# A STUDY OF THE PHYSICAL FITNESS OF NINTH GRADE GIRLS ENROLLED AT SALINA JUNIOR HIGH SCHOOL SOUTH, SALINA, KANSAS, 1964-1965

by

MARY VIRGINIA BEVAN

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# INTRODUCTION

> The strength of our democracy is no greater than the collective well-being of our people. The vigor of our country is no stronger than the vitality and will of all our countrymen. The level of physical, mental, moral, and spiritual fitness of every American citizen must be our constant concern. . . . I urge that in all communities there be more coordination between the schools and the community, parents, educators, and civic-minded citizens in carrying forward a resourceful, vigorous program for physical fitness--a program that will stir the imagination of our youth, calling on their toughest abilities, enlisting their greatest enthusiasm--a program which will enable them to build the energy and strength that is their American heritage.[1]

As exemplified in the preceding words of former President Kennedy, the physical fitness of our youth has become a presidential and universal concern for the United States. Before the deceased Kennedy, ex-President Eisenhower expressed a similar desire for increased youth fitness, and to initiate concrete action, he formed the first President's Council on Physical Fitness in 1956. He also urged the forming of Governor's Councils on Physical Fitness, and in November, 1957, Kansas had its first state-wide meeting to inform all concerned educators. For their consideration, the Governor's Advisory Committee approved the following four proposals: (1) That a program be developed which will tend to promote, among our Kansas youth, fitness in all its aspects, physical, social, emotional, mental, and spiritual; that particular emphasis

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[1]John F. Kennedy, "A Presidential Message to the Schools on the Physical Fitness of Youth," Youth Physical Fitness (Washington, D. C.: President's Council on Youth Fitness, July, 1961).

should be placed at this time on the physical. (2) That the state P. T. A. take the leadership in establishing Community Health and Fitness Councils whose job it would be to mobilize local community resources and interest in youth fitness. (3) That the State Department of Public Instruction be urged to implement the present requirements and that schools be urged to develop a continuing program of health, physical education, and safety one period per day from grades one through twelve, this period to be a regularly scheduled period each day and that after school or out of school activities such as intramurals, athletics, recess, etc., be in addition to this period. (4) That there be created in the office of the State Department of Education a position of State Supervisor of Health, Physical Education and Safety. It would be the duty of this state supervisor to implement the above proposals by developing a youth fitness program and seeing that this program functions in the schools.[2]

To continue in the same vein as these two great men, President Johnson has emphasized, just as vehemently, the strong need for his countrymen to recognize the vital force fitness and health can play not only in the individual's but also in the nation's well-being. Fitness has always played an important part in the defense of our country in time of war, but it is now recognized as essential for daily living even in peace time. Increased leisure due to automation and shorter working hours

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[2]From data distributed at the first Kansas Governor's Council on Physical Fitness in Topeka, Kansas, November, 1957.

is forcing the average American citizen to pursue a hobby or some other form of wholesome recreation.[3] In many cases this must be provided at government expense, e.g., city recreation departments, for many families cannot afford the expense of commercial recreation. If this is not done, our country could become one of idleness and boredom.

Looking back through the portals of history, there is evidence that fitness held an important position even during Woodrow Wilson's term of office. He had his entire cabinet turn out daily for calisthenics.[4] And it was in response to John Kennedy that the fitness of his own staff be investigated after reviewing an old executive order dated 1908 and signed by Teddy Roosevelt stating that every marine should be able to march fifty miles in twenty hours over a three-day period double timing at least seven hundred yards of the distance.[5] As a result of this old document, Pierre Salinger was asked to initiate a fitness program for Kennedy's staff. Also resulting from the publicity concerning this and a plea to the nation from Kennedy to do more hiking in the interest of fitness, people from all over the nation in every walk of life, including Kennedy's own brother, Robert, have been hiking great distances.[6]

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[3]Jac A. Cropley, "Recreation Out of Necessity," Recreation, 57:84, February, 1964.

[4]"Fitness on New Frontier," United States News, 54:10, February 18, 1963.

[5]"Fitness of White House Staff," Newsweek, 61:22, February 18, 1963.

[6]"Americans Can Walk," United States News, 54:64, February 25, 1963.

In a report of the progress made in fitness in 1963, Kennedy told the nation that the capacity of the army to withstand aggression depended upon the fitness of the American G.I. In addition, he felt, the future effectiveness of any civil servant, astronaut, or office typist, rested on fitness and vitality.[7] Because of similar views, many countries are emphasizing the fitness of their youth. For example, France has recognized the importance of physical fitness; in 1963 Charles de Gaulle, "whose own paunch droops like a cold soufflé," ordered a great emphasis on fitness for all candidates for le baccalauréat. Before graduation all students had to pass a physical test.[8]

Never before in the history of our country has there been more stress upon the importance of physical fitness. Never before have physical educators had a better opportunity to pluck the "goose with the golden egg," in order to publicize their programs, improve their facilities, create better curriculums for students, and elevate their profession. This opportunity must not be treated lightly; every advantage must be pressed so that the great meaning and need of physical education is understood in each of its many facets by all--the layman, the politician, the administrator, and especially the physical educator, himself.

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[7]John F. Kennedy, "Fitness--Report of Progress," Look, 27:82-83, August 13, 1963.

[8]"Why Jean Can't Run? de Gaulle's Physical Fitness Program," Newsweek, 61:108, March 25, 1963.

The need for physical fitness is not a modern one. The past history of any group of theories, educational or political, can be invaluable in understanding their present growth and future potential. Physical fitness has been of prime importance to nations in ancient times and has continually gained in stature throughout the history of mankind.

Some of the world's most profound thinkers, the ancient philosophers Socrates, Plato, and Aristotle, were promoters of physical education. In the words of Socrates, "No citizen has a right to be an amateur in the matter of physical education training. It is part of his profession as a citizen to keep himself in good condition, ready to serve his state at a moment's notice."[9]

Even in homeric ages athletes and men of prowess were extolled. Ancient Greeks placed an abundance of emphasis on physical attributes and abilities. They knew it was necessary to have not only a free and inquiring mind, but a strong and active body to develop "glorious limbed youth, as Pindar." The symbol of their dedication to physical hardihood was the Olympic games. No astronaut or statesman of today receives a more enthusiastic welcome than did the Olympic victors when they returned to their cities.[10]

Physical education experienced a decline in importance, and was suppressed during the medieval era until the turn of the

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[9]Emmett A. Rice and John L. Hutchinson (ed.), A Brief History of Physical Education (New York: A. S. Barnes and Company, 1952), p. 38.

