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A STUDY DETERMINING THE MUSCULAR FITNESS STATUS OF
CERRO GORDO, ILLINOIS, PUBLIC SCHOOL STUDENTS
AS DETERMINED BY THE AAHPER FITNESS TEST
AND THE KRAUS-WEBER TEST

BY

LAWRENCE I. SMITH

A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science, Department of
Physical Education, South Dakota
State College of Agriculture
and Mechanic Arts

June, 1962

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AND THE KRAUS-WEBER TEST

This thesis is approved as a creditable, independent investigation by a candidate for the degree, Master of Science, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Adviser

Head of the Major Department

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LIS

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CHAPTER I

INTRODUCTION

Physical fitness has been a concern of every society since early Greek and Chinese civilizations, but the interest in fitness has fluctuated with the times. In general, there was peak interest during war years and the usual drop-off of interest following the cessation of hostilities. Current concern placed on fitness can be traced to: (1) the 40 per cent medical rejection of the nation's youth in World War II drafts; and (2) the disquieting draftee rejection rate of the Korean War. Leading physical educators have consistently been striving to bring the need for fitness programs to the attention of the general public, and the work of Kraus and his associates did much to revitalize interest in physical fitness.¹

As a result of the findings of Kraus concerning the status of muscular fitness of American youth as compared to that of European children, President Eisenhower called a conference to discuss the fitness of American youth. This conference was followed by the creation of the President's Council on Youth Fitness. Many conferences have been held to discuss the fitness problem and methods of improving fitness, and many more are planned on the national, state, and local level.

The American Association of Health, Physical Education and Recreation, national organization for the physical education profession, took an important step in studying the muscular fitness of American youth by setting up a youth fitness test. This test

was given to thousands of American children to aid in determining their physical fitness. National norms were established for a seven-item battery test in order that schools in the nation could judge the physical fitness of their youth.²

Statement of the Problem

The purpose of this study is to compare the physical fitness of the Cerro Gordo, Illinois, Public School students with national norms and with that of students in other areas. Steps in the solution of this problem were:

1. The administration of the American Association of Health, Physical Education and Recreation's Youth Fitness Test to the students in grades five through twelve.
2. A comparison of the results of the American Association of Health, Physical Education and Recreation's Youth Fitness Test in the Cerro Gordo Public Schools with national norms.
3. The administration of the Kraus-Weber Test of Minimum Muscular Fitness to students in grades five through twelve.
4. A comparison of the results of the Kraus-Weber Test in the Cerro Gordo Public Schools with results from other areas.
5. A comparison of the test scores of non-athletes and athletes in the Cerro Gordo Public Schools, with respect to their performance on the AAHPER Youth Fitness Test.

Definitions

1. AAHPER Youth Fitness Test--physical fitness test battery of seven items prepared under the sponsorship of the American Association for Health, Physical Education and

Recreation by Paul Hunsicker. Hereafter referred to as the AAHPER Test.

2. Kraus-Weber Test of Minimum Muscular Fitness--test battery of six items. Hereafter to be referred to as the Kraus-Weber Test.

Delimitations

This study is limited to grades five through twelve in the Cerro Gordo Public Schools, Cerro Gordo, Illinois. Grades five and six had no required physical education, but had a recess period in the morning and afternoon at which time they took part in physical activity. Grades seven through twelve had required physical education five days a week.

CHAPTER II

RELATED LITERATURE

The problem of physical fitness has become one of increasing importance in the United States during the last 6-7 years. Fitness is now a novel and interesting topic to the man in the street, who had given it little thought from the end of World War II until about 1953, when Kraus and Hirschland began their studies. To the health educator, the physical educator, the teacher, the physician, and the school administrator, it is a long-established ideal which has been admired from afar, with little likelihood of attainment. Now, perhaps physical educators have the opportunity to bring this issue to the attention of the people.³

A study by Dr. Hans Kraus and Ruth P. Hirschland based on selected tests of strength and flexibility showed definite weaknesses among American school children in northeastern urban and suburban communities.⁴ Since this report "physical fitness" has become a popular subject, but apparently means different things to different people. For some, it is total well-being--physical, mental, emotional, and social. For others, it is the ability to perform activities or tests.⁵

Rash defined physical fitness as "that condition of the organism which permits activity without undue fatigue."⁶

C. H. McCloy listed as prerequisites to physical fitness:

- (1) improved inheritance through proper selection of mates;
- (2) acquisition of good health habits; and (3) avoidance of infection and other drains that impair the health.⁷

Romney defined fitness as follows: "Physical fitness is readiness, preparedness, to live and function purposefully, effectively and happily in today's society--here and now."⁸

A short definition of physical fitness is one presented by Nash, who defined it as "the bodily ability to sustain adaptive effort."⁹

Wear stated that the following characteristics are needed for an individual who is physically fit: (1) he is able to respond efficiently and satisfyingly to the physical demands of his daily work and play; (2) he is able to engage in at least one moderately active physical activity without tiring; (3) he is able to recover from such activity in a short time without any unpleasant after-effects; (4) he has a reserve of energy at the end of a regular day which enables him to approach the activities of the evening (work or recreation) with interest and enthusiasm; (5) he is able to sleep well after an ordinary day and is able to begin the next day completely recovered from the activities of the preceding day; (6) he is free from removable defects and disorders.¹⁰

Larson and Yocom defined physical fitness as "the nature and degree of adjustment (or adaptation) in activities requiring muscular effort."¹¹

Hall stated that in general, "fitness means one's ability to do more than his daily work without upsetting his bodily process."¹²

Recently, Paul Hunsicker said, "Physical fitness includes those qualities which will permit an individual to perform life activities involving speed, strength, agility, power, and endurance and to engage in the various kinds of physical activities required of modern day living including sports and athletics, and to be able to maintain his optimum amount of fitness."¹³

Hall stated that fitness consisted of four factors, namely: (1) a sturdy physique; (2) organic fitness; (3) motor fitness; and (4) body protection.¹⁴

Having experimented a number of years in the field of physical medicine and rehabilitation, Kraus and his co-workers, at New York University-Bellevue Medical Center, set up a battery of six tests designed to measure the minimum muscular fitness level of children and young adults. Although the tests were somewhat arbitrarily selected, Kraus defends them as tests of minimum fitness--a level below which individuals are predisposed to orthopedic and emotional difficulties. Specifically the tests were constructed to ascertain "whether or not the individual has sufficient strength and flexibility in the parts of the body upon which demands are made in normal daily living."¹⁵ The experiences of Kraus, Weber, and Hirschland, working with low back pain and other motor disturbances associated with the tension syndrome, seemed to indicate a need for an evaluation of individual muscle strength and flexibility.

Kraus and his associates measured 4,264 American and 2,870 European school children from comparable urban and suburban communities. His test findings showed that 57.9 per cent of the American children failed one or more of the tests, whereas only 8.7 per cent of the Europeans (Austrians, Italians, Swiss) similarly failed. The difference between these two groups, says Kraus, stems from the fact that European children do not have the "benefit" of a highly mechanized society; they do not use cars, school buses, elevators, or other laborsaving devices. They must walk everywhere--even to school, frequently a long distance. Their recreation is based largely on the active use of their bodies; in America recreation as spectators is more common than as participants.¹⁶ The results found by Kraus caused considerable discussion in physical medicine and physical education circles and constituted one factor that prompted President Eisenhower to initiate a commission dedicated to the task of raising the physical fitness of American youth. Thus, Kraus had much to do in the evaluation of physical fitness in the schools and the search for more effective measures for appraisal.

A fair amount of discussion has taken place over the validity of the Kraus-Weber battery as a measure of physical fitness. The critics insist that the test battery was arbitrarily selected for use with persons suffering from low back pain. It established no norms, as it is a pass or fail test. Also, some persons had no trouble with the first five items but failed Test 6 (flexibility).

Kraus contends, however, that the tests were not meant to measure degrees of physical fitness as a more elaborate test might do; instead, the six tests together constitute only a minimum muscular fitness test, which provides a minimum standard for children. Furthermore, the tests were self-validating and did not need norms because the subject was being compared only with himself. To fail part of the test, said Kraus, indicates that the subject is below standard and predisposed toward orthopedic or emotional difficulties.¹⁷

It was a common feeling among physical educators that the Kraus report seemed to indicate a need for expanding physical education programs from the pre-school group to the high school group. The general feeling was that a lack of sufficient exercise caused this deficiency.

The report by Kraus and associates brought many comments from physical educators in the United States. A. T. Slater-Hammel felt that it was time we questioned the report of physical deficiency in Americans. He stated, "Americans today are healthier, live longer, and break more athletic records than any generation of their ancestors."¹⁸

George Hawks felt differently about the subject and remarked, "We may be healthier as a nation, break more athletic records than other countries, but breaking records on the part of a fraction of one per cent of the young people of the country doesn't give physical fitness to the other ninety-nine plus per cent."¹⁹

Although a valid test for determining physical fitness has not yet been devised, Dr. Rogers, originator of the Rogers Physical Fitness Test and the Physical Fitness Index, stated, "Doctors Kraus and Weber have provided in their battery of six tests far and away the most valid and generally useful measure of physical fitness for children of elementary age."²⁰

Physical educators after securing more information on the fitness of American youth started extending the study to their own schools and surrounding territory.

In an Indiana city, 1,456 elementary school children were tested with the Kraus-Weber Tests. The tests were highly reliable as evidenced by coefficients of .95 in all cases. The Indiana group was found to be superior to the Kraus group in all comparisons of failure; girls were superior to boys at all levels in passing the test and in flexibility; for both sexes there was a decided decrease in strength item failure as age increased, so much that by eleven years of age, the percentage of failure on any test item was less than 8 per cent and agreed closely with results found for European children. In the same study it was found that not over six children in the entire study population failed on each of the back strength items; this fact suggests that these items do not discriminate well.²¹

Logterman tested 767 Sioux Indian children and 754 Caucasian children, age six through twelve, in South Dakota on the Kraus-Weber Tests. The Caucasian children had only 32.9 per cent failure;

whereas the Indian group tested had 41.6 per cent failure on one or more of the test items. In four of the seven Indian schools and in both of the Caucasian students' schools tested, the girls were found to be superior to the boys in muscular fitness. Logterman concluded also that the main reason for this difference was the difference in failure on the flexibility test. He found in the Sioux Indian sample an increase in flexibility failures with advancing age for both sexes.²²

Lockwood found that only 36.7 per cent of 275 elementary and junior high school students in four separate schools in South Dakota failed the Kraus-Weber Test. He found also that in all but one school the girls were superior to the boys in the per cent of test failure.²³

Nehowig found that only 32.3 per cent failed the Kraus-Weber Test in the Madelia, Minnesota, Public Schools, where the test was administered to 380 students in the fifth through the eleventh grade.²⁴

Foreign countries began taking an interest in the Kraus-Weber Tests, and reports came in from Japan, East Pakistan, and India. Noguchi made the same suggestion as the Indiana study after his research with the test on 6,549 Japanese school children, among whom he found no failures on tests 3, 4, and 5. His studies coincided with those of Kraus in that the percentage of Japanese failures increased between twelve and thirteen years of age. Only 3.3 per cent of the Japanese children failed the test of flexibility, but the weakness failures were 77 per cent of all failures and they were almost all failures on tests one and two.²⁵

Kelliher reported that 2,325 children in East Pakistan were given the Kraus-Weber Tests and that 35.87 per cent of the boys and 56.56 per cent of the girls failed one or more items. The following are conclusions revealed by the test conducted in East Pakistan:

(1) the over-all minimum muscular fitness of the Pakistani children was below that of the European children, but somewhat better than that of American children as revealed by the data from the original Kraus-Hirschland report; (2) the abdominal weaknesses were pronounced among both boys and girls; and (3) the girls were slightly superior to the boys in back strength and flexibility.²⁶

Mahajan reported that 3,700 children in suburban and rural schools in India were given the Kraus-Weber Tests and that 9.1 per cent failed one or more items. The most striking result was that only 4.6 per cent of the Indian children failed the flexibility test, as compared to the 44.3 per cent of failure reported by Kraus.²⁷

