealed the following: (1) the infants in the lower socioeconomic group showed significantly higher motor development than the infants in the upper socio-economic group; and (2) differences in motor development

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[17]Judith R. Williams and Roland B. Scott, "Growth and Development of Negro Infants: IV. Motor Development and Its Relationship to Child Rearing Practices in Two Groups of Negro Infants," Child Development, 24 (June, 1953), 101-121.

were found to be related to methods of child care with infants from more permissive and less exacting families of the lower socioeconomic group scoring significantly higher in motor development than infants from rigid environments of the upper socioeconomic group.

Eighty children and forty-four university students were subjects in a study by Rhodes[18] in which she compared the motor abilities of both Negro and white children and Negro and white adults. The subjects were given the walking path test, needle-threading test, and stylus tapping test. She concluded there was little, if any, difference between the Negroes and whites on the selected measures of motor ability.

ANTHROPOMETRIC STUDIES RELATED TO CAUCASIAN AND NEGRO BOYS AND GIRLS

According to Cobb,[19] anthropologists have found nothing to suggest an association between race and competition in track and field events. Negroes have been found to participate in most track and field events. The Negro athlete has dominated the sprints and long jump

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[18]Adele Rhodes, "A Comparative Study of Motor Abilities of Negroes and Whites," Child Development, 8 (September, 1937), 369-371.

[19]W. Montague Cobb, "Race and Runners," The Journal of Health and Physical Education, 7 (January, 1936), 3-7, 52-54, 56.

but appears less frequently in middle distance running and field events. Cobb belives this is not due to anatomical build but because Negroes will not subject themselves to rigorous training. Some Negro stars have declared that the desire to excel in a white environment has been the motivation for their success.

Cobb stated that races differ from one another in certain physical characteristics. The Negro has long legs and arms relative to the length of his trunk as compared to the white. The leg of the Negro is long in proportion to his thigh. The belly of the gastrocnemius of the Negro is short and the tendon long, whereas in the white, the belly is long and the tendon short. The Negro pelvis is generally narrower than that of the white.

Metheny[20] conducted a study involving 51 male Negro students and 51 male white students to determine anthropometrical racial differences and their theoretical implications for athletic performances. She concluded that Negroes were found to exceed the whites in weight, arm length, forearm length, hand length, elbow width, leg length, lower leg length, foot length

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[20]Eleanor Metheny, "Some Differences in Bodily Proportions between American Negro and White Male College Students as Related to Athletic Performance," The Research Quarterly, 10 (December, 1939), 41-53.

and width, knee width, shoulder breadth, chest depth and width, neck girth, and limb girths, all relative to stature. The whites exceeded the Negroes in sitting height, total fat, hip width, and ilium width. Metheny theorized that the Negro should be superior to the white in throwing and jumping because of the longer forearm and longer leg.

Using 6,219 subjects, Bean[21] conducted a study to determine the sitting height in children and adults. The mean yearly growth increments of the torso for males from five to twenty-two years of age were as follows: (measurements in centimeters) (1) Asiatics, 1.82; (2) Europeans, 1.54; and (3) Africans, 1.35; and for females, (4) Asiatics, 1.45; (5) Europeans, 1.34; and (6) Africans, 1.23. According to Bean the torso had two periods of rapid growth, the first from five to seven years in boys and girls, the second from eleven to thirteen years in girls and fourteen to sixteen in boys. The first period of rapid growth in the American Negro was from eight to ten years instead of from five to seven years. In the American Negro the growth of the torso was less than in other groups. The lower extremities grew more rapidly than the torso up to the

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[21]Robert Bennett Bean, "The Sitting Height," American Journal of Physical Anthropology, 5 (October-December, 1922), 349-390.

following ages: British-American girls, 11 years and boys, 15 years; and German-American girls, 13 years and boys, 16 years. After these ages the torso grew more rapidly than the lower extremities. The mean yearly growth of the torso for females eleven to thirteen years of age was as follows: (1) Africans, 2.11; (2) Europeans, 2.57; and (3) Asiatic, 2.75. The mean yearly growth of the torso for males fourteen to sixteen years was as follows: (1) Africans, 2.23; (2) Europeans, 2.81; and Asiatic, 3.27. The mean adult sitting height of soldiers was as follows: (1) at Camp Gordon, American Negro, 87.3 and white 91.2; (2) at Camp Lee, American Negro, 86.6 and white, 90.6. Bean concluded that the Negro had a short torso and long extremities and sitting height grows more rapidly during and after puberty than before.

Lloyd-Jones,[22] in a study involving 121,820 white and 5,142 Negro children in the Los Angeles schools, conducted an investigation to determine the average height for age and average weight for age of the races. He found the mean height of the white boys exceeded that of the Negro boys at all age levels five

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[22]Orren Lloyd-Jones, "Race and Stature: A Study of Los Angeles School Children," The Research Quarterly, 12 (March, 1941), 83-97.

through eighteen, except at the thirteen, fourteen, and fifteen year levels. The mean height of the white girls exceeded that of the Negro girls at all ages, except at age nine and fourteen. The mean weight of the white boys exceeded that of the Negro boys at all age levels five through eighteen, except at the fourteen, fifteen, and eighteen age levels. The mean weight of the white girls exceeded that of the Negro girls at all age levels.

Steggerda, Crane, and Steele,[23] in testing 100 Caucasian female students at Smith College, investigated the bodily proportions of women. The mean measurements of the Caucasian women were as follows: (1) span or arm stretch, 1640.25 millimeters; (2) total arm length, 513.65 millimeters; (3) upper arm length, 291.55 millimeters; (4) lower arm length, 222.75 millimeters; (5) hand length, 187.40 millimeters; (6) leg length, 762.59 millimeters; and (7) tibia length, 401.25 millimeters. In comparing these measurements to an earlier study done on 100 Smith College students, the investigators found the arm span and total arm length, of the girls in the earlier study, were 7 millimeters and 7.6 millimeters longer, respectively. They believed this

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[23]Morris Steggerda, Jocelyn Crane, and Mary D. Steele, "One Hundred Measurements and Observations on One Hundred Smith College Students," American Journal of Physical Anthropology, 13 (July-September, 1929), 189-254.

was due to the fact that the mean stature of the girls in the earlier study was 10 millimeters more than in their study.

Steggerda and Petty[24] conducted a study involving 100 Negro girls at Tuskegee Institute, Alabama and used the data on 100 white girls from Smith College to determine similarities and dissimilarities in the physical features of Negroes and whites. The mean anthropometrical measurements for the Negro girls were as follows: (1) age, 20.05 years; (2) stature, 1633.10 millimeters; (3) weight, 55.84 kilograms; (4) total arm length, 551.40 millimeters; (5) upper arm length, 306.30 millimeters; (6) lower arm length, 244.65 millimeters; (7) hand length, 192.05 millimeters; (8) total leg length, 793.50 millimeters; (9) tibiale length, 461.10 millimeters; and (10) sitting height, 837.40 millimeters. The mean anthropometrical measurements for the white girls were as follows: (1) age, 20.15 years; (2) stature, 1628.05 millimeters; (3) weight, 55.59 kilograms; (4) total arm length, 513.65 millimeters; (5) upper arm length, 291.55 millimeters; (6) lower arm length, 222.75 millimeters; (7) hand

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[24]Morris Steggerda and Christine E. Petty, "An Anthropometric Study of Negro and White College Women," The Research Quarterly, 11 (October, 1940), 110-118.

length, 187.40 millimeters; (8) total leg length, 762.59 millimeters; (9) tibiale length, 421.85 millimeters; and (10) sitting height, 868.46 millimeters. Their research revealed that the two groups were similar in age, stature, and weight; Negroes were larger than whites in all measurements of appendages; Negroes had a longer lower arm in relation to the upper arm than did whites; and the whites had a longer trunk length than the Negroes as measured by sitting height.

Straus,[25] utilized 244 cadavers at Western Reserve University to determine whether there was a difference in the size of the human ilium among white and Negro men and women. The mean direct iliac height and iliac width were as follows: (1) white males, 130.2 millimeters and 162.4 millimeters; (2) white females, 124.4 millimeters and 157.3 millimeters; (3) Negro males, 125.0 millimeters and 156.6 millimeters; and (4) Negro females, 116.5 millimeters and 146.2 millimeters. He found the male and female white pelves were larger than Negro pelves of the corresponding sex and that white and Negro males were larger than the females of the corresponding stock in all iliac dimensions except lower iliac height.

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[25]William L. Straus, Jr., "The Human Ilium: Sex and Stock," American Journal of Physical Anthropology, 11 (October-December, 1927), 1-28.

Using 100 male and over 30 female cadavers in both the white and Negro population at Western Reserve University, Todd and Lindala[26] conducted a study to determine the mean anthropometrical measurements of the races. The mean measurements for males were as follows (measurements in millimeters): (1) standing height, whites, 1706.3 and Negroes, 1743.8; (2) entire arm length, whites, 759.7 and Negroes, 798.3; (3) arm length without hand, whites, 569.4 and Negroes, 598.3; (4) upper arm length, whites, 332.6 and Negroes, 340.3; (5) length of forearm, whites, 249.1 and Negroes, 268.8; (6) length of hand, whites, 186.9 and Negroes, 199.0; (7) leg length without foot, whites, 798.4 and Negroes, 846.4; (8) thigh length, whites, 497.4 and Negroes, 515.2; and (9) length of lower leg, whites, 375.8 and Negroes, 401.4. The mean measurements for females were as follows: (1) standing height, whites, 1596.6 and Negroes, 1585.9; (2) entire arm length, whites, 695.1 and Negroes, 713.1; (3) arm length without hand, whites, 519.7 and Negroes, 532.7; (4) upper arm length, whites, 301.8 and Negroes, 303.4; (5) length of forearm, whites, 224.7 and Negroes, 237.2; (6) length of hand, whites,

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[26]T. Wingate Todd and Anna Lindala, "Dimensions of the Body: Whites and American Negroes of Both Sexes," American Journal of Physical Anthropology, 12 (July-September, 1928), 35-119.

171.8 and Negroes, 179.1; (7) leg length without foot, whites, 739.2 and Negroes, 761.7; (8) thigh length without foot, whites, 739.2 and Negroes, 761.7; (8) thigh length, whites, 461.3 and Negroes, 467.0; and (9) length of lower leg, whites, 351.8 and Negroes, 364.9. Todd and Lindala drew the following conclusions: (1) the Negro upper arm was short and the forearm long; (2) the female arm was slightly shorter than the male in both stocks; (3) the entire arm of the Negro was longer as compared to the entire arm of the white in both sexes; (4) the Negro of both sexes had a long lower limb; and (5) there was not the slightest evidence of difference in proportion of thigh and leg with either sex or stock.

Using cadavers in Cleveland, Todd[27] investigated the variances of physical characteristics in male Negro and male white subjects. Body weight and six limb circumferences were altered by the change from life to death. This fact eliminated those measurements from the study. The mean physical traits of the male subjects were as follows (measurements in millimeters); (1) sphyrion height, whites, 73 and Negroes, 69; (2) entire arm,

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[27]T. Wingate Todd, "Entrenched Negro Physical Features," Human Biology, 1 (January, 1929), 57-69.

whites, 760 and Negroes, 799; (3) arm length without hand, whites, 569 and Negroes, 598; (4) upper arm, whites, 33 and Negroes, 340; and (5) hand length, whites, 187 and Negroes, 199. He found the Negro upper arm to be somewhat short but this was compensated by his slightly longer forearm. Hand length of the Negro was proportional to total arm length. The arm of the Negro was slightly longer than the arm of the white.

Williams, Grim, Wimp, and Whayne[28] conducted a study involving 73 white male and 59 Negro male cadavers, to determine whether racial differences existed in the human calf muscles. Their research revealed the following facts concerning calf musculature and bony leg proportions: (1) the tendinous part of the gastrocnemius forms a greater proportion of the total length of the muscle in American Negroes than in whites; (2) the gastrocnemius muscle bellies of Negroes were shorter than those of the whites; (3) the Negroes were taller than the whites; (4) the inferior point of the fibular origin of the soleus was located higher in the Negroes than in whites; (5) the Negro tibia was longer than the white in proportion to the total length of the gastrocnemius muscle; (6) the tibial length of the

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[28]G. D. Williams, G. E. Grim, J. J. Wimp, and T. F. Whayne, "Calf Muscles in American Whites and Negroes," American Journal of Physical Anthropology, 14 (January-March, 1930), 45-58.

Negro, in proportion to stature, was greater than that of the whites; and (7) the thicknesses of the Negro's tibia and fibula throughout their length was, in proportion to the length of the tibia, less than that of the white.

Hrdlicka,[29] in a study dealing with twenty adult male and six adult female Negroes, secured measurements of the subjects for future racial comparisons. The mean anthropometrical measurements for Negro males were as follows: (1) stature, 168.6 centimeters; (2) arm spread, 178.4 centimeters; (3) sitting height, 87.2 centimeters; (4) hand length, 20 centimeters; and (5) dynamometric grip strength, 40.3 kilograms. The mean anthropometrical measurements for Negro females were as follows: (1) stature, 157.9 centimeters; (2) arm spread, 164.8 centimeters; (3) sitting height, 81.92 centimeters; (4) hand length, 19.38 centimeters; and (5) grip strength, 34.0 kilograms. He concluded, through comparisons with other studies dealing with white males and females, that the Negro hand in both sexes was longer and broader and the Negro male was slightly stronger than the white male. The arm spread of the

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[29]Ales Hrdlicka, "The Full-Blood American Negro," American Journal of Physical Anthropology, 12 (July-September, 1928), 15-33.

Negroes of both sexes exceeded that of the whites. The whites of both sexes had greater sitting height statures than the Negroes.

Herskovits, Cameron, and Smith,[30] in a study involving 639 Amory, Mississippi Negroes, investigated whether or not individual differences existed between Northern and Southern Negroes. The data collected in the Amory series was compared to data collected in a general series and in the Howard series. The Howard series was conducted at Howard University in New York City, in Washington, D.C., and in West Virginia. The mean adult Negro male statures were as follows: (1) Amory Series, 171.0 centimeters; (2) General Series, 170.5 centimeters; and Howard Series, 171.1 centimeters. The mean adult Negro female statures were as follows: (1) Amory Series, 159.8 centimeters; and (2) General Series, 158.65 centimeters. The researchers concluded that there was no significant difference in the stature of the Nothern and Southern Negroes.

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[30] Melville J. Herskovits, Vivian K. Cameron, and Hariett Smith, "The Physical Form of Mississippi Negroes," American Journal of Physical Anthropology, 16 (October-December, 1931), 193-201.

Steggerda and Petty,[31] in a study involving 100 Negroes at Tuskegee Institute, conducted an investigation to determine the anthropometrical measurements of Negro college males. The mean measurements of the Negroes were as follows: (1) stature, 1,749.30 centimeters; (2) weight, 70.06 kilograms; (3) sitting height, 890.30 centimeters; (4) total arm length, 804.10 centimeters; (5) upper arm length, 331.20 centimeters; (6) lower arm length, 262.50 centimeters; (7) hand length, 207.80 centimeters; (8) leg length, 964.90 centimeters; (9) right hand grip, 50.20 kilograms; and (10) left hand grip, 46.92 kilograms. They found the Negro men were slightly taller than the average Negro in other studies and the men had relatively long arms and legs and a short trunk.

After measuring 941 white subjects, Meredith and Meredith[32] established mean anthropometrical measures for boys and girls. The mean measurements for

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[31]Morris Steggerda and Christine Evans Petty, "Body Measurements on 100 Negro Males from Tuskegee Institute," The Research Quarterly, 13 (October, 1942), 275-279.

[32]Howard V. Meredith and E. Matilda Meredith, "The Body Size and Form of Present-Day White Elementary School Children Residing in West-Central Oregon," Child Development, 24 (June, 1953), 83-102.

seven and ten year old white boys were as follows: (1) stature, 122.2 centimeters and 138.8 centimeters; (2) upper limb length, 51.6 centimeters and 59.5 centimeters; (3) lower limb length, 54.7 centimeters and 64.9 centimeters; (4) weight, 23.9 kilograms and 32.9 kilograms; and (5) sitting height, 67.5 centimeters and 73.9 centimeters. The mean measurements for seven, nine, and eleven year old white girls were as follows: (1) stature, 121.4 centimeters, 132.7 centimeters and 144.4 centimeters; (2) upper limb length, 50.9 centimeters, 56.3 centimeters, and 61.7 centimeters; (3) lower limb length, 54.4 centimeters, 61.0 centimeters, and 68.0 centimeters; (4) weight 23.7 kilograms, 29.8 kilograms, and 37.5 kilograms; and (5) sitting height, 67.0 centimeters, 71.7 centimeters, and 76.4 centimeters. Their research revealed that the paired series of means of the children age seven showed that boys were larger than girls in stature, upper limb length, lower limb length, weight, and sitting height.

Using all literature pertaining to adult male American Negro and American Caucasian anthropometric comparisons, Norman[33] made the following conclusions:

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[33]Stephen L. Norman, "Collation of Anthropometric Research Comparing American Males: Negro and Caucasian" (unpublished Master's thesis, University of Oregon, Eugene, 1968).

(1) Negroes were larger than Caucasians in weight, shoulder width, arm span, hand length, hand width, foot length, foot width, leg girth, nose width, and bigonial diameter; (2) Caucasians were larger in stature, sitting height, trunk height, hip width, nose length, and ear height; and (3) arm, forearm, thigh, and leg measurements could not be analyzed because of insufficient data.

SUMMARY OF RELATED LITERATURE

The literature has been reviewed in two main sections: (1) general studies related to Caucasian and Negro boys and girls; and (2) anthropometric studies related to Caucasian and Negro boys and girls.

Eleven general studies related to Caucasian and Negro boys and girls were reviewed. Five studies reviewed were concerned with the speed of reaction time. Two studies found that Caucasian children were superior to Negro children in speed of reaction time. One study found that Negro athletes had faster reaction time than Caucasian athletes; however, another study found that Negro athletes did not react more quickly than Caucasian athletes. A study involving high school students revealed there was no difference in the reaction time of Negro and Caucasian students. Three studies concerned

with physical fitness were reviewed. All three studies found that Negro children scored better than Caucasian children on selected measures of physical fitness. Three studies reviewed concerned the vertical jump. Two studies found that Negro students performance on the vertical jump was greater than Caucasians. One study found that Negro college students had better scores than Caucasian college students on the Sargent jump.

Twelve studies related to anthropometric measures of Caucasian and Negro boys and girls were reviewed. Four studies found that Negroes had a longer upper extremity, lower extremity, and foot than Caucasians. Three studies concluded that Negroes had a longer arm, hand, and leg than Caucasians. Three studies found that Caucasians had greater sitting height than Negroes. Two studies found that Negroes had greater weight than Caucasians. One study concluded that Negroes had greater height than Caucasians. Another study contradicted the finding and claimed Caucasians had greater height than Negroes. One study reported Negroes had a longer forearm and thigh than Caucasians. One study found Caucasian children had greater height and weight than Negro children. Another study found Negro college girls had longer upper and

lower extremities than Caucasian college girls; but Caucasian girls had greater sitting height than Negro girls. One study reported boys had greater height, upper extremity, lower extremity, weight, and sitting height than girls.

CHAPTER III

PROCEDURE

OVERVIEW OF THE STUDY

Introduction

This study was conducted at the Leon Godchaux Grammar, Rosenwald Elementary, and St. Peter Parochial, Reserve, Louisiana; Garyville Elementary and Sixth Ward Elementary, Garyville, Louisiana; and Woodland Elementary, John L. Ory Elementary, and La Place Elementary, La Place, Louisiana; during the fall semester of the school year 1970-1971. The anthropometric measures that were taken on each subject were as follows: weight, standing height, sitting height, length of the thigh, length of the leg, length of the lower extremity, length of the arm, length of the forearm, length of the hand, and length of the upper extremity. The tests of medicine ball put, standing broad jump, and zigzag run were administered to nine hundred students. The selection was limited to seventy-five Caucasian boys, seventy-five Caucasian girls, seventy-five Negro boys, and seventy-five Negro girls

from each of three age groups: six year olds, eight year olds, and ten year olds.

A 3 x 2 x 2 factorial analysis of variance was utilized in treating the data to determine if significant differences existed between Caucasians and Negroes and between boys and girls in each of the variables studied and to determine whether racial anthropometric differences and performances of boys and girls were uniform at various age levels.

Selection of Subjects

All six, eight, and ten year old students from Leon Godchaux Grammar, Rosenwald Elementary, and St. Peter Parochial, Reserve, Louisiana; Garyville Elementary and Sixth Ward Elementary, Garyville, Louisiana; and Woodland Elementary, John L. Ory Elementary, and La Place Elementary, La Place, Louisiana, served as subjects for this study. After reaching seventy-five subjects in each group any additional scores were omitted. Prior to the study the cooperation of the parish superintendent of schools, school principals, and the classroom teacher in charge of each class was obtained. Those students who had medical excuses did not participate in the testing program.

Testing Schedule

Testing took place during November, December, and January of the 1970-1971 school year. The tests were

administered during a two hour morning or afternoon session. A class of twenty students was tested at each session.

The tests and measures were administered as follows: standing broad jump, medicine ball put, zigzag run, weight, standing height, sitting height, length of the thigh, length of the leg, length of the lower extremity, length of the arm, length of the forearm, length of the hand, and length of the upper extremity. A make-up test period was scheduled for those students who had missed being tested with their respective groups.

Test Administrators

The test administrators for this study consisted of the author and the classroom teachers. The author administered all tests of standing broad jump, medicine ball put, and zigzag run. The classroom teacher acted as a recorder. Except for weight and standing height, which was taken by the classroom teacher, the author took all of the other anthropometric measurements.