[10]Kennedy, op. cit.

nineteenth century when it enjoyed a sharp rise in interest through the efforts of many dedicated men. One of the first of these, who is known as the "grandfather" of German gymnastics, was Johann Friedrich GutsMuths. Because of his long service to education and his valuable literary contributions, he is regarded as one of the founders of modern physical education.[11] Following GutsMuths was his former student, Friedrich Ludwig Jahn. Jahn's faith and work in physical education originated from patriotic motives. He differed from Locke on the matter of discipline through physical education, and held that exercise should be regarded as a means of growth and development of powers rather than as a hardening process.[12] Dudley Sargent and Luther Halsey Gulick were two other eminent men who contributed much to the field of physical education. Gulick in his book, Physical Education by Muscular Exercise,[13] was one of the first early educators to recognize exercises as a means to physical fitness and well-being. He felt "the position taken during exercise is of the greatest importance."[14] F. A. Schmidt, another M.D., also wrote a book on this subject, Physical Exercises and their Beneficial Influence.[15] In this book Schmidt emphasized the importance of the years between fourteen and twenty because of

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[11]Rice, loc. cit., p. 90.

[12]Ibid., pp. 101-102.

[13]Luther Halsey Gulick, Physical Education by Muscular Exercise (Philadelphia: Blakiston's Son and Company, 1907).

[14]Ibid., p. 11.

[15]F. A. Schmidt, Physical Exercises and their Beneficial Influence (North American Gymnastic Union). Translated from the German by A. B. C. Biewend, St. Louis, 1894.

the great development of the heart and lungs during this age span. He stressed the need for exercise, but added, "real exhaustion is even now to be avoided yet," which is not in complete concurrence with today's physiologists.[16]

"Mens sana in corpore sano," a sound mind in a sound body, is an axiom that has become historically famous in physical education.[17] This statement would indicate a strong relationship between academic achievement and muscular ability. Socrates stressed that "poor health can contribute to grave mistakes in thinking."[18] Comenius noted, "Intellectual progress is conditioned at every step by bodily vigor. To attain the best results, physical exercise must accompany and condition mental training."[19] Rousseau observed that "an enfeebled body enervates the mind," and he included a rich program of physical activities for Emile.[20]

Educators today believe just as strongly as these eminent philosophers that there is a direct correlation between the mind and the body as it pertains to the individual's ability to perform. Physical education, therefore, has as its primary objective the desire to be an integral part of education--to contribute to the seven cardinal principles.[21]

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[16]Peter V. Karpovich, Physiology of Muscular Activity (Philadelphia and London: W. B. Saunders Company, 1953), p. 28.

[17]Ibid., p. 247.

[18]Charles A. Bucher, "Health, Physical Education, and Academic Achievement," National Education Association Journal, 54: 38, May, 1965.

[19]Ibid.

[20]Ibid.

[21]Clyde Knapp and E. Patricia Hagman, Teaching Methods for Physical Education (New York: McGraw-Hill Book Company, Inc., 1953), p. 64.

Health and physical education programs are related to academic achievement in at least four ways: (1) through emphasis on the development of motor skills, (2) by promoting physical fitness, (3) by imparting knowledge and modifying behavior in regard to good health practices, and (4) by aiding in the process of social and emotional development which leads to a more positive self-concept.[22]

The President's Council has developed guide lines to physical fitness which are embodied in the following four basic points: (1) a health appraisal for each youth to discover the remedial effects and determine his capacity for examination, (2) a physical performance screening process to identify underdeveloped youth, (3) at least fifteen minutes of vigorous activity as part of the daily physical education program, and (4) performance achievement tests to measure progress.[23]

"Our aim is not to develop super athletes, but, to bring all of our young men and women up to minimum acceptable levels of physical fitness."[24] This is a statement credited to Charles "Bud" Wilkinson, former University of Oklahoma coach and Kennedy's special consultant to the President's Council on Youth Fitness. It expresses extremely well the primary objective and philosophy of the nation's physical fitness program. After a study of the fitness of children in the public schools of this

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[22]Bucher, loc. cit., pp. 38-39.

[23]"Youth and Fitness, Where Do We Stand?" Senior Scholastic, 82:8-9, February 13, 1963. Statement made by George Gallop.

[24]Ibid. Statement made by Charles "Bud" Wilkinson.

nation, Wilkinson discovered that ten million pupils, 26 per cent of the boys and 23 per cent of the girls, couldn't pass simple tests on pull-ups, sit-ups, and squat thrusts. Fifteen million or 40 per cent couldn't pass the standard seven physical fitness tests. Two thousand boys and girls in five different states were involved in this first testing program. In the schools that had a physical education program only 25 per cent failed the three original tests, but 46 per cent failed in the schools with no specific physical education program.[25] After these disastrous results Kennedy asked Wilkinson to spearhead a pilot program in Muskogee, Oklahoma. The results, publicly known, were very successful and have paved the way for succeeding programs of fitness.

Recreation and park departments throughout the country have been involved in similar pilot programs in fitness. Track and field events have been especially prominent.[26] Huntington, a city on the north shore of Long Island, forty-five miles east of New York City, was one of eight cities that conducted pilot programs in recreation fitness. They were specifically involved with the use of an obstacle course much like those used in the armed services.[27] Salina, Kansas, was another of these pilot cities. They initiated a fitness program on the playgrounds involving all seven of the standard fitness tests. In addition an

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[25]Charles Wilkinson, "Fitness Can Be Fun," Newsweek, 50: 17-18, July 23, 1962.

[26]Joseph B. Sharpless, "Track and Field Development," Recreation, 57:230-231.

[27]Joseph G. Anderson, "Physical Fitness Pilot Project," Recreation, 56:276, June, 1963.

obstacle course was arranged in conjunction with St. John's Military School of Salina. To date this fitness program is rapidly increasing in interest and in number of participants.[28]

Eastchester, New York, began a fitness camp patterned after the intramural program at West Point which was started in 1921 by Douglas MacArthur and is still in effect. The success of Eastchester's program has been overwhelming.[29] Portland, Oregon, has also developed sports-fitness camps as part of its summer youth program.[30]

Not everyone is so enthused. Frank Foster believes that there has been too much emphasis placed upon physical fitness, that it is not synonymous with health, and that we need to develop more leisure time activities for the last years of a child's life. He refers to Robert Kennedy's hike as folly, and feels too much money is spent on professional games and facilities for athletics.[31] However, his ideas lack substantiation and validity because he is using the term fitness only in reference to calisthenics and athletics, activities of muscular strength and endurance, whereas the word fitness, with all its ramifications, has evolved to denote a much more inclusive meaning.[32]

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[28]The privilege of personal participation as a supervisor with the Salina Recreation Commission.

[29]Vincent D. Bellew, "Experiment in Fitness," Recreation, 57:281-282. He is the Superintendent of Recreation in Eastchester.

[30]Dorothea Graham, "Sports Fitness Camps," Recreation, 57:280-281.

[31]Frank P. Foster, "Warning Against a Physical Fitness Mania," New York Times, February 9, 1964, p. 15.

[32]See Definition of Terms, the word fitness, page 17 in this paper.

