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A Physical Fitness Comparison Between Rural and Urban Children and Canadian Fitness Standards

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A PHYSICAL FITNESS COMPARISON BETWEEN RURAL AND URBAN CHILDREN AND CANADIAN FITNESS STANDARDS

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ABSTRACT

The purpose of this study was to determine whether or not Manitoba school students of rural areas were better physically fit than students of urban areas. The investigator was also interested in finding out how these two areas (urban and rural) compared to the National Canadian Association for Health, Physical Education, and Recreation (CAHPER) standards. The comparisons were made by (1) comparing the mean of the rural and urban test results based on the findings of the Centennial Athletic Awards Programme: (2) by comparing the mean of rural and urban areas with the CAHPER mean.

The null hypothesis was assumed for this study (.01 level) and the "t" technique for testing the significance of the difference between mean was used to compare the mean of urban and rural children, at each age level, for each event and for both sexes. The "t" technique was also used to compare the mean of urban and rural children to CAHPER fitness mean at each age level, for each event and for both sexes.

Results indicated that no significant difference existed in the physical fitness of urban and rural students. There were, however, significant differences in favor of the Manitoba students (urban and rural) when compared to the national CAHPER fitness mean.

CHAPTER I

INTRODUCTION

The Problem

Physical fitness has received a great deal of interest and emphasis in the last fifteen years in the United States. Since so much has already been observed and reported about physical fitness, the question may be asked, "Why then another study on physical fitness?"

Physical fitness and its implications were not felt in Canada (where the writer resides) until about 1966. It was at this time that the Canadian Association for Health, Physical Education and Recreation published the Fitness-Performance Test Manual. The manual contained the norms for six test items based on a 11,000 population sampling of Canadian youth from coast to coast. Despite all the emphasis the United States had placed on physical fitness since 1956 and the Kraus-Weber report, the Federal Government of Canada had really done very little about physical fitness. Yes, it was true that Provincial physical education heads had promoted physical fitness for years, but no real continuous program had evolved. It was also true that individual Canadians have promoted physical fitness for years in an excellent manner. However, overall, most of the emphasis in and promotion of physical fitness in Canada was in the form of "lip service." It was the hope of this writer

that this study could shed some light on the status of physical fitness in Canada and particularly in Manitoba.

Purpose of the Study

The purpose of this study was to determine through the use of the results of the Centennial Athletic Awards Programme whether or not school students of rural areas were more physically fit than children of urban areas. Phases of this study included: a fitness comparison of pupils from one-room rural schools (purely rural) and pupils from Winnipeg School Division No. 1 (purely urban); the comparison of one-room rural physical fitness standards with Canadian National Physical Fitness Standards (CAHPER); and the comparison of Winnipeg School Division No. 1 (urban) physical fitness standards with the Canadian National Physical Fitness Standards.

Delimitations of the Study

The participants involved in this study were Manitoba students attending school, grades 1 - 10 (ages 6 - 15) and were in either a one-room rural school or in the Winnipeg School Division No. 1 (urban). All participants in this study took part in the Centennial Athletic Awards Programme.

The number of participants involved in this study from the rural areas and from Winnipeg School Division No. 1 for each event was:

	Rural		Urban	
	Boys	Girls	Boys	Girls
Standing Broad Jump	901	849	11,971	11,687
300 Yd. Run	872	815	11,815	11,507
Sit-Up	891	833	11,941	11,714
Cross-Country Run	837	834	11,899	11,978

Upon completion of the Centennial Athletic Awards Programme, December 31, 1967, and for months thereafter, the data concerned with the program for Manitoba were collected and filed by the Provincial Physical Education Department. It was, therefore, from the Manitoba Physical Education Department that the data for this study were obtained.

Limitations

1. The testing for the Centennial Athletic Awards Programme was done, for the most part, by untrained (in the science of physical measurement) classroom teachers.

2. The award received by an individual was only as high (gold, silver, bronze) as that individual's lowest score on all the events. This factor had a negative effect on the athletically poorer pupils.

3. In some districts there was no supervisor of physical education to make sure that the testing procedures were being carried out properly. Consequently, the validity of the results turned in at the end of the program has to be considered doubtful.

4. The assumption had to be made that: individuals located in one-room schools had a rural background; individuals in Winnipeg School

Division No. 1 had an urban background; and no one had recently moved from an environment other than what they represented on the test.

5. There were far more urban children (all age groups) than rural children.

6. The fact that some school districts gave full support to the Centennial Athletic Awards Programme and other school districts did little to support the program, had an effect on the results.

Definition of Terms

AAHPER:--The American Association for Health, Physical Education and Recreation. Henceforth in this paper to be referred to as AAHPER.

Rural:--In this study, refers to that area serviced by a one-room school.

Urban:--In this study, refers to that area serviced by the Winnipeg School Division No. 1.

Fitness:--The state or quality of being fit; suitableness or aptitude of any means to accomplish an end.

Calisthenics:--Light gymnastics suitable for warm-up, designed to promote grace as well as health.

Physical Education:--That phase of the whole process of education which is concerned with vigorous muscular activities and related responses, and with the modifications in the individual resultant from these responses.

Transitory:--Existing or continuing for a short time only.

Somatotype:--Classification of the body according to shape.

Compulsory Events:--Events which are required.

Optional Events:--Events which are not required, a freedom of choice exists.

Kraus-Weber Study:--A study done in 1956 which compared the fitness of American and European children. The American children did much poorer than their European counterparts and thus began the fitness movement in the United States.

AAHPER Youth Fitness Test Manual:--The American Association for Health, Physical Education and Recreation devised the test manual (1958) consisting of seven events, norms and instructions under the sponsorship of the President's Council on Youth Fitness. Revision in 1961 and 1965.

Youth Physical Fitness:--Suggested Elements of a School-Centered Program. Devised by the President's Council on Youth Fitness in 1961.

5BX:--A physical fitness plan devised by the Royal Canadian Air Force in 1962.

The CAHPER Fitness Performance Test Manual:--The Canadian Association of Health, Physical Education and Recreation devised the test manual consisting of six events, norms and instruction in 1966.

The Centennial Athletic Awards Programme:--A physical fitness test plan for Canadian school children ages 6 - 18 (1967).

Need for the Study

Is it really necessary that the general public know that a lack of physical fitness could mean death? (See Appendix A, p.). Hein and Ryan reviewed the literature concerned with the contributions of

physical activity to physical health.[1] They reported that clinical observations and experimental studies pointed to definite values of exercise in the preservation of the health of the cardiovascular system and the prolongation of life. Reports on active and sedentary occupations, with both under stress, showed that the death rate from coronary heart disease has been highest among the sedentary occupations. Physical activity appeared to give cardiac protection.

Raab has reported studies dealing with physically active and sedentary occupations.[2] He found less active or underexercised individuals have an earlier and greater cardio-vascular morbidity and mortality, and their cardiac performance under stress was inferior to that of the trained sportsman or lumberjack.

Physical fitness takes on a very different and important meaning with the same result as discussed above when thought about in the light of John F. Kennedy's words:

> 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 our countrymen. The level of physical, mental, moral and spiritual fitness of every American citizen must be our constant concern.
>
> The need for increased attention to the physical fitness of our youth is clearly established. Although today's young people are fundamentally healthier than the youth of any previous generation, the majority have not developed strong, agile bodies. The softening process of our civilization continues to carry on its persistent erosion. It is of great

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[1]Fred V. Hein and Allan J. Ryan, "The Contributions of Physical Activity to Physical Health," Research Quarterly, XXXI (May, 1960), pp. 263-281.

[2]Wilhelm Raab, "Degenerative Heart Disease from Lack of Exercise," Journal of Health, Physical Education, and Recreation, XXXVI (April, 1965), p. 88.

importance, then, that we take immediate steps to ensure that every American child be given the opportunity to make and keep himself physically fit--fit to learn, fit to understand, to grow in grace and stature, to fully live.[3]

Norman Erbe continued along the same lines as Kennedy when he stated:

> The strength of our nation lies in individuals. We can only be as strong as the individuals themselves are strong. Fitness implies that we are prepared to meet the emergencies demanded of us. Just what these emergencies might be can only be speculated at this time. As members of the community, it is our duty to be informed on this phase of education (physical education) as well as every other, to see that every child receives the best instruction so that his right to an education of his total being, mental and physical, is met.
>
> Even with an all-out effort in the schools to provide for the physical welfare of all the children, this is not enough, this desire must permeate the whole community. Adults must take pride in the physical well-being of themselves as well as their children. The community must take steps to provide opportunities for the physical activities of everyone which will turn them into a moving and doing community rather than just a sitting and watching community.[4]

Physical fitness was important to Canadians just as it was to Americans and for many of the same reasons. Two of these reasons included health for individual longevity and health plus strength for patriotic reasons. Despite the interest in physical fitness by Canadians, very little research outside of the CAHPER fitness standards had been done on the Canadian physical fitness scene. The writer felt that the results of the urban-rural comparison of Manitoba boys and girls

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[3]John F. Kennedy, "A Presidential Message to the Schools on the Physical Fitness of Youth," Journal of Health, Physical Education, and Recreation, XXXII (September, 1961), p. cover.