ANTHROPOMETRIC MEASURING INSTRUMENT

A chair to measure six and eight year olds was constructed in order to obtain the following measurements: sitting height, length of the arm, length of the forearm, length of the hand, length of the upper extremity, length of the thigh, length of the leg, and length of the lower extremity. A larger chair was constructed to measure ten year olds. Two boards, 1 inch and the other 1/2 inch thick, were used on the seat of the chair or under the subject's feet to insure that all body parts were at right angles. The chair was built out of 2 x 12-inch number two pine, and yard sticks were attached to the chair with plastic and metal clips. The back of the chair was thirty-seven inches in height and the seat was nine inches deep, twelve inches wide, and twelve inches high. A six and one-half-inch extension was added to the right front side of the seat in order to get an accurate leg measurement. A nine-inch adjustable arm was mantled to the chair with a carriage bolt which was attached to the arm bracket that was secured by a wing nut. An eight-inch tenon groove was mortised on the back of the chair to adjust the arm rest for accurate measurements. The arm rest was rabbeted 1/4" x 1-1/8" and an 18"

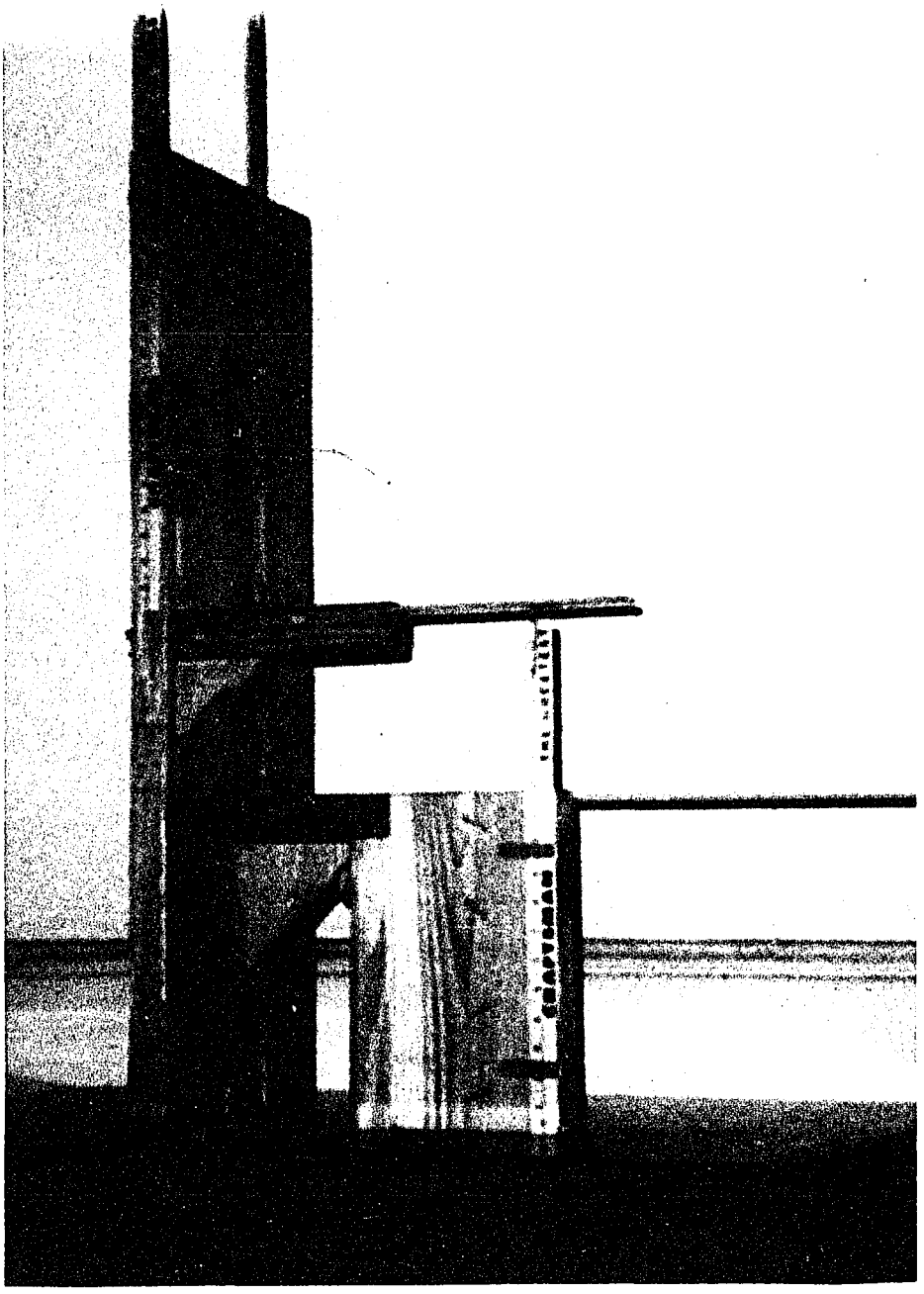

FIGURE 1

ILLUSTRATION OF CHAIR USED FOR
ANTHROPOMETRICAL MEASUREMENTS

sliding rule was placed in the groove. The back and edge of the back were rabbeted, and a yard stick was placed in the groove to secure the sitting height and upper arm length, respectively. The seat and extension on the right front side were rabbeted, and stationary yard sticks were placed in the grooves to secure thigh and leg measurements, respectively.

The larger chair, which was used to measure the ten year olds, had the same dimensions as the smaller one with these exceptions: the back of the chair was forty-five inches in height, the seat was fifteen inches high, the extension on the right front side was eight and one-half inches and the arm was thirteen inches in length.

ANTHROPOMETRIC MEASUREMENTS

Standing Height

A stadiometer was used to obtain the height of the subject. The subject stood erect with the eyes straight forward, the arms at the side, the palms of the hand turned inward, the fingers pointed downward, and the feet together. The measuring points for the standing height were from the highest point of the head (vertex) to the surface on which the subject

stood. The height was recorded to the nearest quarter-inch. All measurements were taken on students in their regular school clothing with the exception of shoes and coats.

Sitting Height

The subject was seated in an erect position on the chair, the head was held in an erect position with the eyes straight forward. The measurement was taken at the back of the individual from the highest point of the head to the seat of the chair. The sitting height and all the following measurements were recorded to the nearest one-eighth of an inch.

Weight

The weight of each subject was obtained using a lever-type scale which was found in the schools. Weight of the subject was recorded to the nearest quarter-pound.

Length of the Thigh

Thigh measurements were taken as the subject sat in the chair with his knees bent at a ninety degree angle and his feet on the floor. Measuring points for the thigh were from the posterior aspect of the gluteus maximus to the patella.

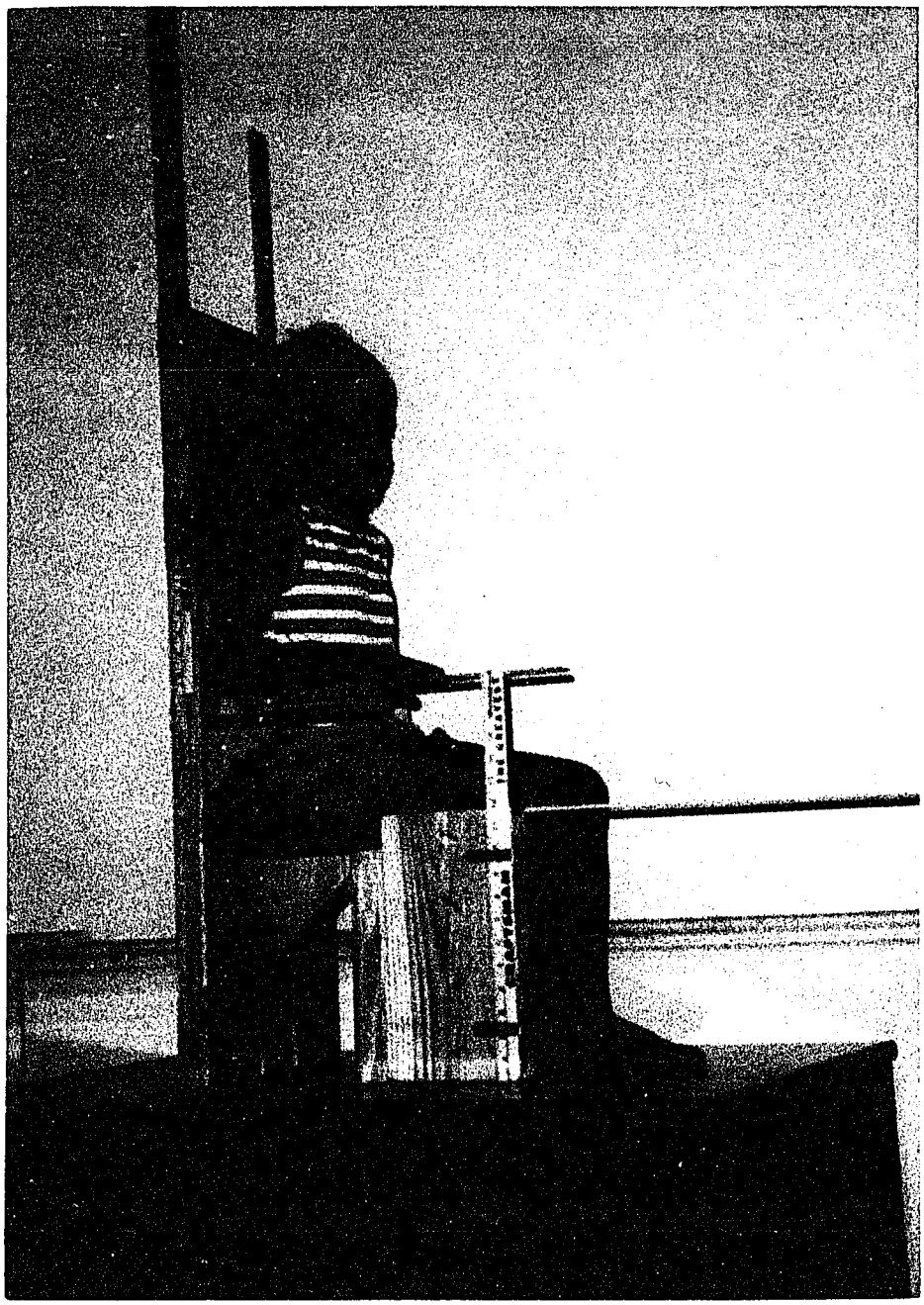

FIGURE 2

ILLUSTRATION OF SUBJECT'S POSITION IN CHAIR
USED FOR ANTHROPOMETRICAL MEASUREMENTS

Length of the Leg Including the Foot

The subject sat in the chair with his knees bent at a ninety degree angle and his feet on the floor. Measuring points for the leg were from the floor to the thigh just above the patella.

Length of the Lower Extremity

The length of the lower extremity was the sum of the thigh and leg including the foot.

Length of the Arm

The subject sat in the chair with his right elbow at a ninety degree angle to the back of the chair and arm rest. Measuring points for the arm were from the olecranon process of the ulna to the acromion process of the scapula.

Length of the Forearm

The subject sat in the chair with his forearm on the arm rest. Measuring points for the forearm were from the proximal end of the ulna to the tip of the styloid process of the radius (styloin).

Length of the Hand

The subject sat in the chair with his forearm and hand on the arm rest. Measuring points for the hand were from the styloid process of the radius (stylion)

to the tip of the middle finger (dactylion) with the hand in a dorsum position.

Length of the Upper Extremity

The length of the upper extremity was the sum of the arm, forearm, and hand.

ADMINISTRATION OF TESTS

Standing Broad Jump

The standing broad jump was used to determine whether there were any differences in the muscular power of the lower extremities of Caucasian and Negro boys and girls. The student stood behind the take-off line with his feet several inches apart. Preliminary to jumping the student simultaneously swung his arms backward and dipped his knees. The jump was performed by extending the knees and swinging his arms forward. The measurement was from the closest heel mark or other part of the body that touched the floor to the take-off line. The test administrator recorded the best of three jumps in inches to the nearest inch.[1] A tape measure was attached to the floor in order to record the subjects performance. The subjects

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[1]AAHPER Youth Fitness Test Manual, (Washington: American Association for Health, Physical Education, and Recreation, 1965), p. 20.

performed without shoes and no practice was allowed for the standing broad jump or any of the following test items.

Two-Hand Medicine Ball Put

The medicine ball put tested the muscular power of the upper extremities of the subjects. A six-pound and eleven ounce medicine ball was used in the administration of the test. The subject assumed a sitting position in a straight back chair, and the student held the ball in both hands with the ball drawn back against the chest and just below the chin. The performer was instructed to push the ball outward, parallel to the floor, for maximum distance. A harness was placed around the performer's chest and tightly drawn to the rear by a partner in order to eliminate swaying during the push. The put was made primarily with the arms. The distance was measured from the forward edge of the chair to the point of contact of the ball with the floor. The administrator recorded the best of three trials in feet to the nearest foot.[2]

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[2]Barry L. Johnson and Jack K. Nelson, Practical Measurements for Evaluation in Physical Education, (Minneapolis: Burgess Publishing Co., 1969), p. 86.

Zigzag Run

The zigzag run was used to determine whether differences were apparent in agility between Caucasian and Negro boys and girls. The subject used a standing start from behind the starting line. On the command go, the student ran the course in a figure-eight pattern. The course was marked on the floor, and one standard was placed at each of the right angles of a sixteen foot by ten foot rectangle and the fifth standard was placed in the middle of the rectangle. The contestant was instructed to run the course as fast as possible without grasping or misplacing the standards. Any subject who fouled or failed to run the prescribed course was required to repeat the test. The student was required to complete three circuits of the course. The final score was the elapsed time to the nearest tenth of a second upon completion of the third lap.[3]

PILOT STUDY

A pilot study was conducted to determine a method by which anthropometric measurements could be taken and to check the administrative procedures of

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[3]Harold M. Barrow and Rosemary McGee, A Practical Approach to Measurement in Physical Education, (Philadelphia: Lea and Febiger, 1964), p. 146.

the test items. The pilot study was conducted in conjunction with the Headstart program at Godchaux Grammar School, Reserve, Louisiana, and Garyville Grammar School, Garyville, Louisiana, and boys Little League baseball and girls Little League softball teams in Reserve, Louisiana.

Anthropometric measurements were taken and achievement tests were administered to five six year old boys and six six year old girls in the Headstart program. Except for one Caucasian boy and one Caucasian girl, all students tested in the Headstart program were Negroes. All anthropometric measurements, standing broad jump, and medicine ball put were administered without difficulty. The zigzag run was very difficult for the six year olds to master. Only one of the eleven subjects ran the course properly on the first attempt. The other ten subjects had to be give additional trials until the figure-eight pattern was learned.

The majority of eight, ten, and twelve year old boys were members of the Little League baseball program in Reserve, Louisiana. All twenty-nine boys tested were Caucasians. The selection included nine eight year olds, fifteen ten year olds, and five twelve year olds.

All anthropometric measurements, standing broad jump, and medicine ball put were administered without difficulty. Five boys had to repeat the zigzag run because the correct pattern was not followed.

The majority of eight, ten, and twelve year old girls were members of the Little League softball program in Reserve, Louisiana. All fifteen girls tested were Caucasians. The selection included five girls in each of the following groups: eight year olds, ten year olds, and twelve year olds. All anthropometric measurements, standing broad jump, and medicine ball put were administered without difficulty. Only one eight year old girl had to repeat the zigzag run because the correct pattern was not followed.

STATISTICAL ANALYSIS

A 3 x 2 x 2 factorial analysis of variance was utilized in treating the data to determine if there were significant differences between Caucasians and Negroes and between boys and girls in each of the variables studied, and to determine whether racial anthropometric differences and performances of boys and girls were uniform at various age levels. The Pearson Product-Moment method of correlation was employed to determine the reliability of the anthropometrical measurements.

CHAPTER IV

ANALYSIS AND PRESENTATION OF DATA

RELIABILITY OF THE MEASURING INSTRUMENT

The reliability of the chair as a measuring instrument was checked by correlating the measurements taken on a test-retest of twenty subjects. The correlation coefficients for the anthropometric measures were as follows: sitting height, .97; arm, .95; forearm, .97; hand, .98; upper extremity, .99; thigh, .98; leg, .99; and lower extremity, .99.

As shown in Table I, each correlation coefficient was significant at the .01 level of confidence. It was evident that the measuring device was a reliable instrument for measuring the body parts included in this study.

TABLE I

RELIABILITY COEFFICIENTS FOR SITTING HEIGHT, ARM, FOREARM, HAND, UPPER EXTREMITY, THIGH, LEG, AND LOWER EXTREMITY OF TWENTY SUBJECTS BY TEST-RETEST METHOD

Measurements	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg
Correlations	.97	.95	.97	.98	.99	.98	.99	.99

For 18 degrees of freedom, an r of .561 was needed for significance at the .01 level of confidence.

STATISTICAL ANALYSIS

A 3 x 2 x 2 factorial analysis of variance was utilized in treating the data to determine if there were significant differences between Caucasians and Negroes and between boys and girls in each of the variables studied and to determine whether racial anthropometric differences and performances of boys and girls were uniform at various age levels.

Before conducting the study, it was recognized that as age increased the following measures would almost certainly be significantly greater: weight, standing height, sitting height, arm, forearm, hand, upper extremity, thigh, leg, and lower extremity. It was also understood that as age increased the performances would be significantly better on the standing broad jump, the medicine ball put, and the zigzag run. Therefore, this study did not analyze age differences. However, the 3 x 2 x 2 factorial analysis of variance was used to primarily determine the interaction between age and sex and between age and race.

THREE-BY-TWO-BY-TWO FACTORIAL ANALYSIS OF VARIANCE

Analysis of Variance of Weight Between Age, Sex, and Race

As shown in Table III, the boys' weight was .8 of a pound more than the girls' at the six year level, 2.7 pounds more than the girls' at the eight year level, and .9 of a pound more than the girls' at the ten year level. As shown in Table II, the F for the comparison between sexes was 4.15 which was significant at the .05 level, which indicated the boys weighed significantly more than the girls.

The F for the interaction between age and sex was .77 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the boys weighed more than the girls at all age levels.

As shown in Table IV, the Caucasians' weight was .4 of a pound greater than the Negroes' weight at the six year level, 1.1 pounds greater than the Negroes' at the eight year level, and 3.5 pounds greater than the Negroes' at the ten year level. As shown in Table II, the F for the comparison between races was 5.48 which was significant at the .05 level, which indicated that the Caucasians weighed significantly more than the Negroes.

TABLE II

ANALYSIS OF VARIANCE FOR WEIGHT OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	101,801	50,900	444.93	.01
Sex	1	474	474	4.15	.05
Age-Sex	2	176	88	.77	N.S.
Race	1	627	627	5.48	.05
Age-Race	2	395	197	1.73	N.S.
Sex-Race	1	46	46	.40	N.S.
Age-Sex-Race	2	85	42	.37	N.S.
Error	888	101,587	114		
Total	899	205,194			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE III

MEAN WEIGHT OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 46.4*	M = 45.6	.8
8 years old	M = 59.9	M = 57.2	2.7
10 years old	M = 72.5	M = 71.6	.9

N = Number of subjects; M = mean; *weight in pounds.

TABLE IV

MEAN WEIGHT OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N = 150)	Negroes (N = 150)	Difference
6 years old	M = 46.2*	M = 45.8	.4
8 years old	M = 59.1	M = 58.0	1.1
10 years old	M = 73.8	M = 70.3	3.5

N = Number of subjects; M = mean; *weight in pounds.

The F for the interaction between age and race was 1.73 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Caucasians weighed more than the Negroes at all age levels.

The F for the interaction between sex and race was .40 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race which indicated that the difference in weight between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .37 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on weight were independent of each other.

Analysis of Variance of Standing Height Between Age, Sex, and Race

Inspection of the data in Table VI revealed that the boys standing height was .2 of an inch greater than the girls at the six year level, .8 of an inch greater than the girls at the eight year level;

however, at the ten year level the girls' standing height was .4 of an inch greater than the boys. In Table V, the F for the comparison between sexes was 1.10 which was not significant at the .05 level, which indicated that there was no significant difference in standing height between boys and girls.

The F-ratio shown for the interaction between age and sex was 3.50 which was significant at the .05 level of confidence. Therefore, there was a significant interaction between age and sex. Inspection of Table VI reveals that the difference between boys and girls was greater at age eight than at ages six and ten.

As noted in Table VII, the Negroes' standing height was .4 of an inch greater than the Caucasians at the six year level, .5 of an inch greater than the Caucasians at the eight year level, and .7 of an inch greater than the Caucasians at the ten year level. Table V reveals an F-ratio of 8.59 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' standing height was significantly greater than the Caucasians.

TABLE V

ANALYSIS OF VARIANCE FOR STANDING HEIGHT OF 900 CAUCASIAN AND NEGRO, BOYS AND GIRLS, SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	12,279	6,139	796.30	.01
Sex	1	8	8	1.10	N.S.
Age-Sex	2	53	26	3.50	.05
Race	1	66	66	8.59	.01
Age-Race	2	1	.8	.10	N.S.
Sex-Race	1	6	6	.87	N.S.
Age-Sex-Race	2	21	10	1.39	N.S.
Error	888	6,849	7		
Total	899	19,286			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE VI

MEAN STANDING HEIGHT OF BOYS AND GIRLS, SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 45.6*	M = 45.4	.2
8 years old	M = 50.4	M = 49.6	.8
10 years old	M = 54.4	M = 54.8	.4

N = Number of subjects; M = mean; * standing height in inches.

TABLE VII

MEAN STANDING HEIGHT OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 45.3*	M = 45.7	.4
8 years old	M = 49.7	M = 50.2	.5
10 years old	M = 54.2	M = 54.9	.7

N = Number of subjects; M = mean; * standing height in inches.

Analysis of the data in Table V revealed an F-ratio of .10 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Negroes' standing height was greater than the Caucasians' at all age levels.

The F-ratio shown in Table V for the interaction between sex and race was .87 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in standing height between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was 1.39 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on standing height were independent of each other.

Analysis of Variance of Sitting Height Between Age, Sex, and Race

Inspection of the data in Table IX revealed that the boys' sitting height was .2 of an inch greater than the girls' at the six year level, .6 of an inch greater than the girls' at the eight year level,

and .1 of an inch greater than the girls' at the ten year level. In Table VIII, the F for the comparison between sexes was 12.22 which was significant at the .01 level, which indicated the boys' sitting height was greater than the girls'.

The F-ratio shown for the interaction between age and sex was 4.85 which was significant at the .01 level of confidence. Therefore, there was significant interaction between age and sex, which revealed that the difference in sitting height between boys and girls was significantly greater in favor of the boys at the eight year level than it was at the six and ten year levels.

As noted in Table X, the Caucasians' sitting height was .6 of an inch greater than the Negroes' at the six year level, .6 of an inch greater than the Negroes' at the eight year level, and .7 of an inch greater than the Negroes' at the ten year level. Table VIII reveals an F-ratio of 64.60 for the comparison between races which was significant at the .01 level. This indicated that the Caucasians' sitting height was greater than the Negroes'.

Analysis of the data in Table VIII revealed an F-ratio of .50 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant

TABLE VIII

ANALYSIS OF VARIANCE FOR SITTING HEIGHT OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	2,054	1,027	744.35	.01
Sex	1	16	16	12.22	.01
Age-Sex	2	13	6	4.85	.01
Race	1	89	89	64.60	.01
Age-Race	2	1	.7	.50	N.S.
Sex-Race	1	.08	.08	.05	N.S.
Age-Sex-Race	2	2	1	.85	N.S.
Error	888	1,222	1.37		
Total	899	3,399			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE IX

MEAN SITTING HEIGHT OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N=150)	Girls (N=150)	Difference
6 years old	M = 25.0*	M = 24.8	.2
8 years old	M = 27.1	M = 26.5	.6
10 years old	M = 28.7	M = 28.6	.1

N = Number of subjects; M = mean; * sitting height in inches.

TABLE X

MEAN SITTING HEIGHT OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 25.2*	M = 24.6	.6
8 years old	M = 27.1	M = 26.5	.6
10 years old	M = 29.0	M = 28.3	.7

N = Number of subjects; M = mean; * sitting height in inches.

interaction between age and race, which was interpreted to mean the Caucasians sitting height was greater than the Negroes at all age levels.

The F-ratio shown in Table VIII for the interaction between sex and race was .05 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in sitting height between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .85 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on sitting height were independent of each other.

Analysis of Variance of Arm Length Between Age, Sex, and Race

Inspection of the data in Table XII revealed that the boys' arm length was .06 of an inch greater than the girls' at the six year level, .19 of an inch greater than the girls' at the eight year level, and .05 of an inch greater than the girls' at the

ten year level. In Table XI, the F for the comparison between sexes was 5.86 which was significant at the .05 level, which indicated the boys' arm length was significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was 1.22 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the boys' arm length was greater than the girls' at all age levels.

As noted in Table XIII, the Negroes' arm length was .14 of an inch greater than the Caucasians' at the six year level, .29 of an inch greater than the Caucasians' at the eight year level, and .13 of an inch greater than the Caucasians' at the ten year level. Table XI reveals an F-ratio of 21.91 for the comparison between races which was singificant at the .01 level. This indicated that the Negroes' arm length was significantly greater than the Caucasians'.