W. W. Bauer, M. D., director emeritus, Department of Health Education, American Medical Association, questions "Is the tail wagging the dog?"[33] Through the use of this metaphor Bauer explicates that the "tail" represents the school fitness and the "dog" represents the parents. He feels that fitness should begin at home and that it is more than mere exercise. Bauer compares fitness to a fine-cut jewel with many facets. The physical aspects of fitness are necessary because "modern living is mostly sitting;" however, the other "facets" must not be overlooked. According to Bauer, fitness demands, in addition to muscular activity: (1) good medical care, (2) first rate dental care, and (3) rest and sleep.[34]

Perhaps his theories can best be visualized by considering his "Seven Paths to Fitness": (1) good basic health, (2) good nutrition, (3) dental service, (4) exercise, (5) concept of satisfying work, [Under this "path," Bauer quotes Thomas Carlyle, "Blessed is he who has found his work; let him have no other blessedness."] (6) play and recreation, and (7) rest, relaxation, and sleep.[35]

Dr. Harold M. Slerting, a Tufts University doctor feels, too, that much more of the burden should be placed on the home. When answering the American Medical Association's question,

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[33]W. W. Bauer, "Keep Children Fit and Hardy," Parent Teacher Association Magazine, 58:14, October, 1963.

[34]Ibid.

[35]W. W. Bauer, "Seven Paths to Fitness," Todsy's Health, 41:13, April, 1963.

"Fitness for what?" Slerting replied, "fitness for normal adult activities and a more satisfying life span."[36]

Home fitness would be ideal, but in order to be effective, the cooperation of all parents would have to be secured. That this is possible or feasible is very doubtful. George Gallop declared, after polling thousands on their exercise habits, that, "American parents are involved in a massive conspiracy to brainwash children against physical activity. From the time a child is six until his senior year in college, the American youth is taught how to avoid using his muscles."[37] Obviously, the daily routine of life in the pioneer era of our country made it much easier for a person to keep fit.[38] However, until such time as the parents have the incentive and energy that is necessary to promote fitness by example, schools will have to continue their services.

In the District of Columbia, one school incorporated something novel in their fitness program. The students were dragging in at nine o'clock to school and putting in a sluggish day of work. They innovated the schedule completely. Students arrived at 7:30 a.m., ate a good breakfast, exercised for a brief period, and then showered before starting their schoolwork. Great improvement was noted in the academic work of these

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[36]"For Fitness Build Health," Science Newsletter, 84:11, July 6, 1963.

[37]"Youth and Fitness, Where Do We Stand?" Senior Scholastic, 82:8-9, February 13, 1963.

[38]Kennedy, op. cit.

students.[39]

There is no doubt but what the school and the home have an important role to play in the fitness of our youth. In addition, teacher training institutions have a dual responsibility within a program of physical fitness: (1) professional preparation of future teachers and (2) preparation of non-major students for their part in the total fitness program of our schools.[40]

Before planning an adequate physical fitness program, one must be able to identify the individual who is physically fit for daily living and to determine the needs of the student who may not be fit. C. L. Wear has proposed six characteristics which may be used to identify the student 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 quickly. (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 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. The individual who

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[39] "Exercise Helps Schoolwork," Science Newsletter, 84:9, July 6, 1963.

[40] John H. Jenney, "The Teacher Training Institution's Responsibility for Physical Fitness," The Physical Educator, 15:50, May, 1958.

fails to exemplify most of these characteristics may be in need of a planned program of fitness under professional care.[41]

Fitness is definitely on the move nationally, and in the words of Dr. McNeeley, "It begins with you. If you believe fitness is important then you will (1) Be fit, and will (2) Sell it to others."[42]

The words of Shane McCarthy are also very appropriate, "Think Big, Plan Big, and Act Big, and from this gathering of proven dedicated fitness leadership could come a snowball that might well move the mountain of passivity and sedentary habits. Go to it and God bless you!"[43]

"Physical education cannot be all things to all men, but it must be some things to all men."[44]

## PURPOSE OF PHYSICAL FITNESS TESTING

Any testing or measurement which is administered to students represents one form of evaluation. Evaluation is a process that can serve many purposes. It should always be a continuous process just as learning, for the student, undergoes many

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[41]C. L. Wear, "Physical Fitness Promotion and Physical Education Class Program," The Physical Educator, 15:3, March, 1958.

[42]"Fitness Developments," The Physical Educator, 20:11, March, 1963.

[43]Shane McCarthy, "Forward with Fitness," The Physical Educator, 15:83, October, 1958. (In an address given to the national convention of American Association of Health, Physical Education, and Recreation in Kansas City, Missouri.)

[44]"What is Fitness?" The Physical Educator, 16:122, December, 1959.

transitions. One of the primary purposes for testing of any type is that of checking on progress in order to better evaluate or determine the attainment of preconceived objectives. If used judiciously, this kind of evaluation can be a very potent means of producing progress.[1]

From results of a survey by Charles Wilkinson, the Kraus-Weber test results, and other research findings, it would appear that American youth have been lacking in physical fitness. This prompted the first President's Council on Youth Fitness to be established in 1956. Since that time the American Association for Health, Physical Education and Recreation, in January, 1959, announced a new program called Operation Fitness--U.S.A., headed by Louis E. Means, A.A.H.P.E.R. Director of Special Projects.[2] Through his efforts and those of many other dedicated men, including our present special consultant to the president, Stan Musial, many objectives have been formed. Three of basic concern which former President Kennedy urged each school to adopt are as follows: (1) Identify the physically underdeveloped pupil and work with him to improve his physical capacity. (2) Provide a minimum of fifteen minutes of vigorous activity every day for all pupils. (3) Use valid fitness test to determine

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[1]William Leonard Hughes, Esther French, and Nelson G. Lehsten, Administration of Physical Education for Schools and Colleges (New York: The Ronald Press Company, 1954), p. 62.

[2]Youth Fitness Test Manual (Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1962), p. 3.

pupils' physical abilities and evaluate their progress.[3]

Validated tests have long been a part of good physical education programs: (1) only through tests can standards be developed, (2) tests provide the best means of measuring achievement and diagnosing weaknesses, and (3) physical achievement test provide self-evaluation and a strong motivation for development within the individual pupil.[4]

Physical fitness tests, therefore, can be very helpful in: (1) establishing norms for their comparative value, (2) motivating students to achieve greater physical fitness, (3) aiding the teacher in measuring achievement, (4) aiding the student in self-evaluation, (5) discovering strengths and weaknesses in any given program, and (6) measuring the progress toward the program's objectives.

In a few instances these tests are used to classify students into homogeneous groups in order to facilitate better teaching methods. Some teachers feel the students will be in an environment more conducive to learning if they participate with others of their own sex, size, maturity, strength, speed, and skill.[5]

Only through valid testing will physical educators be able to improve their programs and measure their progress toward the national goal of total fitness for all youths.