[4]Norman A. Erbe, "Highlights from Iowa's Fitness Conference," Journal of Health, Physical Education, and Recreation, XXXIV, No. 2 (February, 1963), p. 55.

would shed some light on the physical fitness of urban and rural children and indicate where more emphasis in the physical education program was needed. The comparison of Manitoba urban and rural standards with the CAHPER national fitness standards would indicate to Manitobans just where their youth stood in comparison to the "Canadian" youth and determine if the CAHPER standards were suitable for Manitoba children.

Review of Related Literature

A great many studies and much research has been done in the area of physical fitness. Each investigator (see Appendix B, p. 108) had his own definition of physical fitness. From the multitude evolved this definition of physical fitness for the purposes of this study: "The ability to do normal amounts of work efficiently without undu fatigue; it is also the development of strength, endurance and coordination in proportion to the individual's potential." This definition will aid the reader in better understanding the full meanings and implications of the forthcoming review of literature.

The review of literature in this study was done with five general thoughts in mind. The writer wished: (1) to show the importance of physical fitness in relation to an individual's daily living; (2) to point out the directions and implications of physical fitness for an individual; (3) to compare the fitness of American youth within America (urban and rural) and with the youth of other countries; (4) to show the effects of incentives on physical fitness, as well as the effect of physical fitness on academic success and popularity; and (5) to trace the development of physical fitness in North America.

Physical Fitness: Importance
in Effective Daily Living

Bonnie Prudden said that, without activity and the release of tensions, the body reacts with aches and pains and a lessened mental ability. She stated:

> There is no muscle that does not improve with correct and regular use--including the heart. There is no muscle that will not atrophy if it is not used--including the heart. It must be further remembered that the physical life and the emotional life are not apart. They share the same body, the same stresses and the same releases. If the body is too sedentary, too tired and too lazy to provide physical outlets for the daily tensions that beset each human being, the emotions will retaliate with a hundred aches and pains, fatigue and lack of desire for life. The most important years to build a good body are between birth and six. The years from six to twelve, are next in importance. While there is rarely a chance for optimum returns after twelve, still it is never too late to improve. . . . and even to improve very much. No boy or girl can get the most out of the studies provided by the school unless his or her body is kept in top condition by the physical education program in the school and the influence it should bring to bear for after school recreation. No man or woman can expect to face life successfully without the vehicle of a good body, that body is formed and developed best in childhood.[5]

Dr. Raab saw the need for physical fitness for survival. He stated:

> I often get the impression that fitness is being advocated as nice rather than necessary and that our instruction is promoted in a spirit of fitness for fun rather than fitness for survival in keeping with the seemingly popular take-it-easy philosophy. I am not being melodramatic in my use of the word "survival." We are faced by a shrewdly calculating and patient enemy who is waiting for our economic, moral and physical disintegration, firmly convinced that our complacency

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[5]Bonnie Prudden, Testing and Training for Physical Fitness (Glenwood: David G. Smith Printing-Publishing, 1962), p. 110.

will work in his favor. Whether we like it or not, we have to be prepared to live with a creeping emergency or cold war that may last for decades.[6]

Thomas Cureton pointed out some rather startling factors about the fitness of American males. He said:

> America is rapidly becoming a nation of soft, out-of-shape men and women who cannot endure for an hour the kind of stress that our ancestors faced daily. Today, the typical American is older physically than his years give him the right to be.
>
> The average young man in this country has a middle-aged body. He can't run the length of one city block, he can't swim a hundred yards, he can't climb one flight of stairs without getting out of breath. At the age of twenty-six he has the capacity of a man in his forties. By the time he reaches his early thirties he will have disabilities that are normally associated with men twice his age.
>
> The average middle-aged man in this country is close to death. He is only one emotional shock or one sudden exertion away from a serious heart attack--this nation's leading cause of death.[7]

President Johnson spoke on physical fitness:

> Experience has taught me that regular exercise proper diet, and adequate rest and relaxation are essential to good health. I swim twice daily; I enjoy walking in the outdoors.
>
> Physical activity provides relief from tension and it also builds the strength and endurance all of us need.
>
> America's young men and women are taller, heavier and healthier than ever before. They can be the most energetic and productive citizens in the world. This is a challenge which I know each of you will want to meet.[8] (See Appendix C. p. 115.)

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[6]Dr. W. Raab, "Physical Fitness and Our Youth," National Association of Secondary School Principals, Vol. xlvi (March, 1962), p. 161.

[7]Thomas Kirk Cureton, Jr., Physical Fitness and Dynamic Health, 4th Edition (The Dial Press, 1965), p. 21.

[8]Lyndon B. Johnson, "Be Fit For Any Challenge," School Board Journal, Vol. XXXVIII (August, 1966), p. 20.

A group of professionals, very much concerned and very close to the lack-of-fitness problem in America, has been the American Medical Association. This organization has released the following statements about physical fitness:

> Fitness rests first of all upon a solid foundation of good health. Be it in the home, on the farm, at the office, in the factory, or in the military service--fitness for effective living implies freedom from disease, enough strength, agility, endurance, and skill to meet the demands of daily living; sufficient reserves to withstand ordinary stresses without causing harmful strain; and mental development and emotional adjustment appropriate to the maturity of the individual.
>
> The upper limits one can achieve in fitness are determined largely by inheritance. However, the extent to which an individual develops his own potential for fitness depends upon his daily living practices and exercise habits. Adequate nutrition, sufficient rest and relaxation, suitable work, appropriate medical and dental care, and the practice of moderation are also important in maintaining fitness.
>
> . . . In essence, the greatest effect of an exercise program is the improved organization of the body functions which support activity.
>
> . . . The more often the normal heart and circulatory system are required to move blood to active regions of the body, the more efficient they become. Prolonged inactivity, on the other hand, results in a decline in circulatory and pulmonary efficiency.
>
> . . . An individual's ultimate performance is limited by the physiological capacity of the body systems involved.
>
> . . . The untrained person can increase his tolerance for exercise by following a regular regime, but under ordinary circumstances still will not approach his physiological limit of activity.
>
> . . . Exercise which regularly approaches physiological limits, coupled with adequate rest, results in the development of increased strength and endurance. By contrast, exercise carried to the state of exhaustion may do harm, particularly to the unconditioned individual.
>
> . . . The voluntary muscles become stronger when gradually increasing loads are placed on them.
>
> . . . In a sedentary existence, or where physical activity is not diversified, certain body muscles may not develop sufficiently.
>
> . . . Obesity, muscle atrophy, cardio-vascular inefficiency, joint stiffness, and impairment of various metabolic functions are possible effects of prolonged inactivity. The successful use of physical activity in the medical management of patients

> indicates the beneficial effects of exercise in preventing or delaying organic disease and degeneration.
>
> . . . Exercise, regardless of its nature or extent cannot provide immunization against infectious illness or cure communicable diseases.
>
> . . . There is no longer any doubts that the level of physical activity does play a major role in weight control.[9]

The Kraus-Weber report stirred up a great deal of interest in physical fitness. The people also became concerned about the physically active individual and athlete. If either slowed down or retired from vigorous activity, would he be more susceptible to a heart attack? Bucher quoted Sir Alan Rook: "No evidence could be located from the information available that cardio-vascular causes of death were more prominent in the sportsman or occurred at an earlier age."[10]

Bucher quoted Dr. E. Andrus: "It is clear that strenuous exercise, properly supervised, does not cause disease in the normal heart."[11]

Physical Fitness: Directions and Implications

The level of physical fitness, which a person maintains, has been dependent upon the level of activity he pursues. Physical fitness increases, generally, as physical activity increases, and decreases as physical activity decreases. Physical fitness is a transitory thing, so have some authors claimed.

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[9] American Medical Association and American Association for Health, Physical Education, and Recreation, "Exercise and Fitness," Journal of Health, Physical Education, and Recreation, Vol. XXXV, No. 5 (May, 1964), p. 42.

[10] Charles A. Bucher, Foundations of Physical Education (St. Louis: C. V. Mosby Co., 1964), p. 350.

[11] Ibid., p. 350.