Buxton administered the Kraus-Weber Tests and other tests for areas of the body which were neglected in the Kraus-Weber Tests to 1,057 Iowa school children between the ages of six and fifteen from six schools in the Iowa City area. In an effort to make the Kraus-Weber scores more meaningful, Buxton studied the tests in terms of age and sex groups and found that strength and flexibility differ enough with age and sex to encourage the development of standards.²⁸

The question of flexibility and relationship to physical fitness seems to be a stumbling point in the Kraus-Weber battery. Noguchi questioned whether flexibility is related to body-trunk-leg proportions.²⁹

Atwood and Fox administered the Kraus-Weber Tests to 575 Iowa City, Iowa, school children representing the entire group in grades one through six in three non-public schools. The results showed that 66.1 per cent were considered deficient because they failed one or more tests and 56.9 per cent of the children failed the flexibility item of the test. Both of these marks were higher than the 57.9 per cent of failure and 44.3 per cent of flexibility failure reported by Kraus. They found also that most of the weakness failures were on the abdominal muscles tests, with less than one per cent rate of failure on back muscle tests. Two other factors noted in this study were: (1) the rate of failure for boys was consistently higher than for girls because of failure on the flexibility test rather than on the strength test; and (2) no conclusive statement could be made regarding the correlation between test failure and emotional disturbances. They also urged caution in interpreting the results of the Kraus-Weber toe-touch test.³⁰

Lawther challenged the great stress placed on the flexibility item in interpretation of the whole Kraus-Weber score. He raised four points in regard to the weakness of Americans in comparison with Europeans. One was that the average Americans are taller, are heavier, and live longer than at any other preceding time in United States history. The second point was that the particular types of stunts involved in the Kraus-Weber Tests, especially the flexibility aspect, approximate closely the movements of the formal and individual gymnastic program which still forms the base of

physical education in much of Europe. The third point was that fitness is specific. To answer a question as to state of fitness, one needs to ask, "Fitness for what?" Lawther stated that one can develop in a few weeks a "minimum muscular fitness" to do the average tasks of life by "overload" exercise in doing that task. The last point was that physical performance, which is a unit reaction, cannot be measured by tests of isolated movements and still determine the functional efficiency of the whole organism.³¹

The primary purpose of the study by Broer and Galles was to determine the importance of the relationship of trunk-plus-arm (reach) to leg length and weight to height in the ability to perform the toe-touch test. The results obtained from 100 University of Washington women students in regular physical education activity classes taking the flexibility test showed: (1) that the relationship of reach length to leg length is not an important factor in the performance of the toe-touch test for persons with average body builds; but (2) for those with extreme body builds, a longer trunk-plus-arm (reach) measurement in relation to shorter legs gives an advantage in the performance of this test.³²

Mathews, Shaw, and Woods also discounted as insignificant the body length and lower limb length measurements as they relate to flexibility in the toe-touch test.³³

Donald Mathews and associates tested 66 college women on three hip flexibility tests, an adapted Kraus-Weber Floor Touch Test, Leighton Flexometer, and Wells Sit and Reach. The purpose

of the study was to determine the relationship between the three selected tests of hip flexibility in the antero-posterior plane and the following anthropometric measures: (1) standard height; (2) distance from greater trochanter to floor; and (3) standing reach. The results showed: (1) no significant relationship between the flexibility of the hip joint in the antero-posterior plane and the length of body segments; and (2) the adapted Kraus-Weber Test was the most objective of the three flexibility tests.³⁴

Scott had this to say about flexibility: "It is impossible to state how much flexibility is desirable, principally because it depends upon the individual's build, his muscular strength, and the activities in which he is to engage."³⁵

Although the flexibility test item accounts for a great number of failures, the usefulness of the test is not seriously affected. Kirchner and Glines administered the Kraus-Weber Test of Minimum Fitness in 1956 to a random sample population of 1,195 elementary school children of Eugene, Oregon. They found the following results: (1) only 38.1 per cent failed one or more of the test items, but this percentage of failure was lower than had been obtained in other published surveys in the United States and considerably lower than the original Kraus' findings of 58.7 per cent; (2) the girls were superior to the boys at all age levels, the main reason for this difference being due largely to the difference in failure on the flexibility test, as only 14.0 per

cent of the girls failed; (3) the total test failure was reduced from 38.1 to 19.4 per cent when the flexibility item was removed from the test battery; (4) of the 455 children who failed the test, 78.7 per cent failed one item; 17.4 per cent, two items; 2.9 per cent, three items; and 1.1 per cent, four items; (5) there was a decrease in strength failure at each increased age level for both sexes; (6) at each increased age level there was an increase in flexibility failures; and (7) the children in the school with the strong physical education programs had almost 15 per cent fewer test failures than those with poor programs.³⁶

Shaffer working with 1,400 junior high school girls in two schools with different physical education programs, found that failure on the Kraus-Weber Tests is positively correlated with intelligence--that is, as intelligence increased, test failures decreased. Also as the age level of the girls increased, the percentage of test failures increased. Furthermore, it was found that a program of exercises based on physiological needs produced rapid gains in strength and flexibility, for after one semester of a program including conditioning exercises, these girls, most of whom had no physical education before the experiment, matched the European children's low rate (8.7 per cent) of failure on the Kraus-Weber Tests. Moreover, Shaffer points out that with those conditioning exercises, "requiring less time than is necessary for the classes to take showers, done twice each week for part of two semesters, junior high school students have less than five per cent Kraus-Weber

Test failure. The improvement in appearance and well-being of the girls is far more rewarding than any test results."³⁷

At Bedford, Ohio, High School the Kraus-Weber Tests were given to 430 boys in the physical education class. Only eight failed the test battery, and all eight failed the test of flexibility. The reason given for this low failure rate was that a daily period in calisthenics was given each day.³⁸

In the spring of 1954, Mount Pleasant, Delaware, Special School District tested 539 elementary school children. The results were shocking, as 91.2 per cent of the children could not pass the six items required.³⁹

Walworth County, Wisconsin, administered the Kraus-Weber Tests to 671 students representing all areas of the county. The test samples were disappointing, since they indicated a 47 per cent incidence of failure.⁴⁰

There have been considerable misunderstanding and misinterpretation of the meaning and implications of the Kraus-Weber Tests. Some of the questions concerning the test were as follows:

- (1) Very few "back" tests are failed; why use them at all?
- (2) Does the floor-touch test depend on body size? (3) Why do Kraus-Weber Test scores not correlate with grip strength test, for instance? Dr. Kraus defended his test with the following answers: (1) back strength failures have been found significant; (2) computations made by Dr. Sonja Weber in our original posture studies (1945), as well as present testing experience, show that

size does not significantly affect performance in this test; (3) the Kraus-Weber Tests are muscular tests for strength and flexibility. No direct correlation with a single strength test can be expected. Grip strength alone is not correlated with strength of posture muscles. Moreover, grip strength correlates only about 25 per cent with total strength.⁴¹

This mushrooming interest in physical fitness, inspired by physical education on the local and community level, has led to national concern. MacKensie pointed out that on completion of the dedication ceremonies of the new United States Air Force Academy on July 11, 1955, at Denver, Colorado, 306 cadets began a four-year program of physical education. When they are graduated, they will complete the requirements equivalent to those of a physical education minor of students in civilian institutions. The program of physical education at the Air Force Academy is geared to prepare future air commanders to maintain their personal fitness as well as develop the leadership qualities necessary to insure that the Air Force maintains a high degree of physical and emotional fitness.⁴²

In June of 1956, President Eisenhower called a conference on fitness. This was the first peace-time conference on youth fitness held by the national government and was held at the United States Naval Academy, Annapolis, Maryland. President Eisenhower's attention was focused on the fitness problem by an article by Kraus and Hirschland, "Muscular Fitness and Health," presenting their findings

on the physical deficiencies of American children in contrast with those of European children. The President called the conference because he felt that more should be done to help youth become physically fit and better qualified to face the requirements of modern life.⁴³

In the Annapolis meeting the following facts were brought out by Vice-President Nixon: (1) less than 50 per cent of the boys and girls in our high schools received physical education; (2) 91 per cent of the nation's 150,000 elementary schools had no gymnasiums; (3) only 1,200 of our 17,000 communities in the United States had full-time recreation leadership; and (4) 90 per cent of the nation's elementary schools had less than the recommended five acres of land for essential play areas.⁴⁴

Nixon added, "We are not a nation of softies but we could become one, if proper attention is not given to the trend of our time, which is toward the invention of all sorts of gadgets to make life easy and in so doing to reduce the opportunity for normal physical health-giving exercise."⁴⁵

This meeting was followed by the creation of the President's Council on Youth Fitness. Vice-President Nixon was selected as chairman of the council.⁴⁶ Later the same year, Shane MacCarthy was sworn in as Executive Director of the Council.⁴⁷ In 1957, G. Ott Romney was appointed Deputy Executive Director of the President's Council on Youth Fitness.⁴⁸

The American Association of Health, Physical Education and Recreation entered into this national concern for fitness by holding a conference in September of 1956.⁴⁹ The purposes of this conference were: (1) to study the problems of fitness to determine its meaning to the Association; (2) to prepare and approve a definition of fitness; and (3) to deal with the implementation of a fitness program. They defined fitness "as the state which characterizes the degree to which the individual is able to function. Fitness is an individual matter. It implies the ability of each person to live most effectively within his potentialities."⁵⁰

The President of the AAHPER, Ray Duncan, brought out the fact that they were the largest professional group with an interest in fitness, and they could and should provide leadership in the field of fitness.⁵¹

Because Governor Stratton and the physical educators of Illinois were alarmed over the fitness situation, the Governor called a Conference on Youth Fitness in Illinois. The emphasis at the first Illinois Conference on Youth Fitness was largely on problems relating to physical fitness. Representatives of all interested agencies and groups participated, and the concept of total fitness was basic to the discussion. The outcomes from the Conference were believed to be a better understanding of the whole problem and the placing of emphasis on the contributions of all related and interested agencies to youth fitness.⁵²

The National Collegiate Athletic Association became concerned

with youth fitness at their 1957 annual convention. Among the many recommendations heard and approved on fitness was one to advocate the establishment of a Youth Fitness Council in each state; another to co-operate and participate in the activities of this council; and a third to urge that representatives of the coaches' association be included in the make-up of all fitness councils.⁵³

Vice-President Nixon presided over the first meeting of the Citizens Advisory Committee of President Eisenhower's Council on Youth Fitness held at the United States Military Academy, West Point, New York, in September, 1957. Nixon pointed out that throughout his travels in 40 different countries he had observed the youth of other nations and was certain that the youth of our country have better nutrition, better education, better clothes, and better health than the youth of any other country in the world. He also stressed the need for more and better physical education facilities, more well-prepared and competent teachers and leaders, and programs of activities that provide vigorous activities for all boys and girls regardless of their skill.⁵⁴

A nation-wide survey of the physical fitness of American youth was initiated through the AAHPER's Youth Fitness Project. Details of the project were developed at an exploratory meeting in February, 1957. Four basic tasks confronted the Youth Fitness Project:

- (1) to identify the major aspects of fitness; (2) to evaluate tests now available to measure these aspects identified and where no

suitable tests exist, to develop valid, reliable, objective, and economical tests; (3) using the tests developed, to establish norms for the sexes and different age levels for the various aspects of fitness; and (4) to give consideration to the formation of a fitness profile.⁵⁵ After two days of meetings, this group of 13 or more expected to come up with a test battery which they believed, based on their experience and judgment, would serve the purpose. The test consisted of a battery of seven items for boys and seven items for girls. The two batteries were identical, except for the procedure used in the pull-up test. Later, certain aquatic items were added to the test, but these have not gained wide acceptance, primarily because of lack of facilities in testing areas. The seven items were pull-up, sit-up, shuttle run, standing broad jump, 50-yard dash, softball throw for distance, and the 600-yard run-walk.⁵⁶