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[3]John F. Kennedy, "A Presidential Message to the Schools on the Physical Fitness of Youth," Youth Physical Fitness (Washington, D.C.: President's Council on Youth Fitness, July, 1961).

[4]Youth Physical Fitness (Washington, D.C.: President's Council on Youth Fitness, July, 1961), pp. 8-9.

[5]Edward F. Voltmer and Arthur A. Esslinger, The Organization and Administration of Physical Education (New York: Appleton Century Crafts, Inc., 1958), p. 510.

## PURPOSE OF THE PROBLEM

The primary purpose of this problem was to compile statistical data in order to obtain concise, concrete information concerning the fitness of the ninth grade girls at Salina Junior High School South. From the material derived from these test results, indicated areas of weakness will be discovered, and therefore can be improved in the physical fitness program for ensuing students.

There is, however, a dual purpose--which is to provide the Kansas State University Physical Education Department with data concerning the physical fitness of ninth grade girls in the midwest.

## DEFINITIONS OF TERMS USED

Health. Health is that complete fitness of body, soundness of mind, and wholesomeness of emotions, which make possible the highest quality of effective living and of service. The World Health Organization has defined health as "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity."[1]

Fitness. Fitness pertains to the functioning of a person as a whole. Fitness is not a simple concept. In the United

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[1]C. E. Turner, C. Morley Sellery, and Sara Louise Smith, School Health and Health Education (St. Louis: C. V. Mosby Company, 1957), p. 33.

States a citizen is really fit only if he does his share to advance our democracy, our economy, our culture, and our moral and spiritual life.[2] It means readiness, preparedness, to live and function purposefully, effectively, and happily in today's society--here and now. Fitness is not an absolute. It is variable from individual to individual, from vocation to vocation, from sport to sport, from climate to climate, from circumstance to circumstance, from era to era.[3] According to Bauer there exists two different schools of thought concerning fitness: (1) the word fitness should always be used alone because to designate any of the many phases of fitness is to limit our thinking, circumscribe our efforts, and delay progress to our goal; (2) the word fitness should always be modified with one of several adjectives among which are physical, mental, emotional, biological, social, and spiritual.[4] In this report the word fitness, without qualification, pertains to the total well being of an individual, inclusive of moral, intellectual, social, and emotional components as well as physical ones.

Physical Fitness. Physical fitness is that phase of fitness which pertains to the organic well-being of an individual. Physical fitness denotes endurance, strength, agility, and muscular ability in direct proportion to the optimum potential of an individual. It is sometimes referred to as motor fitness.

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[2]Simon A. McNeeley, "Fitness--For a Complex Goal, An All-Out Effort," The Physical Educator, 23:85, May-June, 1957.
[3]G. Ott Romney, "The What, Why and How of Youth Fitness," The Physical Educator, 16:123, December, 1959.
[4]W. W. Bauer, "Seven Paths to Fitness," Today's Health, 41:13, April, 1963.

Youth Fitness. Youth fitness is that phase of total fitness limited to youth as contrasted by child or adult fitness; it is usually thought of with regard to secondary school-age boys and girls.

Mean. The mean is that measurement of central tendency which is most reliable--a single score which represents all scores in a distribution, and may be best defined as the average.[5]

## REVIEW OF THE LITERATURE

The introduction of the present research involved a comprehensive review of the literature concerning fitness as it existed in the past, as it relates to the present, and as it may affect the future. The objectives were (1) to review past history in order to discover the individual's and nation's needs in regard to fitness; (2) to study the present to better understand how these needs evolved, and what steps are being taken to meet them; and (3) to recognize the pilot programs which are setting the pace for better fitness tomorrow.

The books and periodicals referred to were obtained from the Kansas State University Library, the Department of Physical Education of Kansas State University, the Salina Public Library, the Kansas Wesleyan University Library, and personal collections.

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[5]H. Harrison Clarke, Application of Measurement to Health and Physical Education (New Jersey: Prentice-Hall, Inc., 1961), pp. 425-430.

Most of the literature is very current; however, as a result of the publicity following the formation of the first President's Council on Youth Fitness in 1956, an influx of material concerning fitness flooded the news media in the two succeeding years. Therefore special consideration was taken to include this specific period of time.

## ADMINISTRATION OF TESTS

The tests used were those basic seven recommended by the President's Council on Youth Fitness and the American Association for Health, Physical Education, and Recreation: (1) the modified pull-up test, (2) the sit-up test, (3) the shuttle-run test, (4) the standing broad jump test, (5) the fifty-yard dash test, (6) the softball throw for distance test, and (6) the six-hundred-yard run-walk test.

The girls participating included all those ninth grade girls enrolled in Salina Junior High School South who were eligible to participate in the physical education program via a medical doctor's examination prior to school or immediately thereafter. Because Schilling Air Force Base was closed, a number of girls moved during the school year and were not able to complete the tests. These girls were not included in the final results.

The first group of tests was administered in September, 1964, a few weeks after school commenced. This delay was to allow for a minimum of warming-up activities in order to alleviate some of the soreness and stiffness usually accompanying that

first dose of regularly planned calisthenics. The tests took approximately one week to administer in conjunction with the other planned activities, and were given during the first part of each period in lieu of the normal ten- or fifteen-minute calisthenic period. The same procedure was followed in May, 1965, during the spring semester.

Prior to the administration of the tests, the students were informed of the reasons and uses for physical fitness testing, insofar as the tests would affect their grades and the overall school program. The individual improvement on each test constituted a larger part of the measurement than the actual score; however, this was not emphasized until the second period of administration so that each student would be inclined to exert a maximum effort on the first group of tests as well as the second.

Each test was thoroughly explained and demonstrated prior to its administration.

## NORMS USED

The norms used for measuring and categorizing each score were those recommended by the President's Council on Youth Fitness, published first in July, 1961. The American Association for Health, Physical Education, and Recreation has since published comparable norms which tend to reinforce the advisability of the original ones.

The specific norms used for the problem were those relating

to the fourteen-year-old girl since the majority of students were fourteen throughout the year. (See Table 1.)

## PHYSICAL FITNESS TESTS AND RESULTS

This chapter includes a description of each specific test used, the instructions given prior to its administration, and the test results.

### The Modified Pull-Up Test

Equipment. A horizontal bar was used. It was adjusted to chest level for each girl.

Directions Given. Starting position (illustrated in Fig. 1): Grasp the bar with palms facing out. Extend the legs under the bar, keeping the body and knees straight. The heels should be on the floor. Fully extend the arms so they form an angle of ninety degrees with the body line. The arms should form an angle of forty-five degrees with the floor. Each pupil should brace her partner's heels to prevent slipping.

Action: (1) Pull body up with the arms until the chest touches the bar. (2) Lower body until elbows are fully extended. (3) Repeat the exercise attempting to achieve the "Excellent" score of forty-five, but not exceeding that number.

Rules: (1) The body must be kept straight. (2) The chest must touch the bar and the arms must then be fully extended. (3) No resting is permitted. (4) One pull-up is counted each time the chest touches the bar.