Analysis of the data in Table XI revealed an F-ratio of 1.83 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted

TABLE XI

ANALYSIS OF VARIANCE FOR ARM LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	651	325	904.80	.01
Sex	1	2	2	5.86	.05
Age-Sex	2	.89	.44	1.22	N.S.
Race	1	7	7	21.91	.01
Age-Race	2	1	.66	1.83	N.S.
Sex-Race	1	.04	.04	.11	N.S.
Age-Sex-Race	2	.62	.31	.86	N.S.
Error	888	319	.36		
Total	899	983			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XII

MEAN ARM LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 9.13*	M = 9.07	.06
8 years old	M = 10.28	M = 10.09	.19
10 years old	M = 11.21	M = 11.16	.05

N = Number of subjects; M = mean; *upper arm length in inches.

TABLE VIII

MEAN ARM LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 9.03*	M = 9.17	.14
8 years old	M = 10.04	M = 10.33	.29
10 years old	M = 11.12	M = 11.25	.13

N = number of subjects; M = mean; *upper arm length in inches.

to mean the Negroes' arm length was greater than the Caucasians' at all age levels.

The F-ratio shown in Table XI for the interaction between sex and race was .11 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in arm length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .86 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on arm length were independent of each other.

Analysis of Variance of Forearm Length Between Age, Sex, and Race

Inspection of the data in Table XV revealed that the boys' forearm length was .13 of an inch greater than the girls' at the six year level, .18 of an inch greater than the girls' at the eight year level, and .12 of an inch greater than the girls' at the ten year level. In Table XIV, the F for the comparison between sexes was 21.66 which was significant

at the .01 level, which indicated the boys' forearm length was significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was .42 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that boys' forearm length was greater than the girls' at all age levels.

As noted in Table XVI, the Negroes' forearm length was .28 of an inch greater than the Caucasians' at the six year level, .36 of an inch greater than the Caucasians' at the eight year level, and .34 of an inch greater than the Caucasians' at the ten year level. Table XIV reveals an F-ratio of 112.61 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' forearm length was significantly greater than the Caucasians'.

Analysis of the data in Table XIV revealed an F-ratio of .61 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Negroes' forearm length was greater than the Caucasians' at all age levels.

TABLE XIV

ANALYSIS OF VARIANCE FOR FOREARM LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	378	189	900.33	.01
Sex	1	4	4	21.66	.01
Age-Sex	2	.17	.09	.42	N.S.
Race	1	23	23	112.61	.01
Age-Race	2	.25	.13	.61	N.S.
Sex-Race	1	.01	.01	.04	N.S.
Age-Sex-Race	2	.19	.09	.42	N.S.
Error	888	185	.20		
Total	899	592			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01 and at the .01 level, 4.64.

TABLE XV

MEAN FOREARM LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 7.04*	M = 6.91	.13
8 years old	M = 7.87	M = 7.69	.18
10 years old	M = 8.62	M = 8.50	.12

N = Number of subjects; M = mean; *forearm length in inches.

TABLE XVI

MEAN FOREARM LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 6.83*	M = 7.11	.28
8 years old	M = 7.60	M = 7.96	.36
10 years old	M = 8.39	M = 8.73	.34

N = Number of subjects; M = mean; *forearm length in inches.

The F-ratio shown in Table XIV for the interaction between sex and race was .04 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in forearm length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .42 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on forearm length were independent of each other.

Analysis of Variance of Hand Length Between Age, Sex, and Race

Inspection of the data in Table XVIII revealed that the boys' hand lengths were .07 of an inch greater than the girls' at the six year level, .16 of an inch greater than the girls' at the eight year level, and there was no difference in hand length between boys and girls at the ten year level. In Table XVII, the F for the comparison between sexes was 9.46 which was significant at the .01 level, which

indicated the boys' hand length was significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was 3.33 which was significant at the .05 level of confidence. Therefore, there was a significant interaction between age and sex. Inspection of Table XVIII reveals that the difference between boys and girls was greater at age eight than at ages six and ten.

As noted in Table XIX, the Negroes' hand length was .37 of an inch greater than the Caucasians' at the six year level, .40 of an inch greater than the Caucasians' at the eight year level, and .38 of an inch greater than the Caucasians' at the ten year level. Table XVII reveals an F-ratio of 220.66 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' hand length was significantly greater than the Caucasians'.

Analysis of the data in Table XVII revealed an F-ratio of .13 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant

TABLE XVII

ANALYSIS OF VARIANCE FOR HAND LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	173	86	578.46	.01
Sex	1	1	1	9.46	.01
Age-Sex	2	1	.50	3.33	.05
Race	1	33	33	220.66	.01
Age-Race	2	.04	.02	.13	N.S.
Sex-Race	1	.02	.02	.13	N.S.
Age-Sex-Race	2	.24	.12	.80	N.S.
Error	888	132	.15		
Total	899	342			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 leve, 3.01; and at the .01 level, 4.64.

TABLE XVIII

MEAN HAND LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 5.48*	M = 5.41	.07
8 years old	M = 6.01	M = 5.85	.16
10 years old	M = 6.52	M = 6.52	.00

N = Number of subjects; M = mean; *hand length in inches.

TABLE XIX

MEAN HAND LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 5.26*	M = 5.63	.37
8 years old	M = 5.73	M = 6.13	.40
10 years old	M = 6.33	M = 6.71	.38

N = Number of subjects; M = mean; *hand length in inches.

interaction between sex and race which was interpreted to mean the Negroes' hand length was greater than the Caucasians' at all age levels.

The F-ratio shown in Table XVII for the interaction between sex and race was .13 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in hand length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .80 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on hand length were independent of each other.

Analysis of Variance of Upper Extremity Between Age, Sex, and Race

Inspection of the data in Table XXI revealed that the boys' upper extremity length was .3 of an inch greater than the girls' at the six year level, .6 of an inch greater than the girls' at the eight year level, and .1 of an inch greater than the girls' at the ten year level. In Table XX, the F for the comparison

between sexes was 13.22 which was significant at the .01 level, which indicated the boys' upper extremity length was significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was 1.73 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the boys' upper extremity length was greater than the girls' at all age levels.

As noted in Table XXII, the Negroes' upper extremity length was .8 of an inch greater than the Caucasians' at the six year level, 1.0 inch greater than the Caucasians' at the eight year level, and .9 of an inch greater than the Caucasians' at the ten year level. Table XX reveals an F-ratio of 105.44 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' upper extremity length was significantly greater than the Caucasians'.

Analysis of the data in Table XX reveals an F-ratio of .81 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Negroes' upper extremity length was greater than the Caucasians' at all age levels.

TABLE XX

ANALYSIS OF VARIANCE FOR UPPER EXTREMITY LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	3,369	1,684	979.51	.01
Sex	1	22	22	33.22	.01
Age-Sex	2	5	2	1.73	N.S.
Race	1	181	181	105.44	.01
Age-Race	2	2	1	.81	N.S.
Sex-Race	1	.21	.21	.12	N.S.
Age-Sex-Race	2	2	1	.73	N.S.
Error	888	1,525	1.72		
Total	899	5,110			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXI

MEAN UPPER EXTREMITY LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years	M = 21.7*	M = 21.4	.3
8 years old	M = 24.2	M = 23.6	.6
10 years old	M = 26.3	M = 26.2	.1

N = Number of subjects; M = mean; *entire arm length in inches.

TABLE XXII

MEAN UPPER EXTREMITY LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 21.1*	M = 21.9	.8
8 years old	M = 23.4	M = 24.4	1.0
10 years old	M = 25.8	M = 26.7	.9

N = Number of subjects; M = mean; *entire arm length in inches.

The F-ratio shown in Table XX for the interaction between sex and race was .12 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in upper extremity length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .73 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on upper extremity length were independent of each other.

Analysis of Variance of Thigh Length Between Age, Sex, and Race

Inspection of the data in Table XXIV revealed that the girls' thigh length was .1 of an inch greater than the boys' at the six year level, there was no difference in thigh length between boys and girls at the eight year level, and the girls' thigh length was .4 of an inch greater than the boys' at the ten year level. In Table XXII, the F for the comparison between sexes was 4.83 which was significant, at the .05 level, which

indicated the girls' thigh length was significantly greater than the boys'.

The F-ratio shown for the interaction between age and sex was 2.42 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the difference in thigh length between boys and girls was uniform at all age levels.

As noted in Table XXV, the Negroes' thigh length was .5 of an inch greater than the Caucasians' at the six year level, .5 of an inch greater than the Caucasians' at the eight year level, and .5 of an inch greater than the Caucasians' at the ten year level. Table XXIII reveals an F-ratio of 47.13 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' thigh length was significantly greater than the Caucasians'.

Analysis of the data in Table XXIII revealed an F-ratio of .08 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Negroes' thigh length was greater than the Caucasians' at all age levels.

The F-ratio shown in Table XXIII for the interaction between sex and race was .06 which was not

TABLE XXIII

ANALYSIS OF VARIANCE FOR THIGH LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	2,254	1,127	901.66	.01
Sex	1	6	6	4.83	.05
Age-Sex	2	6	3	2.42	N.S.
Race	1	58	58	47.13	.01
Age-Race	2	.22	.11	.08	N.S.
Sex-Race	1	.08	.08	.06	N.S.
Age-Sex-Race	2	1	.93	.74	N.S.
Error	888	1,107	1.25		
Total	899	3,435			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXIV

MEAN THIGH LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 15.3*	M = 15.4	.1
8 years old	M = 17.3	M = 17.3	.0
10 years old	M = 19.0	M = 19.4	.4

N = Number of subjects; M = mean; *thigh length in inches.

TABLE XXV

MEAN THIGH LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 15.1*	M = 15.6	.5
8 years old	M = 17.0	M = 17.5	.5
10 years old	M = 19.0	M = 19.5	.5

N = Number of subjects; M = mean; *thigh length in inches.

significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in thigh length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .74 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on thigh length were independent of each other.

Analysis of Variance of Leg Length Between Age, Sex, and Race

Inspection of the data in Table XXVII revealed that the boys' leg length was .1 of an inch greater than the girls' at the six year level, .2 of an inch greater than the girls at the eight year level, and there was no difference in leg length between boys and girls at the ten year level. In Table XXVI, the F for the comparison between sexes was 1.82 which was not significant at the .05 level, which indicated the boys' leg length was not significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was .92 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the difference in leg length between boys and girls was uniform at all age levels.

As noted in Table XXVIII, the Negroes' leg length was .5 of an inch greater than the Caucasians' at the six year level, .4 of an inch greater than the Caucasians' at the eight year level, and .6 of an inch greater than the Caucasians' at the ten year level. Table XXVI reveals an F-ratio of 65.76 for the comparison between races which was significant at the .01 level. This indicated that Negroes' leg length was significantly greater than the Caucasians'.

Analysis of the data in Table XXVI revealed an F-ratio of .03 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which was interpreted to mean the Negroes' leg length was greater than the Caucasians at all age levels.

The F-ratio shown in Table XXVI for the interaction between sex and race was .02 which was not significant at the .05 level of confidence. Therefore,

TABLE XXVI

ANALYSIS OF VARIANCE FOR LEG LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	1,678	839	912.29	.01
Sex	1	1	1	1.82	N.S.
Age-Sex	2	1	.85	92	N.S.
Race	1	60	60	65.76	.01
Age-Race	2	.05	.03	.03	N.S.
Sex-Race	1	.02	.02	.02	N.S.
Age-Sex-Race	2	1	.65	.70	N.S.
Error	888	814	.92		
Total	899	2,558			

For 1 and 888 dr, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXVII

MEAN LEG LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 14.2*	M = 14.1	.1
8 years old	M = 15.9	M = 15.7	.2
10 years old	M = 17.5	M = 17.5	.0

N = Number of subjects; M = mean; *leg length in inches.

TABLE XXVIII

MEAN LEG LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 13.9*	M = 14.4	.5
8 years old	M = 15.7	M = 16.1	.4
10 years old	M = 17.2	M = 17.8	.6

N = Number of subjects; M = mean; *leg length in inches.

there was no significant interaction between sex and race. This indicated that the difference in leg length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .70 which was not significant at the .05 level of confidence. Therefore there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on leg length were independent of each other.

Analysis of Variance of Lower Extremity Between Age, Sex, and Race

Inspection of the data in Table XXX revealed that there was no difference in lower extremity length between boys and girls at the six year level, the boys' lower extremity length was .2 of an inch greater than the girls' at the eight year level, and the girls' lower extremity length was .4 of an inch greater than the boys' at the ten year level. In Table XXIX, the F for the comparison between sexes was .30 which was not significant at the .05 level, which indicated that the girls' lower extremity length was not greater than the boys'.

The F-ratio shown for the interaction between age and sex was 1.74 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the differences in lower extremity length between boys and girls were uniform at all age levels.

As noted in Table XXXI, the Negroes' lower extremity length was 1.1 inches greater than the Caucasians' at the six year level, 1.0 inch greater than the Caucasians' at the eight year level, and 1.1 inches greater than the Caucasians' at the ten year level. Table XXIX reveals an F-ratio of 59.68 for the comparison between races which was significant at the .01 level. This indicated that the Negroes' lower extremity length was significantly greater than the Caucasians'.

Analysis of the data in Table XXIX revealed an F-ratio of .04 for the interaction between age and race which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Negroes' lower extremity length was greater than the Caucasians' at all age levels.

TABLE XXIX

ANALYSIS OF VARIANCE FOR LOWER EXTREMITY LENGTH OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	7,837	3,918	974.88	.01
Sex	1	1	1	.30	N.S.
Age-Sex	2	13	6	1.74	N.S.
Race	1	239	239	59.68	.01
Age-Race	2	.20	.10	.04	N.S.
Sex-Race	1	.03	.03	.00	N.S.
Age-Sex-Race	2	5	2	.65	N.S.
Error	888	3,571	4.02		
Total	899	11,669			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXX

MEAN LOWER EXTREMITY LENGTH OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 29.5*	M = 29.5	.0
8 years old	M = 33.2	M = 33.0	.2
10 years old	M = 36.5	M = 36.9	.4

N = Number of subjects; M = mean; *entire leg length in inches.

TABLE XXXI

MEAN LOWER EXTREMITY LENGTH OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 28.9*	M = 30.0	1.1
8 years old	M = 32.6	M = 33.6	1.0
10 years old	M = 36.1	M = 37.2	1.1

N = Number of subjects; M = mean; *entire leg length in inches.

The F-ratio shown in Table XXIX for the interaction between sex and race was .00 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in lower extremity length between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .65 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on lower extremity length were independent of each other.

Analysis of Variance of the Standing Broad Jump Between Age, Sex, and Race

Inspection of the data in Table XXXIII revealed that the boys' standing broad jump was 4.1 inches greater than the girls' at the six year level, 5.6 inches greater than the girls' at the eight year level, and 6.2 inches greater than the girls' at the ten year level. In Table XXXII, the F for the comparison between sexes was 121.03 which was significant at the .01 level, which indicated the boys' standing

broad jump scores were significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was 1.74 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the boys' standing broad jump scores were greater than the girls' at all age levels.

As noted in Table XXXIV, the Caucasians' standing broad jump score was 1.4 inches greater than the Negroes' at the six year level, the Negroes' standing broad jump score was .2 of an inch greater than the Caucasians' at the eight year level, and the Caucasians' standing broad jump score was 3.6 inches greater than the Negroes' at the ten year level. Table XXXII reveals an F-ratio of 10.34 for the comparison between races which was significant at the .01 level. This indicated that the Caucasians' standing broad jump score was significantly greater than the Negroes'.

Analysis of the data in Table XXXII revealed an F-ratio of 4.24 for the interaction between age and race which was significant at the .05 level of confidence. Therefore, there was a significant interaction between age levels and race, which was interpreted to mean

TABLE XXXII

ANALYSIS OF VARIANCE FOR THE STANDING BROAD JUMP OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	55,086	27,543	526.13	.01
Sex	1	6,336	6,336	121.03	.01
Age-Sex	2	182	91	1.74	N.S.
Race	1	541	541	10.34	.01
Age-Race	2	532	266	4.24	.05
Sex-Race	1	62	62	1.20	N.S.
Age-Sex-Race	2	96	48	.92	N.S.
Error	888	46,490	52		
Total	899	109,327			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXXIII

MEAN STANDING BROAD JUMP SCORE OF BOYS AND GIRLS SIX EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 33.8*	M = 29.7	4.1
8 years old	M = 44.0	M = 38.4	5.6
10 years old	M = 54.0	M = 47.8	6.2

N = Number of subjects; M = mean; *standing broad jump score in inches.

TABLE XXXIV

MEAN STANDING BROAD JUMP SCORE OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 32.4*	M = 31.0	1.4
8 years old	M = 41.1	M = 41.3	.2
10 years old	M = 52.7	M = 49.1	3.6

N = Number of subjects; M = mean; *standing broad jump score in inches.

that the six and ten year old Caucasians' standing broad jump score was higher than the Negroes', but the eight year old Negroes' score was higher than the Caucasians'.

The F-ratio shown in Table XXXII for the interaction between sex and race was 1.20 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race. This indicated that the difference in standing broad jump score between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .92 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on the standing broad jump score were independent of each other.

Analysis of Variance of the Medicine Ball Put Between Age, Sex, and Race

Inspection of the data in Table XXXVI revealed that the boys' medicine ball put score was .36 of a foot greater than the girls' at the six year level, .61 of a foot greater than the girls' at the eight year level, and .66 of a foot greater than the girls' at the

ten year level. In Table XXXV, the F for the comparison between sexes was 121.50 which was significant at the .01 level, which indicated the boys' medicine ball put score was significantly greater than the girls'.

The F-ratio shown for the interaction between age and sex was 3.44 which was significant at the .05 level of confidence. Therefore, there was a significant interaction between age and sex, which revealed that the difference in the medicine ball put score between boys and girls was significantly greater in favor of the boys at the eight and ten year levels, but not as great a difference at the six year level.

As noted in Table XXXVII, the Caucasians' medicine ball put score was .06 of a foot greater than the Negroes' at the six year level, .09 of a foot greater than the Negroes' at the eight year level, and .02 of a foot greater than the Negroes' at the ten year level. Table XXXV reveals an F-ratio of 5.77 for the comparison between races which was significant at the .05 level. This indicated that the Caucasians' medicine ball put scores were significantly greater than the Negroes'.

Analysis of the data in Table XXXV revealed an F-ratio of .72 for the interaction between age and race which was not significant at the .05 level of

TABLE XXXV

ANALYSIS OF VARIANCE FOR THE MEDICINE BALL PUT OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	895	447	829.40	.01
Sex	1	65	65	121.50	.01
Age-Sex	2	3	1	3.44	.05
Race	1	3	3	5.77	.05
Age-Race	2	.78	.39	.72	N.S.
Sex-Race	1	.69	.69	1.27	N.S.
Age-Sex-Race	2	.16	.08	.14	N.S.
Error	888	478	.54		
Total	899	1,448			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXXVI

MEAN MEDICINE BALL PUT SCORE OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = 2.42*	M = 1.88	.36
8 years old	M = 3.47	M = 2.86	.61
10 years old	M = 4.83	M = 4.17	.66

N = Number of subjects; M = mean; *medicine ball put score in feet.

TABLE XXXVII

MEAN MEDICINE BALL PUT SCORE OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M = 2.09*	M = 2.03	.06
8 years old	M = 3.21	M = 3.12	.09
10 years old	M = 4.60	M = 4.40	.20

N = Number of subjects; M = mean; *medicine ball put score in feet.

confidence. Therefore, there was no significant interaction between age and race, which was interpreted to mean the Caucasians' medicine ball put scores were greater than the Negroes' at all age levels.

The F-ratio shown in Table XXXV for the interaction between sex and race was 1.27 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race which indicated that the difference in the medicine ball put score between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .14 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on the medicine ball put score were independent of each other.

Analysis of Variance of the Zigzag Run Between Age, Sex, and Race

Each individual score recorded for the zigzag run was divided into one and this score was used in the analysis of variance. Inspection of the data in Table XXXIX revealed that the boys' zigzag run score was .0003 of a second better than the girls' at the six year level, .0009 of a second better than the girls' at the eight year

level, and .0014 of a second better than the girls' at the ten year level. In Table XXXVIII, the F for the comparison between sexes was 20.00 which was significant at the .01 level, which indicated the boys' zigzag run scores were significantly better than the girls'.

The F-ratio shown for the interaction between age and sex was .00 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age and sex, which revealed that the boys' zigzag run scores were better than the girls' at all age levels.

As noted in Table XL, the Caucasians' zigzag run score was .0005 of a second better than the Negroes' at the six year level, .0015 of a second better than the Negroes' at the eight year level, and .0022 of a second better than the Negroes' at the ten year level. Table XXXVIII reveals an F-ratio of 40.00 for the comparison between races which was significant at the .01 level. This indicated that the Caucasians' zigzag run scores were significantly better than the Negroes'.

Analysis of the data in Table XXXVIII revealed an F-ratio of 10.00 for the interaction between age and race which was significant at the .01 level of confidence.

TABLE XXXVIII

ANALYSIS OF VARIANCE FOR THE ZIGZAG RUN OF 900 CAUCASIAN AND NEGRO BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Source of Variation	D.F.	Sum of Squares	M^2	F	P
Age	2	.0048	.0024	240.00	.01
Sex	1	.0002	.0002	20.00	.01
Age-Sex	2	.0000	.0000	.00	N.S.
Race	1	.0004	.0004	40.00	.01
Age-Race	2	.0001	.0001	10.00	.01
Sex-Race	1	.0000	.0000	.00	N.S.
Age-Sex-Race	2	.0000	.0000	.00	N.S.
Error	888	.0056	.00001		
Total	899	.0112			

For 1 and 888 df, F-ratio needed at .05 level, 3.86; and at the .01 level, 6.67. For 2 and 888 df, F-ratio needed at .05 level, 3.01; and at the .01 level, 4.64.

TABLE XXXIX

MEAN ZIGZAG RUN SCORE OF BOYS AND GIRLS SIX, EIGHT, AND TEN YEARS OLD

Age	Boys (N = 150)	Girls (N = 150)	Difference
6 years old	M = .0258*	M = .0255	.0003
8 years old	M = .0294	M = .0285	.0009
10 years old	M = .0320	M = .0306	.0014

N = Number of subjects; M = Mean; *zigzag run score in seconds.

TABLE XL

MEAN ZIGZAG RUN SCORE OF CAUCASIANS AND NEGROES SIX, EIGHT, AND TEN YEARS OLD

Age	Caucasians (N=150)	Negroes (N=150)	Difference
6 years old	M =.0259*	M = .0254	.0005
8 years old	M =.0297	M = .0282	.0015
10 years old	M =.0324	M = .0302	.0022

N = Number of subjects; M = mean; *zigzag run score in seconds.

Therefore, there was a significant interaction between age levels and race, which was interpreted to mean that the differences in zigzag run scores between Caucasians and Negroes increased at all age levels as age increased.

The F-ratio shown in Table XXXVIII for the interaction between sex and race was .00 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between sex and race which indicated that the difference in zigzag run scores between boys and girls was uniform at the levels of both races.

The F for the interaction between age, sex, and race was .00 which was not significant at the .05 level of confidence. Therefore, there was no significant interaction between age, sex, and race, which when coupled with the non-significant two factor interaction indicated that the effects of age, sex, and race on the zigzag run score were independent of each other.

CHAPTER V

SUMMARY, FINDINGS, DISCUSSION OF FINDINGS, AND CONCLUSIONS

SUMMARY

The primary purpose of this study was to compare the following anthropometric measurements of Caucasian and Negro boys and girls: standing height, sitting height, weight, length of the arm, length of the forearm, length of the hand, length of the upper extremity, length of the thigh, length of the leg, and length of the lower extremity. The secondary purpose of this study was to determine whether there were any differences in the standing broad jump, medicine ball put, and zigzag run performances of Caucasian and Negro boys and girls.