Paul Hunsicker led in the development of the AAHPER Physical Fitness Test that was given to children between grades five and twelve to set up national norms on fitness. The data gathered were to give information regarding what boys and girls between grades five and twelve could do relative to selected aspects of fitness. The test battery did not investigate the mental, social, or emotional aspects. The data were compiled in the Survey Research Center of the University of Michigan.⁵⁷

A statement by a joint committee of the American Medical Association and the American Association for Health, Physical Education and Recreation on the role of exercise in fitness brought out two

points of special interest: (1) the living body is responsive to training; and (2) the body operates under wide margins of safety and is remarkably resistant to strain.⁵⁸

The Second Annual Meeting of the President's Council on Youth Fitness and the President's Citizens Advisory Committee on the Fitness of American Youth met at Fort Ritchie, Maryland, on September 7-9, 1958. Out of this conference came seven points which aimed to enhance the fitness of American youth. The members of the Conference felt that their main duty was to alert the nation to the need for fitness and to guide the nation on the road to better fitness.⁵⁹

The AAHPER took another stride towards promoting more fitness in Americans by emphasizing the fact that there was a need for a total fitness program. The association realized that all concerned must work together on this fitness problem and through programs and publications make the public aware of the fitness problem so they would take part in the movement. Through their Youth Fitness Test Manual, norms were made possible by the testing of thousands of students in America. Emblems, T-shirts, and sweat shirts symbolizing the fitness project were awarded.⁶⁰

Starr pointed out that the fitness test battery developed under the AAHPER leadership would be of tremendous value to the instructional program if it was thoroughly used by teachers. Starr recommended the following suggestions for its use in a school system or local community planning for youth fitness: (1) to judge the

pupils' ability to maintain or raise their standards of fitness; (2) to study the strength and weakness of the curriculums and programs; (3) to counsel students into a program based on their needs; (4) to interpret to the administration and lay groups the value and purpose of health and physical education; and (5) to motivate the pupils to improve and maintain fitness.⁶¹

President Dwight D. Eisenhower proclaimed the week of May 3-9, 1959, as National Youth Fitness Week. The President requested all government officials, parents, youth, and interested local and national organizations to use appropriate means during the week to promote programs and activities demonstrating the importance of youth fitness, to the end that the continuing strength and well-being of the people could be assured.⁶²

Pohndorf stated that every individual who sets forth the desirable needs for fitness should himself or herself be in a good physical condition. He went on to say that fitness education is best served by living examples of personal fitness.⁶³

Willgoose believed that the objectives of physical fitness should take precedence over the other goals of physical education. He felt that physical fitness has a close relationship with other skills and does not slight other goals of physical education.⁶⁴

The Research Council meeting in Portland, Oregon, in 1959, decided that, because of numerous requests from colleges and universities, fitness test norms would be established for college students. Work was started that fall on the collection of data on

college men, and the norms were published in September, 1960, by Hunsicker.⁶⁵

Late in the summer of 1960, work was started on the establishment of norms for college women. Dr. Mohr was appointed head of this project. The tests were completed by the spring of 1961, and the norms were published in September, 1961.⁶⁶

President-elect Kennedy cited the growing physical softness of Americans as a menace to our security today. Kennedy stated that the schools had been urged to give increased attention to the physical well-being of the students but that during the preceding five years there had been no noticeable improvement in physical fitness of American youth. He felt that physical fitness was a national problem and that it required national action. He believed that an increasingly large number of young Americans were neglecting their bodies and becoming soft.

Kennedy outlined a four-step plan of action and said that Governor Abraham Ribicoff of Connecticut, the new Secretary of Health, Education and Welfare, would have the responsibility for implementing the program. These four proposed steps were the following:

1. Establish a White House Committee on Health and Fitness to formulate and carry out a program to improve the physical condition of the nation.
2. Make physical fitness of our youth the direct responsibility of Health, Education and Welfare.
3. Invite the Governor of each state to attend an annual National Youth Fitness Congress.

4. Proclaim through all departments of the government that the promotion of sports participation and physical fitness is a basic and continuing policy of the United States.⁶⁷

On March 23, 1960, President John F. Kennedy named Charles B. (Bud) Wilkinson, athletic director and head football coach at the University of Oklahoma, as his special consultant on youth fitness.⁶⁸

Nationally and internationally, the AAHPER Fitness Test has amassed important information in the three years of its existence. The most recent example came to light through the testing of 10,000 British boys and girls by Pohndorf and Campbell. In all tests and at all ages, the British boys finished 14 per cent higher than the United States average. British girls, on the average for all tests and all ages, finished 23 per cent ahead of girls in the United States. Seven different tests were given to both boys and girls in the 10- to 17-year-old age bracket. British girls scored ahead of United States girls in all seven tests, and British boys finished ahead of the United States boys in six. The only United States "victory" was in "arm power" for boys. The British test results take on added meaning when one considers the high degree of similarity between the British and American way of life.⁶⁹

The President of the United States called a Conference on Physical Fitness of Youth, February 21, 1961, in Washington, D.C. One hundred men and women actively engaged in programs affecting youth were called in from all parts of the United States for a

concentrated one-day meeting. The participants were organized into six small groups to facilitate the exchange of ideas. The groups were asked to provide suggestions in answer to the following two basic questions:

1. In what ways can the federal government strengthen its services and facilities that affect physical fitness of youth?
2. How can the federal government further cooperate with state and local official agencies and with professional and private organizations in continuing the broad national effort to help all children and youth keep physically fit?⁷⁰

Weiss stated that sports were limited in the amount of fitness they can develop. He believed that those who participate regularly in recreational sports of moderate or higher levels of intensity and frequency will probably develop levels of fitness that easily meet the normal demands of daily living with something left over for emergencies. But, he felt that those concerned must question whether sports and sports alone develop the level of fitness they want the youth of the country to attain throughout their school years. He concluded by saying, "I am certain that sports have real value, for they can provide our youth with the incentive to become physically fit."⁷¹

The first move in the direction of revamping the flabby Americans by the President's Fitness Program was a suggested school-centered program. It was a plan of action directed to those elementary and secondary schools of the nation which were not doing anything to educate their students physically. It was

based on the ideas and techniques successfully used by those schools which have made health and physical education an effective force in the development of their boys and girls.⁷²

In conclusion, the literature studied indicated that the Kraus-Weber Test has stimulated thought and much research in physical education concerning youth fitness. Many studies have been made using the test, and controversial questions have arisen concerning it as being a valid test. As a result of the Kraus-Weber Test, the public has become more aware of the problem of fitness. National concern was also shown when President Eisenhower formed the President's Council on Youth Fitness to study the fitness problem of our country. This resulted in a new fitness test devised by the AAHPER to study the problem further. The use of this test has revealed that the rapidly changing mode of American life has left its imprint on the basic fitness of American youth.

CHAPTER III

PROCEDURES

The Kraus-Weber Test and the AAHPER Test were administered to the students in grades five through twelve in three schools located in Cerro Gordo, Illinois. The schools which participated in this study were the following:

Cerro Gordo Grade School--grades five and six

Cerro Gordo Junior High School--grades seven and eight

Cerro Gordo Senior High School--grades nine through twelve

The Kraus-Weber Test was administered to 434 students by the author alone; the AAHPER Test was administered to 378 students by the author, assisted by the physical education instructors of the schools. The tester was certified in the administering of the tests, and the assistants were thoroughly instructed before the actual testing started.

The equipment used for the Kraus-Weber Test consisted of a table (approximately 3 feet high), one small pillow, and a blanket.

The test was described to the students, and they were told how they would be scored. They were also told not to practice any of the test items.

The students removed their shoes before taking the Kraus-Weber Test. Boys and girls were tested separately, and they approached the table in single file and watched the preceding student take the test. This gave the testee another thorough demonstration which

better acquainted him with the test. The first five parts of the test were administered on the table, and the sixth, on the floor. The pillow was used in test items four and five. The blanket was used to cover the girls in the first five tests. Before being tested, the student gave his name. Upon completion of each test item, the tester recorded the results on special forms.

A detailed description of the Kraus-Weber Test and the procedures used in administering it appears in Appendix A.

The AAHPER Test consisted of a battery of seven items: (1) the 50-yard dash; (2) the softball throw for distance; (3) the 600-yard run-walk; (4) the pull-up; (5) the sit-up; (6) the standing broad jump; and (7) the shuttle run.

The students were given reasonable warm-up prior to each event, and those students with questionable medical records were excused from the test.

The 50-yard dash was administered on a blacktop surfaced area, and the softball throw, on a playfield. The rest of the test items were administered in the gymnasium.

A detailed description of the administration of the AAHPER Test appears in Appendix B.

CHAPTER IV

TREATMENT AND ANALYSIS OF DATA

Treating the Data

The raw scores of the Kraus-Weber and the AAHPER tests were arranged in order and treated as described in the following paragraphs.

The test results were recorded on IBM cards to minimize error.

In the Kraus-Weber Test, the subjects were arranged by sex and grade and listed in order (Table 1).

Table 1. Number of Subjects Tested on
Kraus-Weber Test by Sex and Grade

Grade	5	6	7	8	9	10	11	12	Total
Boys	14	18	30	41	41	22	39	24	229
Girls	24	14	39	33	37	28	17	13	205
Total	38	32	69	74	78	50	56	37	434

The total per cent of test failure, total per cent of incidence of weakness failure, total per cent of incidence failure, and total per cent of flexibility failures were computed for the entire group by grade and sex. A comparison of total test failures with those of other geographical areas was also determined.

The raw scores of the AAHPER Test were first used to find the average scores of the boys and girls in each event, and these scores were compared with the national average as derived from the same test.⁷³ The raw scores were then changed into standard scores by the "order of merit" method as described by Garrett. The following formula was used:⁷⁴

$$\text{Per Cent} = \frac{100 (R - .5)}{N}$$

The standard scores of the boys who were not athletes and those who were in grades ten through twelve in the Cerro Gordo Public Schools were then compared. In this study, athletes were defined as those who had been out for one sport and completed the season. Boys who did not go out or who didn't finish the season were classified as the non-athletes. In comparing the scores of the athletes with the scores of the non-athletes, the "difference method" as described by Garrett was used.⁷⁵ The t-value was calculated for each test item, and the level of significance determined. The five per cent level of significance was the level selected for this study.

To analyze the results of the two tests more completely, the composite scores of the AAHPER Test were correlated with the results of the Kraus-Weber Test. Since the Kraus-Weber Test was scored on a pass-fail basis, the data were dichotomous. The method of "biserial r" correlation as described by Garrett was used to compute this relationship.⁷⁶

$$r_{bis} = \frac{M_p - M_q}{S.D.} \times \frac{(p \times q)}{u}$$

The level of significance was obtained from Table 25 in Garrett.⁷⁷

Analysis of Data

Kraus-Weber Test

Per Cent of Test Failures (grades)

An examination of Table 2 will show that the per cent of test failure (found by dividing the total number of test failures by the total number taking the test and multiplying the result by one hundred) was highest in the sixth grade with 34.4 per cent failing and lowest in the ninth grade with 9.0 per cent failing. An analysis of the total test failures in all grades revealed that 19.3 per cent failed. This percentage of failure was considerably lower than that given in published results from other areas of the United States.

Per Cent of Test Failures (boys)

Table 2 indicates that according to this test the boys in the fifth grade with 50.0 per cent of test failure had the least amount of muscular fitness. The ninth grade boys with only 14.6 per cent of test failure had the lowest percentage of test failure. The eighth grade boys were next lowest with 24.4 per cent.

Table 2. Summary of Kraus-Weber Test Failures
by Grades and Sex

Grade	Per Cent of Test Failures	Per Cent of Test Failures (boys)	Per Cent of Test Failures (girls)
5	28.9	50.0	16.7
6	34.4	33.3	35.7
7	24.6	36.7	15.4
8	20.3	24.4	15.2
9	9.0	14.6	2.7
10	12.0	27.3	0.0
11	19.6	25.6	5.9
12	16.2	25.0	0.0
Total	19.4	27.2	10.7

Per Cent of Test Failures (girls)

Table 2 reveals also that the girls in the tenth and twelfth grades did not have a single test failure, whereas the sixth grade girls had the highest per cent of test failures with 35.7 per cent.