Table 1. Norms for fourteen-year-old girls established by the President's council on youth fitness.[1]

| Pull-ups | Sit-ups | Shuttle run | Standing broad jump | 50-yard dash | Softball throw | 600-yard run-walk |
|---|---|---|---|---|---|---|
| **Excellent** | | | | | | |
| 45 | 49-50 | 10.5 | 6'0" | 7.3 | 112' | 2:20 |
| **Good** | | | | | | |
| | 48 | 10.6 | 5'11" | 7.4 | 111' | 2:21 |
| 44 | 44 | 10.7 | 5'10" | 7.5 | 110' | 2:25 |
| 43 | 40 | 10.8 | 5'9" | 7.6 | 105' | 2:30 |
| 42 | 36 | 10.9 | 5'8" | 7.7 | 95' | 2:35 |
| 41 | 32 | 11.0 | 5'7" | 7.8 | 90' | 2:40 |
| 40 | 28 | 11.1 | 5'6" | 7.9 | 89' | 2:45 |
| | | 11.2 | | 8.0 | | |
| **Satisfactory** | | | | | | |
| 39 | 27 | 11.3 | 5'5" | 8.1 | 88' | 2:46 |
| 38 | 26 | 11.4 | 5'4" | | 85' | 2:50 |
| 36 | 24 | 11.5 | 5"3" | 8.2 | 83' | 2:55 |
| 34 | 22 | 11.6 | 5'2" | | 80' | 3:00 |
| 32 | 20 | 11.7 | 5'1" | 8.3 | 78' | 3:50 |
| 30 | | 11.8 | 5'0" | | 75" | |
| 29 | | | | | | |
| **Poor** | | | | | | |
| 28 | 19 | 11.9 | | | 74' | 3:60 |
| 27 | 18 | 12.0 | 4'11" | 8.4 | 72' | 3:10 |
| 25 | 17 | 12.1 | 4'10" | 8.5 | 70' | 3:13 |
| 23 | 16 | 12.2 | 4'9" | 8.6 | 68' | 3:16 |
| 21 | 15 | 12.3 | 4'8" | 8.7 | 66' | 3:19 |
| 19 | | 12.4 | 4.7 | 8.8 | 64' | 3:21 |
| | | 12.5 | | | | |

[1] Youth Physical Fitness, pp. 47-54.

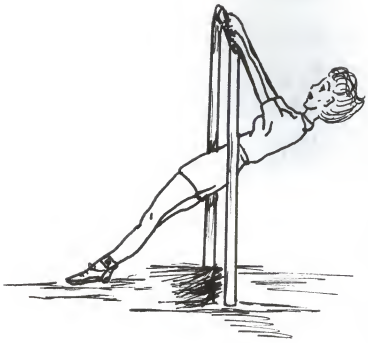

Fig. 1. Starting position for modified pull-up.

Results of Modified Pull-Up Test. As illustrated in Table 2, 35 per cent of the girls ranked in the "Excellent" category in the fall of 1964. By spring this group was increased from thirty to forty-three girls, giving a total per cent of 49.4 in the "Excellent" range in the spring. This shows an increase of 14.4 per cent. The category "Excellent" represents those girls capable of performing forty-five or more pull-ups.

Only nine girls or 10 per cent of the class ranked in the "Good" category in the fall. In the spring 4.6 per cent of the girls ranked in this category. Nearly one-third of the

class was "Satisfactory" after the first trial; 36.8 per cent was included in this group in the spring. When school began twenty girls, or 23 per cent, ranked "Poor". By the following spring this was decreased to 9.2 per cent, or only eight girls.

Table 2. Results of modified pull-up test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 30 | 35 | 43 | 49.4 |
| Good | 9 | 10 | 4 | 4.6 |
| Satisfactory | 28 | 32 | 32 | 36.8 |
| Poor | 20 | 23 | 8 | 9.2 |
| Total | 87 | 100 | 87 | 100.0 |

## The Sit-Up Test

This test was done in pairs; as one girl did the sit-ups, the partner held her ankles to prevent slipping while counting each successful sit-up.

Equipment. The floor was used.

Directions Given. Starting position (illustrated in Fig. 2): Lie on back with knees bent at a ninety-degree angle. The arms should be together and held up perpendicularly to the floor. The feet must rest on the floor, the toes and heels touching.

Action: (1) Sit up and place elbows on knees (illustrated in Fig. 3). (2) Return to starting position. (3) Repeat the exercise attempting to achieve the "Excellent" score

of forty-nine or fifty, but do not exceed that number.

Rules: (1) No resting is permitted. (2) One complete sit-up is counted each time the girl returns to starting position.

Fig. 2. Starting position for sit-up test.

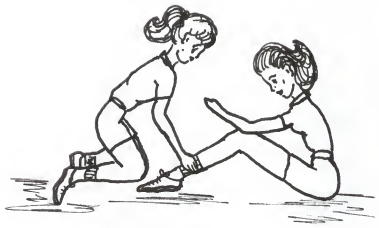

Fig. 3. The sit-up.

Results of Sit-Up Test. According to Table 3, the Salina girls performed well in comparison to the national norms. While only one girl placed in the "Excellent" category in the

fall, by spring this number was increased to fifty girls, or 57.4 per cent. This is an increase of 56.2 per cent. This category contains those girls who performed forty-nine or fifty sit-ups.

Table 3. Results of the sit-up test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 1 | 1.2 | 50 | 57.4 |
| Good | 82 | 94.2 | 36 | 41.4 |
| Satisfactory | 4 | 4.6 | 1 | 1.2 |
| Poor | 0 | 0 | 0 | 0 |
| Total | 87 | 100.0 | 87 | 100.0 |

During the fall testing eighteen girls, or 94.2 per cent, ranked "Good"; this was decreased to thirty-six girls, or 41.4 per cent, in the spring. Many of the girls ranking in this category after the first trial improved their scores during the spring trial, and thus placed in the "Excellent" range. Only four girls fell within the "Satisfactory" category in the fall. This number was reduced to one in the spring. None of the girls ranked in the "Poor" category or below in either the spring or fall testing.

## The Shuttle-Run Test

Equipment. Two blocks of wood, two inches by two inches by four inches and a stopwatch. Two parallel lines thirty feet

apart were designated on the gymnasium floor. The blocks of wood were placed behind one of the lines. The girls either wore sneakers or ran in their bare feet.

Directions Given. Starting position (illustrated in Fig. 4). Stand behind the line opposite the blocks, ready to run.

Action: On the signal, "Ready! Go!" run to the blocks, pick up one, return, and place it behind the starting line. Do not throw or drop it. Then run, pick up the second block, and carry it back across the starting line.

Rules: (1) Two trials are allowed. (2) Any trial in which the block is dropped or thrown will be disqualified. (3) The better of the two trials will be recorded.


Fig. 4. Shuttle-run test.