A total of nine hundred subjects from the following schools: Leon Godchaux Grammar, Rosenwald Elementary, and St. Peter Parochial, Reserve, Louisiana; Garyville Elementary and Sixth Ward Elementary, Garyville, Louisiana; and Woodland Elementary, John L. Ory Elementary, and La Place Elementary, La Place, Louisiana, served as subjects for this study. The selection

included seventy-five Caucasian boys, seventy-five Caucasian girls, seventy-five Negro boys, and seventy-five Negro girls from each of the following age groups: six year olds, eight year olds, and ten year olds. The anthropometric measures and achievement tests, as listed in the preceding paragraph, were administered to the subjects.

Statistical computations were processed in the Louisiana State University Computer Research Center. Coefficients of correlation were employed to determine the reliability of the measuring instrument. A factorial analysis of variance was utilized in treating the data to determine if there were significant differences between six year old, eight year old, and ten year old subjects; boys and girls; and whether there were any significant interactions between age, sex, and race.

FINDINGS

Based on the results of this study, the findings were as follows:

1. Boys had significantly greater weight, sitting height, arm, forearm, hand, and upper extremity length than girls.

2. Girls had a significantly greater thigh length than boys and there was no significant difference in the standing height, leg, and lower extremity length between boys and girls.

3. Boys perform significantly better than girls in the standing broad jump, the medicine ball put, and the zigzag run.

4. Negroes had significantly greater standing height, arm, forearm, hand, upper extremity, thigh, leg, and lower extremity length than Caucasians.

5. Caucasians had significantly greater weight and sitting height than Negroes.

6. Caucasians had significantly greater scores in the standing broad jump, medicine ball put, and zigzag run than the Negroes.

7. The significant interaction between age level and sex on sitting height, standing height, and hand length indicated the boys' measurements were significantly greater than the girls at the eight year level than at the six or ten year level.

8. The significant interaction between age level and sex on performance of the medicine ball put indicated the boys' performance to be significantly greater than the girls' at the eight and ten year levels than at the six year level.

9. The significant interaction between age level and race on performance of the standing broad jump indicated the Caucasians' performance was significantly greater than the Negroes' at the six and ten year level and the Negroes' performance was significantly greater at the eight year level.

10. The significant interaction between age level and race on performance of the zigzag run indicated the Caucasians' performance was significantly greater than the Negroes' at the eight and ten year levels than at the six year level.

DISCUSSION OF FINDINGS

It was found that the Negroes had greater standing height and longer appendages than the Caucasians. This was evidenced by the Negroes superior standing height, arm, forearm, hand, upper extremity, thigh, leg, and lower extremity length. The greater stature and longer upper and lower extremities combined with lighter body weight indicated the Negroes had more of an ectomorphic body type than did the Caucasians. However, this was in agreement with the findings of

Steggerda and Petty,[1] Metheny,[2] Todd and Lindala,[3] and Williams, Grim, Wimp, and Whayne.[4]

The Caucasians had greater weight and sitting height than the Negroes. This longer trunk length of the Caucasians may be responsible for their superior weight over the Negroes. The greater weight, smaller stature, and smaller upper and lower limbs indicated the Caucasians had more of a mesomorphic body type than the Negroes. This finding was shown to be consistent with the findings of Hrdlicka.[5]

The boys had significantly greater weight, sitting height, arm, forearm, hand and upper limb length than the girls which was in agreement with the findings of Meredith and Meredith.[6]

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[1]Steggerda and Petty, op. cit., "An Anthropometric Study of Negro and White College Women," 118.

[2]Metheny, op. cit., "Some Differences in Bodily Proportions between American Negro and White Male College Students as Related to Athletic Performance," 50-51.

[3]Todd and Lindala, op. cit., "Dimensions of the Body: Whites and American Negroes of Both Sexes," 72-75.

[4]Williams, Grim, Wimp, and Whayne, op. cit., "Calf Muscles in American Whites and Negroes," 57-58.

[5]Hrdlicka, op. cit., "The Full-Blood American Negro," 17.

[6]Meredith and Meredith, op. cit., "The Body Size and Form of Present-Day White Elementary School Children Residing in West-Central Oregon," 86-89.

The finding that Caucasians had superior scores in the standing broad jump was contradictory to the findings of Pontheiux and Baker[7] and Berger and Paradis.[8]

In general, the anthropometric findings of this study supported the consensus of the literature that Negroes were superior to Caucasians in measures of stature and upper and lower limb lengths. The boys superior performance over the girls in test of power and agility was also in agreement with the literature. However, the finding that Caucasians performed better than the Negroes on the standing broad jump was not in agreement with the findings of most studies.

CONCLUSIONS

Based on the findings of this study, the following conclusions were made:

1. At the six, eight, and ten year levels boys differed from girls in most anthropometric measurements; however, there were no differences in standing height, leg, and lower extremity length.

2. Boys were superior to girls in performance of power and agility events at the six, eight, and ten year levels.

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[7]Ponthieux and Barker, op. cit., "Relationships Between Race and Physical Fitness," 471.

[8]Berger and Paradis, op. cit., "Comparison of Physical Fitness Scores of White and Black Seventh Grade Boys of Similar Socioeconomic Level," 668.

3. The differences between boys and girls in anthropometric measurements were not consistent at all age levels.

4. Negro boys and girls had longer appendages and were taller than Caucasians.

5. Longer appendages, in favor of the Negro boys and girls, had no influence on their performance in events of power and agility.

6. Differences in anthropometric measurements between the races were consistent at all age levels.

7. Although there are significant anthropometric differences between boys and girls and Negro and Caucasian, these differences do not warrant separation by race and/or sex for purposes of educational instruction.

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APPENDICES

APPENDIX A

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE SIX-YEAR-OLD CAUCASIAN BOYS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
1	43.50	46.25	25.75	8.88	7.38	5.63	21.88	15.75	14.38	30.13	35	2	.0271
2	47.50	44.25	24.75	8.25	6.50	5.13	19.88	14.25	13.25	27.50	43	2	.0255
3	42.50	44.50	25.13	8.25	6.50	5.63	20.25	13.63	13.00	26.63	47	2	.0237
4	47.00	47.25	26.25	9.13	7.13	6.25	22.50	14.63	14.38	29.00	28	2	.0231
5	46.00	45.00	25.13	9.00	6.88	5.63	21.50	14.63	13.38	28.00	39	2	.0245
6	42.50	44.75	23.88	8.50	6.63	5.00	20.13	15.88	13.25	29.13	26	2	.0226
7	49.25	46.50	26.00	8.75	6.88	5.63	21.25	14.25	14.00	28.25	27	2	.0235
8	40.25	43.25	24.25	7.88	6.13	5.00	19.00	13.75	13.00	26.75	37	2	.0251
9	42.25	42.50	23.75	8.00	6.38	5.25	19.63	13.88	12.88	26.75	41	2	.0261
10	38.25	43.00	24.00	8.75	6.88	5.25	20.88	13.75	13.13	26.88	24	1	.0225
11	42.25	43.25	24.63	8.13	6.50	5.38	20.00	15.63	13.75	29.38	29	2	.0214
12	58.50	48.75	26.50	9.75	7.50	6.38	23.63	16.13	15.50	31.63	27	3	.0240
13	40.50	44.50	25.00	8.25	6.88	4.88	20.00	13.88	13.25	27.13	41	2	.0269
14	58.50	46.00	25.75	8.88	7.00	5.50	21.38	15.13	14.13	29.25	31	2	.0263
15	83.00	50.50	27.00	9.75	7.88	6.13	23.75	18.50	15.50	34.00	32	3	.0278
16	48.75	45.75	25.75	9.50	7.00	5.63	22.13	16.50	14.75	31.25	46	3	.0302
17	44.50	45.75	25.38	9.63	7.00	5.38	22.00	15.75	14.00	29.75	23	3	.0254
18	43.50	43.75	24.50	8.88	6.88	5.00	20.75	15.13	13.25	28.38	28	2	.0264
19	45.00	45.00	25.13	9.25	6.75	5.25	21.38	15.00	14.00	29.00	41	2	.0228
21	46.00	46.25	25.75	9.25	7.00	5.38	21.63	15.38	13.88	29.25	29	2	.0284
22	41.75	46.00	25.13	9.50	7.00	5.38	21.88	15.75	13.88	29.63	29	2	.0274
23	52.00	48.50	26.25	10.00	7.38	5.88	23.25	16.50	15.38	31.88	25	2	.0267
24	41.50	43.75	24.50	8.50	6.63	5.00	20.13	14.00	13.50	27.50	35	2	.0285
25	53.00	47.00	25.88	9.25	7.25	5.63	22.13	15.38	14.13	29.50	57	3	.0305

APPENDIX A (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-Arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
26	70.00	49.50	27.50	9.75	7.50	5.63	22.88	17.38	15.75	33.13	40	3	.0259
27	41.75	44.25	25.00	8.63	6.50	5.50	20.63	14.25	13.63	27.88	49	?	.0295
28	43.00	46.00	26.13	9.00	7.00	5.50	21.50	14.50	14.00	28.50	28	2	.0254
29	40.00	42.75	24.75	8.13	6.50	4.88	19.50	13.88	13.25	37.13	30	2	.0291
30	60.00	45.50	25.75	9.00	7.25	5.50	21.75	15.50	14.13	29.63	48	3	.0338
31	44.00	45.00	24.75	8.88	7.00	5.50	21.38	14.25	14.00	28.25	41	2	.0268
32	43.50	44.50	24.75	8.75	6.88	5.25	20.88	15.00	13.75	28.75	28	2	.0271
33	46.75	47.00	26.13	9.50	7.13	4.63	21.25	15.75	14.25	30.00	31	2	.0244
34	47.50	45.50	25.50	9.00	7.25	5.13	21.38	15.38	13.88	29.25	46	2	.0285
35	50.00	48.00	26.25	10.00	7.50	5.75	23.25	16.50	15.00	31.50	34	3	.0245
36	50.00	47.00	25.13	10.00	7.38	5.88	23.25	16.25	14.88	31.13	18	2	.0216
37	52.00	48.50	25.88	9.50	7.25	5.50	22.25	17.00	15.50	32.50	39	3	.0266
38	40.50	43.50	24.75	8.75	6.50	5.25	20.50	14.50	13.00	27.50	24	2	.0261
39	62.25	50.25	27.63	10.25	7.88	6.38	24.50	17.00	16.00	33.00	38	3	.0235
40	43.50	46.50	25.25	9.50	6.63	5.25	21.38	15.13	14.50	29.63	33	2	.0258
41	37.75	40.75	22.50	8.50	6.13	4.88	19.50	14.00	14.38	28.38	30	1	.0250
42	46.75	44.00	25.63	8.88	7.00	5.25	21.13	14.63	13.13	27.75	25	2	.0268
43	54.50	47.25	26.50	9.38	7.13	5.50	22.00	15.25	14.63	29.88	38	3	.0259
44	44.00	44.75	24.50	9.25	6.63	5.13	21.00	15.13	14.13	29.25	35	2	.0273
45	48.25	46.50	25.00	9.50	7.00	5.38	21.88	15.75	14.50	30.25	36	3	.0283
46	44.00	45.00	25.50	9.50	6.50	5.13	21.13	14.25	13.75	28.00	39	3	.0290
47	39.50	44.00	24.88	9.13	6.88	5.00	21.00	15.13	13.38	28.50	24	2	.0257
48	55.00	47.50	27.25	9.88	7.25	5.50	22.63	16.38	15.00	31.38	34	3	.0224
49	55.75	48.50	26.63	9.88	8.00	6.25	24.13	16.88	15.13	32.00	30	3	.0272
50	36.75	41.75	23.25	8.75	6.75	4.75	20.25	14.75	12.63	27.38	26	2	.0244

APPENDIX A (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
51	35.50	40.50	23.25	8.25	6.00	4.75	19.00	13.75	12.25	26.00	27	1	.0213
52	47.25	44.50	25.00	8.88	6.38	5.00	20.25	13.63	13.25	26.88	32	3	.0225
53	55.50	47.25	26.75	9.25	7.00	5.50	21.75	15.88	14.75	30.63	45	3	.0273
54	47.25	46.75	26.25	9.00	7.00	5.25	21.25	14.38	14.00	28.88	32	2	.0229
55	40.00	44.75	25.88	8.50	6.50	5.00	20.00	13.50	13.00	26.50	23	2	.0221
56	48.50	45.50	25.63	9.00	6.88	5.13	21.00	14.75	13.75	28.50	28	2	.0239
57	50.50	48.00	26.50	9.88	7.00	5.13	22.00	15.75	14.75	30.50	43	2	.0247
58	46.50	44.25	24.50	8.88	6.88	5.00	20.75	15.75	13.83	29.63	35	2	.0260
59	48.25	44.75	24.50	8.75	6.75	5.13	20.63	15.13	13.75	28.88	40	2	.0251
60	43.50	44.75	24.75	8.88	6.50	5.00	20.38	14.50	13.38	27.88	35	2	.0232
61	42.75	47.00	26.50	9.00	6.88	5.13	21.00	14.50	13.88	28.38	44	2	.0273
62	46.75	46.00	26.13	8.88	7.00	5.13	21.00	15.00	14.38	29.38	30	2	.0239
63	40.75	44.25	25.25	9.25	6.88	4.88	21.00	14.75	13.75	28.50	44	3	.0292
64	54.00	47.00	27.25	9.63	7.25	5.50	22.38	16.00	14.25	30.25	38	3	.0277
65	40.25	44.00	23.38	9.13	6.75	5.00	20.88	15.38	13.63	29.00	32	2	.0255
66	48.25	45.75	25.50	9.13	7.25	4.88	21.25	14.75	14.13	28.88	36	3	.0222
67	44.25	45.50	24.38	9.75	6.63	5.13	21.50	15.50	13.75	29.25	31	2	.0311
68	37.75	44.25	23.88	8.63	6.50	4.88	20.00	14.88	13.25	28.13	36	2	.0299
69	41.00	44.50	23.88	9.50	6.88	4.88	21.25	14.00	13.25	27.25	26	2	.0232
70	39.75	42.25	23.13	8.88	6.75	5.00	20.63	14.13	13.00	27.13	34	2	.0274
71	41.75	44.50	24.75	9.25	7.00	5.00	21.25	14.25	13.25	27.50	38	2	.0312
72	41.00	44.25	23.00	8.75	6.50	4.63	19.88	13.75	13.00	26.75	37	3	.0337
73	50.50	47.74	26.38	9.38	7.00	5.25	21.63	14.88	14.25	28.13	28	2	.0245
74	40.75	45.00	24.75	8.75	6.75	4.75	20.25	14.63	13.38	28.00	27	2	.0282
75	46.75	47.50	25.75	10.25	7.50	5.75	23.50	15.63	14.75	30.38	29	2	.0252

APPENDIX B

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE SIX-YEAR-OLD CAUCASIAN GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
76	43.00	46.00	24.63	9.00	6.75	5.50	21.25	15.25	14.25	29.50	35	2	.0287
77	38.50	42.00	23.38	8.00	6.13	4.88	19.00	13.50	12.00	25.50	19	1	.0247
78	42.25	45.00	25.00	8.88	6.50	5.38	20.75	15.25	13.50	28.75	27	2	.0238
79	47.75	46.75	25.88	9.25	6.75	5.75	21.75	15.25	14.38	29.63	44	3	.0251
80	46.00	45.75	24.63	9.25	6.75	5.25	21.25	15.25	14.25	29.50	45	2	.0291
81	49.00	46.75	25.38	8.88	7.00	5.50	21.38	15.38	14.38	29.75	29	2	.0273
82	43.75	43.75	25.25	7.88	6.13	5.00	19.00	14.63	13.25	27.88	38	2	.0273
83	50.25	46.25	25.63	9.38	7.00	5.50	21.88	15.75	14.50	30.25	27	2	.0238
84	48.50	52.25	27.50	9.13	6.88	5.50	21.50	15.63	14.50	30.13	41	3	.0250
85	44.50	45.50	25.00	9.00	6.75	5.38	21.13	15.38	14.25	29.63	39	2	.0298
86	44.00	43.50	24.88	8.75	7.00	5.25	21.00	14.75	13.63	28.38	35	2	.0271
87	42.50	46.75	25.75	9.50	7.13	5.63	22.25	15.75	14.13	29.88	30	2	.0257
88	45.50	44.50	25.38	9.13	6.88	5.50	21.50	15.25	13.75	29.00	46	2	.0285
89	35.50	46.00	26.50	8.88	6.88	5.75	21.50	16.00	14.75	30.75	39	2	.0292
90	45.50	44.50	24.75	8.75	6.38	5.13	20.25	15.75	13.75	29.50	33	2	.0252
91	32.50	40.50	22.75	8.00	5.75	4.88	18.63	14.25	12.13	26.38	26	1	.0273
93	41.00	44.50	24.75	9.13	6.50	5.25	20.88	14.75	13.25	28.00	35	2	.0273
94	34.00	39.25	22.50	8.00	6.13	4.88	19.00	13.25	12.13	25.38	29	1	.0258
95	51.25	45.50	25.75	9.00	6.63	5.38	21.00	14.88	13.88	28.75	35	2	.0275
96	48.00	46.25	27.00	9.50	6.50	5.75	21.75	14.50	13.88	28.38	33	2	.0253
97	54.00	47.50	26.50	10.00	7.00	5.50	22.50	16.25	14.50	30.75	30	3	.0270
98	41.00	43.50	24.88	8.38	6.38	4.88	19.63	14.13	13.13	27.25	39	2	.0273
99	37.00	43.50	24.50	8.88	6.13	4.75	19.75	13.75	13.00	26.75	39	2	.0299
100	50.00	45.75	24.75	9.00	7.13	5.50	21.63	15.38	14.25	29.63	23	2	.0259

APPENDIX B (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
101	45.50	43.50	25.25	8.50	6.75	5.13	20.38	13.75	13.13	26.88	33	2	.0227
102	41.50	43.75	24.63	8.88	6.75	4.88	20.50	14.13	13.50	27.63	38	2	.0253
103	35.50	42.75	23.38	8.50	6.50	5.13	20.13	14.25	13.38	27.63	29	2	.0238
104	47.00	43.25	25.13	8.25	6.63	5.00	19.88	14.25	13.25	27.50	42	2	.0292
105	40.50	44.25	24.00	8.50	6.50	5.13	20.13	14.25	13.38	27.63	32	1	.0226
106	100.50	50.50	29.63	9.63	7.50	6.13	23.25	17.63	16.25	33.88	21	3	.0232
107	50.00	44.75	25.50	8.88	7.00	5.38	21.25	14.75	13.63	28.38	31	2	.0274
108	39.00	42.50	24.00	8.38	6.13	5.00	19.50	14.13	12.63	26.75	37	1	.0247
109	44.50	44.00	24.38	9.00	6.75	5.50	21.25	14.75	14.00	28.75	39	2	.0275
110	46.75	43.50	25.25	8.75	6.50	5.13	20.38	14.63	13.00	27.63	19	1	.0244
111	42.50	43.25	25.13	8.88	6.38	5.13	20.38	13.25	13.13	26.38	36	2	.0266
112	52.00	47.50	26.25	9.88	7.38	5.50	22.75	16.13	14.63	30.75	35	2	.0250
113	61.50	48.00	26.38	9.75	7.50	6.13	23.38	16.13	15.25	31.38	26	2	.0267
114	43.75	44.50	26.25	9.00	6.50	5.50	21.00	14.13	13.63	27.63	24	1	.0242
115	43.00	44.00	24.63	9.00	6.75	5.25	21.00	14.25	13.24	27.50	29	2	.0241
116	65.00	49.00	26.50	10.00	7.38	5.88	23.25	16.75	15.38	32.13	30	2	.0243
117	41.25	43.00	24.25	8.75	6.50	4.88	20.13	14.00	13.13	27.13	31	2	.0238
118	51.50	46.00	24.88	9.88	7.00	5.50	22.38	15.50	14.50	30.00	23	2	.0234
119	36.25	42.50	23.88	8.50	6.50	4.75	19.75	13.75	12.88	26.63	23	1	.0246
120	42.50	44.50	24.50	8.88	6.63	5.25	20.75	14.75	13.38	28.13	30	2	.0258
121	43.00	46.74	25.50	9.13	6.88	4.88	20.88	15.38	13.88	29.25	22	2	.0246
122	43.75	43.00	24.50	8.13	6.50	4.88	19.50	13.75	13.00	26.75	29	2	.0246
123	37.25	42.75	24.38	8.50	6.25	5.00	19.75	14.00	12.88	26.88	22	2	.0241
124	37.00	42.25	23.38	8.50	6.75	4.88	20.13	14.63	13.25	27.88	21	1	.0215
125	51.00	46.25	26.00	9.25	7.13	4.88	21.25	16.13	14.13	30.25	28	2	.0242

APPENDIX B (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-Arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
126	47.00	46.50	26.25	9.38	6.63	5.25	21.25	15.38	14.00	29.38	24	2	.0251
127	35.50	42.00	24.25	8.50	5.88	4.63	19.00	14.00	12.13	26.13	32	1	.0252
128	37.50	42.50	23.00	8.25	6.38	4.63	19.25	14.50	13.00	27.50	32	1	.0238
129	42.50	41.75	24.13	9.00	6.75	5.00	20.75	13.75	13.25	27.00	29	2	.0248
130	44.00	44.25	24.63	8.75	6.50	4.75	20.00	15.25	13.63	28.88	30	2	.0244
131	52.50	49.00	26.00	10.13	7.50	5.75	23.38	16.75	15.50	32.25	32	3	.0253
132	53.50	49.00	25.88	9.38	7.25	5.13	21.75	17.13	15.63	32.75	35	3	.0227
133	50.00	46.25	25.63	9.25	6.88	5.38	21.50	16.00	14.38	30.38	32	3	.0253
134	44.75	45.25	26.25	9.00	6.25	4.88	20.13	14.75	13.50	28.25	28	2	.0212
135	46.00	44.00	25.00	9.00	6.88	4.88	20.75	14.38	14.13	28.50	26	2	.0261
136	54.25	49.75	26.50	10.38	7.75	5.38	23.50	16.63	15.88	32.50	34	2	.0245
137	50.00	46.00	25.00	9.13	7.00	5.25	21.38	16.50	14.50	31.00	31	3	.0282
138	42.50	44.00	24.38	8.75	6.63	5.13	20.50	14.75	13.38	28.13	27	1	.0237
139	48.25	46.25	26.25	9.13	7.25	5.38	21.75	14.88	13.88	28.75	34	3	.0266
140	42.25	43.75	24.25	8.63	6.88	4.88	20.38	14.38	13.50	27.88	22	2	.0244
141	36.00	40.74	23.00	8.25	6.25	4.63	19.13	14.00	12.63	26.62	18	1	.0251
142	48.25	49.50	26.13	9.75	7.50	5.50	22.75	17.38	15.00	32.38	26	2	.0251
143	47.00	46.00	25.50	8.88	6.75	5.50	21.13	15.50	14.25	29.75	25	3	.0280
144	44.75	45.25	25.38	9.50	7.25	5.38	22.13	15.63	14.00	29.63	33	2	.0263
145	45.75	47.25	25.50	9.88	7.13	5.25	22.25	16.00	14.50	30.50	34	2	.0291
146	48.25	49.75	26.75	9.50	7.25	5.75	22.50	16.50	14.75	31.25	34	2	.0280
147	48.50	46.50	25.00	8.75	6.88	5.00	20.63	16.38	14.50	30.88	21	2	.0273
148	47.74	47.25	25.75	9.50	7.38	5.38	22.25	15.50	14.50	30.00	33	2	.0284
149	36.00	42.25	23.88	8.25	6.00	4.50	18.75	13.75	12.50	26.25	26	1	.0252
150	52.00	47.00	26.00	9.25	7.13	5.50	21.88	15.50	14.25	29.75	36	2	.0245