Lehsten reported that organic fitness increases with activity and decreases with inactivity.[12] Walters, on the other hand, concluded that as little as seven and one-half to eleven minutes a day of strenuous activity for eleven days resulted in improved cardio-respiratory efficiency.[13]

Anna Espenschade stated:

> Recent research tells us that desirable changes in the bones and tissues of the body result directly from exercise. Furthermore, all of these effects are reversible; deterioration occurs when exercise is discontinued.[14]

The American Medical Association stated in relation to the transitory nature of physical fitness:

> The potential for muscular strength increases throughout childhood and adolescence, usually reaching a maximum in early adulthood. In the thirties or forties most individuals experience the onset of a gradual decline of strength, endurance and agility. The heart and circulatory system also tends to exhibit lessening of functional capacity for exercise for resilience in recovery after exercise. The extent and rapidity of this decline is partly dependent on exercise habits in adult life. The beneficial efforts of exercise are transient; persons who continue to train retain their capacities longer than those who neglect training. Individual differences, dependent on constitutional disposition and basic organic health, affect the rate of decline of strength and endurance.[15]

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[12]Nelson G. Lehsten, "The Implementation of Research Findings in the Junior High School Physical Education Program," Journal of Health, Physical Education, and Recreation, Vol. XXX (February, 1959), pp. 23-24.

[13]C. Etta Walters, "Effects of Prescribed Exercise on Physical Efficiency of Women," Research Quarterly, Vol. XXIV (March, 1953), p. 102.

[14]Anna S. Espenschade, "Why Be Physically Fit," National Education Journal, Vol. LI (February, 1962), p. 35.

[15]American Medical Association and American Association for Health, Physical Education, and Recreation, "Exercise and Fitness," Journal of Health, Physical Education, and Recreation, Vol. XXXV, No. 5 (May, 1964), p. 43.

Other authors claimed that fitness was an individual and specific thing. The level of fitness a person possessed was dependent upon genetic factors, somatotype, type of activities in which the person was involved and time of year. Clifford Keeney stated:

> Physical educators realize that fitness is a highly specific quality. The fitness possessed by a football player at the peak of the season and that exhibited by a cross-country runner are so different as to make comparison on a common basis a meaningless endeavor. It is like comparing a sports car to a heavy duty truck. This specificity is due in part to the genetic determination of such anatomic bases as body type, body size, and in part to the adaptation of the body to the activities pursued by an individual.[16]

Sheldon, over a period of years, has conducted research on the procedures of determining body type (somatotypes) and has related body type data to other personal characteristics and qualities. His categories of body type have been classified as endomorph (fat), mesomorph (athletic), and ectomorph (thin). Those low in mesomorphy or high in endomorphy have usually been rather unskilled in athletics. This usually has been true even though physical requirements vary for different sports. Sheldon stated:

> Muscular strength is correlated with the mesomorphic factor. The mesomorph is found to be superior in agility, speed and endurance. Because of a higher muscular strength component, the mesomorph develops a higher level of physical fitness than any other body types. In general, structure of the organism for physical fitness and athletic performance determines to a

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[16]Clifford E. Keeney, "A Professor of Biology Proposes a New Definition of Physical Fitness as Work Capacity," Journal of Health, Physical Education, and Recreation, Vol. XXXI (September, 1960), pp. 29-30.

> significant degree the level or height of achievement possible for the individual. Structure, in this sense, does determine function.[17]

Physical education has come under careful scrutiny since the Kraus-Weber findings in 1956. Physical education should not be considered physical fitness. However, many have felt physical fitness should be a large part of the physical education program. Below are some feelings and statements concerning the relationship of physical education to physical fitness.

Hein and Ryan reviewed various clinical observations and studies which concerned the effect of physical activity on physical health and concluded:

> 1. Regular exercise can play a significant role in the prevention of obesity and thereby indirectly influence the greater incidence of degenerative disease and shortened life span associated with this condition.
> 2. A high level of physical activity throughout life appears to be one of the factors that acts to inhibit the vascular degenerative characteristic of coronary heart disease, the most common cause of death among cardiovascular disorders.
> 3. Regular exercise assists in preserving the physical characteristics of youth and delaying the onset of the stigmata of aging and may exert a favorable influence upon longevity.
> 4. Conditioning the body through regular exercise enables the individual to meet emergencies more effectively and so serves, in turn, to preserve health and to avoid disability and perhaps death.
>
> Each of these benefits is valuable in itself; together they amount to a significant contribution to physical health.

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[17] W. H. Sheldon, "The Varieties of Human Physique," Journal of Health, Physical Education, and Recreation, Vol. XXXVI (April, 1965), p. 90.

> What has always been suspected is beginning to be scientifically demonstrated. Exercise may still be considered good "medicine."[18]

John Jenny claimed physical fitness could not be left to chance. He stated:

> The development of body vigor cannot be left to the chance outcomes of "free play" a game program, or a sports program. In our modern day culture, which has taken away the experiences of climbing trees, vaulting fences, and jumping over ditches and streams as natural activities--as well as accepted activities--educators must artificially supply the counterpart of these activities.[19]

Anna Espenschade stated in her article entitled, "Why Be Physically Fit":

> . . . A child's whole outlook on life can be improved by enjoyable participation in active games and sports, in swimming and dancing. Both children and adults experience a feeling of well-being and release of tension in physical activity.
>
> Physical fitness and good social-emotional adjustment usually develop together in childhood. Under competent adult leadership, boys and girls play together, form friendships, co-operate or compete in groups or on teams. In play, they experience success or failure. Sometimes they lead, sometimes they follow. They learn to abide by rules, to give and take, to judge themselves and others realistically.[20]

Arthur Esslinger, University of Oregon, has aptly said:

> It doesn't make much sense to put so much effort and money into preparing fine scientists, doctors, lawyers, musicians, poets, philosophers, journalists, businessmen, and the like

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[18]Fred V. Hein and Allan J. Ryan, "The Contributions of Physical Activity to Physical Health," Research Quarterly, Vol. XXXI (May, 1960), pp. 263-385.

[19]John H. Jenny, Physical Education, Health, Education, and Recreation (New York: The MacMillan Co., 1961), p. 116.

[20]Anna S. Espenschade, "Why Be Physically Fit," National Education Journal, Vol. LI (February, 1962), p. 35.

> who cannot achieve their full potential because they lacked the strength, stamina, health and vitality to do so. . . . For all of our youth, physical education represents the best hope to develop the interests, skills, knowledges, and attitudes in regard to physical activities that will culminate in a strong, tough, fatigue-resistant physique that will bear up under the stresses and strains of the softness of our space age.[21]

Robert Luby commented on physical fitness and physical education in this manner:

> There has been mounting evidence in literature through the years about the value of physical education experiences for the growing child. Educators, child study specialists, physicians, sociologists, and parents have long asserted that physical education activities contribute to the child's skills. These activities are also responsible for developing self and group understandings and insights and attitudes. Youngsters acquire strength and vigor that help them cope more successfully with the increasingly complex responsibilities produced by school placement.
>
> In recent years, psychiatrists have contended that children develop many of their ego strengths through the development of physical skills and that these ego strengths are vital to total life adjustments.[22] (See Appendix D., p. 121.)

Physical fitness, as has been previously stated, has been of great concern to most physical educators. These educators have continually sought better and more interesting ways to present fitness programs. All over America and Canada various kinds of fitness programs have been in operation to develop and improve the fitness of today's youth.

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[21]Arthur Esslinger, "Physical Fitness--Major Objective?", Educational Leadership, Vol. XX (March, 1963), pp. 384-391.

[22]Dr. Robert R. Luby, "Why Physical Education in the Elementary School," Grade Teacher, Vol. XXCII (December, 1964), p. 80.

Both Kistler and Landiss found that physical fitness could be improved by intensive conditioning programs.[23, 24] However, Wilbur concluded that the formalized apparatus method did not necessarily show superiority over the sports method in increasing physical fitness.[25]

Wireman studied the relative effectiveness of four approaches to increasing physical fitness in male college freshmen in 1960.[26] He concluded that knowledge of results seemed to have more effect on physical fitness than fifteen minutes of calisthenics at the beginning of each class.

The purpose of Dominick Toddonio's study was to examine the assumption that fifteen-minute daily periods of calisthenics was sufficient to influence the physical fitness of elementary school-aged children.[27] It was concluded that fifteen-minute daily periods of

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[23]J. W. Kistler, "A Study of the Results of Eight Weeks of Participation in a University Physical Fitness Program," Research Quarterly, Vol. XV (March, 1944), pp. 23-28.

[24]C. W. Landiss, "Influences of Physical Education Activities on Motor Ability and Physical Fitness of Male Freshmen," Research Quarterly, Vol. XXVI (October, 1955), pp. 295-307.

[25]E. A. Wilbur, "A Comparative Study of Physical Fitness Indices as Measured by Two Programs of Physical Education: The Sports Method and the Apparatus Method," Research Quarterly, Vol. XIV (October, 1943), pp. 326-332.

[26]Bill O. Wireman, "Comparison of Four Approaches to Increasing Physical Fitness," Research Quarterly, Vol. XXXI (December, 1960), pp. 658-666.

[27]Dominick A. Toddonio, "Effect of Daily Fifteen-Minute Periods of Calisthenics Upon the Physical Fitness of Fifth-Grade Boys and Girls," National College of Physical Education for Men, Vol. LXVII (January, 1964), pp. 31-32.

calisthenics had little or no effect upon the physical fitness of fifth grade boys and girls as measured by the AAHPER Youth Fitness Test.