Per Cent of Incidence of Failure (grades)

Table 3 shows that the per cent of incidence of failures (found by adding the number of abdominal, psoas, back, and flexibility failures, dividing this number by the total number taking the test, and multiplying the result by one hundred) was lowest in the ninth grade with 9.0 per cent and highest in the fifth grade with 39.5 per cent.

Table 3. Summary of Kraus-Weber Test Incidence
of Failures by Grades and Sex

Grade	Per Cent of Incidence of Failures	Per Cent of Incidence of Failures (boys)	Per Cent of Incidence of Failures (girls)
5	39.5	64.3	25.0
6	34.4	33.3	35.7
7	26.5	41.4	15.4
8	27.0	34.1	18.2
9	9.0	14.6	2.7
10	12.0	27.3	0.0
11	19.6	25.6	5.9
12	16.2	25.0	0.0
Total	21.7	30.3	12.2

Per Cent of Incidence of Failure (boys)

Table 3 shows that the ninth grade boys had the lowest percentage of incidence of failures with 14.6 per cent, and the boys in the fifth grade had the highest rate with 64.3 per cent.

Per Cent of Incidence of Failure (girls)

Table 3 reveals that the girls in the tenth and twelfth grades had no failures and therefore had the lowest per cent of incidence of failures with zero. The sixth grade was highest with 35.7 per cent.

Per Cent of Incidence of Weakness Failures (grades)

Table 4 shows that the per cent of incidence of weakness failures (found by adding the number of abdominal, psoas, and back failures, dividing this number by the total number taking the test, and multiplying the result by one hundred) was lowest in the ninth, tenth, eleventh, and twelfth grade with zero, because of the fact that these four grades had no failures. The fifth grade was highest with 15.8 per cent.

Table 4. Summary of Kraus-Weber Test Incidence of Weakness Failures by Grades and Sex

Grade	Per Cent of Incidence of Weakness Failures	Per Cent of Incidence of Weakness Failures (boys)	Per Cent of Incidence of Weakness Failures (girls)
5	15.8	21.4	12.5
6	3.1	5.6	0.0
7	2.9	3.4	2.6
8	9.5	9.8	9.1
9	0.0	0.0	0.0
10	0.0	0.0	0.0
11	0.0	0.0	0.0
12	0.0	0.0	0.0
Total	3.7	3.9	3.4

Per Cent of Incidence of Weakness Failures (boys)

Table 4 shows that the highest per cent of incidence of weakness failures was in the fifth grade with 21.4 per cent. The boys in the ninth, tenth, eleventh, and twelfth grades had no failures and therefore had the lowest per cent, with zero.

Per Cent of Incidence of Weakness Failures (girls)

Table 4 shows that the girls in the fifth grade with 12.5 per cent of incidence of weakness failures were the highest. The sixth, ninth, tenth, eleventh, and twelfth grades had the lowest percentage of failures with zero.

Per Cent of Flexibility Failures (grades)

Table 5 shows that the per cent of flexibility failures (found by dividing the number of flexibility failures by the total number taking the test and multiplying the result by one hundred) was highest in the sixth grade with 31.3 per cent and lowest in the ninth grade with 9.0 per cent.

Per Cent of Flexibility Failures (boys)

Table 5 shows that the fifth grade boys with 42.9 per cent had the greatest percentage of flexibility failures. The seventh grade was lowest in percentage of flexibility failures with 16.7 per cent.

Per Cent of Flexibility Failures (girls)

Table 5 shows that the tenth and twelfth grade girls did not

have one flexibility failure and therefore were lowest with zero per cent. The sixth grade was highest in failures with 35.7 per cent.

Table 5. Summary of Kraus-Weber Test Flexibility Failures by Grades and Sex

Grade	Per Cent of Flexibility Failures	Per Cent of Flexibility Failures (boys)	Per Cent of Flexibility Failures (girls)
5	23.7	42.9	12.5
6	31.3	27.8	35.7
7	23.5	37.9	12.8
8	17.6	24.4	9.1
9	9.0	14.6	2.7
10	12.0	27.3	0.0
11	19.6	25.6	5.9
12	16.2	25.0	0.0
Total	18.0	26.3	8.8

Comparison of Kraus-Weber Test Results with Results from Other Geographical Areas of the United States and the World

Figure I shows that the school tested in this study on the items of the Kraus-Weber Test was lower in failure than any school with published results in the United States except for the 1.9 per cent of test failure in Bedford, Ohio. The 19.3 per cent of failure at Cerro Gordo was the lowest, considering only those schools testing both boys and girls.

Figure II shows that Cerro Gordo's per cent of test failure was considerably lower than that reported for East Pakistan, but higher than test results from Austria, Switzerland, Italy, and India.

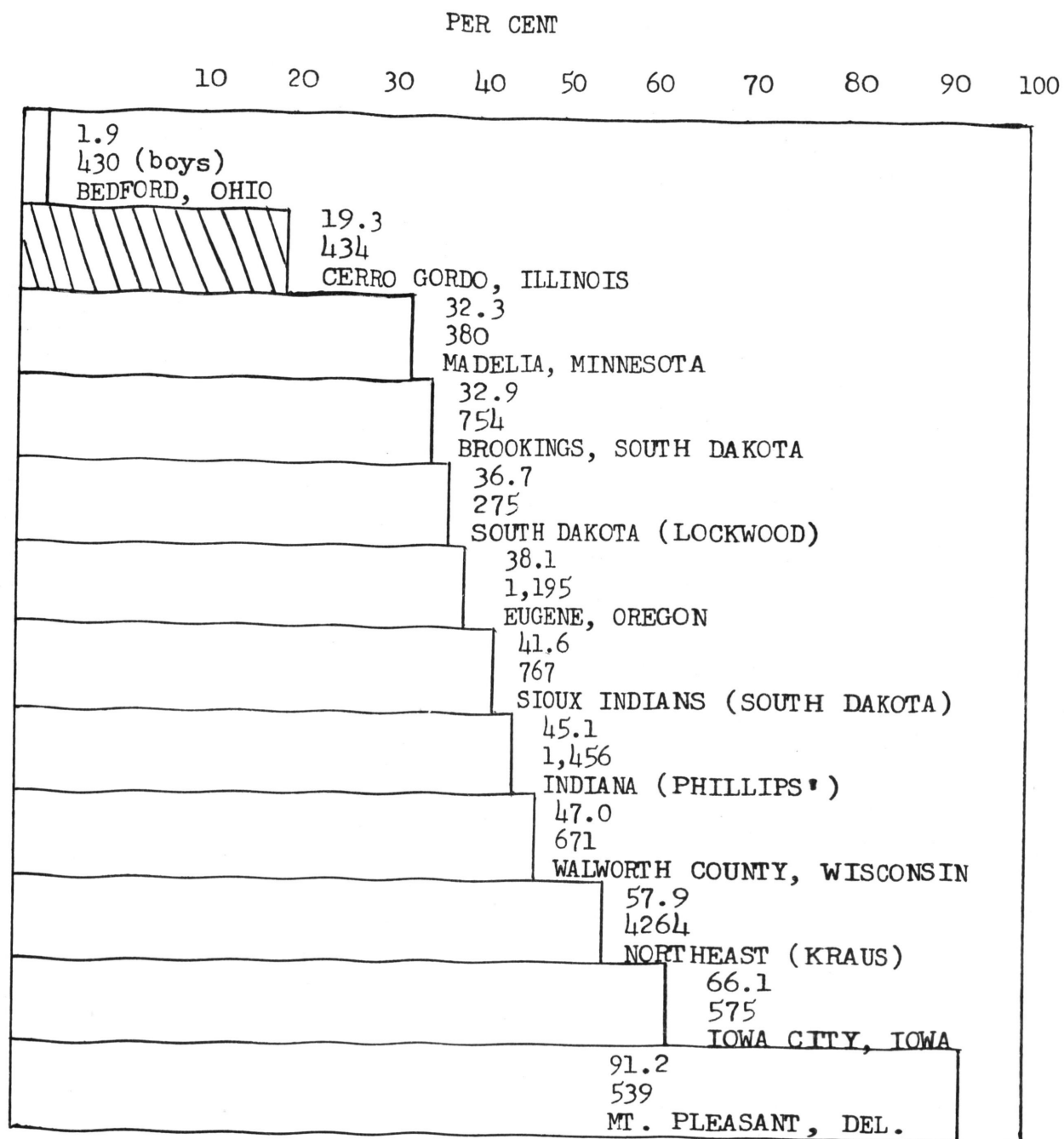


Figure I. A Comparison of the Results of the Kraus-Weber Test Failures in the Cerro Gordo Public Schools with Results from Other Geographical Areas of the United States

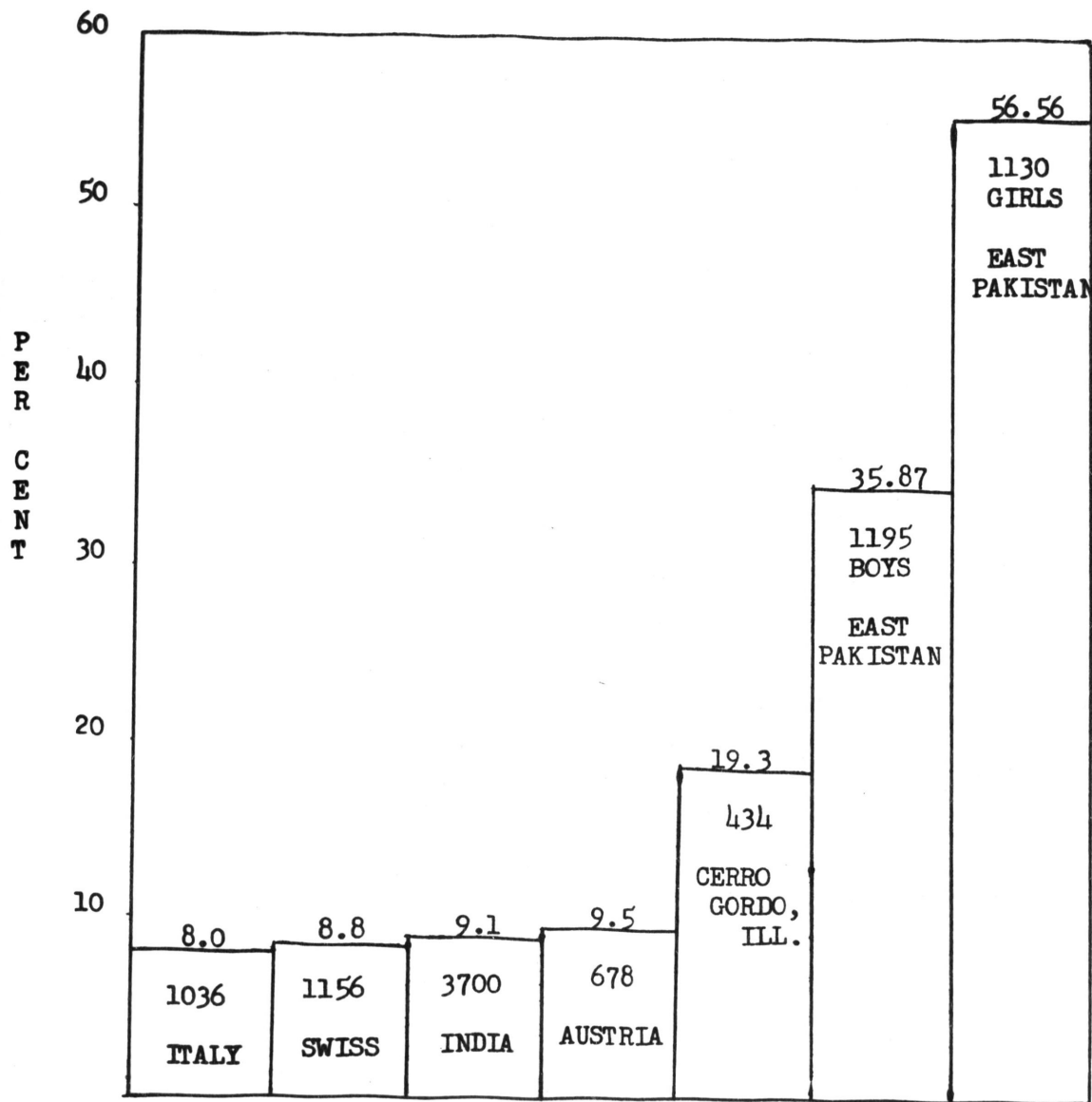


Figure II. A Comparison of the Results of the Kraus-Weber Test Failures in the Cerro Gordo Public Schools with Results from Other Geographical Areas of the World

AAHPER Test

Sit-up

Figure III shows that at age ten the Cerro Gordo girls' and boys' average was below the national girls' and boys' average. At all other ages the Cerro Gordo boys' and girls' average exceeded the national average, except at age eleven for which the boys' average was the same as the national average.