APPENDIX C

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE SIX-YEAR-OLD NEGRO BOYS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-Arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Pu	Zigzag Run
151	56.00	47.75	25.63	9.25	5.50	6.25	21.00	16.63	15.00	31.63	52	3	.0295
152	50.00	46.50	24.88	9.13	7.13	5.75	22.00	16.13	14.88	31.00	32	2	.0253
153	38.25	43.75	24.00	8.88	6.88	5.13	20.88	14.13	13.50	27.63	27	1	.0222
154	39.50	43.25	22.25	7.88	7.00	5.38	20.25	14.75	13.88	28.63	30	1	.0229
155	54.50	49.00	26.13	9.88	7.88	6.00	23.75	16.75	15.38	32.13	33	3	.0265
156	45.25	46.00	25.00	9.13	7.00	5.63	21.75	15.50	14.25	29.75	36	3	.0213
157	43.25	46.00	24.50	9.13	7.00	5.63	21.75	15.38	14.63	30.00	31	2	.0226
158	46.75	46.00	25.00	8.88	7.13	5.50	21.50	15.00	14.63	29.63	31	3	.0264
159	39.00	44.00	23.50	8.50	6.88	5.38	20.75	15.00	14.13	29.13	31	2	.0288
160	44.00	44.25	23.88	8.63	6.63	5.50	20.75	14.63	13.88	28.50	26	2	.0224
161	40.50	43.25	24.38	8.38	6.38	5.25	20.00	13.38	13.38	26.75	31	1	.0255
162	50.00	46.75	25.00	9.13	7.25	5.75	22.13	16.38	14.63	31.00	36	2	.0244
163	42.00	49.75	25.88	9.25	7.88	6.13	23.25	16.75	15.50	32.25	40	2	.0247
164	55.00	48.50	25.88	9.25	7.63	6.13	23.00	17.25	15.25	32.50	39	3	.0290
165	47.50	46.25	24.88	9.75	7.63	6.00	23.38	14.75	14.38	29.13	36	2	.0240
166	46.50	47.50	25.00	9.88	7.25	5.88	23.00	16.38	14.75	31.13	13	2	.0234
167	46.00	46.50	24.38	9.13	7.00	5.75	21.88	15.00	14.00	29.00	25	2	.0207
168	46.25	46.50	24.63	9.50	7.25	5.88	22.63	15.63	14.75	30.38	29	2	.0248
169	43.00	46.25	24.50	8.88	6.88	5.75	21.50	15.13	13.88	29.00	35	3	.0247
170	54.00	47.25	25.38	9.88	7.75	6.25	23.88	16.50	15.13	31.63	36	3	.0229
171	42.25	42.50	24.38	8.50	6.88	5.25	20.63	14.25	13.63	27.88	32	2	.0236
172	41.75	44.00	23.50	8.50	6.88	5.25	20.63	14.38	13.75	28.13	34	2	.0217
173	52.25	45.75	24.88	9.13	7.13	5.88	22.13	15.25	14.50	29.75	37	2	.0263
174	44.75	45.25	24.00	9.25	7.25	5.75	22.25	16.13	14.50	30.63	44	3	.0236
175	44.50	46.75	24.25	9.75	7.25	6.25	23.25	15.13	14.25	29.38	45	2	.0227

APPENDIX C (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
176	55.25	46.25	25.25	9.25	7.25	5.75	22.25	15.75	14.63	30.38	31	3	.0259
177	36.50	44.50	23.38	9.00	7.13	5.25	21.38	14.88	14.25	29.13	35	2	.0243
178	43.50	46.50	24.00	9.13	7.25	5.63	22.00	16.25	14.88	31.13	43	3	.0271
179	42.50	45.50	24.25	8.50	6.88	5.50	20.88	15.25	14.13	29.38	35	2	.0284
180	46.50	47.00	25.38	8.88	7.13	5.38	21.38	15.63	14.50	30.13	31	2	.0268
181	39.50	44.50	24.00	9.25	7.13	5.50	21.88	14.75	14.00	28.75	29	2	.0217
182	41.50	47.00	24.63	9.50	7.50	6.00	23.00	15.63	15.13	30.75	44	2	.0226
183	51.50	46.50	24.25	9.75	7.50	5.63	22.88	16.88	15.13	32.00	32	3	.0259
184	37.50	43.00	23.88	8.50	6.50	5.13	20.13	13.75	13.25	27.00	38	3	.0297
185	45.00	45.50	24.63	9.13	7.25	5.50	21.88	14.50	14.00	28.50	40	3	.0280
186	41.50	45.00	24.13	8.50	7.13	5.50	21.13	14.88	14.13	29.00	40	2	.0247
187	38.50	45.50	24.63	8.88	7.00	5.75	21.63	14.38	14.00	28.38	38	2	.0263
188	38.50	43.50	23.25	8.75	6.50	5.25	20.50	14.75	13.50	28.25	35	2	.0255
189	41.50	44.50	24.00	8.38	6.88	5.25	20.50	14.75	13.25	28.00	31	2	.0280
190	42.25	42.50	24.00	8.38	6.88	5.25	20.50	15.63	14.13	29.75	35	3	.0247
191	48.75	45.00	24.63	9.63	7.38	5.75	22.75	16.25	14.75	31.00	34	2	.0250
192	42.75	43.75	23.63	8.75	7.13	5.38	21.25	16.00	14.50	30.50	39	2	.0294
193	45.00	46.00	24.63	9.25	7.25	5.88	22.38	15.50	14.75	30.25	42	2	.0245
194	43.75	38.50	22.25	8.00	6.25	5.00	19.25	13.50	12.63	26.13	25	2	.0242
195	48.50	45.00	24.63	9.25	7.75	5.88	22.88	16.63	15.00	31.63	40	2	.0248
196	42.75	42.50	24.50	9.50	7.63	5.75	22.88	15.00	14.25	29.25	36	2	.0290
197	40.25	42.50	24.50	9.13	6.75	5.88	21.75	14.25	13.63	27.88	34	2	.0294
198	44.75	45.00	24.25	8.88	6.88	5.38	21.13	15.50	14.38	29.88	33	3	.0261
199	43.75	44.50	23.75	9.25	7.13	5.75	22.13	15.38	13.75	29.13	36	3	.0276
200	49.00	48.00	25.25	9.75	7.50	5.88	23.13	16.50	15.25	31.75	30	2	.0276

APPENDIX C (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
201	45.50	46.25	24.25	9.50	7.25	5.63	22.38	15.63	15.00	30.63	22	2	.0282
202	69.00	49.00	26.75	9.88	8.00	6.88	24.75	17.13	16.00	33.13	27	3	.0253
203	45.75	44.50	23.75	8.75	7.00	5.38	21.13	15.25	14.50	29.75	25	1	.0215
204	43.75	47.00	25.50	9.25	7.13	5.63	22.00	15.75	14.38	30.13	23	2	.0277
205	44.50	45.00	27.88	9.38	7.13	5.63	22.13	15.38	14.38	29.75	24	2	.0249
206	41.75	44.00	23.75	8.88	6.63	5.38	20.88	16.00	13.88	29.88	32	2	.0255
207	47.00	47.75	25.38	9.88	7.50	5.75	23.13	15.88	15.38	31.25	35	1	.0277
208	48.25	45.50	25.13	9.13	7.25	5.63	22.00	15.63	14.38	30.00	45	3	.0283
209	52.50	47.75	26.13	9.75	7.25	5.88	22.88	16.13	15.13	31.25	26	3	.0252
210	49.00	49.50	25.38	10.13	7.75	6.25	24.13	16.25	14.88	31.13	44	3	.0299
211	47.50	45.25	25.38	9.00	6.75	5.50	21.25	15.13	14.13	29.25	35	2	.0256
212	46.25	46.00	25.13	9.88	7.50	5.75	23.13	15.63	14.75	30.38	20	2	.0230
213	60.00	49.25	26.38	10.00	7.75	6.00	23.75	16.63	15.50	32.13	30	3	.0250
214	51.50	45.75	25.50	9.13	7.00	5.88	22.00	14.88	14.13	29.00	42	2	.0280
215	43.00	46.50	24.50	10.00	7.63	6.13	23.75	15.50	15.00	30.50	38	2	.0270
216	49.50	46.75	24.88	10.00	7.63	5.75	23.38	15.50	15.25	30.75	50	3	.0293
217	52.00	48.50	26.25	10.00	7.38	6.38	23.75	16.00	15.63	31.63	39	3	.0296
218	46.50	44.50	25.00	9.00	7.13	5.63	21.75	14.38	14.00	28.38	46	2	.0248
219	50.00	45.50	25.25	9.25	7.38	5.50	22.13	14.63	13.88	28.50	23	2	.0233
220	47.50	44.50	24.88	8.75	7.00	5.00	20.75	14.63	13.75	28.38	30	2	.0256
221	46.75	44.50	24.88	9.38	7.13	5.75	22.25	14.75	14.00	28.75	17	2	.0282
222	43.00	46.50	25.13	9.25	7.25	5.25	21.75	16.13	14.00	30.13	28	1	.0229
223	47.00	45.00	24.50	9.00	7.38	5.50	21.88	15.38	13.88	29.25	33	2	.0248
224	49.50	48.50	25.63	9.75	7.50	5.75	23.00	16.50	15.38	31.88	28	2	.0280
225	44.00	45.25	25.25	8.88	7.00	5.25	21.13	14.63	13.75	28.38	34	2	.0252

APPENDIX D

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE SIX-YEAR-OLD NEGRO GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
226	42.75	44.25	24.25	8.25	5.13	5.50	18.88	15.25	13.63	28.88	22	2	.0245
227	44.25	44.25	24.63	8.75	6.38	5.38	20.50	14.38	13.50	27.88	43	1	.0314
228	79.50	50.00	26.63	10.25	6.63	6.25	23.13	17.88	16.63	34.50	37	3	.0289
229	53.25	46.25	25.38	9.25	7.25	6.25	22.75	15.25	14.75	30.00	33	2	.0249
230	41.25	44.00	24.88	8.38	6.25	5.25	19.88	13.88	13.13	27.00	32	1	.0242
231	49.00	45.50	25.13	9.25	7.38	5.50	22.13	15.13	14.13	29.25	29	2	.0253
232	44.50	47.00	25.75	8.88	7.00	5.75	21.63	14.88	14.50	29.38	23	2	.0257
233	40.00	47.00	24.63	9.75	7.88	5.88	23.50	17.38	15.63	33.00	32	2	.0258
234	34.50	40.50	21.88	8.50	6.50	4.88	19.88	13.50	13.00	26.50	11	1	.0207
235	46.50	47.00	25.50	9.75	7.13	5.88	22.75	15.38	14.13	29.50	28	2	.0270
236	42.50	48.75	25.75	9.63	7.88	5.63	23.13	16.75	15.38	32.13	25	1	.0223
237	48.25	47.50	25.25	9.75	7.75	5.88	23.38	16.63	15.00	31.63	31	2	.0244
238	41.00	44.75	23.38	9.13	7.25	5.50	21.88	15.00	14.25	29.25	21	2	.0238
239	45.00	47.25	25.13	9.25	7.13	5.88	22.25	15.75	14.38	30.13	38	2	.0243
240	37.00	44.25	23.50	8.75	6.50	5.38	20.63	14.38	13.75	28.13	26	2	.0294
241	47.75	45.75	25.00	9.38	7.00	5.38	21.75	15.13	14.75	29.88	30	2	.0208
242	49.75	46.25	25.38	9.00	7.38	5.75	22.13	16.88	14.50	31.38	27	2	.0245
243	57.25	48.75	26.13	9.75	7.38	5.88	23.00	16.13	15.88	32.00	30	3	.0273
244	37.00	44.00	23.25	8.63	6.63	5.50	20.75	14.63	13.38	28.00	19	1	.0251
245	45.00	46.75	24.63	9.00	7.13	5.50	21.63	15.88	14.50	30.38	32	2	.0262
246	46.75	46.25	24.63	9.50	7.38	5.63	22.50	15.38	14.88	30.25	33	2	.0246
247	44.75	43.75	23.63	9.00	6.75	4.88	20.63	14.50	13.50	28.00	41	2	.0242
248	34.50	43.25	22.50	8.50	6.88	5.13	20.50	14.25	13.88	28.13	40	2	.0250
249	39.00	45.00	24.88	8.75	7.00	5.50	21.25	14.63	13.75	28.38	37	2	.0254
250	43.75	47.50	24.75	9.50	7.38	5.50	22.38	15.50	14.75	30.25	36	2	.0233

APPENDIX D (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
251	51.50	44.50	24.00	8.88	6.75	5.25	20.88	15.50	13.75	29.25	24	2	.0233
252	43.00	44.75	24.63	9.00	7.00	5.50	22.50	14.38	14.13	28.50	27	1	.0232
253	44.00	46.25	24.25	9.25	7.25	5.50	22.00	17.13	14.50	31.63	34	2	.0257
254	48.25	47.50	25.38	9.75	7.38	5.88	23.00	17.25	15.13	32.38	38	3	.0283
255	45.00	52.25	24.00	9.00	7.13	5.38	21.50	15.25	14.00	29.25	22	2	.0222
256	36.75	42.75	23.13	8.50	6.38	5.13	20.00	14.00	13.38	27.38	18	1	.0223
257	42.50	44.00	24.25	8.38	7.00	5.88	21.25	15.00	13.88	28.88	35	2	.0239
258	42.00	38.25	23.13	8.00	6.25	4.75	19.00	14.25	12.88	27.13	22	1	.0232
259	66.25	50.00	26.50	9.50	7.88	6.50	23.88	16.88	16.00	32.88	28	2	.0263
260	42.25	44.00	24.25	8.63	6.75	5.50	20.88	14.63	13.75	28.38	30	2	.0253
261	44.00	44.50	23.75	8.88	7.13	6.00	22.00	15.25	14.13	29.38	26	2	.0217
262	45.00	46.00	24.75	9.13	7.00	5.25	21.38	15.75	14.50	30.25	35	2	.0268
263	47.50	48.00	24.88	9.75	7.50	6.00	23.25	17.13	15.00	32.13	39	2	.0251
264	49.00	47.00	25.00	9.50	7.25	5.88	22.63	16.00	14.75	30.75	34	2	.0276
265	40.50	43.00	22.38	8.13	6.75	5.75	20.63	15.75	13.38	29.13	25	2	.0246
266	42.50	45.50	23.38	9.13	7.25	5.75	22.13	16.75	14.25	31.00	37	2	.0271
267	41.75	43.25	22.25	8.50	6.75	5.38	20.63	15.75	13.75	29.50	31	1	.0261
268	44.00	43.25	24.38	9.38	7.25	5.50	22.13	16.00	14.38	30.38	31	2	.0277
269	42.75	50.00	24.63	9.13	7.00	5.50	21.63	16.75	15.00	31.75	28	2	.0271
270	35.25	43.00	23.50	8.63	6.38	5.25	20.25	14.50	13.75	28.25	30	2	.0248
271	46.00	49.00	24.75	9.50	7.25	5.75	22.50	17.50	15.50	33.00	23	1	.0265
272	46.75	48.50	25.00	9.88	7.50	5.75	23.13	16.38	15.50	31.88	31	2	.0280
273	43.00	49.50	26.38	9.25	7.28	6.25	22.88	16.75	15.25	32.00	42	2	.0249
274	46.75	46.00	25.50	9.50	7.50	6.13	23.13	16.00	14.88	30.88	38	2	.0255
275	49.50	49.00	25.63	10.00	7.50	6.13	23.63	18.25	15.75	34.00	32	3	.0250

APPENDIX D (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
276	50.00	53.00	25.38	9.88	7.50	6.00	23.38	17.13	15.75	32.88	29	2	.0278
277	52.50	49.25	27.00	9.13	7.25	6.13	22.50	15.75	15.00	30.75	21	1	.0255
278	48.25	42.25	24.75	8.63	6.25	5.50	20.38	14.13	13.38	27.50	30	1	.0289
279	50.50	46.50	24.75	9.63	7.00	5.88	22.50	16.88	15.00	31.88	27	2	.0254
280	44.50	43.25	23.00	8.50	6.75	5.25	20.50	15.50	13.88	29.38	16	1	.0238
281	47.50	43.00	24.13	9.00	7.00	5.75	21.75	15.38	14.50	29.88	33	1	.0249
282	39.25	44.00	23.75	8.88	6.75	5.00	20.63	15.00	14.00	29.00	31	2	.0235
283	47.74	46.00	24.63	10.00	7.63	6.38	24.00	16.00	14.88	30.88	25	2	.0264
284	47.00	47.00	25.00	9.75	7.25	5.50	22.50	15.50	14.25	29.75	25	2	.0273
285	43.00	44.75	24.63	9.25	7.25	5.00	21.50	15.13	14.13	29.25	26	1	.0267
286	41.00	43.50	22.88	8.88	7.00	5.38	21.25	15.00	13.38	28.38	27	1	.0258
287	65.00	49.50	26.25	9.88	7.88	6.25	24.00	17.75	16.00	33.75	24	2	.0255
288	46.00	44.50	24.50	8.88	6.88	5.63	21.38	15.13	13.88	29.00	16	2	.0214
289	41.00	43.50	23.50	8.88	6.75	5.25	20.88	14.38	13.75	28.13	29	1	.0266
290	45.00	45.75	24.50	9.00	7.13	5.50	21.63	15.50	14.50	30.00	29	2	.0224
291	41.00	43.50	24.50	9.00	6.88	5.13	21.00	14.88	13.50	28.38	26	1	.0237
292	50.00	46.00	24.75	9.38	7.25	5.50	22.13	15.75	15.00	30.75	16	2	.0264
293	44.25	47.00	25.00	9.50	7.00	5.25	21.75	16.00	14.38	30.38	23	2	.0232
294	40.50	44.75	24.25	9.13	7.25	5.75	22.13	14.63	14.13	28.75	10	2	.0226
295	44.25	46.25	24.00	9.88	7.38	5.38	22.63	17.00	14.75	31.75	17	3	.0262
296	38.75	43.25	24.38	8.88	6.63	5.38	20.88	15.38	13.13	28.50	32	2	.0226
297	47.00	45.50	25.25	9.00	7.00	5.25	21.25	15.50	13.88	29.38	26	2	.0246
298	40.75	44.00	24.75	8.75	7.00	4.88	20.63	14.25	13.75	28.00	21	1	.0260
299	53.25	47.00	25.75	10.00	7.50	5.50	23.00	18.00	15.50	33.50	19	3	.0269
300	51.00	48.00	25.75	10.13	7.50	5.75	23.38	16.25	15.25	31.50	43	2	.0251

APPENDIX E

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE EIGHT-YEAR-OLD CAUCASIAN BOYS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
301	46.50	47.75	26.00	9.75	7.25	5.63	22.63	15.88	15.00	30.88	42	3	.0299
302	50.00	47.50	25.75	9.25	7.25	5.50	22.00	15.63	14.25	29.88	38	2	.0268
303	60.50	49.75	26.38	10.38	7.88	6.00	24.25	18.00	15.50	33.50	56	4	.0280
304	62.00	51.00	28.00	9.88	7.50	6.13	23.50	17.25	15.63	32.88	43	4	.0283
305	46.25	48.25	26.63	9.50	7.00	5.38	21.88	15.75	14.63	30.38	48	3	.0269
306	62.00	51.50	28.25	10.50	7.88	6.00	24.38	17.25	16.50	33.75	49	3	.0284
307	56.50	49.00	27.13	9.63	7.50	5.88	23.00	16.13	15.00	31.13	40	3	.0254
308	55.00	48.25	27.75	10.13	7.50	5.75	23.38	16.25	15.00	31.25	50	3	.0308
309	60.50	51.25	28.88	10.00	7.63	6.00	23.63	17.13	15.75	32.88	46	4	.0334
310	60.25	50.00	27.75	10.00	7.88	6.38	24.25	16.38	15.25	31.63	45	4	.0290
311	52.00	51.25	27.50	9.38	7.25	5.63	22.38	15.63	14.00	29.63	41	3	.0285
312	48.75	48.00	26.25	10.00	7.25	5.50	22.75	15.50	14.25	29.75	49	3	.0302
313	49.25	48.00	25.00	9.25	7.25	5.50	22.00	17.88	15.13	33.00	55	3	.0312
314	48.50	47.50	26.13	10.00	7.38	5.13	22.50	15.00	14.63	29.63	35	2	.0247
315	68.00	50.00	28.25	10.13	7.50	5.88	23.50	16.50	15.38	31.88	45	4	.0311
316	63.00	50.50	28.50	10.00	7.38	5.88	23.25	15.75	15.00	30.75	47	3	.0277
317	59.00	50.50	27.75	10.00	8.00	5.88	23.88	15.88	15.50	31.38	35	3	.0261
318	45.25	45.25	25.00	9.00	6.75	5.25	21.00	14.50	12.74	27.25	48	3	.0328
319	59.75	52.50	28.25	10.50	7.75	5.63	23.88	16.75	15.75	32.50	41	4	.0286
320	48.75	48.00	25.38	9.50	7.13	5.25	21.88	16.38	14.88	31.25	52	3	.0311
321	75.75	51.75	28.75	10.50	7.75	6.00	24.25	17.00	15.50	32.50	57	5	.0293
322	61.00	50.50	28.00	10.38	8.00	5.75	24.13	16.13	15.50	31.63	55	4	.0309
323	80.00	53.25	29.25	11.38	8.88	6.50	26.75	18.25	16.75	35.00	46	5	.0299
324	46.25	46.50	24.88	9.63	7.13	5.13	21.88	15.63	14.50	30.13	57	3	.0340
325	80.25	50.50	27.00	9.63	7.50	5.88	23.00	19.25	16.25	35.50	35	4	.0243

APPENDIX E (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
326	58.25	48.75	26.75	10.13	7.38	5.25	22.75	17.00	15.50	32.50	44	3	.0292
327	71.00	53.25	28.63	10.50	8.00	6.00	24.50	18.63	17.00	35.63	37	4	.0294
328	60.75	51.75	28.13	10.75	8.13	6.00	24.88	17.50	16.63	34.13	41	3	.0292
329	53.75	49.25	26.25	10.38	7.50	5.75	23.63	17.00	15.25	32.25	40	4	.0302
330	57.25	49.75	27.25	10.00	7.50	5.38	22.88	16.50	15.50	32.00	39	4	.0304
331	52.50	47.25	27.13	8.88	7.00	5.25	21.13	15.25	14.13	29.38	45	3	.0316
332	52.50	50.00	28.00	10.50	7.75	5.75	23.63	16.75	15.88	32.63	47	4	.0298
333	64.00	50.50	27.75	10.00	8.00	6.00	24.00	18.25	16.88	35.13	44	3	.0323
334	78.25	51.00	28.00	10.13	7.75	5.75	23.63	18.38	16.50	34.88	43	3	.0317
335	52.50	49.50	25.88	10.13	7.75	5.50	23.38	16.88	16.25	33.13	43	3	.0287
336	48.00	47.50	25.75	10.25	7.75	5.63	23.63	16.63	15.25	31.88	30	3	.0311
337	68.00	50.00	27.88	10.25	8.00	6.00	24.25	17.50	16.25	33.75	26	3	.0309
338	52.00	48.50	26.00	10.38	7.75	5.75	23.88	16.75	16.00	32.75	40	3	.0276
339	69.00	54.00	29.25	11.00	8.13	6.25	25.38	18.63	16.75	35.38	48	5	.0346
340	69.00	53.25	28.50	10.75	8.00	6.25	25.00	17.50	16.50	34.00	44	4	.0316
341	54.50	50.75	27.38	10.13	7.63	5.50	23.25	17.25	16.00	33.25	35	3	.0318
342	56.25	50.50	27.38	10.50	7.75	5.88	24.13	17.25	15.88	32.13	46	3	.0324
343	51.50	50.00	26.88	10.25	7.63	6.00	23.88	16.38	15.63	32.00	50	3	.0303
344	68.00	51.00	27.88	10.75	8.25	6.00	25.00	17.38	16.25	33.63	34	4	.0306
345	59.00	49.00	27.38	10.25	7.63	6.00	23.88	16.88	15.50	32.38	39	4	.0313
346	50.00	47.00	26.25	9.00	7.13	5.50	21.63	16.13	14.63	30.75	43	3	.0258
347	61.00	50.00	26.88	11.13	8.00	5.75	24.88	18.00	15.88	33.88	49	5	.0277
348	50.00	48.00	27.00	9.63	7.50	5.50	22.63	17.13	15.13	32.25	44	3	.0303
349	58.00	48.00	26.25	10.00	7.50	5.75	23.25	17.38	15.00	32.38	36	3	.0309
350	56.00	49.00	26.88	10.13	7.63	5.63	23.38	16.50	15.75	32.25	43	4	.0323