Physical Fitness: Urban-Rural, European and Oriental Comparisons

Is mere activity the answer to the physical fitness problem? Or, are there certain variables that must be considered? Is it the physical education program that determines the level of fitness an individual can attain? Studies have been done which compared the fitness levels of urban and rural children who do receive different kinds (if any at all in rural areas) of physical education programs. Three studies listed below give the results of urban-rural fitness comparisons.

James Fox compared the fitness of city boys and girls to country boys and girls in Virginia. He made th following observations:

> City boys scored slightly higher than country boys on tests of the strength of arm, shoulder, leg muscles, and agility. Country boys scored higher on tests of respiratory endurance, and slightly better on speed and balance. City girls scored higher than country girls on tests of strength of arm, shoulder and leg muscles. Country girls scored higher on tests of respiratory endurance. In other areas of physical fitness test scores were almost identical.[28]

Frank Siewert compared the fitness and sports skills of grade 9 boys from rural, urban and parochial backgrounds. He found no difference in the fitness of the boys.[29] However, he did find that boys

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[28] James Crawford Fox, "Establishing Physical Fitness Norms for Fifteen-Year-Old Boys and Girls in Virginia Schools," Dissertation Abstracts, Vol. XXII, Pt. 2 (October-December, 1961), pp. 1499-1500.

[29] Frank Siewert, "A Comparison of Some Components of Physical Fitness and Sports Skills of Ninth Grade Boys of Rural, Urban and Parochial School Background," Completed Research in Health, Physical Education, and Recreation, Vol. V (1963), pp. 96-97.

from urban and parochial schools were superior in sport skill. Herman Boone, in his study, "A Comparison of the Physical Fitness Level of Urban and Rural Boys," stated:

> The AAHPER Youth Fitness Test was administered to 100 rural and 100 urban boys. The urban boys were superior to the rural boys and the difference was significant at the .01 level.[30]

The results of the Kraus-Weber fitness study were published in 1956. The shocking fact that American children were less physically fit than European children became known. Since that time many studies have been made which compared the fitness of American children to children of other countries. (See Appendix E, p. 126.) George Hansell stated:

> Physical fitness tests, such as reported by Kraus-Prudden and Knullgen, graphically prove that the children of other countries surpass ours in strength and endurance.
>
> The famous Kraus-Prudden report summarized an international testing bee among 7,000 children in the U. S., Switzerland, Austria and Italy. The children, aged 6 to 16, were subject to a battery of six physical fitness tests. The results were fantastic. Only 42.1% of the American boys and girls passed every test, compared to 91.1% for the European youngsters.[31]

The AAHPER Youth Fitness Test (pull-ups, sit-ups, shuttle run, 40-yard dash, standing broad jump, softball throw, 600-yard run-walk) was administered to over 10,000 British boys and girls in 1958-59. It was concluded that British boys were far superior to the United States boys in all the fitness tests except the softball throw. The British

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[30]Herman Boone, "A Comparison of the Physical Fitness Levels of Urban and Rural Boys," Completed Research in Health, Physical Education, and Recreation, Vol. IX (1967), p. 59.

[31]George A. Hansell, "Physical Fitness Can Be Improved," Journal of Health, Physical Education, and Recreation, Vol. XXXI (February, 1962), pp. 58-60.

irls were likewise superior to the United States girls. In fact, at pecific ages, the British girls were superior in performance over the nited States boys, at the ages of 10, 11, 12 and 13 on the mean scores n five of seven tests. It was also concluded that, in general, the ritish and United States boys and British girls improved with age while he United States girls showed either little improvement or regressed ith age. The authors stated, "The unfit condition of the U. S. youth s serious as indicated in this study."[32]

Are the children of today better or less physically fit than heir parents or other children from previous years? Researchers could ot seem to agree on this point as their studies revealed different results. Blesh and Scholz compared the fitness of Yale freshmen in 1956 nd freshmen in 1948.[33] They found the Yale freshmen in 1956 less fit, lthough not significantly so, than the freshman class of 1948.

Scores achieved by fathers (1925) and sons (1959) in physical bility tests (broad jump, chins, fence vault, 100-yard run) at Pomona ollege were studied in 1960.[34] The findings indicated that a larger ercentage of the tests were passed by the fathers and scores were

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[32]W. R. Campbell and R. H. Pohndorf, "Physical Fitness of ritish and United States Children," Physical Education, Vol. LIII July, 1961), pp. 48-57.

[33]T. Erwin Blesh and Alfred E. Scholz, "Ten Year Survey of hysical Fitness Tests at Yale University," Research Quarterly, ol. XXVIII (November, 1957), pp. 321-26.

[34]Bryant J. Cratty, "A Comparison of Fathers and Sons in hysical Ability," Research Quarterly, Vol. XXXI (March, 1960), p. 12-16.

significantly higher in three out of four of the tests. The highest, positive correlations were noted between father and son performance in the broad jump (+ .86) and in the 100-yard run (+ .59).

Ronald Bos compared children in grades 5 - 12 in 1961 with children of 1940 (5 - 12) on pull-ups, sit-ups, standing broad jump, and 50-yard dash. Bos found that:

> Boys performance by age in pull-ups, sit-ups, standing broad jump, and 50-yard dash were essentially similar. Present mean performance for boys based on the Classification Index was inferior in pull-ups, standing broad jump and 50-yard dash to performance reported in three studies conducted in California, with the major discrepancies at the elementary and junior high level rather than the senior high level. Present girls performances in the 50-yard dash and standing broad jump were essentially similar to pre-1940 performances except that the present older girls compared less favorably than the younger. Present girls performances in the sit-ups were markedly inferior. Present girls performances in the 50-yard dash on the basis of the Classification Index were poorer than those in the "California Studies."[35]

Cross motor tests were given to subjects of the California Adolescent Study in 1934-35. These same tests were repeated in 1958-59 by pupils of the same age and grade, enrolled in the same school.[36] Performances of boys and girls of the latter group were superior in jump and reach and in the dynamometric strength "pull" test. Boys of 1958-59 excelled also in throw for distance, Brace test and grip

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[35]Ronald R. Bos, "An Analysis of the Youth Fitness Project Data and a Comparison of These Data with Comparable Data Recorded to 1940," Completed Research in Health, Physical Education, and Recreation, Vol. III (1961), p. 50.

[36]Anna S. Espenschade and Helen E. Meleney, "Motor Performances of Adolescent Boys and Girls of Today in Comparison with Those of 24 Years Ago," Research Quarterly, Vol. XXXII (May, 1961), pp. 186-190.

strength. Boys and girls of 1934-35 were superior in the dash and broad jump. Ira Gordon stated:

> American youth have not improved substantially over previous generations in spite of their better nutrition and living conditions, nor have they held their own against western European youth.
>
> . . . Further, our culture, except for certain ethnic groups, has never stressed the mass calisthenic activity, but has stressed competitive team sports. Since these proficiency factors appear to be so specific, it may be that American youths may excel, at those activities more related to our culture. The findings between American generations may be more meaningful.[37]

Hunsicker and Reif compared the physical fitness of public school children, grades 5 - 12, in 1958 and in 1965. They discovered that the fitness level of the 1965 public school children, grades 5 - 12, was above that of the 1958 group.[38] Swengros had the same opinion:

> Todays young people are stronger, faster and more skillful than their counterparts of the 1950's. Test results prove it. In 1957-58 nearly 10,000 boys and girls representing a cross section of American society were given the Youth Fitness test, which assesses physical strength, stamina, speed, agility and coordination. In 1964-65 the test was repeated with a similar group. . . . Ten year old boys had shaved 19 seconds off their average time for the 600-yard run, and added 6 inches to their average work in the standing broad jump, and 9 feet to their average softball throw. All other groups, including girls, improved likewise.[39]

If American youth were less fit than his European and Oriental counterpart, what reasons existed for the phenomenon? Robert Irving,

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[37]Ira J. Gordon, "Fitness: Goal or Grail," Educational Leadership, Vol. XX (March, 1963), p. 397.

[38]Paul A. Hunsicker and Guy G. Reiff, "A Survey and Comparison of Youth Fitness 1958-1965," Journal of Health, Physical Education, and Recreation, Vol. XXXVII (January, 1966), p. 24-25.

[39]Glen V. Swengros, "Improvement in Physical Fitness," Instructor, Vol. LXXVI (August, 1966), p. 125.