Pull-up

Figure IV indicates that the Cerro Gordo boys' and girls' average on the pull-up and modified pull-up for girls exceeded the national average at all age levels.

Shuttle-run

Figure V indicates that there was considerable difference between the average time of the Cerro Gordo ten- and eleven-year olds on the shuttle-run as compared to the national average. Very little difference existed between the national average and the Cerro Gordo boys' average on the shuttle-run at ages twelve through seventeen. From age twelve through seventeen the Cerro Gordo girls' average in the shuttle-run was better than the national girls' average. (This item is measured in time. Therefore, the lower the time the better the performance.)

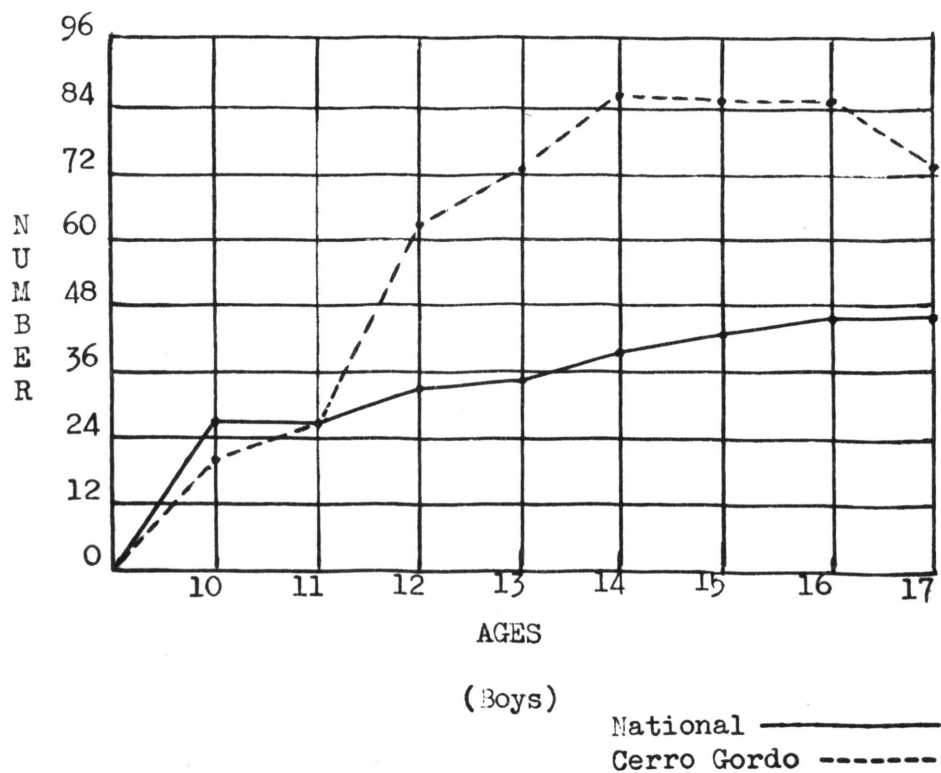
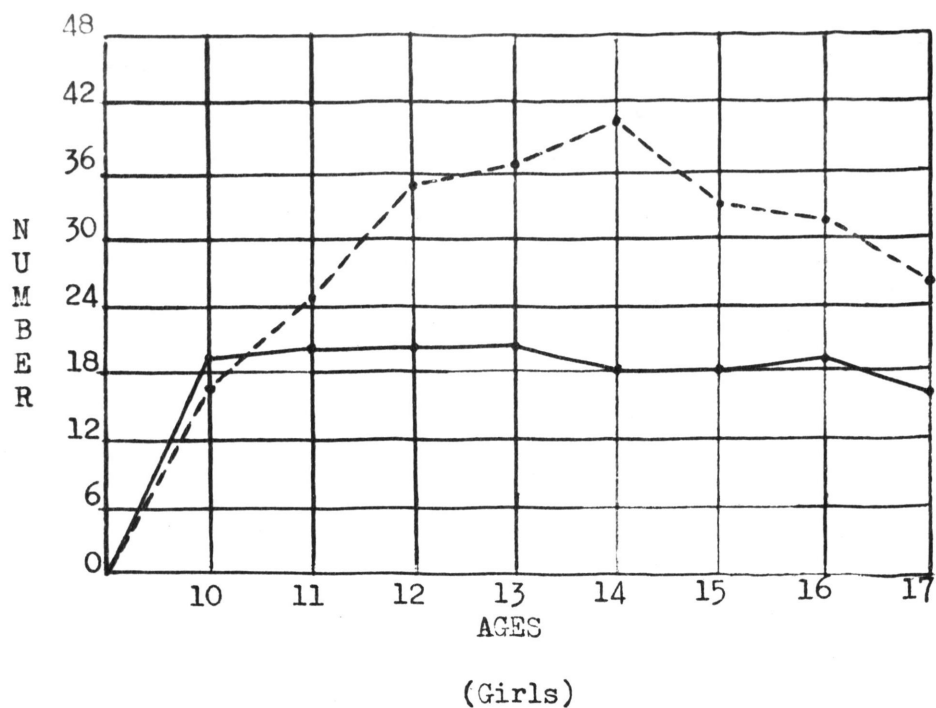
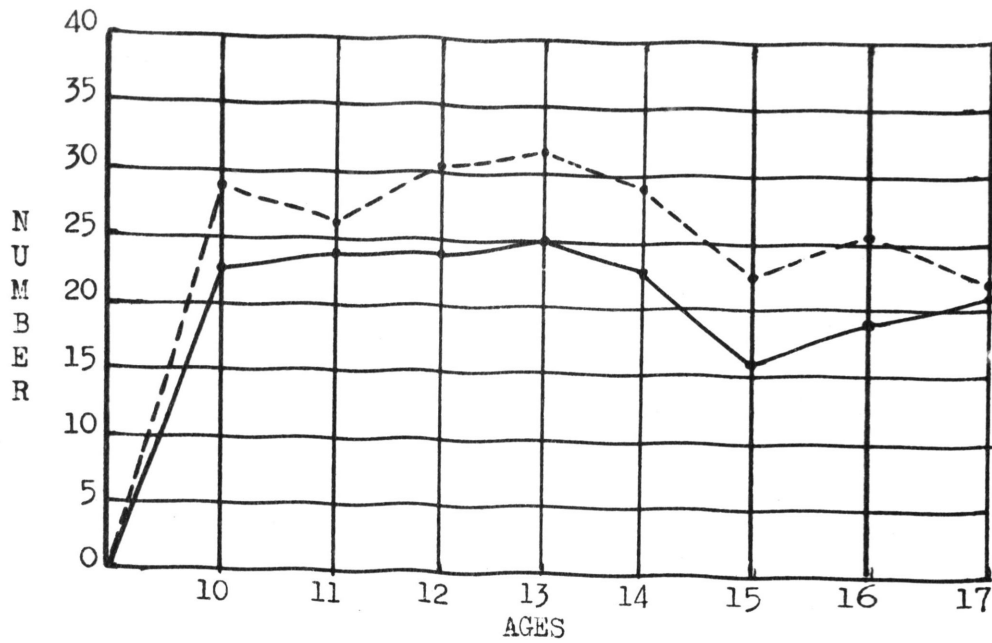
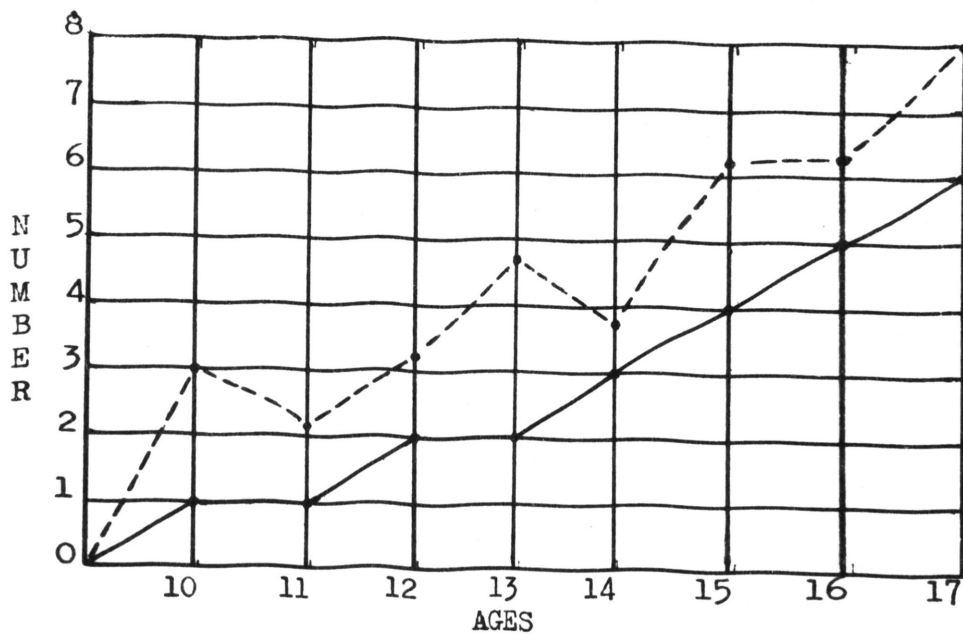


Figure III. Performance of the Cerro Gordo Students on the Sit-up Test Item of the AAHPER Test as Compared with National Performance



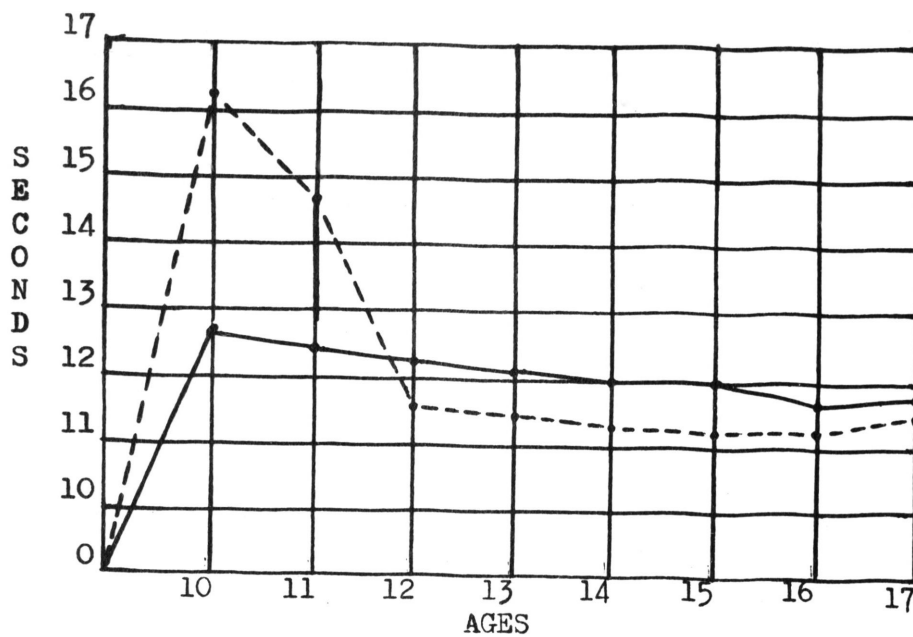
(Girls)