APPENDIX E (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
351	56.00	51.00	27.88	10.75	8.00	6.13	24.88	18.50	16.63	35.13	41	4	.0322
352	61.26	51.00	28.38	10.00	8.13	6.25	24.38	17.88	16.25	34.13	38	3	.0326
353	63.25	49.75	27.13	10.13	7.50	5.63	23.25	17.13	15.50	32.63	36	3	.0285
354	49.25	47.00	25.88	9.25	7.00	5.50	21.75	15.75	14.38	30.13	37	3	.0294
355	92.50	53.75	29.25	10.63	8.38	6.38	25.38	18.75	17.13	35.88	34	5	.0280
356	49.50	46.25	26.25	9.13	7.00	5.38	21.50	15.38	14.38	29.75	49	3	.0322
357	49.00	49.50	26.75	9.50	7.38	5.75	22.88	16.75	15.38	32.13	45	2	.0276
358	73.25	53.00	28.50	10.38	8.25	6.50	25.13	19.00	16.63	35.63	55	5	.0320
359	54.25	48.25	27.00	9.38	7.13	5.63	22.13	15.75	14.63	30.50	60	4	.0331
360	54.00	49.50	26.63	10.25	7.50	5.75	23.50	16.88	15.50	32.38	40	3	.0311
361	54.25	49.50	27.13	9.88	7.50	5.63	23.00	16.63	15.13	31.75	47	3	.0310
362	53.75	49.75	27.13	9.63	7.25	5.63	22.50	17.75	15.25	33.00	51	4	.0332
363	74.00	52.50	28.25	10.13	7.88	6.13	24.13	18.25	16.50	34.75	45	3	.0318
364	55.75	51.00	27.13	10.25	8.00	6.00	24.25	17.75	16.00	33.75	49	4	.0328
365	74.25	53.25	29.00	11.00	8.13	6.00	25.13	18.25	16.75	35.00	41	5	.0282
366	65.75	52.34	28.13	10.25	8.25	6.13	24.63	17.88	16.63	34.50	43	4	.0322
367	73.00	52.50	28.50	10.75	8.13	6.50	25.38	18.13	16.63	34.75	50	4	.0325
368	56.50	48.50	26.75	10.13	7.63	5.63	23.38	16.00	14.50	30.50	42	3	.0325
369	73.50	53.50	29.63	10.00	8.13	6.00	24.13	17.50	16.75	34.25	45	4	.0318
370	79.25	54.00	29.50	10.75	8.50	5.75	25.00	18.50	17.63	38.13	50	4	.0297
371	54.50	48.50	26.00	9.50	7.50	5.38	22.38	15.88	15.00	30.88	34	3	.0303
372	71.75	50.25	27.38	10.50	8.00	5.63	24.13	17.75	16.38	34.13	45	4	.0294
373	52.50	48.75	26.50	10.00	7.63	5.50	23.13	16.25	15.25	31.50	57	3	.0322
374	56.75	48.50	26.00	9.88	7.50	5.75	23.13	16.63	15.00	31.63	42	3	.0275
375	78.75	52.75	29.13	10.50	8.25	6.00	24.75	18.50	16.63	35.13	47	4	.0261

APPENDIX F

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE EIGHT-YEAR-OLD CAUCASIAN GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
376	63.50	51.00	27.25	11.00	7.38	5.88	24.25	17.38	16.63	34.00	47	2	.0286
377	46.75	48.00	25.88	9.13	6.88	5.63	21.63	16.13	14.63	30.63	39	2	.0273
378	55.75	51.50	26.75	9.50	7.63	6.25	23.38	17.38	16.50	33.88	37	3	.0272
379	48.75	48.50	25.13	9.75	7.13	5.75	22.63	17.63	15.75	33.38	42	3	.0272
380	70.00	48.00	26.00	9.25	7.13	5.50	21.88	16.50	15.00	31.50	42	3	.0259
381	68.00	50.25	26.88	10.13	7.25	6.13	23.60	17.00	15.38	32.38	35	3	.0248
382	49.25	45.00	24.13	8.75	6.75	5.50	21.00	14.75	13.25	28.00	47	2	.0326
383	55.75	49.00	27.25	9.63	7.63	5.88	23.13	16.00	15.13	31.13	51	3	.0306
384	65.25	52.00	26.75	10.75	7.88	6.13	24.75	18.50	16.50	35.00	54	3	.0307
385	45.75	47.25	25.63	9.13	7.00	5.38	21.50	16.63	14.38	31.00	51	2	.0271
386	50.00	47.50	25.88	9.50	7.13	5.75	22.38	17.00	14.75	31.75	44	2	.0297
387	66.50	49.50	26.75	10.00	8.25	5.38	23.63	16.75	15.13	31.88	44	3	.0252
388	51.25	49.25	26.75	10.50	7.75	5.88	24.13	16.25	15.75	32.00	34	1	.0259
389	95.00	54.00	29.50	11.25	8.13	6.50	25.88	18.25	17.25	35.50	41	3	.0301
390	51.50	50.00	27.00	9.75	7.25	5.50	22.50	17.88	15.88	33.75	30	3	.0292
391	52.00	49.50	27.50	9.75	7.25	5.75	22.75	17.13	15.00	32.13	35	3	.0294
392	55.00	49.50	26.50	9.88	7.75	5.63	23.25	16.00	15.38	31.38	43	3	.0328
393	57.00	49.50	27.50	9.88	7.25	5.75	22.88	16.25	14.50	30.75	37	3	.0295
394	53.75	48.50	26.50	10.13	7.63	5.63	23.38	16.38	14.25	30.63	41	3	.0323
395	102.50	51.00	29.75	10.88	8.50	6.13	25.50	18.63	17.25	35.88	23	3	.0237
396	62.25	53.75	29.00	11.75	8.13	6.13	26.00	18.50	17.13	35.63	38	2	.0300
397	62.25	48.50	26.13	9.88	7.50	5.75	23.13	17.38	15.50	32.88	40	3	.0300
398	53.25	47.75	26.00	9.75	7.38	5.88	23.00	16.63	14.50	31.13	40	3	.0257
399	47.25	45.50	25.00	9.13	6.75	5.38	21.25	16.38	14.00	30.38	51	3	.0313
400	75.50	49.50	27.25	10.25	8.00	5.75	24.00	17.50	15.75	33.25	31	3	.0249

APPENDIX F (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
401	90.00	53.50	29.00	11.00	8.38	6.00	25.38	18.75	17.13	35.88	34	4	.0277
402	80.50	54.00	29.13	11.25	8.63	6.25	26.13	19.38	17.50	36.88	41	4	.0268
403	57.00	48.50	27.88	9.88	7.38	5.50	22.75	15.50	14.50	30.00	37	3	.0303
404	55.00	47.75	25.88	10.00	7.50	5.63	23.13	17.13	15.25	32.28	55	4	.0303
405	67.25	52.00	28.25	10.38	7.75	5.88	24.00	17.50	16.50	34.00	41	4	.0312
406	54.50	55.00	29.63	11.50	8.75	6.13	26.38	19.13	17.25	36.38	41	5	.0277
407	52.00	50.75	27.75	10.25	7.25	5.50	23.00	17.13	15.25	32.38	30	3	.0267
408	39.75	46.75	24.88	9.75	7.13	5.25	22.13	15.88	14.50	30.38	35	3	.0311
409	50.25	48.75	25.63	10.13	7.63	5.38	23.13	16.75	15.50	32.25	31	3	.0309
410	88.00	55.75	30.25	11.00	8.50	6.38	25.88	19.75	18.00	37.73	35	4	.0291
411	60.75	50.25	27.50	10.00	7.50	5.63	23.13	17.63	15.88	33.50	31	3	.0297
412	45.00	46.50	25.25	9.50	7.13	5.50	22.13	15.75	14.50	30.25	34	3	.0290
413	64.25	49.75	27.00	9.88	7.25	5.50	22.63	17.50	15.88	33.38	32	3	.0305
414	44.25	47.00	26.50	9.50	6.88	5.25	21.63	15.00	13.88	28.88	41	3	.0333
415	54.25	47.50	27.13	9.88	7.13	5.38	22.38	15.50	14.63	30.13	48	3	.0363
416	56.25	49.00	26.88	9.75	7.38	5.75	22.88	17.13	15.50	32.63	30	2	.0323
417	78.50	51.50	27.50	10.50	7.88	5.63	24.00	18.75	16.75	35.50	35	3	.0284
418	51.00	48.25	26.88	9.50	7.75	5.38	22.63	16.25	15.00	31.25	38	3	.0313
419	54.75	47.50	25.88	9.75	7.38	5.13	22.25	16.00	14.75	30.75	37	3	.0299
420	56.25	49.50	25.88	9.75	7.50	5.38	22.63	17.63	16.13	33.75	33	3	.0265
421	62.00	49.00	26.88	9.75	7.50	5.75	23.00	17.75	15.75	33.50	34	3	.0259
422	49.75	46.50	26.88	8.88	6.63	5.50	21.00	15.50	14.38	29.88	37	3	.0265
423	52.25	49.50	26.63	9.88	7.25	5.50	22.63	17.00	15.25	32.25	38	3	.0271
424	76.75	56.25	28.88	11.25	8.25	6.38	25.88	21.50	18.50	40.00	39	3	.0283
425	58.00	50.00	28.50	10.00	7.38	5.75	23.13	16.88	15.25	32.13	36	3	.0280

APPENDIX F (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
426	47.00	46.00	25.50	9.13	7.25	5.50	21.88	15.75	14.38	30.13	43	3	.0330
427	56.00	50.00	28.25	10.25	7.88	5.50	23.63	17.25	15.75	33.00	35	3	.0311
428	52.00	49.00	26.75	9.88	7.50	5.75	23.13	15.75	15.13	30.88	39	3	.0292
429	54.00	47.50	26.63	9.50	7.00	5.38	21.88	15.88	14.88	30.75	38	3	.0286
430	54.00	51.00	26.88	10.25	7.75	5.75	23.75	17.63	16.00	33.63	41	3	.0353
431	58.00	50.50	28.13	9.75	7.13	5.75	22.63	17.00	15.50	32.50	42	3	.0269
432	38.00	45.00	24.50	9.50	6.88	5.00	21.38	15.63	14.13	29.75	39	2	.0320
433	42.00	44.50	24.25	8.88	6.88	4.88	20.63	14.63	13.88	28.50	31	2	.0267
434	67.00	48.00	27.25	10.13	7.38	5.88	23.38	17.13	15.25	32.38	27	3	.0280
435	52.25	49.75	27.00	9.75	7.63	5.88	23.25	17.38	15.75	33.13	39	3	.0290
436	57.75	50.00	26.50	10.00	7.75	5.50	23.25	17.13	15.88	33.00	43	3	.0303
437	50.75	47.75	25.50	10.13	7.38	5.50	23.00	17.00	15.25	32.25	37	3	.0290
438	53.50	49.25	26.00	10.00	7.63	5.25	22.88	17.50	15.63	33.13	32	3	.0282
439	67.50	49.75	26.75	10.00	7.88	5.63	23.50	17.00	16.00	33.00	36	3	.0300
440	75.00	53.00	28.25	11.00	8.38	6.00	25.38	19.00	17.13	36.13	40	3	.0276
441	58.50	48.75	26.50	10.00	7.50	5.75	23.25	16.50	15.50	32.00	43	3	.0320
442	62.25	51.00	27.63	10.00	8.00	5.88	23.88	17.75	16.25	34.00	32	3	.0311
443	49.25	46.75	24.75	9.50	7.00	5.50	22.00	16.38	14.25	30.63	30	2	.0288
444	54.50	51.00	28.13	10.00	7.75	5.75	23.50	17.13	15.88	33.00	42	3	.0325
445	50.75	47.50	25.50	9.38	7.13	5.63	22.13	16.38	15.25	31.63	37	3	.0276
446	56.50	51.00	26.75	10.00	7.88	5.88	23.75	17.75	16.00	33.75	36	2	.0280
447	54.50	48.00	26.00	9.88	7.50	5.28	22.63	17.25	15.25	32.50	34	3	.0327
448	50.00	47.00	25.38	9.50	7.25	5.13	21.88	16.38	15.00	31.38	30	3	.0287
449	58.50	51.00	27.75	10.13	7.75	5.75	23.63	17.38	16.25	33.63	35	3	.0302
450	58.00	50.00	26.88	10.00	7.75	5.75	23.50	16.88	15.63	32.50	39	3	.0327

APPENDIX G

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE EIGHT-YEAR-OLD NEGRO BOYS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
451	61.00	51.00	26.88	10.38	8.25	6.88	25.50	17.13	17.63	34.75	47	4	.0312
452	68.50	52.00	26.63	10.50	7.75	6.50	24.75	18.13	17.25	35.38	44	4	.0319
453	59.00	52.00	26.38	10.13	7.88	6.38	24.38	18.88	16.88	35.75	47	4	.0268
454	42.00	48.00	25.13	9.75	7.38	6.00	23.13	15.75	15.13	30.88	47	4	.0304
455	56.00	53.25	27.50	11.50	8.88	6.63	27.00	19.25	17.13	36.38	31	3	.0273
456	72.00	54.00	28.50	11.28	8.75	6.88	27.00	18.50	17.75	36.25	42	4	.0262
457	55.00	49.75	26.25	10.25	7.75	6.00	24.00	17.25	16.13	33.38	35	3	.0279
458	60.00	50.00	26.63	10.50	7.88	6.00	24.38	17.50	16.25	33.75	44	4	.0269
459	60.25	50.50	26.13	11.00	8.13	6.38	25.50	18.00	16.00	34.00	46	3	.0303
460	56.00	51.00	26.75	10.25	8.00	6.13	24.38	18.13	16.88	35.00	43	3	.0265
461	62.00	49.25	25.88	9.13	7.50	5.88	22.50	16.00	15.13	31.13	37	3	.0257
462	63.75	53.00	26.25	11.38	8.75	6.38	26.50	18.25	17.38	35.63	44	3	.0260
463	72.00	49.25	26.75	9.75	7.13	5.75	22.63	16.63	15.38	32.00	48	3	.0273
464	58.00	50.00	26.38	10.25	7.63	6.13	24.00	17.13	16.25	33.38	43	3	.0283
465	64.00	50.00	26.88	10.13	7.88	6.38	24.38	17.13	16.50	33.63	50	3	.0285
466	56.00	47.50	25.13	9.50	7.13	5.63	22.25	15.88	14.75	30.63	34	2	.0255
467	60.00	48.25	26.13	9.63	7.38	5.50	22.50	16.75	15.00	31.75	42	4	.0280
468	68.00	52.00	27.25	11.13	8.63	6.50	26.25	17.75	17.63	35.38	34	3	.0249
469	63.50	52.25	26.38	11.50	8.75	6.63	26.88	18.50	17.25	35.75	58	5	.0311
470	62.00	54.25	28.50	11.38	6.75	6.75	26.75	18.25	17.75	36.00	40	3	.0266
471	60.25	49.50	26.25	10.88	8.25	6.13	25.25	17.38	16.13	33.50	46	3	.0316
472	63.00	51.25	26.25	11.25	8.38	6.63	26.25	18.75	16.25	35.00	33	4	.0335
473	63.50	52.50	27.63	11.38	8.13	6.38	25.88	18.38	16.38	34.75	52	4	.0349
474	58.50	50.00	26.50	10.25	8.00	6.50	24.75	18.25	16.75	35.00	50	3	.0301
475	70.25	51.75	26.75	11.00	8.25	6.38	25.63	17.88	16.00	33.88	46	4	.0263

APPENDIX G (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
476	64.00	49.50	26.50	11.25	7.75	6.38	25.38	17.50	15.50	33.00	51	4	.0300
477	65.00	49.75	26.75	10.00	7.50	6.13	23.63	17.75	16.00	33.75	43	3	.0314
478	52.00	48.50	26.50	9.25	7.63	5.88	22.75	15.88	14.88	30.75	48	3	.0251
479	61.00	51.50	27.25	10.50	8.00	6.50	25.00	18.25	16.25	34.50	48	3	.0277
480	54.50	50.00	25.63	9.88	8.13	6.13	24.13	18.38	16.50	34.88	42	3	.0276
481	54.50	53.25	28.25	10.25	8.25	6.75	25.25	17.38	16.38	33.75	44	2	.0298
482	68.00	52.75	27.88	11.13	8.25	6.63	26.00	17.50	16.88	34.38	37	3	.0278
483	64.75	53.25	27.88	11.00	8.63	6.88	26.50	18.13	16.50	34.63	53	4	.0265
484	61.75	52.50	26.50	10.88	8.63	6.38	25.88	19.25	17.13	36.38	45	4	.0273
485	63.50	51.50	27.25	10.25	7.88	6.50	24.63	17.75	15.75	33.50	46	4	.0234
486	61.50	52.50	26.88	11.25	8.50	6.38	26.13	18.25	17.25	35.50	51	4	.0233
487	58.75	50.50	27.75	10.00	8.00	6.13	24.13	17.75	16.50	34.25	32	2	.0255
488	58.25	50.75	26.25	9.75	8.00	6.25	24.00	17.75	16.00	33.75	52	3	.0262
489	47.75	50.00	24.38	10.00	8.00	6.25	24.25	17.63	16.13	33.75	33	2	.0273
490	53.25	52.50	26.50	10.50	8.00	6.25	24.75	17.88	16.38	34.25	45	3	.0312
491	56.00	50.00	26.75	10.13	8.00	6.00	24.13	17.13	15.63	32.75	51	3	.0265
492	54.75	47.00	26.38	9.75	7.50	5.63	22.88	15.63	13.75	29.38	31	3	.0275
493	56.00	50.25	26.50	10.25	8.00	5.88	24.13	17.00	15.88	32.88	51	4	.0332
494	62.25	52.00	28.25	10.63	8.25	6.75	25.63	17.75	16.50	34.25	49	4	.0298
495	70.75	53.25	29.63	11.38	8.75	7.13	27.25	18.63	17.88	36.50	51	6	.0328
496	68.00	53.00	29.75	10.88	8.13	7.00	26.00	18.25	16.50	34.75	49	4	.0235
497	54.00	49.50	26.75	10.00	7.75	6.25	24.00	16.50	15.00	31.50	47	4	.0279
498	60.00	50.00	27.13	10.50	7.88	6.25	24.63	16.75	16.00	32.75	31	3	.0245
499	52.00	47.00	25.88	9.50	7.38	5.75	22.63	16.25	14.38	30.63	44	3	.0288
500	62.25	51.50	27.25	10.13	8.00	6.25	24.38	17.75	16.50	34.25	49	4	.0297

APPENDIX G (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
501	70.25	54.75	28.50	11.75	9.00	6.75	27.50	19.13	17.50	36.63	64	5	.0327
502	48.50	47.75	25.63	9.75	7.38	5.75	22.88	15.88	14.50	30.38	45	3	.0310
503	67.50	53.50	29.00	11.00	8.00	6.50	25.50	17.75	16.88	34.63	51	4	.0332
504	56.50	50.25	27.50	10.13	7.88	6.38	24.38	16.75	15.38	32.13	47	4	.0303
505	63.00	50.50	26.75	11.13	8.50	6.25	25.88	17.13	16.50	33.63	39	4	.0277
506	59.00	49.75	26.88	10.63	8.00	6.00	24.63	16.13	15.50	31.63	41	2	.0281
507	56.75	50.00	26.38	10.50	8.25	6.13	24.88	16.38	15.50	31.88	49	3	.0299
508	62.00	51.00	27.25	10.38	8.00	6.13	24.50	17.13	16.25	33.38	42	4	.0324
509	58.25	47.50	26.88	10.25	8.00	5.75	24.00	16.50	15.00	31.50	50	4	.0281
510	60.00	52.75	27.00	11.13	8.38	6.13	25.63	19.00	17.25	36.25	42	4	.0253
511	53.75	50.00	26.75	10.00	8.00	6.00	24.00	17.38	16.00	33.38	37	3	.0259
512	62.25	51.25	27.50	10.88	8.38	6.25	25.50	17.50	16.13	33.63	34	4	.0284
513	58.75	52.75	27.75	10.88	6.38	6.38	25.75	18.50	17.00	35.50	45	3	.0294
514	52.00	49.50	25.38	10.38	8.13	6.00	24.50	18.00	16.25	34.25	39	3	.0205
515	55.00	49.00	26.00	9.88	8.13	5.63	23.63	16.63	15.63	32.25	44	3	.0257
516	52.75	49.25	26.00	9.88	7.63	5.50	23.00	17.38	15.63	33.00	46	3	.0290
517	56.75	51.50	27.00	11.13	8.75	5.88	25.75	18.88	17.13	36.00	49	4	.0204
518	50.00	47.50	25.13	9.50	7.75	5.75	23.00	16.38	15.00	31.38	42	3	.0268
519	45.75	45.75	25.25	9.00	7.25	5.50	21.75	15.00	14.50	29.50	44	3	.0325
520	68.50	51.25	27.88	10.25	7.88	6.25	24.38	18.38	16.25	34.63	46	4	.0326
521	68.00	52.00	27.88	10.75	8.38	6.13	25.25	19.75	16.75	36.50	30	3	.0303
522	67.25	51.00	26.50	11.00	8.88	6.38	26.25	18.00	16.75	34.75	31	3	.0295
523	66.75	52.50	26.38	11.25	8.75	6.50	26.50	19.40	17.50	37.00	36	4	.0308
524	62.75	49.75	27.50	9.88	7.50	6.25	23.63	16.75	15.63	32.38	65	5	.0321
525	51.75	51.75	27.50	10.25	8.25	5.75	24.25	17.13	16.38	33.50	30	3	.0296