Jr., gave his reasons for American youth lack of fitness in the article, "Why All the Fuss About Fitness." Irving stated:

> The term "physical fitness" implies ability to perform, and therein lies our own weakness. Contemporary American life belies the efforts of our forebearers to build this nation--efforts which demand performance, dynamism, and relentless energy. The comfort and luxury which symbolize our present status also symbolize our physical deterioration. If, in our material wealth, we can be considered fortunate, then our European, African or Asian neighbors are less fortunate; yet they outperform us (United States), both sexes consistently, and at all ages.
>
> The straightforward reason for our physical unfitness can be summed up in two words, circumstance and attitude. Our circumstance may be thought of as a series of status symbols: relative material wealth and security, an abundance of home appliances and comforts, public and private transportation facilities galore, "exclusive" memberships, food, clothing and shelter previously unheard of, ad infinitum.[40]

Henery Willenburg gave his reasons for the lack of fitness among the American population:

> Some of the obstacles preventing many people from achieving fitness are the relative lack of physical activity in daily living, and the scarcity of time available for a regular exercise program.[41]

Not all researchers and writers agreed that American youth was as physically unfit as much of the literature would have readers believe. The following conclusions were recently reported from studies and comparisons of the physical fitness of public school children and university students of America with similar groups in Germany and Sweden:

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[40]Robert N. Irving, Jr., "Why All the Fuss About Fitness," Educational Leadership, Vol. XX (March, 1963), p. 376.

[41]Henery Willenburg, Isometrics (New York: Award Books, May, 1964), pp. 1-2.

It appears to be a widely accepted view that the American child is inferior to the European child with regard to physical fitness. . . . The study "seems to indicate that the difference in physical work capacity or physical fitness between some American and some European children and young adults may not be as marked as has been generally assumed."[42]

Dr. Bauer stated:

I think we should be glad that the country has been alerted (by the President). I think we need to improve our concepts of fitness and to improve our program. But I don't think we need to be worried, and I do not agree with those who say that American youth is soft. When you put American youth to the test, American youth comes through--it has never failed, and I don't believe it's going to fail us now.[43]

Maxwell L. Howell commented on his doubts as to the unfitness of American youth. Howell stated:

Are the children of America really as unfit as most of the recent literature would lead us to believe. Some writers have produced evidence that shows that with very little practice the failure rate is not so alarming, that children who fail the test do not differ from those who passed, in personality, as inferred by Kraus; and others have criticized the test itself, in that it employed movements that are quite similar to those found in the gymnastically-oriented European physical education and sports program, and that it could scarcely be considered a physical fitness test.[44, 45, 46]

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[42]Editorial, "Health in Brief: Study Physical Fitness of American Youth," Health, Vol. XXIX (June, 1961), p. 15.

[43]U. S. News and World Report, Fitness Training Methods (Toronto: Canadian Association for Health, Physical Education, and Recreation, Inc.), p. 4.

[44]Maxwell L. Howell and W. R. Morford, Fitness Training Methods (Toronto: Canadian Association for Health, Physical Education, and Recreation, Inc.), pp. 3-4.

[45]Maxwell L. Howell, "A Critique of the Kraus-Weber Test," Journal of Health, Physical Education, and Recreation, Vol. XXII (January, 1956), pp. 11-16.

[46]Maxwell L. Howell and Peter Mullins, "A Further Critique of the Kraus-Weber Test," Journal of Health, Physical Education, and Recreation, Vol. XXIV (November, 1957), pp. 20-23.

J. Philip Keene commented on the Kraus-Weber findings:

> The current interest in fitness testing came about through the Kraus-Weber proximal muscle test findings in which Americans were unfavorably compared with European children. Misinterpretation of these tests produced extensive overt concern with fitness testing in this country.[47]

Physical Fitness: Incentives, Academic Success and Popularity

Being physically fit may not only allow us to live longer, but it may also be a factor in academic success and popularity (See Appendix F, p. 129). Weber studied the relationship of physical fitness, as measured by the Iowa Physical Efficiency Profile, to grade point average.[48] He found a correlation of .41, which was significant beyond the .01 level of confidence.

Rogers and Palmer did a study at the Nathaniel Hawthorne Junior High School in Yonkers, New York, in 1954.[49] This study revealed that the improvement of the Physical Fitness Index has a positive effect upon academic work. Douglas Yarnall examined the relationship of physical fitness to selected measures of popularity among high school senior boys. Yarnall concluded:

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[47] J. Philip Keene, "Fitness, Posture, and Other Selected School Health Myths," The Journal of School Health, Vol. XXXVII (January, 1967), p. 11.

[48] John R. Weber, "Relationship of Physical Fitness to Success in College and to Personality," Research Quarterly, Vol. XXIV (December, 1954), p. 471.

[49] H. Harrison Clarke, "The Nathaniel Junior High School Project," The Physical Fitness Newsletter, No. 6, University of Oregon (May 20, 1955).

> A positive relationship does exist between physical fitness and popularity among the high school senior boys in the study. Therefore, it may be concluded that physical fitness is of some social value to the high school student.[50]

Bernard Gutin tested the hypothesis: any increase in physical fitness has a positive effect on the ability of individuals to perform complex tasks. He concluded:

> The increase in the group level of fitness, which may be developed within the structure of a college course meeting twice weekly for 12 weeks, does not positively affect the possibility of that group to perform complex mental tasks following stress.[51]

Darrel Mack found no relationship between fitness and academic success.[52]

A motivating force coming from outside an individual could do much to improve the physical fitness of that individual. Incentives, other than personal goals, have been of value in the development and maintenance of physical fitness. Clinton Strong studied the effects of motivation on the performance of physical-fitness tests of sixth grade children. He observed:

> 1. The level-of-aspiration and team-competition motivating conditions are more effective than competition-against-

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[50]C. Douglas Yarnall, "Relationship of Physical Fitness to Selected Measures of Popularity," Research Quarterly, Vol. XXXVII (May, 1966), p. 288.

[51]Bernard Gutin, "Effect of Increase in Physical Fitness on Mental Ability Following Physical and Mental Stress," Research Quarterly, Vol. XXXVII (May, 1966), p. 218.

[52]Darrel Dean Mack, "The Relationship of Success in the Washinton State University Physical Fitness Test to Academic Success, For the 1961-62 Male Freshmen at Washington State University," Completed Research in Health, Physical Education, and Recreation, Vol. V (1963), p. 87.

self, competition-to-establish-class-records, competition-against-someone-of-nearly-equal ability, and competition-against-someone-of-markedly-different-ability-motivating conditions.

2. Motivation improves boy's performance more than girl's performance.

3. The validity of the measures of physical-fitness tests is dependent upon the motivating conditions under which the tests are administered.[53]

John Douthitt's study dealt with the effect of social-incentive conditions on performance in physical fitness tests. Douthitt studied grades 10 - 11 boys and girls and found:

1. The level-of-aspiration social-incentive condition is more effective as a motivating force than are team-competition and competition-with-person-of-near-equal-ability social incentive conditions.

2. The reliability of the measures of physical fitness tests is dependent upon motivation developed by the conditions under which the tests are administered.[54]

Burton Seidler studied the effect motivational incentives have on the physical performance of boys. Seidler observed:

All forms of motivation used in this study resulted in significantly better scores than did no specific motivation.

No one type of incentive emerged as clearly the best single method of producing significantly improved results. In rank order, however, they were (a) competition-against-state-norms, (b) competition-against-level-of-aspiration, (c) competition-against-self, (d) competition-against-another-class, (e) no specific motivation.[55]

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[53]Clinton Herbert Strong, "Motivation Related to Performance of Physical-Fitness Tests," Dissertation Abstracts, Vol. XXII, Pt. 2 (October-December, 1961), p. 1504.

[54]John Edward Douthitt, "Effects of Specific Social-Incentive Conditions on Performance of Physical Fitness Tests," Dissertation Abstracts, Vol. XXV (October-December, 1964), p. 2338.

[55]Burton Marshall Seidler, "Effect of Selected Motivational Incentives on Physical Performance of Boys," Dissertation Abstracts, Vol. XXVI, Pt. 1 (July-October, 1965), p. 195.

Michael Malan studied the performance of athletes versus non-athletes. He found:

> A group of 58 non-athletes and 18 athletes competing for physical education grades under a squad and individual point system were compared on the basis of improvement on the revised 1965 AAHPER Youth Fitness Test with a group of 52 non-athletes and 18 athletes working under a standard teacher evaluation method. Non-athletes working under the point system improved their fitness significantly at the .01 level but the athletes did not. Athletes, working under the teacher evaluation method, improved their fitness significantly at the .01 level but the non-athletes did not.[56]

History of Physical Fitness:
United States

The history of the fitness movement in the United States cannot be considered a lengthy one in years. However, a great deal of print, controversy, and action has taken place since the movement began back in the 50's. President Kennedy gave his interpretation of the beginning of the fitness movement in America:

> The first indication of a decline in the physical strength and ability of young Americans became apparent among United States soldiers in the early stages of the Korean War. The second came when figures were released showing that almost one out of every two young Americans was being rejected by Selective Service as mentally, morally or physically unfit. But the most startling demonstration of the general physical decline of American youth came when Dr. Han Kraus and Dr. Sonja Weber revealed the results of 15 years of research centering in the Posture Clinic of New York's Columbia-Presbyterian Hospital--results of physical fitness tests, given to 4,264 children in this country and 2,870 children in Austria, Italy and Switzerland.