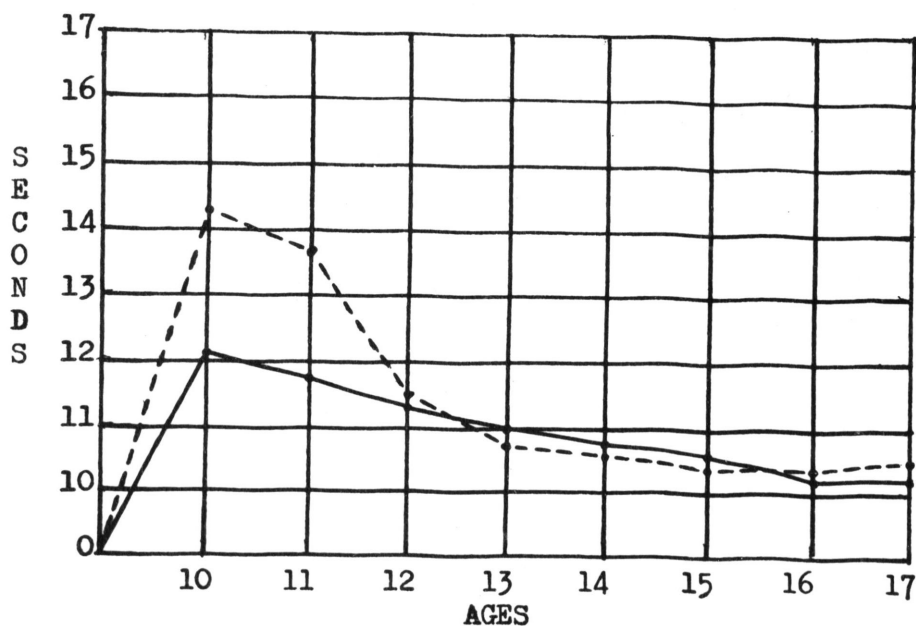
(Boys)

National —————
Cerro Gordo - - - - -

Figure IV. Performance of the Cerro Gordo Students on the Pull-up Test Item of the AAHPER Test as Compared with National Performance



(Girls)



(Boys)

National —————
Cerro Gordo - - - - -

Figure V. Performance of the Cerro Gordo Students on the Shuttle Run Test Item of the AAHPER Test as Compared with National Performance

Standing Broad Jump

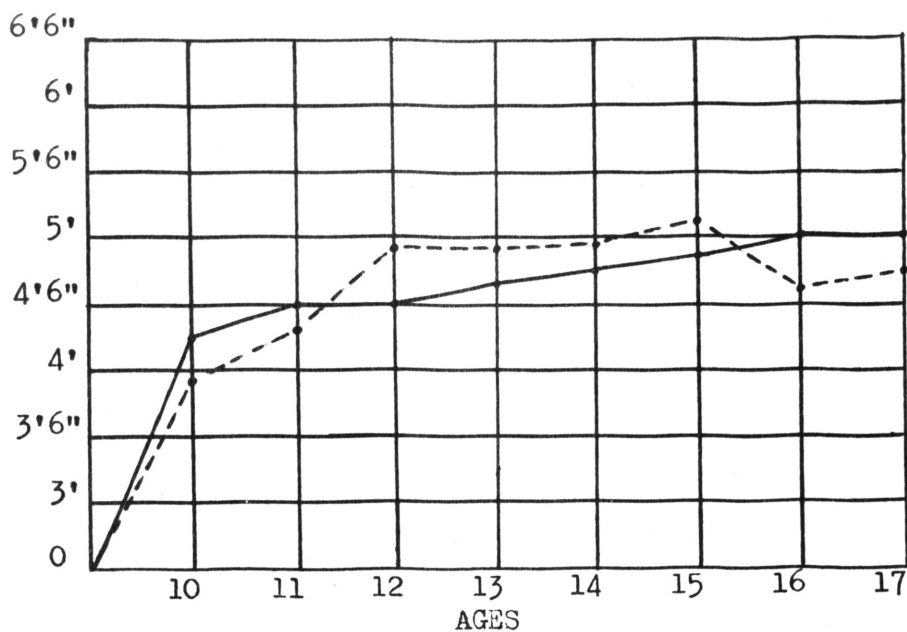
Figure VI shows that the Cerro Gordo girls after age ten and eleven were superior to the national average in the standing broad jump up to age fifteen when the national average surpassed the Cerro Gordo girls' average. The Cerro Gordo boys increased their distance with age, but still fell below the national average in the standing broad jump at ages ten, eleven, and twelve.

50-Yard Dash

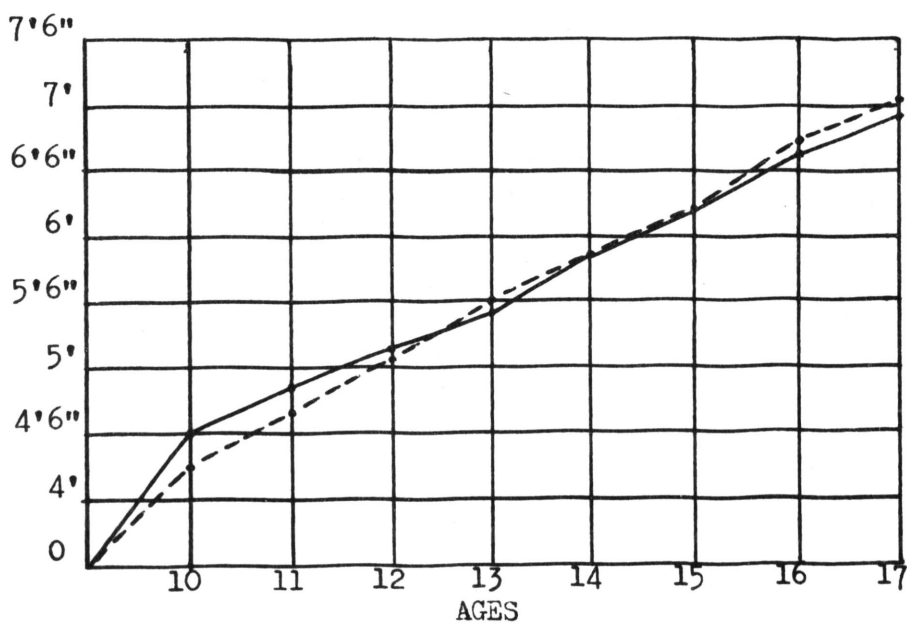
Figure VII shows that in the 50-yard dash the time lowered with the age. The Cerro Gordo girls were lower than the national average from age eleven through fifteen, but were above the national average at the other ages. The Cerro Gordo boys' average was lower than the national average in the 50-yard dash only at ages ten, twelve, thirteen, and fourteen. However, at ages fifteen, sixteen, and seventeen they were very close to the national average. (This item is measured by time. Therefore, the lower the time, the better the performance.)

Softball Throw

Figure VIII indicates that as the students matured, their ability to throw the softball for distance increased. The Cerro Gordo girls' average showed a steady increase up to age sixteen, when it dropped below the national average. The Cerro Gordo boys' average equaled or bettered the national average at all ages except age fifteen.



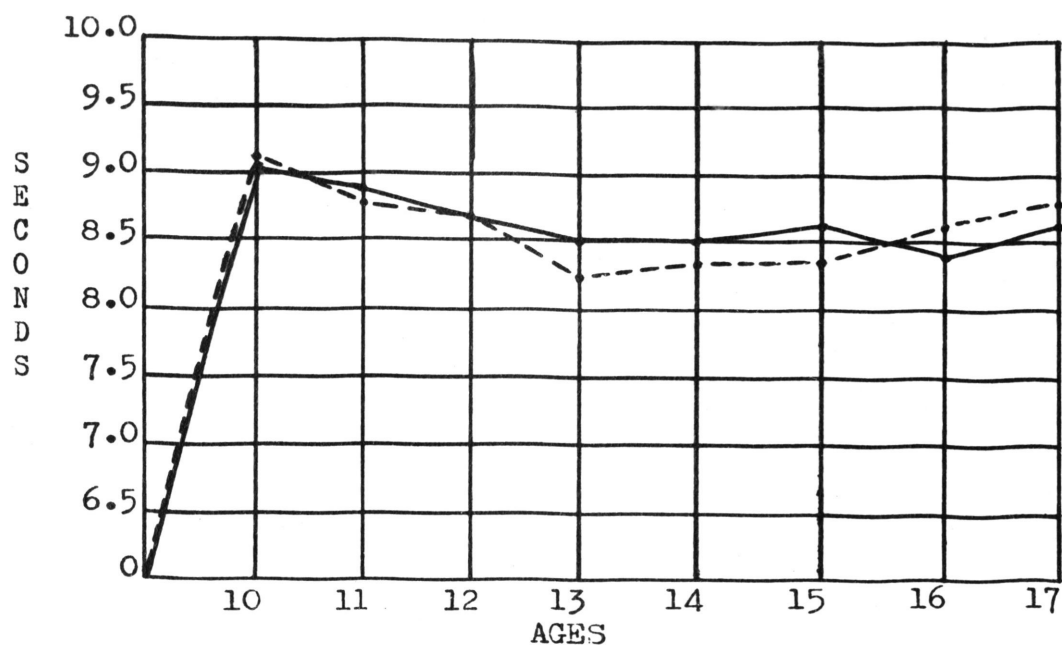
(Girls)



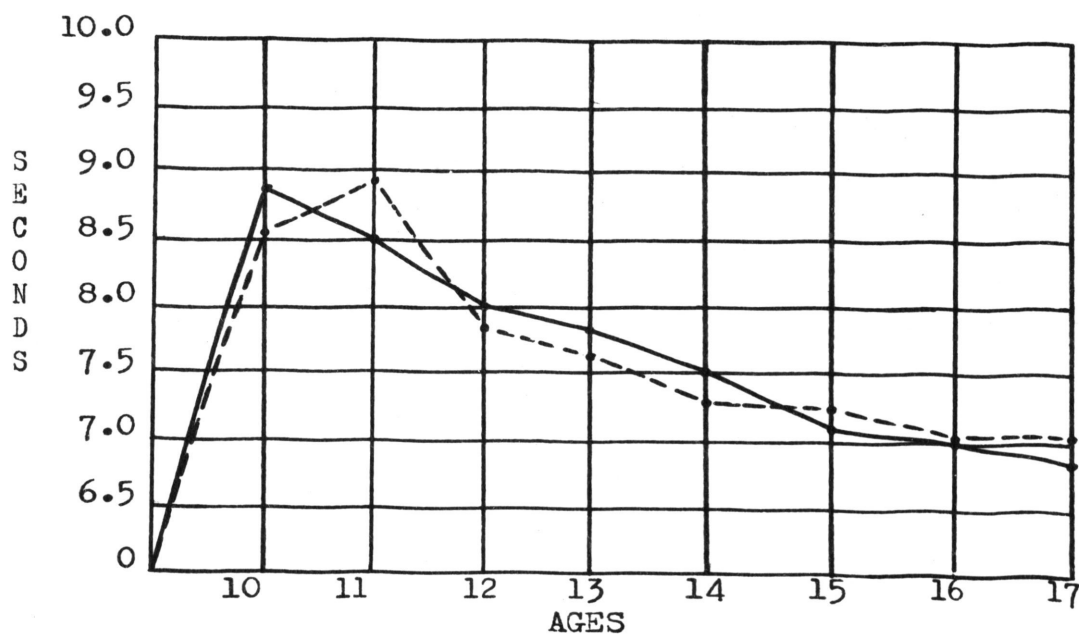
(Boys)

National —————
Cerro Gordo - - - - -

Figure VI. Performance of the Cerro Gordo Students on the Standing Broad Jump Test Item of the AAHPER Test as Compared with National Performance