Results of Shuttle-Run Test. Table 4 shows that an increase of 14 per cent was made in the number of girls falling in the "Excellent" category between the first and second trials. This category represents those girls who ran in 10.5 seconds or less. Twenty girls, or 23 per cent, ranked in the "Good" category in the fall; this number was increased to twenty-three girls, or 26.4 per cent of the class, in the spring. The "Satisfactory" category increased 9.2 per cent from fourteen girls in the fall to twenty-two girls in the spring. Thirty-nine girls ranked "Poor" in the fall compared to only sixteen in the spring, showing a decrease of 26.6 per cent.

Table 4. Results of shuttle-run test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 14 | 16 | 26 | 30.0 |
| Good | 20 | 23 | 23 | 26.4 |
| Satisfactory | 14 | 16 | 22 | 25.2 |
| Poor | 39 | 45 | 16 | 18.4 |
| Total | 87 | 100 | 87 | 100.0 |

The Standing Broad Jump Test

Equipment. A tape measure was fastened to the gymnasium floor with masking tape.

Directions Given. Starting position: Stand with the feet several inches apart, the toes just behind the take-off line

(illustrated in Fig. 5).

Action: Swing the arms backward, bend knees, and jump, swinging arms forcefully forward and upward, taking off from the balls of the feet.

Rules: (1) Three trials will be allowed. (2) Measure from the take-off line to the heel or any part of the body that touches the surface nearest the take-off line. (3) The best of three trials in feet and inches to the nearest inch will be recorded.

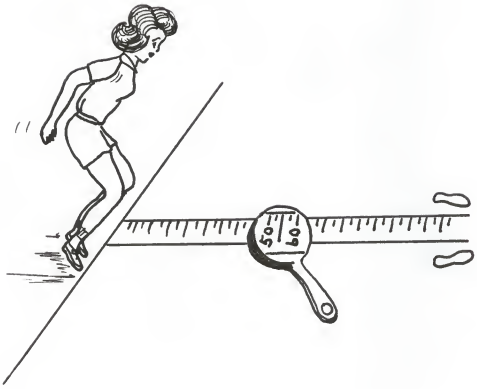

Fig. 5. The standing broad jump test.

Results of the Standing Broad Jump Test. The number of girls in the "Excellent" category increased from twenty to twenty-one, or from 23 per cent to 24 per cent, from the fall testing to the spring testing. In the "Good" category the number of girls decreased from fifteen to thirteen, or 17 per cent to 15 per cent. As illustrated in Table 5, there was very little difference in the results of the fall and spring testing. In addition to this minute difference in the first two categories, the last two also show very little change. The number of girls in the "Satisfactory" range decreased from 22 per cent to 20.8 per cent; the "Poor" category showed a minimum increase in number of 2.2 per cent. Thirty-three girls placed in this area in the fall while thirty-five ranked in it after the spring testing program.

Table 5. Results of the standing broad jump test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 20 | 23 | 21 | 24.0 |
| Good | 15 | 17 | 13 | 15.0 |
| Satisfactory | 19 | 22 | 18 | 20.8 |
| Poor | 33 | 38 | 35 | 40.2 |
| Total | 87 | 100 | 87 | 100.0 |

## Fifty-Yard Dash Test

Equipment. Two stopwatches or one with a split-second timer may be used. Fifty yards were marked off outside on a blacktop area. Care was taken to administer this test on days with a minimum of wind. Two girls were placed in each heat in order to encourage competitive motivation. (Illustrated in Fig. 6.)

Directions Given. Starting position: Stand behind the starting line. The starter will take a position at the finish line with a stopwatch. She will raise one hand preparatory to giving the starting signal.

Action: When the starter brings her hand down, both girls should run. As each girl crosses the finish line, the time will be noted and recorded.

Rules: (1) The score is the lapsed time between the starter's signals and the instant the pupil crosses the finish line. (2) The time will be recorded to the nearest tenth of a second.

Results of the Fifty-Yard Dash Test. As evidenced in Table 6, the Salina girls did very well in comparison to the national norms on the fifty-yard dash test. Only eleven fell in the "Excellent" category in the fall; however, this number was increased to twenty-three in the spring. This is an improvement of 13.8 per cent in this area. The number in the "Good" category increased from thirty-four, or 39.1 per cent to forty-seven, or 54 per cent.

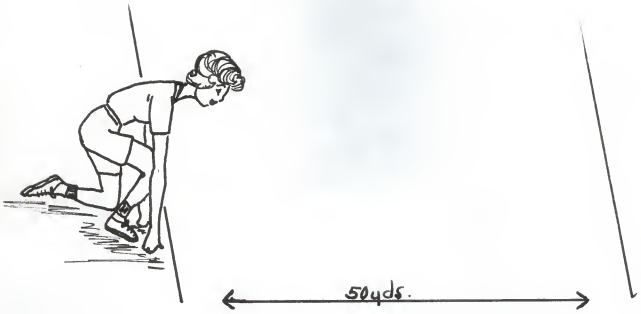


Fig. 6. Fifty-yard dash test.

Table 6. Results of the fifty-yard dash test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 11 | 12.7 | 23 | 26.5 |
| Good | 34 | 39.1 | 47 | 54.0 |
| Satisfactory | 20 | 23.0 | 9 | 10.3 |
| Poor | 22 | 25.2 | 8 | 9.2 |
| Total | 87 | 100.0 | 87 | 100.0 |

Since such a large number of girls increased their scores in the first two categories, there was a relative decrease in the last two areas. The "Satisfactory" range fell from 23 per cent to 10.3 per cent and the "Poor" from 25.2 per cent to 9.2 per cent.

Softball Throw for Distance Test

One half of the students stood in the field to mark the throws for the group taking this test; then their positions were reversed.

Equipment. A softball (12-inch) and a tape measure were needed. Within the students' limitations, lines were marked at five-yard intervals parallel to the restraining line. Each girl threw the ball while remaining within two parallel lines, six feet apart.

Directions Given. Starting position: Stand several feet behind the restraining line, ready to throw (illustration in Fig. 7).

Action: Moving forward, each girl should throw the ball, overhand, from behind the restraining line as far as possible.

Rules: (1) Only an overhand throw may be used. (2) Three throws are allowed. (3) The throw will be disqualified if pupil steps over restraining line. (4) Each girl should stand on the spot where her best throw landed until it is measured and recorded. (6) The best of the three throws to the nearest foot will be measured and recorded.

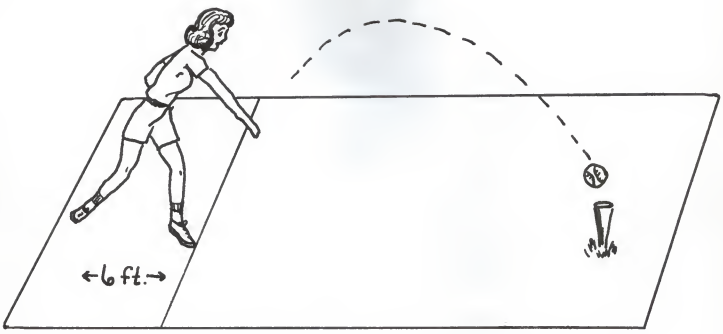


Fig. 7. Softball throw for distance test.