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[56]Michael M. Malan, "The Value of a Selected Physical Education Point System as an Incentive to the Development of Physical Fitness in Athletic and Non-Athletic Eighth Grade Pupils," Completed Research in Health, Physical Education, and Recreation, Vol. IX (1967), p. 132.

> The findings showed that despite our unparalleled standards of living, despite our good food and our many playgrounds, despite our emphasis on school athletics, American youth lagged far behind Europeans in physical fitness. Six tests for muscular strength and flexibility were given; 57.9 per cent of the American children failed one or more of these tests, while only 8.7 per cent of the European younsters failed.[57]

President Eisenhower should be given credit for the impetus he gave to the fitness movement:

> After a White House luncheon attended by Senator Duff, Mr. Kelly and about thirty sports champions, at which Dr. Kraus and Miss Prudden reported their results of administering the Kraus-Weber tests, to American and European children, President Eisenhower scheduled a youth fitness conference in Denver in September, 1956. Postponed because of his heart attack, the conference finally convened at the U. S. Naval Academy, Annapolis, in June. Though it is still a matter of controversy whether the Kraus-Weber tests are an adequate measure of physical fitness, they served to focus national attention of the status of fitness of American youth.[58]

Vice-President Nixon spoke at this same Annapolis Conference and said:

> 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 gadgetry to make life easy and in so doing reduce the opportunity for normal physical health-giving exercise.
>
> The objective of an adequate physical fitness program can be summed up in one word--participation--participation on the part of every boy and girl in America in some form of healthy recreation and physical activity.
>
> The super athlete is not our primary concern. He will take care of himself. It is the boy or girl with ordinary physical abilities who should receive the major share of our attention. Neither is our primary concern of the development of physical fitness in itself. Everyone agrees that the person who has physical fitness enjoys a healthy mental outlook and a general

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[57]John F. Kennedy, "The Soft American," Background Reading for Physical Education (San Francisco: Holt, Reinhart and Winston, 1965), p. 390.

[58]Editorial, "Fitness of American Youth," Journal of Health, Physical Education, and Recreation, Vol. XXVII (September, 1956), p. 8.

feeling of bodily well-being. Physical activity relieves emotional strain under which we live, and relieves the pressure of our highly productive lives.

All studies of this problem indicates that an obvious by-product of an adequate physical fitness and recreational program for America's youth will be a reduction in the rate of juvenile delinquency.

The need for the conference is shown by such facts as these:

> Forty percent of those persons entering the Armed Forces in World War II were unable to swim as far as fifty feet.
>
> Drownings between the ages of 5-44 are second only to motor vehicles in accidental deaths.
>
> Most drownings occur within 15-20 yards of some point of safety.
>
> Less than five percent of our youth have had the opportunity to enjoy the experience of camping and outdoor living. Ninety per cent of the nation's elementary schools have less than five acres of land necessary for essential play areas.[59]

The conference at Annapolis recommended that:

1. The President of the United States create a top-level committee of Federal departments having programs and activities relating to the fitness of youth.
2. A Citizens Advisory Committee be appointed by the President of the United States to advise the President and the American people of the fitness of American youth.
3. The adoption of recommendations 1 and 2 supra, or the activation of any other group, must never cloud the fact that the prime and continuing responsibility for fitness of youth is in the home and local community.
4. All organizations, public or private, education or recreation, in their own particular areas of application and working co-operatively with one another, interpret in various ways the need for and the value of physical fitness. They must avoid a narrow definition of fitness yet take into account the value of simple approaches to this complex problem--building toward complete understanding and support.
5. Coordinated research be conducted to ascertain the dimensions and complications of the fitness of our American youth.

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[59]Richard M. Nixon, Physical Education, Health Education, and ecreation (New York: The MacMillan Company, 1961), p. 109.

6. Television, radio and other media of communications be used to tell the story of youth fitness to the people--including our young people.

7. Federal, state, and local governments sponsor and conduct demonstration projects to dramatize the practicality of steps to aid the fitness of youth.

8. Sufficient funds be provided by public and private sources to initiate the promotion of plans, programs and activities essential for attainment of fitness of American youth.[60]

Almost immediately after the Annapolis Conference, President Eisenhower issued an Executive Order which created the Council on Youth Fitness. The White House Executive Order on the Fitness of American Youth stated:

Whereas recent studies, both private and public, have revealed disturbing deficiencies in the fitness of American youth; and

Whereas, since the youth of our Nation is one of our greatest assets, it is imperative that the fitness of our youth be improved and promoted to the greatest possible extent; and

Whereas such fitness is the responsibility of the government at all levels, as well as the responsibility of the family, the school, the community, and other groups and organization; and

Whereas it is necessary that the activities of the Federal Government in this area to be coordinated and administered so as to assure their maximum effectiveness and to provide guidance and stimulation; and

Whereas a comprehensive study and a re-evaluation of all governmental and non-governmental programs and activities relating to the fitness of youth are necessary in the interest of achieving and maintaining higher standards of youth fitness;

Now, therefore, by virtue of the authority vested in me as President of the United States, it is hereby ordered as follows:

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[60]Annapolis Conference Report, "Fitness of American Youth," Journal of Health, Physical Education, and Recreation, Vol. XXVIII (March, 1957), p. 34.

PART I. PRESIDENT'S COUNCIL ON YOUTH FITNESS

Section 1. There is hereby established the President's Council on Youth Fitness (hereinafter referred to as the Council), which shall be composed of the Vice-President of the United States, who shall be the Chairman of the Council, the Attorney General, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Labor, and the Secretary of Health, Education, and Welfare.

Section 2. The Council shall promote the efficacy of existing programs which will enhance the fitness of American youth. The Council shall seek to coordinate, stimulate, and improve the functions of Federal agencies with respect to the fitness of youth.

Section 3. Each executive department the head of which is referred to in section 1 of this order shall, as may be necessary for the purpose of effectuating the provisions of this order, furnish assistance to the Council in accordance with section 214 of the act of May 3, 1945, 59 Stat. (31 U.S.G. 691). Such assistance may include detailing employees to the Council, one of whom may serve as its executive officer, to perform such functions consistent with the purpose of this order as the Council may assign to them.

PART II. PRESIDENT'S CITIZENS ADVISORY COMMITTEE ON THE FITNESS OF AMERICAN YOUTH.

Section 4. There is hereby established the President's Advisory Committee on the Fitness of American Youth (hereinafter referred to as the Advisory Committee). The Advisory Committee shall be composed of such members as the President may designate, and each member shall serve at the pleasure of the President. A member of the Advisory Committee shall be designated by the President as the Chairman of the Advisory Committee.

Section 5. The Advisory Committee shall consider and evaluate existing and prospective governmental and private measures conducive to the achievement of a happier, healthier and more completely fit American youth.

PART III. GENERAL PROVISIONS.

Section 6. The Council shall be the President's official link with the Advisory Committee. The Council shall meet with the Advisory Committee at least once a year for the purpose of determining the progress made with respect to the problems relating to the fitness of American youth, and, taking into account the results of such meetings and other factors, shall prepare and present reports on this subject to the President.

Section 7. Nothing in this order shall be construed to abrogate, modify, or restrict any function vested by law in,

or assigned pursuant to law to, any executive department or other agency of the Government or any officer thereof.[61]

The following code of action was adopted by the President's Council on Youth Fitness:

1. To devise means through which the alert sounded by the President on current needs of youth may be fully recognized and supported by each adult citizen who must realize the necessity of attaining a happier, healthier and more totally fit youth in America.
2. To encourage the extension, improvement and implementation of existing acceptable youth programs and the development, where appropriate, of new programs making the maximum use of agencies already in existence.
3. To assist in creating public awareness of the extensive existing departmental and agency services to youth.
4. To maintain continuing liaison and consultation with pertinent departments and agencies and to provide a free flow of information on youth fitness matters to and between interested departments and agencies, and the public.
5. To encourage the assistance of public and private groups for the support of programs to aid youth fitness.
6. To handle enquiries and suggestions which pertain to no particular department or agency while recognizing items which fall directly or indirectly within the province of existing organizations, both in and out of Government.
7. To act as the official link for departments and agencies in harnessing the resources of the President's Citizens Advisory Committee for the carrying out of the present programs or the launching of new ones.[62]

Part II of the Executive Order created the Council on Youth Fitness and established the President's Citizens Advisory Committee on the Fitness of American Youth.[63] The 120 persons appointed by the

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[61]The White House Executive Order, "Fitness of American Youth," Journal of Health, Physical Education, and Recreation, Vol. XXVII (September, 1956), p. 10.

[62]American Association for Health, Physical Education and Recreation, "About the President's Council on Youth Fitness," Journal of Health, Physical Education, and Recreation, Vol. XXVIII (September, 1957), p. 35.

[63]Ibid.