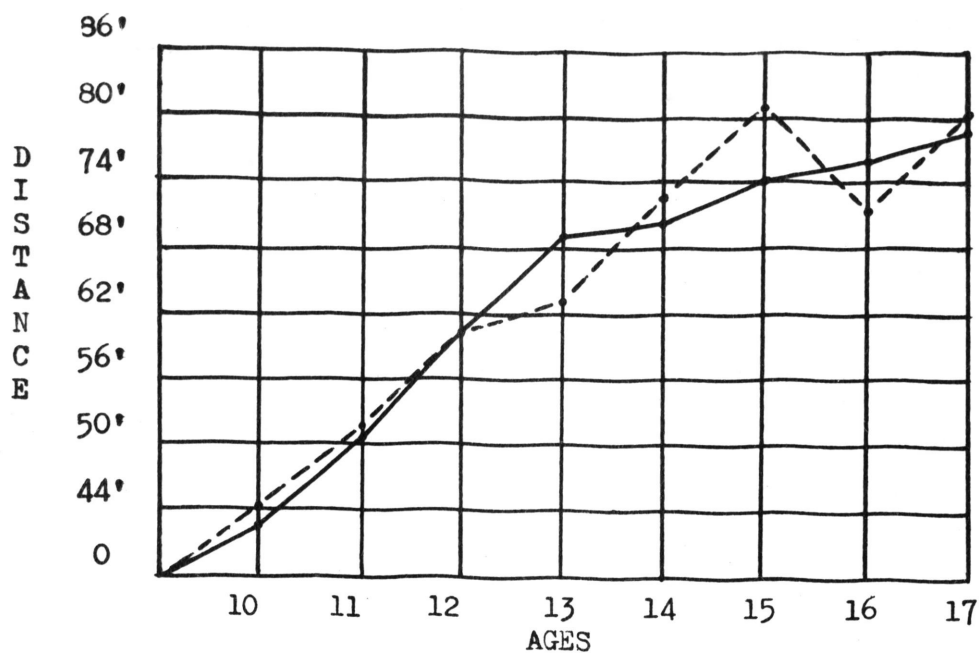
(Girls)



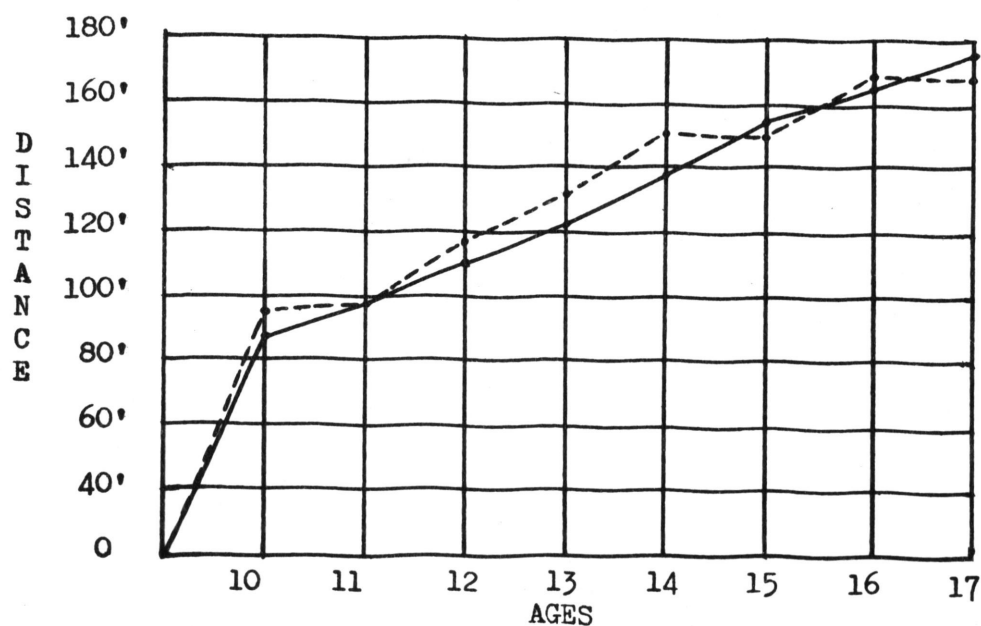
(Boys)

National —————
Cerro Gordo - - - - -

Figure VII. Performance of the Cerro Gordo Students on the 50-Yard Dash Test Item of the AAHPER Test as Compared with National Performance



(Girls)



(Boys)

National —————
Cerro Gordo - - - - -

Figure VIII. Performance of the Cerro Gordo Students on the Softball Throw Test Item of the AAHPER Test as Compared with National Performance

600-Yard Run-Walk

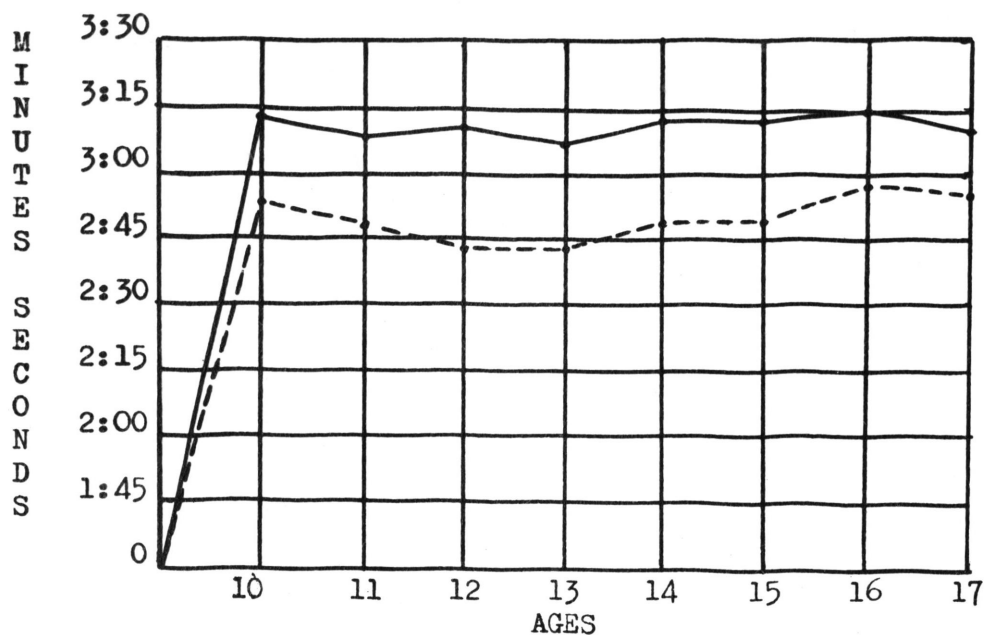
Figure IX indicates that the Cerro Gordo girls' average for this event was consistently lower than the national average at all ages. The time for the girls in the 600-yard run-walk was consistently around the 2 minute and 45 second mark at all ages. The Cerro Gordo boys' average was below the national average at all ages except eleven, sixteen, and seventeen. The national boys' average became lower as age increased, whereas the Cerro Gordo boys' average became lower as age increased after age eleven. (This item is measured by time. Therefore, the lower the time, the better the performance.)

Comparison of Athletes and Non-athletes

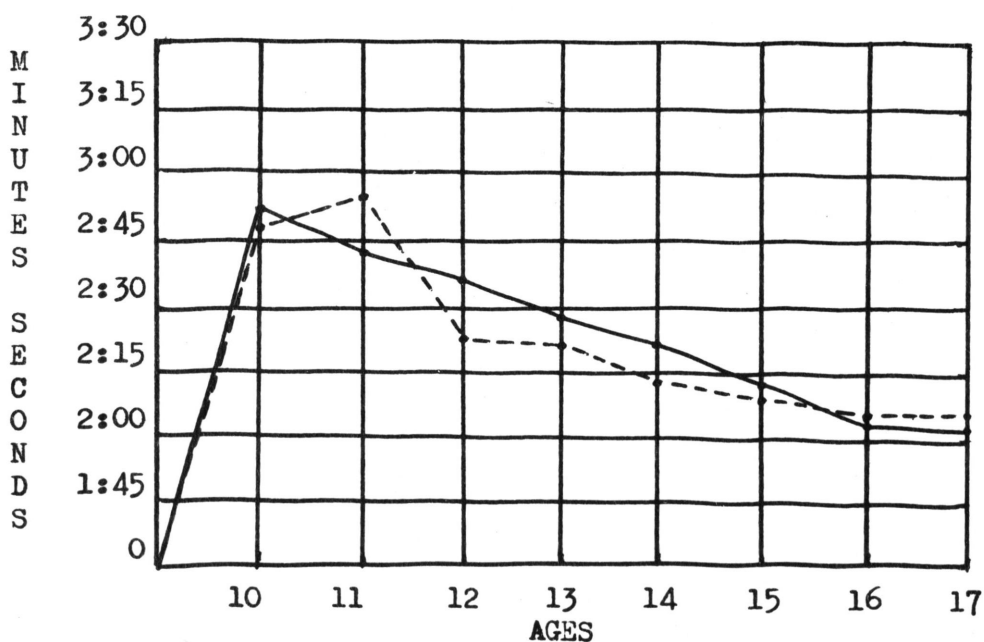
Table 6 refers to differences between athletes and non-athletes in the Cerro Gordo Public School (grades ten through twelve) as indicated by the AAHPER Test, which revealed that the athletes were significantly better only in the 50-yard dash and the 600-yard run-walk at the five per cent level of significance. This seems to indicate that increased activity by a student does not result in a better performance on the AAHPER Test.

Biserial Correlation Between the AAHPER Test and the Kraus-Weber Test

Table 7 shows that the correlation between the Kraus-Weber Test and the AAHPER Test was .348. This is significant at the one per cent level of significance and indicates that there is some relationship between the tests because a correlation this high would not occur by chance more than one time out of one hundred.



(Girls)



(Boys)

National ———
Cerro Gordo - - - - -

Figure IX. Performance of the Cerro Gordo Students on the 600-Yard Run-Walk Test Item of the AAHPER Test as Compared with National Performance

Table 6. Differences Between the Means, Standard Error of the Differences, Critical Ratio, and Level of Significance on the AAHPER Test (Athletes vs. Non-athletes of the Cerro Gordo High School)

Test Item	M ₁ Athletes	M ₂ Non-athletes	(M ₁ -M ₂) Difference	Standard Error Difference	t	Level of Significance
Sit-up	56.32	52.13	4.19	3.25	1.29	.00
Pull-up	57.68	62.13	4.45	4.49	.10	.00
Shuttle-run	61.14	56.33	4.81	4.27	1.13	.00
50-Yard Dash	65.96	55.55	10.41	4.05	2.57	.05
Softball Throw	67.14	59.40	7.74	3.96	1.95	.00
Standing Broad Jump	69.11	62.90	6.21	3.53	1.76	.00
600-Yard Run-Walk	66.71	57.63	9.08	4.10	2.21	.05

Table 7. Biserial Correlation Between AAHPER
Test Results and Kraus-Weber Test Results

AAHPER Scores	Kraus-Weber		Total T
	Pass p	Fail q	
80-89	4	0	4
70-79	19	2	21
60-69	70	6	76
50-59	76	15	91
40-49	74	20	94
30-39	47	16	63
20-29	15	10	25
10-19	1	2	3
0-9	0	1	1
	N=306	N=72	N=378

$$M_p = 51.33$$

$$M_q = 42.69$$

$$M_T = 49.69$$

$$S.D. = 14.11$$

$$r_{bis} = \frac{51.33 - 42.69}{14.11} \times \frac{(.810 \times .190)}{.271} = .348$$

$$p = .810$$

$$q = .190$$

$$u = .271$$

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The Kraus-Weber Test was administered to 434 children and the AAHPER Test to 378 children, fifth through twelfth grades, in the Cerro Gordo, Illinois, Public Schools. The results were analyzed by standard statistical procedures.

Conclusions

The following conclusions are based upon data obtained from this study:

1. Of the 434 children tested on the Kraus-Weber Test, only 19.3 per cent failed one or more test items. This was a lower percentage of failure than was reported from other areas of the United States.
2. The girls were found to be superior to the boys in minimum muscular fitness as determined by the Kraus-Weber Test. This was due largely to the difference in failures on the flexibility test.
3. The per cent of test failure on the Kraus-Weber Test by grades was highest in the sixth grade, with 34.4 per cent of test failure, whereas the per cent of test failure was lowest in the ninth grade with only 9.0 per cent failing.
4. The per cent of test failure for girls on the Kraus-Weber Test was highest in the sixth grade with 35.7 per cent, whereas the tenth and twelfth grade girls were the lowest with no failures.
5. In respect to the Kraus-Weber Test the boys in the fifth grade had the highest per cent of test failure with 50.0 per cent, and the ninth grade boys were the lowest with 14.6 per cent.