Table 7. Results of the softball throw test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 8 | 9.2 | 15 | 17 |
| Good | 18 | 20.8 | 13 | 15 |
| Satisfactory | 15 | 17.0 | 21 | 24 |
| Poor | 46 | 53.0 | 38 | 44 |
| Total | 87 | 100.0 | 87 | 100 |

Results of the Softball Throw Test. As can be seen from Table 7, the girls did not exhibit well in this test compared to the national norms for fourteen-year-old girls. Only eight girls, or 9.2 per cent, ranked "Excellent" in the fall and in the spring there was a minimum increase to 17 per cent. The number of girls in the "Good" area decreased from eighteen to thirteen; however, there was an increase of 7 per cent in the "Satisfactory" category. The percentage in the "Poor" range also fell from 53 per cent to 44 per cent.

The Six-Hundred-Yard Run-Walk Test

Equipment. A stopwatch and the football field were used. Two girls were started at the same time; each girl ran up and back the length of the football field (100 yards) three times to complete 600 yards. (Illustrated in Fig. 8.)

Directions Given. Starting position: Stand behind the starting line.

Action: On the signal, "Ready! Go!" begin running the six-hundred-yard distance, walking only if necessary.

Rules: (1) Walking is permitted, but the object is to cover the distance in the shortest possible time. (2) The time will be recorded in minutes and seconds.

Results of the Six-Hundred-Yard Run-Walk Test. A nominal improvement was made in the scores of the six-hundred-yard run-walk test, according to Table 8. The number of girls falling within the "Excellent" category increased from seven girls, or 8 per cent, to nineteen girls, or 22 per cent. This represents

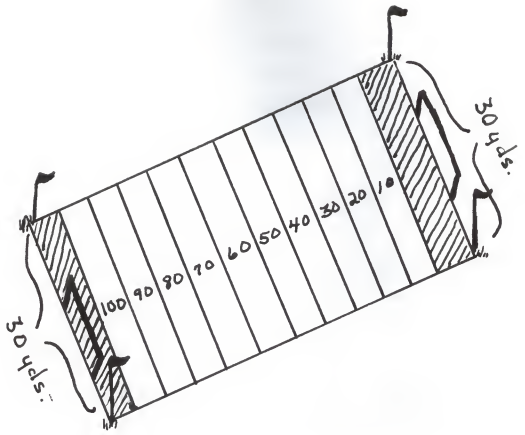


Fig. 8. The six-hundred-yard run-walk test.

Table 8. Results of the six-hundred-yard run-walk test.

| Classification | Fall | | Spring | |
|---|---|---|---|---|
| | Number | Per cent | Number | Per cent |
| Excellent | 7 | 8 | 19 | 22 |
| Good | 21 | 24 | 20 | 23 |
| Satisfactory | 38 | 44 | 33 | 38 |
| Poor | 21 | 24 | 15 | 17 |
| Total | 87 | 100 | 87 | 100 |

an improvement of 14 per cent. The "Good" percentage remains nearly the same, reading 24 per cent in the fall and 23 per cent in the spring. The number of girls placing in the "Satisfactory" element decreased from thirty-eight, or 44 per cent, to thirty-three, or 38 per cent. There was a decrease also in the "Poor" area from 24 per cent to 17 per cent.

## SUMMARY AND CONCLUSIONS

The girls at Salina Junior High School South showed an improvement in all the physical fitness tests given in the 1964-1965 school year. The amount of improvement varied with each test.

The following mean scores are compared in Table 9.

Modified Pull-Ups. The modified pull-up tests the strength and endurance of the arm and shoulder muscles. In the fall testing program the mean score of the girls for modified pull-ups was 36.08; this score ranks in the "Satisfactory" category. After the spring test administration this mean was improved 3.62 pull-ups resulting in a mean score of 39.7. This score ranks at the very top of the "Satisfactory" category as 40 represents the beginning of the "Good" category. However, since the ultimate objective is to have as many girls ranking "Good" or "Excellent" as possible, more stress should be placed upon activities and exercises which will increase the strength and endurance of the biceps, brachialis, and the brachioradialis specifically.

Sit-Ups. The sit-ups tested the muscular endurance, flexibility, and abdominal strength of the girls. An improvement of 7.93 sit-ups was noted between the fall and spring testing program. The mean score of the first trial was 36.16 which ranks in the "Good" category. This was increased to 44.09 during the second trial. Although this score also ranks in the "Good" category, this is an unusually large improvement and represents an adequate program for the abdominal muscles.

Table 9. Mean score and improvement.

| Activity | Fall | Classification | Spring | Classification | Improvement |
|---|---|---|---|---|---|
| Pull-ups | 36.08 | Satisfactory | 39.7 | Satisfactory | 3.62 |
| Sit-ups | 36.16 | Good | 44.09 | Good | 7.93 |
| Shuttle-run | 11.68 sec. | Satisfactory | 11.13 sec. | Good | 0.55 sec. |
| Standing broad jump | 5'3" | Satisfactory | 5'4" | Satisfactory | 1" |
| 50-yard dash | 8.16 sec. | Satisfactory | 7.69 sec. | Good | 0.47 |
| Softball throw | 77.03 feet | Satisfactory | 83.23 feet | Satisfactory | 6.2 feet |
| 600-yard run-walk | 2:57 | Satisfactory | 2:52 | Satisfactory | 0.5 sec. |

Shuttle-Run. The shuttle-run tests the speed and agility of the girls. A high score not only depends on fast running but also on the ability to turn and change direction quickly with a good sense of balance while in motion. The girls made

an improvement of 0.55 second on this test, improving their original mean score from 11.68 seconds to 11.13 seconds. In the fall the class as a whole ranked "Satisfactory" according to national norms. After the spring test was completed, their rank had improved to "Good". This would indicate an adequate program in this area also.

Standing Broad Jump. The standing broad jump is used to test the power, coordination, flexibility, and balance of the girls with a special emphasis on the muscular strength of the legs. The class showed a minimum of one inch improvement on this test; their mean score was 5 feet 3 inches in the fall and 5 feet four inches in the spring. Although both of these scores fall in the middle of the "Satisfactory" class, the lack of much improvement indicates a real need for further study. Future program planning should include activities which will build up the muscles of the leg, especially the sartorius and the gastrocnemius. Special emphasis should be given to correct jumping form and motivation factors should be considered.