APPENDIX H

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE EIGHT-YEAR-OLD NEGRO GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
526	60.75	50.00	27.38	9.25	8.38	5.88	23.50	17.25	15.50	32.75	45	3	.0256
527	49.00	48.00	24.75	9.50	7.25	5.88	22.63	17.00	15.88	32.88	38	2	.0277
528	47.75	47.50	24.63	9.13	6.75	5.88	21.75	16.63	16.13	32.75	38	2	.0271
529	52.75	50.25	25.63	10.25	7.88	6.25	24.38	17.75	17.13	34.88	42	3	.0261
530	61.00	53.25	27.13	11.25	8.63	6.88	26.75	18.38	17.88	36.25	38	3	.0277
531	66.25	54.25	26.88	10.63	8.00	6.75	25.38	19.25	18.63	37.88	37	3	.0288
532	54.25	48.25	25.75	9.63	7.75	5.75	23.13	16.75	15.75	32.50	49	2	.0262
533	51.00	48.00	25.63	10.00	7.88	6.00	23.88	16.13	15.63	31.75	35	2	.0284
534	49.75	51.00	26.50	9.88	8.38	6.25	24.50	17.00	16.75	33.75	33	2	.0250
535	50.00	49.00	25.38	9.88	7.75	5.75	23.38	17.50	15.75	33.25	41	2	.0272
536	38.50	43.00	23.88	8.25	6.00	4.75	19.00	14.13	13.13	27.25	41	2	.0280
537	128.75	54.25	29.13	10.88	8.63	6.75	26.25	19.63	18.13	37.75	28	4	.0268
538	62.00	51.00	27.50	10.88	8.13	6.63	25.63	18.50	16.63	35.13	32	3	.0222
539	70.00	52.50	26.75	11.25	8.38	6.65	26.25	19.38	17.25	36.63	41	4	.0248
540	72.00	49.00	25.63	10.50	8.00	6.38	24.88	17.25	16.00	33.25	29	3	.0242
541	60.00	50.25	25.75	10.25	7.75	6.38	24.38	17.88	15.88	33.75	35	3	.0242
542	70.00	49.00	26.13	10.38	7.38	5.75	23.50	17.13	15.50	32.63	47	3	.0286
543	50.50	49.75	25.75	9.88	8.00	6.25	24.13	17.75	16.13	33.88	40	3	.0271
544	43.50	44.75	24.25	9.50	7.50	5.75	22.75	15.75	14.13	29.88	37	2	.0267
545	57.75	54.00	28.25	10.88	8.50	6.50	25.88	19.38	18.00	37.38	45	2	.0314
546	44.25	46.75	25.50	9.50	7.25	5.75	22.50	15.25	14.13	29.38	33	3	.0284
547	62.50	52.50	27.13	11.00	7.88	6.38	25.25	17.75	15.50	33.25	32	3	.0248
548	57.00	50.25	27.25	10.75	7.75	6.13	24.63	18.00	15.75	33.75	38	3	.0226
549	54.25	49.25	26.13	10.38	8.00	6.25	24.63	17.38	15.25	32.63	42	3	.0290
550	41.00	45.50	24.25	9.75	7.38	5.63	22.75	15.38	13.38	28.75	33	2	.0222

APPENDIX H (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
551	41.75	44.00	23.13	8.88	6.88	5.13	20.88	16.88	13.88	30.75	40	2	.0250
552	50.25	47.00	25.88	9.75	7.38	6.00	23.13	15.88	14.25	30.13	38	2	.0285
553	59.75	50.25	26.38	10.00	7.63	6.25	23.88	17.25	16.00	33.25	31	2	.0280
554	51.75	50.00	24.75	11.00	8.38	6.75	26.13	18.13	16.63	34.75	28	3	.0322
555	59.25	50.75	26.88	10.38	8.13	6.13	24.63	17.88	16.00	33.88	49	3	.0296
556	50.50	51.00	27.75	10.13	8.00	6.13	24.25	17.38	15.75	33.13	39	3	.0295
557	60.75	54.00	28.25	11.13	8.50	6.63	26.25	18.38	17.13	35.50	47	4	.0326
558	46.50	46.25	24.50	9.63	7.25	5.75	22.63	16.00	14.75	30.75	39	3	.0242
559	73.75	48.50	26.75	9.75	7.75	6.13	23.63	16.88	15.63	32.50	35	3	.0263
560	56.00	51.00	25.63	10.00	8.25	6.38	24.63	18.25	16.50	34.75	46	3	.0280
561	57.00	53.00	26.25	10.25	8.00	6.38	24.63	17.00	15.50	32.50	34	3	.0271
562	57.00	49.00	26.38	10.25	7.88	6.13	24.25	17.25	15.25	32.50	38	3	.0298
563	55.00	50.00	26.63	10.00	8.13	5.88	24.00	16.63	15.88	32.50	42	2	.0245
564	35.50	41.50	21.88	7.00	6.88	4.88	18.75	15.50	12.75	28.25	36	2	.0270
565	58.50	48.75	26.88	10.25	7.88	6.25	24.38	17.38	15.50	32.88	43	4	.0284
566	52.00	51.00	26.50	10.50	8.00	6.00	24.50	17.50	16.00	33.50	37	3	.0327
567	49.25	48.50	24.75	10.75	7.75	6.00	24.50	18.00	15.25	33.25	38	3	.0293
568	52.00	48.50	25.50	9.88	7.38	5.75	23.00	16.75	14.88	31.63	42	3	.0277
569	55.25	50.00	26.75	10.88	7.88	6.00	24.75	17.88	16.25	34.13	35	3	.0313
570	65.00	55.25	29.50	11.25	8.50	6.88	26.63	18.38	17.00	35.38	54	3	.0314
571	52.75	51.00	26.00	10.50	8.00	6.25	24.75	18.50	16.25	34.75	53	3	.0326
572	49.75	48.75	25.50	10.25	7.63	5.88	23.75	16.50	15.50	32.00	49	3	.0310
573	63.00	50.50	27.50	11.25	8.25	6.38	25.88	18.13	17.13	35.25	50	3	.0302
574	55.50	50.25	26.13	10.25	7.88	6.00	24.13	17.25	15.88	33.13	35	2	.0252
575	46.00	50.00	27.88	10.13	7.50	5.63	23.25	17.50	15.13	32.63	46	3	.0289

APPENDIX H (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
576	50.75	47.50	26.00	10.13	7.88	5.75	23.75	15.88	14.75	30.63	28	2	.0265
577	47.25	49.50	24.50	10.13	7.63	5.50	23.25	16.88	15.25	32.13	46	2	.0293
578	72.25	53.50	27.63	11.25	9.13	6.75	27.13	20.13	18.00	38.13	38	4	.0300
579	52.25	47.50	25.00	10.00	7.50	5.50	23.00	16.25	15.00	31.25	34	2	.0292
580	64.00	50.25	27.13	10.38	8.13	6.00	24.50	17.13	16.38	33.50	38	3	.0253
581	54.50	47.74	24.50	9.50	7.63	5.75	22.88	19.25	15.63	34.88	49	4	.0277
582	58.00	49.75	26.75	11.00	7.75	6.13	24.88	18.75	16.75	35.50	33	3	.0253
583	60.25	53.50	27.13	11.50	8.63	6.13	26.25	18.38	17.88	36.25	21	3	.0274
584	59.50	47.50	25.63	9.63	7.38	5.88	22.88	16.88	15.13	32.00	38	3	.0254
585	51.00	49.50	25.88	10.25	7.88	6.00	23.13	19.25	16.38	35.63	42	2	.0258
586	48.25	47.50	24.25	10.25	7.88	5.75	23.88	16.75	15.88	32.63	34	2	.0263
587	47.50	47.00	24.88	9.75	7.25	5.13	22.13	17.00	15.00	32.00	37	3	.0279
588	58.75	47.50	26.13	9.50	7.38	5.63	22.50	16.50	15.38	31.88	37	3	.0295
589	53.75	50.25	26.13	10.25	7.63	5.75	23.63	18.00	15.75	33.75	37	2	.0271
590	47.00	48.25	24.88	10.13	7.88	5.50	23.50	17.00	15.75	32.75	40	3	.0288
591	71.00	51.00	28.25	11.00	8.50	6.63	26.13	19.00	16.75	35.75	40	4	.0303
592	64.25	54.00	27.25	11.75	8.75	6.00	26.50	20.00	17.75	37.75	51	4	.0293
593	63.00	54.25	27.50	11.00	8.50	6.38	25.88	20.25	18.00	38.25	39	3	.0305
594	47.50	50.00	25.75	9.88	7.75	5.88	23.50	17.25	15.88	33.13	37	2	.0307
595	53.50	49.75	26.13	10.50	8.50	6.00	25.00	17.50	16.13	33.63	39	3	.0296
596	56.50	51.00	26.13	10.50	7.75	5.88	24.13	18.25	16.50	34.75	45	4	.0238
597	60.00	51.00	26.88	10.00	8.25	6.00	24.25	18.63	16.50	35.13	30	3	.0293
598	50.50	49.00	26.38	9.50	7.38	5.50	22.38	17.00	15.38	32.38	29	2	.0243
599	55.50	52.25	26.25	10.25	8.38	5.75	24.38	19.38	16.75	36.13	44	4	.0296
600	45.50	48.00	24.13	9.38	7.13	5.63	22.13	16.50	14.13	30.63	26	2	.0238

APPENDIX I

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE TEN-YEAR-OLD CAUCASIAN BOYS

Subject	Weight	Standing Height	Witting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
601	87.25	55.25	29.25	11.50	8.50	6.88	26.88	19.25	17.88	37.13	50	4	.0257
602	56.50	51.50	28.13	10.50	8.13	6.13	24.75	17.00	15.38	32.38	55	5	.0364
603	74.50	53.50	29.75	11.25	8.25	6.25	25.75	18.50	16.50	35.00	44	4	.0338
604	66.50	55.25	29.25	11.25	8.25	6.13	26.63	18.38	17.38	35.75	63	5	.0357
605	68.75	55.25	29.13	11.25	8.88	6.38	26.50	19.13	17.50	36.63	45	4	.0304
606	69.25	53.75	28.88	11.25	8.25	6.50	26.00	18.75	17.13	35.88	46	5	.0309
607	77.50	56.75	29.88	11.88	8.50	6.63	27.00	19.50	18.50	38.00	58	5	.0344
608	77.75	56.50	30.25	11.50	8.75	7.00	27.25	19.13	17.88	37.00	54	5	.0321
609	68.00	55.25	29.38	11.38	8.75	6.38	26.50	19.00	17.88	36.88	58	5	.0316
610	70.50	56.00	29.13	11.13	8.75	7.13	27.00	20.50	18.00	38.50	40	4	.0333
611	69.50	54.25	29.50	11.13	8.25	6.38	25.75	18.75	17.13	35.88	50	5	.0324
612	81.75	57.00	31.50	11.88	8.75	6.75	27.38	20.13	17.75	37.88	57	5	.0359
613	62.00	52.00	28.50	10.75	7.75	5.88	24.38	17.63	16.75	34.38	50	4	.0236
614	64.50	53.25	27.88	11.38	8.63	6.38	26.38	18.75	17.25	36.00	53	5	.0357
615	67.75	54.25	28.38	11.75	8.88	6.63	27.25	19.38	17.75	37.13	50	4	.0343
616	118.50	58.00	31.13	12.00	9.13	6.88	28.00	21.13	19.00	40.13	45	5	.0336
617	77.75	55.50	29.25	11.63	8.50	6.50	26.63	20.00	17.50	37.50	62	6	.0352
618	83.50	57.25	30.25	11.88	8.63	6.63	27.13	20.00	18.63	38.63	61	6	.0320
619	85.25	55.00	29.25	11.63	9.00	6.63	27.25	19.63	18.00	37.63	60	6	.0343
620	72.50	53.25	29.13	11.25	8.00	6.38	25.63	18.88	17.25	36.13	59	6	.0325
621	67.00	53.00	28.13	10.68	8.13	6.00	24.88	18.63	16.75	35.38	52	4	.0324
622	76.00	56.25	29.50	11.75	8.88	6.75	27.38	19.50	18.25	37.75	68	7	.0331
623	56.50	51.00	27.50	10.63	8.13	6.13	24.88	18.00	16.63	34.63	62	4	.0340
624	63.50	52.00	28.63	11.00	8.00	6.13	25.13	18.63	17.00	35.63	58	4	.0320
625	63.00	51.00	28.50	10.50	8.00	6.00	24.50	17.88	16.13	34.00	47	4	.0318

APPENDIX I (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
626	75.75	55.75	29.75	11.13	8.13	6.38	25.63	19.38	17.38	36.75	58	5	.0346
627	68.00	53.00	28.25	11.50	8.25	6.38	26.13	18.25	17.13	35.38	55	4	.0327
628	80.00	53.00	28.88	11.00	8.75	6.00	25.75	18.25	16.63	34.88	59	5	.0352
629	63.50	53.50	28.50	11.13	8.38	6.25	25.75	18.50	17.00	35.50	60	4	.0346
630	64.75	52.00	27.25	10.88	8.13	5.88	24.88	17.13	16.38	33.50	63	3	.0246
631	81.50	54.25	28.50	11.13	8.88	6.75	26.75	19.63	18.00	37.63	51	4	.0330
632	69.00	52.75	28.38	11.25	8.25	6.38	25.88	18.13	17.00	35.13	59	5	.0343
633	58.25	49.25	27.50	10.50	7.75	5.88	24.13	16.25	15.00	31.25	56	4	.0340
634	78.00	54.50	29.88	11.50	8.38	6.38	26.25	18.13	17.00	35.13	64	5	.0354
635	55.50	49.50	27.63	9.75	7.50	5.63	22.88	16.63	14.50	31.13	31	3	.0324
636	71.50	53.00	29.75	10.88	8.63	6.00	25.50	17.13	16.63	33.75	60	5	.0301
637	77.00	54.25	29.50	10.88	8.38	6.38	25.63	17.75	17.00	34.75	56	4	.0294
638	92.00	53.50	29.13	10.13	8.63	6.38	25.13	18.25	17.00	35.25	53	5	.0335
639	75.25	53.00	30.00	11.13	8.25	6.38	25.75	17.25	16.50	33.75	53	5	.0330
640	96.00	56.00	29.63	11.25	8.75	6.50	26.50	19.25	18.25	37.50	61	6	.0377
641	104.50	57.00	30.38	11.75	9.25	6.88	27.88	20.38	18.50	38.88	56	6	.0344
642	106.00	59.25	31.13	12.50	9.50	7.13	29.13	20.50	19.25	39.75	57	7	.0325
643	66.00	55.00	29.50	11.50	8.38	6.00	25.88	17.75	17.13	34.88	75	6	.0378
644	68.00	54.50	29.25	10.88	8.50	6.38	25.75	17.25	16.75	34.00	55	5	.0358
645	60.00	52.50	27.75	10.50	8.13	6.00	24.63	17.25	16.25	33.50	67	5	.0384
646	68.00	54.25	29.25	11.12	8.63	6.50	26.25	18.00	16.88	34.88	59	5	.0340
647	74.00	58.00	29.50	11.88	8.88	6.88	27.63	21.00	18.13	39.13	67	6	.0312
648	68.50	54.50	27.00	11.13	8.75	6.13	26.00	19.50	18.00	37.50	65	6	.0354
649	82.25	58.25	31.13	12.00	8.75	6.50	27.25	19.63	18.13	37.75	65	6	.0347
650	88.50	57.00	30.50	11.50	8.75	6.38	26.63	20.00	18.00	38.00	52	5	.0324

APPENDIX I (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
651	84.25	58.50	29.75	12.00	9.25	6.88	28.13	19.75	18.75	38.50	56	6	.0334
652	80.25	55.50	30.25	10.75	8.00	6.50	25.25	18.50	17.75	36.25	63	6	.0311
653	82.00	56.50	30.13	11.38	8.75	6.38	26.50	18.63	17.38	36.00	52	6	.0315
654	54.25	48.50	26.38	9.88	7.50	5.38	22.75	16.75	14.50	31.25	47	4	.0324
655	71.00	54.25	29.63	10.50	8.00	6.00	24.50	17.00	15.88	32.88	50	4	.0312
656	91.75	57.00	28.75	12.00	8.88	6.25	27.13	19.75	18.75	38.50	39	4	.0321
657	62.00	50.00	27.88	10.00	7.75	5.75	23.50	17.25	15.50	32.75	52	4	.0340
658	69.00	53.25	28.75	10.50	7.88	6.00	24.38	18.00	16.75	34.75	49	5	.0331
659	87.75	56.25	29.75	12.00	9.00	6.75	27.75	19.75	18.38	38.13	56	6	.0331
660	76.75	54.25	29.50	11.50	8.50	6.63	26.63	18.13	17.00	35.13	62	4	.0367
661	56.50	50.75	27.88	10.50	7.63	5.75	23.88	16.88	15.50	32.38	52	4	.0328
662	54.50	51.75	26.63	10.63	8.25	6.25	25.13	18.13	16.63	34.75	48	3	.0282
663	65.25	50.00	26.88	10.50	8.13	5.75	24.38	17.75	16.25	34.00	50	4	.0325
664	82.00	55.75	28.88	11.63	9.00	6.75	27.38	20.38	18.38	38.75	55	6	.0328
665	73.00	54.50	28.38	11.00	8.13	6.00	25.13	20.13	17.38	37.50	55	5	.0332
666	112.25	58.00	29.75	11.13	9.25	6.63	27.00	21.13	19.00	40.13	54	5	.0284
667	66.50	54.75	29.00	11.50	8.50	6.13	26.13	20.13	17.50	37.63	55	5	.0317
668	61.00	51.00	27.50	10.75	8.25	6.13	25.13	17.38	16.38	33.75	51	5	.0353
669	55.75	52.25	27.75	10.50	8.25	6.00	24.75	18.13	16.50	34.63	52	4	.0350
670	84.25	57.00	30.75	11.50	8.62	6.50	26.63	20.00	18.50	38.50	64	6	.0312
671	68.00	53.25	29.75	10.50	7.88	6.00	23.38	16.88	16.13	33.00	54	5	.0303
672	80.25	59.50	31.38	12.25	9.00	7.00	28.25	19.88	19.13	39.00	61	6	.0333
673	64.00	51.00	28.13	10.13	7.75	6.00	23.88	17.38	16.00	33.38	58	3	.0313
674	66.25	53.25	28.50	10.13	8.13	5.75	24.00	18.63	16.25	34.88	52	5	.0322
675	83.25	55.25	29.88	11.00	8.63	6.50	26.13	19.00	17.63	36.63	57	6	.0323

APPENDIX J

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE TEN-YEAR-OLD CAUCASIAN GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
676	52.00	50.00	26.75	10.13	7.63	6.13	23.88	17.00	15.38	32.38	35	3	.0221
677	62.25	54.50	29.00	10.88	8.13	6.50	25.50	19.38	17.38	36.75	59	6	.0281
678	70.00	53.00	27.50	11.00	8.13	6.00	25.13	19.00	16.88	35.88	37	4	.0272
679	72.25	53.50	29.00	10.13	8.13	6.25	24.50	19.25	16.63	35.88	40	4	.0266
680	67.50	54.25	29.00	10.50	8.38	6.38	25.25	18.50	17.13	35.63	43	4	.0263
681	132.00	59.00	31.38	11.88	9.13	7.25	28.25	21.63	19.75	41.38	35	5	.0255
682	53.25	50.75	27.13	10.63	7.88	6.25	24.75	17.25	16.13	33.38	46	3	.0328
683	59.00	53.50	28.88	10.75	8.13	6.50	25.38	19.00	16.50	35.50	54	3	.0319
684	61.00	52.00	28.50	10.75	7.88	6.38	25.00	19.25	16.25	35.50	57	4	.0324
685	58.50	48.50	27.63	10.25	7.25	5.75	23.25	17.13	14.75	31.88	61	4	.0377
686	67.00	55.50	30.13	12.13	8.78	6.63	27.50	18.75	17.25	36.00	56	4	.0217
687	71.25	53.50	28.50	10.88	8.25	6.38	25.50	19.00	16.75	35.75	40	5	.0290
688	76.50	54.00	29.13	11.25	8.25	6.50	26.00	18.38	17.13	35.50	44	4	.0347
689	51.50	51.00	27.63	10.38	7.75	5.63	23.75	17.13	15.88	33.00	48	3	.0321
690	60.00	53.50	28.00	10.75	8.13	5.88	24.75	18.50	17.13	35.63	47	3	.0324
691	83.00	56.00	30.75	11.25	8.00	6.75	26.00	19.38	18.13	37.50	51	4	.0334
692	103.75	60.50	31.00	12.50	9.25	7.25	29.00	23.00	19.88	42.88	54	6	.0326
693	68.25	54.50	29.13	10.63	8.50	6.75	25.88	18.63	17.63	36.25	53	4	.0324
694	82.50	58.74	30.00	11.50	8.75	6.75	27.00	21.88	19.25	41.13	39	4	.0322
695	85.25	57.25	30.88	11.50	8.75	6.50	26.75	20.13	18.13	38.25	50	6	.0324
696	58.50	53.50	28.63	10.75	7.75	6.25	24.75	18.00	16.50	34.50	49	3	.0333
697	68.75	54.25	29.88	10.75	8.25	6.13	25.13	18.50	17.00	35.50	51	4	.0325
698	64.50	54.50	28.63	11.38	8.75	6.63	26.75	19.13	17.13	36.25	58	5	.0318
699	52.50	51.00	26.75	10.00	7.50	5.75	23.25	17.50	16.00	33.50	48	3	.0237
700	70.50	56.00	28.50	11.75	9.13	6.50	27.38	20.50	18.50	39.00	51	5	.0311

APPENDIX J (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
701	67.75	54.50	29.75	11.88	8.50	6.00	26.38	19.25	17.38	36.63	48	4	.0357
702	80.25	55.25	30.75	11.63	8.38	7.00	27.00	19.25	17.13	36.38	44	5	.0309
703	71.25	53.50	28.50	11.25	8.50	6.50	26.25	18.88	17.63	36.50	48	4	.0343
704	89.00	55.50	29.50	11.63	8.63	7.00	27.25	19.38	17.88	37.25	47	5	.0299
705	104.75	55.50	29.75	11.50	8.75	6.75	27.00	20.38	18.50	38.88	39	5	.0286
706	74.50	54.25	28.13	11.50	8.38	6.63	26.50	19.88	17.88	37.75	38	4	.0318
707	82.00	53.25	27.13	11.25	8.25	6.25	25.75	21.38	17.00	38.38	45	4	.0322
708	106.25	57.25	29.50	12.38	9.25	7.25	28.88	21.38	19.25	40.63	48	7	.0307
709	126.00	59.25	31.13	12.38	9.28	7.13	28.75	22.38	19.50	41.88	47	6	.0317
710	81.00	57.00	30.50	12.38	9.00	6.75	28.13	20.13	18.75	38.88	48	5	.0358
711	52.25	49.25	26.75	10.50	8.00	5.88	24.38	16.25	15.13	31.38	55	4	.0375
712	80.25	54.50	29.88	11.25	8.50	6.50	26.25	19.25	17.50	36.75	48	4	.0307
713	73.25	54.75	29.13	11.50	8.50	6.50	26.50	19.75	17.63	37.38	52	5	.0343
714	62.00	51.00	28.50	10.25	7.50	6.00	23.75	17.50	15.63	33.13	50	4	.0284
715	58.00	54.00	28.25	11.38	8.38	6.50	26.25	19.38	17.00	36.38	49	4	.0309
716	63.50	53.50	27.75	11.25	8.38	6.00	25.63	18.50	17.00	35.50	45	4	.0303
717	58.25	52.25	27.38	10.63	7.63	6.13	24.38	18.63	16.50	35.13	37	4	.0337
718	79.25	55.00	29.75	11.00	8.38	6.25	25.63	19.25	17.25	36.50	40	4	.0287
719	100.00	58.25	30.38	12.13	9.25	6.75	28.13	21.88	19.00	40.88	57	5	.0298
720	65.50	53.25	28.50	10.88	8.25	6.13	25.25	18.38	16.75	35.13	58	4	.0337
721	65.50	53.75	28.50	10.88	7.88	6.00	24.75	17.88	16.88	34.75	46	5	.0271
722	60.50	50.00	26.63	10.50	7.74	5.75	24.00	17.75	15.88	33.63	51	3	.0324
723	102.25	60.75	31.13	12.50	9.63	7.38	29.50	21.13	20.00	41.13	41	6	.0303
724	77.50	54.25	28.25	11.00	8.25	6.38	25.63	20.13	17.25	37.38	69	5	.0392
725	78.50	58.00	30.25	11.63	8.50	6.38	26.50	19.75	18.63	38.38	60	5	.0345