President served as individuals and representatives of various organizations, agencies, institutions and groups. They have been representative of the total population of the United States. The Committee advised the Council on Youth Fitness. Its duties have been stated as follows:

1. To meet once a year with the President's Council on Youth Fitness.
2. To meet as individuals upon a need basis with the Council.
3. To help obtain grass-root facts on fitness of youth throughout the country.
4. To help alert the nation to the need for emphasis on youth fitness.
5. To help inform the nation of the extent and nature of the problem and means and methods of meeting it.
6. To help interpret the structure, program, and objectives of the Council.
7. To provide ideas to the Council; to make suggestions; to advise on plans.
8. To assist in the implementation of programs in state and local communities.
9. To serve as a clearing house, a sounding board, and a traffic light for the Council.
10. To evaluate the objectives and progress of the Council.[64]

John Jenny commented on the American Fitness movement:

As the work of the Council on Youth Fitness continues at its high governmental level as well as its grass-roots approach, physical educators in every state, territory, city and hamlet have taken another look at their programs. Whether they have accepted the Kraus-Weber findings, used the K-W tests as a measure of fitness, or rejected the findings and the tests as not meeting their particular needs or philosophy is of little importance. What is important is that from the publicity given to the Kraus-Weber research and from the controversy that followed there have been steps leading to a new look at

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[64]American Association for Health, Physical Education, and Recreation, "About the President's Council on Youth Fitness," Journal of Health, Physical Education, and Recreation, Vol. XXVIII (September, 1957), p. 35.

> fitness and the programs which are aimed at creating and maintaining it. The personnel engaged in programs of youth fitness have taken inventory of their stock and have asked themselves, "Is our program of health, physical education, recreation, and sports satisfactory for the developing and maintaining of a fit America?" Professional physical educators believe that this new look at fitness has been a highly stimulating and motivating factor in the progress of the profession.[65]

In more recent years, the concern of the country's medical profession in regard to the problem of the fitness of youth was made evident in the resolution adopted on June 28, 1962, by the House of Delegates of the American Medical Association:

> . . . urging state and local societies to encourage in every way the initiation and continuance of sound physical education of the nation's youth in schools and colleges. . . . approving the principles of the President's Council on Youth Fitness in 1961. . . . re-emphasizing support of local school and college youth fitness programs . . .[66]

A recent statement (1963) by the Education Policies Commission set forth the overall responsibilities of the schools:

> The schools must be guided by certain conditions which are known to be basic to significant mental development. The school has responsibility to establish and maintain these conditions. One of them is physical health. . . . An adequate physical basis for intellectual life must be assured.[67]

The history of the fitness movement in America would not be complete without mentioning the Youth Fitness Manual (published in 1958, 1961, and 1965), and the Youth Physical Fitness: Suggested Elements of a School-Centered Program Manual (1961). These two manuals have played

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[65]John H. Jenny, Physical Education, Health Education and Recreation (New York: The MacMillan Co., 1961), p. 113.

[66]T. J. Blair, "Physical Fitness--Major Objective," Educational Leadership, Vol. XX (March, 1963), pp. 379-382.

[67]Ibid.

and have continued to play a large role as guides for the development and maintenance of fitness programs in the United States.

History of Physical Fitness: Canada

An interest in physical fitness in Canada came about during the depression of the thirties. At this time, a program to upgrade the skills of the unemployed uncovered the fact that better fit people learned skills faster. As a result of this discovery, men, seeking job skills, were required to take one hour of exercise followed by one hour of sports activities per day.

World War II soldier preparation uncovered the relatively low level of fitness of prospective Canadian soldiers. As a result, the National Fitness Act was passed on July 24, 1943. This Act was responsible for the eventual formation of the Department of Health and Welfare.

The National Physical Fitness Act had many shortcomings and so was repealed on June 9, 1954. The Act (1943) did, however, stimulate interest and concern about physical fitness in several provinces. It also brought about the establishment of the Division of Fitness under the Welfare Branch and brought about the appointment of Dr. Doris Plewes as the assistant to the National Director. The National Fitness Act also paved the way for better constructed bills dealing with physical fitness.

The National Fitness Act played an important role in the inauguration of professional training courses in physical education. The first degree course in Canada began in Toronto in 1940. Shortly

thereafter McGill and the University of British Columbia established degree courses in physical education.

The Division of Fitness, under the direction of Dr. Plewes, published a series of pamphlets on posture and exercise between the years 1946 and 1948. These pamphlets proved to be very helpful in the promotion of physical fitness during this period. Two people who played a tremendously large role in the stimulation of interest in physical fitness in Canada were Dr. Doris Plewes and Lloyd Percival.

Dr. Plewes was referred to as the "fountainhead" of the physical fitness movement in Canada. She served as assistant to the Director of the Department of Health and Welfare and consultant to the Fitness and Recreation Branch until 1962. It was mainly through her efforts that the RCAF (Royal Canadian Air Force) developed the 5BX Plan of Physical Fitness (1962). It was through Dr. Plewes' efforts that the Citizens Committee on Children in Ottawa was formed. This committee advocated more emphasis on physical fitness in the public schools.

Lloyd Percival is best known for his weekly broadcast "Sports College of the Air." These radio broadcasts created a great deal of interest in sports, particularly among the young. His broadcasts were supplemented by pamphlets on how to keep fit.

Another step forward for fitness in Canada was the founding of the Canadian Sports Advisory Council. This council was founded mainly through the efforts of Dr. Plewes and Melvin F. Rogers. This council continually submitted briefs to the Minister of Health and Welfare asking for help to enable them to take positive steps toward better Canadian physical fitness. It was the hope of this council that the

Canadian Government might react as swiftly as President Eisenhower had reacted in the United States after the Kraus-Weber report. However, no immediate action was taken.

The Duke of Edinburgh made some remarks concerning Canadian physical fitness in 1959. Interest, following these remarks, was very high right across the nation. The Duke rebuked Canadians for their complacency and at the same time challenged doctors to take some action to improve the situation. This renewed interest in fitness brought about the passage of Bill C-131. This bill enabled the formation of an advisory council, consisting primarily of citizens, to advise the government on issues concerned with physical fitness.

The Royal Canadian Legion tried its hand at physical fitness. However, neither the track and field clinics nor the physical fitness program they began were successful.

Thomas Cureton made a slight impact on adult fitness (1958) by conducting clinics at various YMCA's across the nation. Later, 1959, the Canadian Medical Association had felt slightly shaken and challenged by the words of the Duke of Edinburgh. So, their first move was to strike a liaison between the Canadian Association of Health, Physical Education and Recreation (CAHPER) and themselves with the hope of solving problems common to both associations. This partnership has been a rewarding and fruitful union.

Bill C-131 increased the interest in fitness in Canada considerably. The National Advisory Council, formed as a direct result of the bill, has been highly responsible for the formation of aims and objectives of the Fitness and Amateur Sport Council. Also, the National

Advisory Council has shown its concern for fitness by making large sums of money available for leadership, training, research and promotion of sports.[68]

For Canadian physical fitness, 1963 was the breakthrough year. This was the year that fitness norms based on the performance of Canadian youth were established.

> In 1963 the Board of Directors of the Canadian Association for Health, Physical Education and Recreation requested its Research Committee to design and undertake a project which would establish national norms of physical performance for Canadian children and youth. Their directive stated that this was "a matter of considerable urgency in the national plan regarding fitness and amateur sport."
>
> The research grant request drafted by Drs. Hayden and Yuhasz was submitted to and approved by the Fitness and Amateur Sport Directorate of the Department of National Health and Welfare. A conference was held in Edmonton in February, 1964, to select the test items. A second meeting in May, 1964, established the final items and the research methodology. The details for training of the test supervisors and the collection of the data were settled at a third conference in Quebec City. The testing of the school age population was initiated in September, 1964, and completed in the spring of 1965. The research project was designed to establish fitness norms for Canadian boys and girls from 7 to 17 years of age. The committee agreed that each test item selected was a valid and reliable measure of fitness and simple enough for any teacher, not trained in fitness measurement, to administer. The same test items were to be used for boys and girls at all ages and consideration was given to limiting the time and equipment needed for the test. The selected battery of tests is a unique one but the items are familiar as to allow comparison with other published tests.[69]

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[68] William A. R. Orban, "The Fitness Movement," Physical Education in Canada (Scarborough: Prentice-Hall of Canada, Ltd., 1965), pp. 238-248.

[69] Michael S. Yuhasz and Frank Hayden, The Canadian Association for Health, Physical Education, and Recreation Fitness-Performance Test Manual (The Canadian Association for Health, Physical Education, and Recreation, 1966), pp. 6-7.

Canada celebrated her birthday in 1967. One hundred years had passed since the provinces had joined together to form a Confederation of Provinces--Canada. To mark this very special occasion, it was decided at the federal level to institute in our schools a Centennial Athletic Awards Programme.

The Centennial Athletic Awards Programme is comprised of four events: three compulsory and one optional.