Fifty-Yard Dash. This test primarily measures the speed of an individual; however, the ability to get a quick start will greatly influence the time element. A mean score of 8.16 seconds, ranking "Satisfactory", was held by the class after the first trial. This was improved 0.47 second on the second trial, giving a final mean score of 7.6 seconds, which placed the Salina girls above average nationally with a rank of "Good". This may have been the result of added enthusiasm last year caused largely by Salina's first city-wide track meet.

Softball Throw. The arm and shoulder muscular strength, arm coordination, and correct throwing technique are measured by the softball throw test. The Salina girls ranked average in both trials of this test. Their mean score for the fall testing program was 77.03 feet as compared with 83.23 feet in the spring. Although this is a fair improvement of 6.2 feet, it was not sufficient to raise their rank from "Satisfactory" to "Good". More activities using the large muscles of the arm and shoulder are indicated for next year's program.

Six-Hundred-Yard Run-Walk. The added distance of this running test measures not only the speed of an individual but also her endurance. In the fall testing program the mean score for the class was 2 minutes and 57 seconds, placing the group in the "Satisfactory" category. A minimum improvement of 0.5 second was noted in the spring testing program, resulting in a mean score of 2 minutes and 52 seconds. This also placed the class in the "Satisfactory" area according to the national norms. The extreme heat during the days when the test was administered may account for the small improvement; however, a program geared to develop greater endurance should be planned for the future physical education classes in Salina.

On an overall basis the Salina girls ranked average or above in comparison with the standard norms. If the added proposals are projected for future programs, it is hoped that these categories may be elevated to ultimately reach the "Good" and "Excellent" ranges only. These tests results definitely have given a valid picture of the physical fitness of these ninth grade girls and will prove invaluable in planning succeeding programs.

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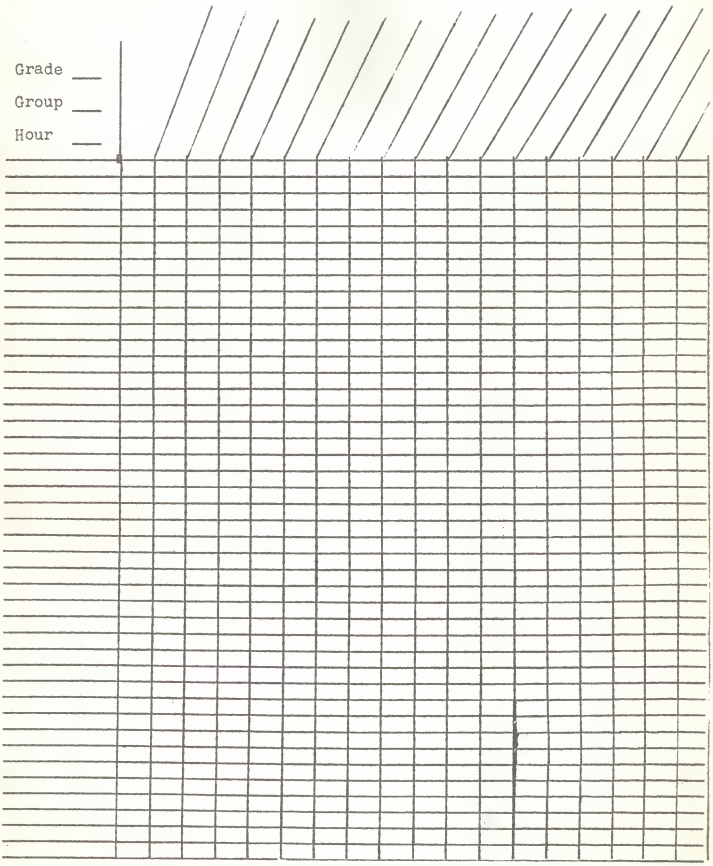
# APPENDIX

PHYSICAL FITNESS RECORDS

SALINA JUNIOR HIGH SCHOOL SOUTH



# A STUDY OF THE PHYSICAL FITNESS OF NINTH GRADE GIRLS ENROLLED AT SALINA JUNIOR HIGH SCHOOL SOUTH, SALINA, KANSAS, 1964-1965

by

MARY VIRGINIA BEVAN

A. B., Kansas Wesleyan University, 1956

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AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Physical Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1965

Physical fitness has been a primary concern of many nations from the ancient civilizations to the present. It was deemed necessary for everyday living by such philosophers as Socrates and Plato. The reasons for physical fitness have varied from the aesthetic beliefs of ancient Athens to the present military purposes of Russia. Whatever the cause, physical education, though suppressed during the medieval era, has gained steadily in stature and currently is the target of all news media.

From the results of a survey by Charles Wilkinson and the Kraus-Weber statistics, evidence indicates that American youth have been lacking in physical fitness. This prompted the first President's Council on Youth Fitness in 1956. Following, in January, 1959, the American Association for Health, Physical Education and Recreation announced a new program called Operation Fitness--U.S.A. Through the efforts of these two organizations and many dedicated men, physical fitness has become a household word. Never before have physical educators had such a golden opportunity to explicate their goals and needs.

Although total fitness has many facets, physical fitness is concerned primarily with the optimum physical potential of an individual. One of the main purposes for physical fitness is that of checking on progress in order to better evaluate or determine the attainment of preconceived objectives. In addition the testing should not only measure the individual student's development and improvement but also the adequacy of the planned program preceding the testing. Through these relative results, future improvement can be indicated and attained.

The President's Council on Youth Fitness has established national norms for seven different tests. The norms are divided into four classifications: excellent, good, satisfactory, and poor. The test items included for girls are (1) the modified pull-up, (2) the sit-up, (3) the shuttle-run, (4) the standing broad jump, (5) the fifty-yard dash, (6) the softball throw, and (7) the six-hundred-yard run-walk.

For this specific problem these tests were administered to all ninth grade girls in September, 1964, and again in May, 1965.

The mean score was improved from 36.08 (satisfactory) to 39.7 (satisfactory) on the modified pull-up test. This was an improvement of 3.62 pull-ups. The sit-ups were increased 7.93 from the fall testing program to the spring testing program; the mean score changed from 36.16 (good) to 44.09 (good). The shuttle-run test showed an improvement of 0.55 second with a mean score of 11.68 seconds the first trial (satisfactory) and 11.13 seconds the second trial (good). The mean score for the fall testing program in the standard broad jump was 5 feet 3 inches (satisfactory). This was increased to 5 feet 4 inches in the spring. The fifty-yard dash exhibited an improvement of 0.47 second between the two tests. The first trial resulted in a mean score of 8.16 seconds (satisfactory) and the second trial in 7.69 seconds (good). A satisfactory mean score of 77.03 feet was measured in the softball throw in the fall. This was increased to 83.23 (satisfactory) in the spring. The last test,

the six-hundred-yard run-walk showed a minimum increase of 0.5 second. The mean score was 2 minutes 57 seconds for the first trial and 2 minutes 52 seconds the second trial.

On an overall basis the Salina girls ranked average or above in comparison with the standard norms. These test results should prove invaluable in planning succeeding programs.