APPENDIX J (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
726	70.50	55.00	29.00	11.38	8.63	6.75	26.75	18.50	17.38	35.88	60	4	.0353
727	70.75	57.00	30.13	11.88	8.63	6.25	26.75	19.38	18.13	37.50	48	4	.0274
728	74.75	53.50	29.50	10.63	8.25	5.75	24.63	18.13	16.25	34.38	68	4	.0348
729	62.50	53.50	27.38	11.13	8.50	6.13	25.75	19.50	17.25	36.75	66	4	.0346
730	74.50	54.15	29.50	11.63	8.50	6.50	26.63	19.00	17.00	36.00	56	5	.0326
731	52.50	51.75	27.75	10.38	8.00	5.63	24.00	17.38	16.13	33.50	56	4	.0359
732	72.00	55.00	29.13	11.50	8.63	5.75	25.88	19.50	17.38	36.88	56	4	.0348
733	88.00	54.25	29.25	11.00	8.75	6.00	25.75	19.63	17.50	37.13	58	5	.0335
734	56.25	52.50	28.50	10.50	8.00	5.75	24.25	18.63	16.25	34.88	66	4	.0367
735	66.50	57.25	29.75	11.50	8.88	6.38	26.75	20.75	18.13	38.88	55	4	.0295
736	74.50	55.00	29.63	11.25	8.25	6.13	25.63	18.50	17.25	35.75	53	4	.0357
737	112.00	55.00	29.50	11.25	9.00	6.13	26.38	20.63	17.88	38.50	48	6	.0306
738	55.50	48.75	27.50	9.50	7.25	5.50	22.25	16.75	14.38	31.13	57	4	.0335
739	105.75	55.25	29.75	11.50	8.50	6.13	26.13	20.88	18.25	39.13	48	6	.0293
740	61.25	51.75	28.88	10.50	8.00	6.00	24.50	17.38	15.75	33.13	55	3	.0308
741	68.75	52.50	29.38	10.75	8.13	6.38	25.25	17.50	16.50	34.00	51	4	.0318
742	62.25	50.75	28.25	10.50	7.88	5.75	24.13	17.00	15.50	32.50	48	3	.0275
743	51.00	49.25	24.25	10.00	7.50	5.50	23.00	19.00	15.50	34.50	61	3	.0301
744	86.00	57.75	31.38	11.50	8.75	6.50	26.75	20.13	18.13	38.25	52	5	.0311
745	63.00	49.75	27.50	10.00	7.38	5.88	23.25	16.88	15.13	32.00	48	3	.0341
746	70.25	53.25	28.25	10.50	7.75	6.00	24.25	18.25	17.00	35.25	47	4	.0377
747	73.25	52.75	27.63	11.00	8.50	5.88	25.38	20.25	17.00	37.25	38	4	.0307
748	56.00	49.00	26.13	10.00	7.50	5.75	23.25	17.50	15.75	33.25	54	4	.0315
749	98.50	61.00	32.38	12.25	9.88	6.88	29.00	20.63	19.75	40.38	28	5	.0277
750	81.50	57.50	30.13	11.38	8.88	6.63	26.88	20.50	18.63	39.13	47	5	.0289

APPENDIX K

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE TEN-YEAR-OLD NEGRO BOYS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Forearm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
751	74.00	53.75	28.13	10.25	8.50	6.88	25.63	18.88	17.25	36.13	48	5	.0303
752	78.00	53.25	28.25	10.88	8.38	6.75	26.00	18.00	17.63	35.63	50	4	.0304
753	67.00	57.00	28.75	11.88	8.75	7.50	28.13	20.75	18.13	38.88	44	4	.0263
754	64.00	53.25	27.25	11.13	8.88	6.88	26.88	19.38	17.25	36.63	54	5	.0303
755	58.50	52.25	27.00	10.75	8.13	6.00	24.88	18.13	17.25	35.38	44	3	.0305
756	80.50	56.50	28.50	12.38	9.00	7.25	28.63	19.75	18.50	38.25	52	5	.0271
757	70.00	53.00	27.13	10.88	8.38	6.50	25.75	19.13	17.13	36.25	34	5	.0296
758	60.75	52.25	26.75	10.88	8.00	6.00	24.88	17.75	15.50	33.25	44	3	.0306
759	63.00	54.50	27.63	11.25	9.00	6.50	26.75	19.38	16.00	35.38	49	4	.0337
760	82.50	60.25	30.38	12.13	9.50	7.38	29.00	20.88	19.88	40.75	48	5	.0266
761	56.50	52.00	26.25	10.75	8.25	6.75	25.75	18.88	17.00	35.88	63	5	.0276
762	77.00	56.50	28.75	11.50	9.38	7.25	28.13	20.75	18.88	39.63	61	6	.0293
763	96.75	58.50	28.63	12.00	10.00	7.50	29.50	21.88	19.75	41.63	50	6	.0264
764	58.75	50.00	26.00	10.00	8.00	6.13	24.13	17.00	15.88	32.88	57	3	.0319
765	60.25	52.00	26.88	10.38	8.13	6.25	24.75	18.00	16.63	34.63	43	4	.0316
766	65.00	52.50	26.75	10.75	8.50	6.88	26.13	19.00	17.50	36.50	44	5	.0294
767	68.25	58.50	30.00	11.88	9.25	7.38	28.50	20.00	19.25	39.25	51	6	.0263
768	72.00	55.75	28.75	11.50	8.88	7.00	27.38	20.00	18.25	38.25	57	5	.0320
769	89.00	57.50	30.63	11.25	9.50	7.75	28.50	19.63	18.25	37.88	56	6	.0318
770	69.00	52.50	26.75	11.13	8.75	6.88	26.75	19.25	16.88	36.13	62	5	.0319
771	86.25	54.00	27.88	11.13	9.00	6.88	27.00	20.00	18.38	38.38	33	5	.0263
772	68.25	54.00	29.26	11.25	8.50	6.50	26.50	18.00	17.38	35.38	60	4	.0322
773	88.50	60.00	30.50	12.50	9.25	7.88	29.63	21.25	20.13	41.38	54	6	.0291
774	77.00	55.25	29.38	11.88	8.25	6.88	27.00	19.13	17.75	36.88	52	6	.0282
775	71.25	55.00	29.25	11.00	8.88	6.75	26.63	19.38	18.13	37.50	57	3	.0307

APPENDIX K (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
776	76.25	54.00	28.75	11.50	8.75	6.63	26.88	19.13	17.88	37.00	54	4	.0257
777	67.25	52.75	27.50	11.00	8.63	6.25	25.88	18.75	16.75	35.50	57	4	.0383
778	68.00	53.50	28.25	11.38	9.00	7.25	27.63	18.50	17.00	35.50	45	4	.0293
779	74.00	56.25	29.63	11.25	8.88	6.50	26.63	20.00	18.00	38.00	39	4	.0318
780	86.00	58.00	29.50	11.63	8.88	7.25	27.75	20.88	18.75	39.63	45	5	.0264
781	62.25	52.50	28.50	10.50	8.25	6.38	25.13	17.75	16.13	33.88	58	4	.0340
782	68.00	54.75	28.25	11.63	8.63	6.50	26.75	19.25	17.50	36.75	59	4	.0318
783	85.50	57.00	28.88	12.25	9.13	6.63	28.00	20.63	18.88	39.60	58	7	.0338
784	84.50	57.25	30.25	12.00	9.13	7.00	28.13	19.50	18.50	38.00	53	6	.0300
785	77.00	57.75	30.75	12.00	9.13	7.00	28.13	19.63	18.50	38.13	56	4	.0334
786	68.00	55.25	29.13	10.88	8.63	6.63	26.13	19.13	17.63	36.75	62	5	.0343
787	67.75	53.25	28.13	10.88	8.25	6.13	25.25	18.25	17.25	35.50	52	4	.0346
788	76.25	58.50	30.38	11.75	9.25	7.13	28.13	21.75	18.88	40.63	43	4	.0328
789	61.25	51.50	27.63	11.00	8.38	6.50	25.88	17.75	16.50	34.35	47	4	.0207
790	70.00	51.75	26.75	11.00	8.50	6.63	26.13	18.88	17.63	36.50	53	4	.0293
791	58.75	51.25	26.38	10.88	8.50	6.38	25.75	19.50	16.75	36.25	61	5	.0295
792	96.50	55.25	29.00	11.75	9.25	6.75	27.75	21.25	18.38	39.63	43	4	.0277
793	60.75	54.00	27.50	12.00	8.88	6.63	27.50	19.75	17.63	37.38	52	4	.0320
794	57.50	52.25	27.25	11.25	8.88	6.63	26.75	18.50	17.13	35.63	47	3	.0303
795	88.50	57.50	29.13	12.38	10.00	7.25	29.63	20.75	19.50	40.25	60	7	.0325
796	66.50	53.25	26.63	11.50	9.00	6.75	27.25	19.25	17.38	36.63	61	5	.0321
797	79.25	55.00	29.00	11.63	9.13	7.50	28.25	19.50	18.50	38.00	53	5	.0338
798	72.00	55.75	28.63	11.50	9.25	6.75	27.50	19.75	18.88	38.63	48	5	.0313
799	62.50	51.00	25.38	11.13	8.25	6.25	25.63	18.88	17.13	36.00	62	5	.0337
800	71.00	54.00	27.75	11.88	9.00	6.88	27.75	19.38	18.50	37.88	61	5	.0334

APPENDIX K (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
801	68.25	51.75	27.13	10.88	8.50	6.63	26.00	18.75	16.63	35.38	54	5	.0359
802	78.00	56.25	30.63	11.50	9.00	7.25	27.75	18.88	18.25	37.13	61	6	.0321
803	62.25	52.13	27.63	10.50	8.63	6.50	25.63	18.38	17.25	35.63	67	5	.0294
804	64.75	54.00	28.38	11.00	8.50	6.25	25.75	18.63	17.38	36.00	44	4	.0331
805	73.50	54.25	28.75	11.38	8.63	6.38	26.38	18.13	17.88	36.00	56	5	.0295
806	69.75	54.25	28.63	11.00	8.88	6.50	26.38	18.13	17.50	35.63	42	6	.0308
807	76.25	56.00	28.25	11.00	8.63	6.50	26.13	19.50	18.25	37.75	63	5	.0363
808	62.25	52.00	26.50	10.75	8.50	6.13	25.38	18.38	17.50	35.88	57	4	.0271
809	71.25	55.34	28.75	11.63	9.25	6.75	27.63	20.25	18.25	38.50	57	6	.0354
810	62.50	51.75	28.50	10.88	8.13	6.00	25.00	17.13	16.25	33.38	49	4	.0321
811	60.50	52.00	26.25	11.13	8.75	6.50	26.38	18.25	17.25	35.50	53	5	.0320
812	74.25	55.25	28.63	11.75	9.38	6.75	27.88	19.63	18.25	37.88	69	6	.0337
813	72.00	54.50	28.63	11.63	8.75	6.63	27.00	19.38	17.75	37.13	38	4	.0288
814	62.50	53.25	27.38	10.50	8.75	6.25	25.50	19.00	17.50	36.50	48	5	.0279
815	69.75	53.75	27.75	10.75	8.50	6.25	25.50	19.75	17.13	36.88	55	5	.0295
816	72.75	51.75	27.63	10.00	8.50	6.25	24.75	17.88	17.25	35.13	51	5	.0266
817	75.50	54.75	29.25	10.13	8.13	6.75	25.00	19.63	17.00	36.63	51	5	.0312
818	70.00	54.25	27.50	11.63	9.13	6.25	27.00	20.25	17.50	37.75	47	4	.0284
819	67.75	55.25	27.50	11.25	9.13	6.50	26.88	19.75	18.13	37.88	56	5	.0303
820	61.75	51.75	27.50	10.63	8.75	6.00	25.38	18.00	16.75	34.75	62	5	.0325
821	68.25	53.00	27.00	11.50	8.88	5.88	26.25	19.38	17.38	36.75	62	5	.0296
822	80.00	55.50	27.88	12.13	9.00	6.63	27.75	19.75	19.00	38.75	51	5	.0328
823	77.75	56.50	29.13	12.00	9.00	7.00	28.00	19.75	18.25	38.00	49	5	.0298
824	70.50	55.25	28.75	10.75	8.50	6.50	25.75	19.25	17.75	37.00	54	5	.0341
825	94.00	57.00	29.63	11.63	9.13	7.00	27.75	20.63	18.38	39.00	51	5	.0302

APPENDIX L

ANTHROPOMETRIC MEASURES OF SEVENTY-FIVE TEN-YEAR-OLD NEGRO GIRLS

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
826	66.25	57.00	29.00	11.13	8.63	6.38	26.13	19.13	18.13	37.25	38	2	.0258
827	62.00	52.25	27.38	10.63	8.00	6.25	24.88	18.38	16.63	35.00	54	3	.0270
828	56.00	74.00	28.88	11.88	8.88	6.88	27.63	20.00	18.25	38.25	30	3	.0268
829	72.75	53.00	28.63	10.75	8.50	6.75	26.13	18.63	17.88	36.50	43	4	.0255
830	84.25	54.75	28.50	11.00	9.00	6.88	26.88	20.13	18.38	38.50	45	4	.0298
831	75.25	57.25	29.13	11.75	9.25	7.25	28.25	20.63	19.13	39.75	47	5	.0245
832	69.25	55.25	29.13	11.13	8.38	7.00	26.50	19.50	18.00	37.50	48	4	.0276
833	97.50	59.25	30.63	12.60	9.38	7.38	29.25	22.13	19.25	41.38	53	6	.0308
834	76.00	56.75	29.13	10.88	9.00	7.38	27.25	20.50	18.88	39.38	53	4	.0278
835	78.00	55.75	30.00	11.25	8.63	6.88	26.75	18.75	17.74	36.50	61	6	.0306
836	67.00	52.50	27.38	10.75	8.25	6.38	25.38	19.38	16.50	35.88	20	3	.0247
837	63.75	53.00	27.00	11.00	8.50	6.50	26.00	19.50	17.50	37.00	32	4	.0280
838	74.75	54.75	28.00	11.13	9.00	7.13	27.13	19.75	18.13	37.88	54	5	.0268
839	59.75	54.25	28.25	11.25	8.75	7.25	27.25	18.50	17.50	36.00	47	4	.0282
840	62.50	54.50	26.88	11.75	9.25	6.75	27.75	19.63	18.38	38.00	36	4	.0275
841	93.50	58.25	29.13	12.00	9.50	7.38	28.88	21.63	19.75	41.38	44	5	.0300
842	66.00	53.75	28.00	11.00	8.25	6.75	26.00	19.25	17.38	36.63	47	5	.0284
843	60.25	52.00	27.25	10.25	7.63	6.38	24.25	17.88	16.88	34.75	39	3	.0330
844	84.50	52.00	26.88	11.00	7.88	6.38	25.25	19.00	17.13	36.13	47	5	.0361
845	64.75	53.50	28.13	10.38	8.13	6.63	25.13	18.38	17.25	35.63	41	4	.0238
846	74.25	55.50	29.00	10.75	8.50	7.00	26.25	19.38	17.50	36.88	41	4	.0299
847	53.75	52.75	26.75	11.13	8.75	6.38	26.25	18.63	17.50	36.13	45	3	.0255
848	56.00	50.50	28.00	11.38	8.75	6.88	27.00	19.38	18.38	37.75	46	4	.0296
849	57.75	80.50	28.63	12.00	8.63	7.00	27.63	19.75	18.38	38.13	46	4	.0292
850	60.75	57.50	29.13	13.38	9.38	7.25	30.00	20.13	19.38	39.50	52	5	.0286

APPENDIX L (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
851	63.75	54.50	27.63	10.75	8.13	6.75	25.63	18.50	17.38	35.88	50	3	.0284
852	61.75	53.50	27.88	10.38	8.25	6.88	25.50	18.13	16.88	35.00	52	3	.0289
853	73.75	55.50	27.63	11.50	8.50	7.50	27.50	21.63	18.50	40.13	46	4	.0303
854	74.00	53.50	28.38	10.38	8.13	6.88	26.38	18.00	16.88	34.88	49	5	.0295
855	70.00	55.50	28.75	11.13	8.38	6.50	26.00	19.75	17.75	37.50	52	4	.0314
856	61.00	85.50	31.00	13.00	9.75	7.75	30.50	22.25	20.13	42.38	48	5	.0277
857	50.50	49.50	25.50	10.38	8.00	6.13	24.50	19.00	16.13	35.13	43	3	.0265
858	42.50	49.75	26.00	10.13	7.75	6.13	24.13	18.50	15.63	34.13	39	3	.0328
859	52.00	52.25	27.50	10.25	8.38	6.63	25.25	18.00	17.00	35.00	42	4	.0251
860	80.00	59.75	29.50	12.75	10.13	7.63	30.50	22.75	20.50	43.25	58	4	.0316
861	62.50	52.00	27.38	10.75	8.25	6.38	25.38	18.25	16.75	35.00	55	4	.0293
862	61.50	56.00	28.25	12.00	8.88	6.75	27.63	20.50	17.75	38.25	41	4	.0318
863	78.00	57.00	29.50	12.00	9.38	7.13	28.50	20.38	19.13	39.50	62	5	.0340
864	61.75	50.25	26.88	10.00	7.88	5.88	23.75	18.63	17.00	35.63	49	3	.0350
865	60.25	53.75	28.25	10.63	7.63	6.25	24.50	18.00	16.13	34.13	49	3	.0341
866	95.50	55.75	30.13	12.00	9.00	6.88	27.88	20.38	18.25	38.63	37	4	.0279
867	70.00	53.50	28.00	11.38	8.63	6.63	26.63	19.50	16.88	36.38	42	4	.0303
868	62.50	54.00	28.13	11.63	8.50	6.75	26.88	18.88	17.50	36.38	42	4	.0325
869	63.50	54.50	28.50	11.50	8.63	6.75	26.88	19.00	17.63	36.63	49	4	.0338
870	62.00	52.00	26.38	10.63	8.13	6.38	25.13	19.13	16.88	36.00	49	3	.0323
871	65.50	56.50	28.88	12.00	9.63	7.38	29.00	20.73	18.75	39.38	54	4	.0314
872	53.50	53.00	28.13	10.63	8.00	6.25	24.88	18.00	16.25	34.25	54	3	.0272
873	61.75	52.25	27.75	11.63	8.25	6.38	26.25	18.50	17.13	35.63	43	3	.0289
874	86.25	57.50	30.00	12.13	9.00	7.25	28.38	20.75	19.00	39.75	49	5	.0306
875	54.00	50.75	26.00	10.75	7.88	5.63	24.25	18.00	16.50	34.50	48	3	.0298

APPENDIX L (continued)

Subject	Weight	Standing Height	Sitting Height	Upper Arm	Fore-arm	Hand	Entire Arm	Thigh	Leg	Entire Leg	Broad Jump	Ball Put	Zigzag Run
876	62.50	51.34	27.38	10.50	8.00	6.38	24.88	18.25	16.75	35.00	48	3	.0325
877	94.00	54.50	28.00	11.00	8.88	6.88	26.75	21.63	17.75	39.38	35	4	.0278
878	89.00	58.00	29.75	11.25	9.38	7.13	27.75	21.00	19.38	40.38	66	6	.0340
879	72.50	54.25	28.63	11.38	8.50	6.63	26.50	19.38	17.38	36.75	34	4	.0302
880	85.50	57.50	28.88	11.88	8.88	7.00	27.75	22.25	18.75	41.00	34	6	.0307
881	60.50	53.25	27.25	11.00	8.50	6.63	26.13	18.88	17.25	36.13	39	3	.0281
882	63.00	53.25	27.00	11.00	8.63	6.25	25.88	18.63	18.00	36.63	45	3	.0294
883	62.50	54.25	27.50	11.38	8.75	6.63	26.75	19.63	17.50	37.13	58	4	.0327
884	78.25	57.25	29.13	12.13	9.75	7.13	29.00	21.25	18.75	40.00	61	6	.0328
885	61.75	50.25	26.75	10.75	8.50	6.50	25.75	18.50	16.38	34.88	43	3	.0294
886	66.25	54.75	28.50	11.25	8.50	6.38	26.13	19.38	17.88	37.25	41	3	.0321
887	52.50	50.50	25.38	10.13	8.50	6.00	24.63	18.38	16.63	35.00	41	2	.0269
888	64.85	56.00	30.00	11.00	8.50	6.00	25.50	20.00	17.50	37.50	56	5	.0375
889	63.75	53.75	28.50	10.38	8.75	6.38	25.50	18.75	17.13	35.88	43	4	.0264
890	81.25	55.50	29.63	11.13	8.88	6.75	26.75	19.38	17.75	37.13	55	5	.0316
891	92.75	58.00	28.88	11.50	9.25	7.25	28.00	22.00	19.50	41.50	56	5	.0312
892	87.00	56.75	28.63	12.00	9.38	6.75	28.13	21.38	17.50	38.88	40	5	.0289
893	79.50	54.25	29.00	10.50	8.25	6.50	25.25	19.88	17.00	36.88	42	4	.0259
894	63.00	51.00	27.25	11.00	8.75	5.88	25.63	19.75	17.63	37.38	31	4	.0295
895	77.75	53.00	27.75	11.00	8.50	6.63	26.13	19.63	17.63	37.25	37	5	.0269
896	64.00	50.25	26.63	10.75	8.50	6.50	25.75	18.00	16.25	34.25	21	3	.0284
897	88.00	59.50	31.13	12.13	9.50	7.38	29.00	21.25	19.63	40.88	42	3	.0296
898	115.00	56.25	30.00	11.50	8.88	7.00	27.38	21.50	18.63	40.13	45	6	.0308
899	62.00	52.25	28.88	11.75	8.75	7.13	27.63	21.25	18.63	39.88	38	3	.0277
900	71.00	55.00	28.75	11.25	8.88	6.50	26.63	19.75	17.75	37.50	42	5	.0299

VITA

The author was born on September 24, 1937, in New Orleans, Louisiana. He graduated from St. Peter Parochial School and Leon Godchaux High School in Reserve, Louisiana in 1952 and 1956, respectively. He attended the University of Southwestern Louisiana in Lafayette, Louisiana and obtained a Bachelor of Science degree in Physical Education in 1960. In 1961, he received his Master of Science degree in Physical Education from Northwestern State University in Natchitoches, Louisiana. During the 1961-1962 school year he taught school at Kenner Junior High School, Kenner, Louisiana. He was employed as a teacher, basketball, baseball, and football coach at Leon Godchaux High School from 1962 to 1968. In 1968, his baseball team won the state championship. In 1965 and 1966, he served as commissioner of the East St. John Parish Little League Baseball Program. The author has traveled throughout the United States, Canada, Mexico, Carribbean, Central America, South America and Europe. In 1971, he was granted a teaching assistantship in the Department of Health, Physical and

Recreation Education at Louisiana State University in Baton Rouge, Louisiana.

EXAMINATION AND THESIS REPORT

Candidate: Nemour Bernard DeLaneuville, Jr.

Major Field: Physical Education

Title of Thesis: A Comparative Study of Anthropometrical Measurements of Caucasian and Negro Boys and Girls

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

May 6, 1971