6. With respect to the average scores on the items of the AAHPER Test, the Cerro Gordo fifth and sixth grade boys and girls were usually at or below average, whereas the older boys and girls were consistently at or above average.
7. The athletes in grades ten through twelve at Cerro Gordo High School were found to be significantly better than the non-athletes in the 50-yard dash and 600-yard run-walk at the five per cent level of significance.
8. The biserial correlation between the AAHPER Test results and the total test results of the Kraus-Weber Test was .348, which was significant at the one per cent level of confidence.

Recommendations

1. The author recommends these tests for any school attempting to evaluate its physical education program by testing the muscle groups of the body.
2. Studies of this type should be conducted on a county and state level to evaluate the physical fitness of the students.
3. The author recommends that the Kraus-Weber Test be validated against one of the other reliable measures of physical fitness.
4. The results of the study show a need for a required physical education program to be set up in the fifth and sixth grades of the Cerro Gordo school system in order to improve the physical fitness of the students.
5. The results of the study show also that the athletes in the high school should be required to take physical education in order to improve total physical fitness.

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APPENDIX A

DESCRIPTION OF THE ADMINISTRATION OF
THE KRAUS-WEBER TEST

Test No. 1 - Abdominal Plus

1. Purpose - To test the strength of the abdominal and psoas muscles.
2. Position of person being tested - The person being tested lies in a supine position with his hands behind his neck. The tester holds the testee's feet down on the table.
3. Procedure - On a command of the tester the testee is instructed to keep his hands behind his neck and try to roll up into a sitting position.
4. Marking - Raising of the trunk from a supine position to a sitting position so that the trunk makes a right angle with the legs constitutes a "pass." If the testee cannot raise up into a sitting position or if he only partially raises up, it shall be considered a "fail."

Test No. 2 - Abdominal Minus

1. Purpose - Further testing of the strength of the abdominal muscles.
2. Position of person being tested - The person being tested lies in a supine position with his hands behind his neck and his knees bent. The tester holds the testee's feet down on the table.
3. Procedure - On a command of the tester the testee is instructed to keep his hands behind his neck and try to roll up into a sitting position.
4. Marking - Raising of the trunk from a supine position to a sitting position so that the trunk makes a right angle with the feet constitutes a "pass." If the testee cannot raise up into a sitting position or if he only partially raises up, it shall be considered a "fail."

Test No. 3 - Psoas (lower abdomen)

1. Purpose - To test the strength of the psoas and lower abdominal muscles.
2. Position of person being tested - The person being tested lies in a supine position with hands behind neck and legs extended.
3. Procedure - On a command of the tester the testee is instructed to keep the knees straight and lift the feet ten inches off the table. He is told to keep them up for a count of ten seconds.
4. Marking - Holding of the feet for the full ten-second count constitutes a "pass." Anything less than ten seconds is considered a "fail."

Test No. 4 - Upper Back

1. Purpose - To test the strength of the upper back muscles.
2. Position of person being tested - The person being tested lies in a prone position with a pillow under his abdomen so that the body would have the feeling of a see-saw which, if weighted at either end, would be able to hold the other end in the air.
3. Procedure - On a command of the tester the testee is instructed that while the tester holds down his feet, he is to put his hands behind his neck and raise his chest, head, and shoulders up and hold them there for a count of ten seconds.
4. Marking - Holding of the chest, head, and shoulders up for the full ten second count constitutes a "pass." Anything less than ten seconds is considered a "fail."

Test No. 5 - Lower Back

1. Purpose - To test the strength of the lower back muscles.
2. Position of person being tested - The person being tested remains prone over the pillow, but removes his hands from behind his neck and places them folded on the table with his head resting on them.
3. Procedure - On a command of the tester the testee is instructed that the tester will hold his chest down on the table and that he is to lift his legs up without bending the knees and hold them up for a count of ten seconds.
4. Marking - Holding of the legs up for the full ten second count constitutes a "pass." Anything less than ten seconds is considered a "fail."

Test No. 6 - Length of Back and Hamstrings (flexibility test)

1. Purpose - To test the length of back and hamstring muscles.
2. Position of person being tested - The person being tested stands erect in stocking feet with hands at his side.
3. Procedure - The testee is instructed to put his feet together, and keep his knees straight at all times. He is then told to lean down slowly and see how close he can come to touching the floor with his fingertips and stay in that position for three seconds.
4. Marking - Touching the floor with the fingertips and holding for three seconds without bending the knees constitutes a "pass." If at anytime the knees are bent while attempting to touch the floor, it shall be considered a "fail." Also, if the floor touch is not held for three seconds, it will be considered a "fail."

APPENDIX B THE 1914-1915 BUREAU YEAR

The first of the year was a very busy one. The Bureau was very active in the first half of the year. The first of the year was a very busy one. The Bureau was very active in the first half of the year.

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DESCRIPTION OF THE ADMINISTRATION OF
THE AAHPER YOUTH FITNESS TEST

Test No. 1 - Pull-up (boys)

1. Equipment - A metal or wooden bar approximately 1 1/2 inches in diameter is preferred. A doorway gym bar can be used and even a piece of pipe or the rungs of a ladder can be used.
2. Description - The bar should be high enough so that the pupil can hang with his arms and legs fully extended and his feet free of the floor. Use the over-hand grasp. After assuming the hanging position, the pupil raises his body by his arms until his chin can be placed over the bar and then lowers his body to a full hang as in the starting position. The exercise is repeated as many times as possible.
3. Rules - (1) Allow one trial unless it is obvious that the pupil has not had a fair chance. (2) The body must not swing during the execution of the movement. The pull must in no way be a snap movement. If the pupil starts swinging, check this by holding your extended arm across the front of the thighs. (3) The knees must not be raised and kicking of the legs is not permitted.
4. Scoring - Record the number of completed pull-ups to the nearest whole number.

Test No. 1 - Modified Pull-up (girls)

1. Equipment - A metal or wooden bar approximately $1\frac{1}{2}$ inches in diameter is preferred. A doorway gym bar can be used and, if no regular equipment is available, a piece of pipe can also serve the purpose. In some instances, it is possible to use the aisle between bleacher seats and have the bleachers support the pipe at the desired height.
2. Description - Adjust the height of the bar so it is approximately at nipple level. Use the over-hand grasp. The pupil extends her legs under the bar and extends the arms fully. The arms should form an angle of 45 degrees with the floor. The heels should be braced to prevent slipping; they can be resting on a mat or against an improvised rest, like the scorer's foot. From this position the pupil raises her body by her arms until the chest touches the bar, then lowers her body to a full hang. The exercise should be repeated as many times as possible.
3. Rules - (1) No resting is permitted. (2) No pull-up shall be counted in which the pupil fails to keep the body straight, come to a full extension of the arms, or touch the chest to the bar. (3) The maximum number is 40.
4. Scoring - Record the number of completed pull-ups to the nearest whole number, with a maximum of 40.

Test No. 2 - Sit-up

1. Equipment - Mat or floor.
2. Description - The pupil lies on his back, either on the floor or on a mat, with legs extended and feet about two feet apart. His hands are placed on the back of the neck with the fingers interlaced. Elbows are retracted. A partner holds the ankles down, the heels being in contact with the mat or floor at all times. The pupil sits up, turning the trunk to the left and touching the right elbow to the left knee, returns to starting position, then sits up turning the trunk to the right and touching the left elbow to the right knee. The exercise is repeated, alternating sides.
3. Rules - (1) The fingers must remain in contact behind the neck throughout the exercise. (2) The knees must be on the floor during the sit-up but may be slightly bent when touching elbow to knee. (3) The back should be rounded and the head and elbows brought forward when sitting up as a "curl" up.
4. Scoring - One point is given for each complete movement of touching elbow to knee. No score should be counted if the fingertips do not maintain contact behind the head, if knees are bent when the pupil lies on his back or when he begins to sit-up, or if the pupil pushes up off the floor from an elbow. The maximum limit in terms of number of sit-ups shall be: 50 sit-ups for girls, 100 sit-ups for boys.

Test No. 3 - Shuttle-Run

1. Equipment - Two blocks of wood, 2 inches by 2 inches by 4 inches, and a stopwatch. Pupils should wear sneakers or run barefooted.
2. Description - Two parallel lines are marked on the floor 30 feet apart. The width of a regulation volleyball court serves as a suitable area. Place the blocks of wood behind one of the lines. The pupil starts from behind the other line. On the signal "Ready? Go!" the pupil runs to the blocks, picks one up, runs back to the starting line and places the block behind the line; he then runs back and picks up the second block which he carries back across the starting line. If the scorer has two stopwatches or one with a split-second timer, it is preferable to have two people running at the same time. To eliminate the necessity of returning the blocks after each race, start the races alternately, first from behind one line and then from behind the other.
3. Rules - Allow two trials with some rest between.
4. Scoring - Record the better of the two trials to the nearest tenth of a second.

Test No. 4 - Standing Broad Jump

1. Equipment - Mat, floor, or outdoor jumping pit, and tape measure.
2. Description - Pupil stands with the feet several inches apart and the toes just behind the take-off line. Preparatory to jumping, the pupil swings the arms backward and bends the knees. The jump is accomplished by simultaneously extending the knees and swinging the arms forward.
3. Rules - (1) Allow three trials. (2) Measure from the take-off line to the heel or other part of the body that touches the floor nearest the take-off line. (3) When the test is given indoors, it is convenient to tape the tape measure to the floor at a right angle to the take-off line and have the pupils jump along the tape. The scorer stands to the side and observes the mark to the nearest inch.
4. Scoring - Record the best of the three trials in feet and inches to the nearest inch.

Test No. 5 - 50-Yard Dash

1. Equipment - Two stopwatches or one with a split-second timer.
2. Description - It is preferable to administer this test to two pupils at a time. Have both take positions behind the starting line. The starter will use the commands, "Are you ready?" and "Go!" The latter will be accompanied by a downward sweep of the starter's arm to give the timer a visual signal.
3. Rules - The score is the amount of time between the starter's signal and the instant the pupil crosses the finish line.
4. Scoring - Record in seconds to the nearest tenth of a second.

Test No. 6 - Softball Throw for Distance

1. Equipment - Softball (12 inch), small metal or wooden stakes, and tape measure.
2. Description - A football field marked in conventional fashion (five-yard intervals), makes an ideal area for this test. If this is not available, it is suggested that lines be drawn parallel to the restraining line, five yards apart. The pupil throws the ball while remaining within two parallel lines, six feet apart. Mark the point of landing with one of the small stakes. If his second or third throw is farther, move the stake accordingly so that, after three throws, the stake is at the point of the pupil's best throw. It was found expedient to have the pupil jog out to his stake and stand there; and then, after five pupils have completed their throws, the measurements were taken. By having the pupil at his particular stake, there is little danger of recording the wrong score.
3. Rules - (1) Only an overhand throw may be used. (2) Three throws are allowed. (3) The distance recorded is the distance from the point of landing to the nearest point on the restraining line.
4. Scoring - Record the best of the three trials to the nearest foot.

Test No. 7 - 600-Yard Run-Walk

1. Equipment - Track or area marked for distance required and a stopwatch.
2. Description - Pupil uses a standing start. At the signal, "Ready? Go!" the subject starts running the 600-yard distance. The running may be interspersed with walking. It is possible to have a dozen subjects run at one time by having the pupils pair off before the start of the event. Then, each pupil listens for and remembers his partner's time as the latter crosses the finish. The timer merely calls out the times as the pupils cross the finish.
3. Rules - Walking is permitted, but the object is to cover the distance in the shortest possible time.
4. Scoring - Record in minutes and seconds.