Compulsory Events

- Standing Broad Jump
- One-Minute Speed Sit-Ups
- 300-Yard Run

Optional Events

- Cross Country Run
- Skating
- Swimming

Participants

All boys and girls from six to eighteen years of age attending Canadian schools are eligible to take part in the programme.

Timing

The program will be conducted between September 6, 1966, and December 31, 1967.

Implementation

The events will be administered, supervised, tested and verified by teachers and/or persons appointed by them.

Awards

Each person completing the programme will receive an award. The degree of achievement will determine the nature of the award.

The objectives of the Centennial Athletic Awards Programme are:

1. To offer Canadian youth in every part of the nation an opportunity to engage in a physical fitness programme.
2. To recognize outstanding physical performance in selected events.
3. To stimulate, encourage and motivate Canadian youth to strive for excellence and reach higher levels in physical fitness.

4. To offer Canadian youth a chance to take an active part in the Centennial of Canadian Confederation.[70]

The Centennial Athletic Awards Programme proved to be a very opular and very efficient means of improving physical fitness for both hysical educators and pupils. It appeared as if this program would lso become part of the history of fitness in Canada. Despite the tre-endous amount of interest created by this program, the Federal Govern-ent of Canada has not seen fit to continue this program from year to ear. The province of Manitoba, and its physical education leaders ave continued to try to get Federal permission to implement a revised rogram based on the Centennial Athletic Awards Programme for the rovince.

The following comments on the history of fitness in Canada were hose of Dr. V. Coroll, University of Manitoba. They were taped during n exclusive interview with the writer:

> If you look at the history of physical fitness in Canada, initially, it was during the wartime situation, when the country became aware of the fact that the physical fitness status of a great number of people was very low and, therefore, a great number of people were turned down for the service. So it became a patriotic type of thing--to be fit so as to be able to serve your country. However, it wasn't until about 1957, when the Kraus-Weber test results came out, and they compared the Canadian and American minimal physical fitness tests and found that the Canadian children and the American children had scored significantly lower than the European children that this became a health type of problem. This is the first time people--general public and even medical people started to think that this was a health problem. They thus began improving

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[70] Michael S. Yuhasz and Frank Hayden, Centennial Athletic wards Programme (1967), pp. 2-3.

> the physical fitness of the population to improve the health of the people rather than as a method of winning wars. The Americans followed up the Kraus-Weber test with the President's Physical Fitness Council (1956) and developed the AAHPER Fitness Test (1958, 1962). The Canadians followed with the CAHPER fitness battery (1965). The CAHPER standards in Canada are more statistically sound because they represent a random sample and the testing was better supervised, whereas the American sample was not a random sample. So really looking at the worth of the norms, the Canadian norms are superior.[71]

Historically, six projects have been influential in the area of fitness in Canada. This influence has occurred only in the last fifteen years. The projects were: Kraus-Weber Test and Study (1956); the AAHPER Youth Fitness Test Manual (1958); Youth Physical Fitness: Suggested Elements of a School Centered Program (1961); the Royal Canadian Air Force 5BX Plan for Physical Fitness (1962); the CAHPER Fitness Performance Test Manual (1966); and the Centennial Athletic Awards Programme (1967). (See Appendix I, p. 157.)

Summary

The following conclusions were reached after a review of the literature on physical fitness:

1. Physical fitness was considered only one part of an individual's total fitness.

2. There was a definition of physical fitness for every author who wrote on physical fitness.

3. Muscles improved in efficiency and strength with use and atrophyed with disuse.

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[71]Dr. V. Coroll, Private interview, University of Manitoba, April 5, 1969.

4. Physical fitness rose to a higher level with activity and fell to a lower level with inactivity.

5. Americans seemed older physically, in many cases, than their age indicated because of a lack of physical fitness.

6. There was no evidence to support the fable that: a physically active or athletic person was more susceptible to heart attacks when activity became negligible.

7. Physical education was deemed important, not only for its immediate worth to individuals, but also for its role in developing sound fitness habits for later life.

8. There appeared to be no superiority in eras or generation as far as the physical fitness of its youth went.

9. Research indicated the possibility that there was some correlation between academic success and physical fitness.

10. Research indicated the possibility that there was some correlation between popularity and physical fitness.

11. The youth of America seemed less physically fit than the youth of some European and Oriental countries.

12. Knowledge of the results of physical fitness tests improved the level of physical fitness faster than a program of extra calisthenics.

13. Studies revealed that the comparison of the fitness of rural and urban boys and girls showed no real preference for either the rural or urban population.

14. Incentives were of definite value in the development and maintenance of physical fitness.

CHAPTER II

METHODOLOGY

Introduction

The Centennial Athletic Awards Programme was instituted by the ederal Government of Canada. The Awards Programme was carried on hroughout 1967 by all Canadian provinces. The results of this fitness est were collected by the Provincial Physical Education Departments.

Permission was granted by the Manitoba Provincial Physical Edu- ation Department to the writer to use the Centennial Athletic Awards ata for purposes of research. The raw data were assembled, classified nd put in useable form by the students of Sansome Junior High School. he data were then transferred to the University of Manitoba Computer enter where a variety of studies were run on a 129-IBM computer.

Description of Subjects

ural and Urban Fitness omparison

The subjects used in this study were school children (boys and irls) in the Province of Manitoba, between the ages of 6 and 15 years. hey participated in the Centennial Athletic Awards Programme. The ubjects came from either a purely rural school (one-room school) or a urely urban school (Winnipeg School Division No. 1).

Rural and CAHPER Fitness Comparison

The rural subjects (boys and girls) came from Manitoba one-room schools. They were between the ages of 7 and 15 years and a part of the Centennial Athletic Awards Programme. The CAHPER standards were based on a sampling of Canadian youth between the ages 7 and 15 years. The standards were the result of a coast-to-coast study on the fitness of 11,000 Canadian youths (See Appendix G, p. 132).

Urban and CAHPER Fitness Comparison

The urban subjects (boys and girls) came from the Winnipeg School Division No. 1 and were between the ages 7 and 15 years. They participated in the Centennial Athletic Awards Programme. The CAHPER standards were based on a sampling of Canadian youth between the ages and 15 years. The standards were the result of a coast-to-coast study on the fitness of 11,000 Canadian youths (See Appendix G, p. 132).

Statistical Procedure

The writer assumed the null hypothesis in the analysis of the differences between the mean obtained for each event, at each age level, or each sex between rural and urban populations, rural and CAHPER standards, urban and CAHPER standards. This hypothesis asserts that there is no true difference between the mean scores, and the difference found between the mean is due to chance and is unimportant.[72]

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[72]Victor Goedicke, Introduction to the Theory of Statistics (New York: Harper and Brothers, 1953), p. 214.

Testing of the null hypothesis by the "t" technique, which tests the significance of the difference between mean, was decided to be the most suitable for this study. This technique determined the ratio between the mean difference and the estimate of the sampling error of the mean difference. The ratio is expressed as "t" and is checked for significance in a "t" table. The value of "t" is proportional to the degrees of freedom (N-1) allowed in determining the relationship between the mean differences and the estimate of sampling error of the mean difference.

For this study it was decided to reject the null hypothesis at the .01 level of significance. This means that if the study were repeated one hundred times, 99 per cent of the studies would have similar results.

Description of the Physical Fitness Test Used in This Study

The Centennial Athletic Awards Programme was a project planned jointly by the Centennial Commission, the Provincial and Territorial Departments of Education, the Department of Indian Affairs and Northern Development and the Department of National Defense, assisted by the Canadian Association for Health, Physical Education, and Recreation (CAHPER), the Canadian Amateur Swimming Association, the Canadian Amateur Speed Skating Association, the Boy Scouts of Canada, and the Girl Guides of Canada. The project was one of many held to mark the Centennial of Confederation in Canada. The objectives of the Centennial Athletic Awards Programme may be found on pp. 41-42. The events which make up the Centennial Athletic Awards Programme may be found on p. 41.

Information concerning the participants in the Awards Programme, length of time it will be conducted, testers of the Awards Programme, and award distribution, may be found on p. 41. Standards for the test may be found in Appendix H.

The Centennial Commission provided cloth crests or shields to every student who completed the Awards Programme. The awards were distributed to individual schools by the Provincial, Territorial and Federal education authorities. The crests were awarded on a basis of the degree of achievement:

Gold - excellent

Silver - outstanding

Bronze - merit

Red Shield - participation

To win one of the three circular crests (gold, silver or bronze) a student must have met or bettered the standards listed in four events (See Appendix H, p. 152). The lowest standard score in any of the four events determined the award. Every person completing the Awards Programme in less than the standard for a bronze crest was awarded a Red Shield for participation. No participant received more than one award.

The compulsory events were recommended to be conducted in the following sequence: (1) Standing Broad Jump, (2) One-Minute Speed Sit-Ups, and (3) 300-Yard Run.

Recommendations as Stated in
the Test Manual

In situations where more than one tester is available:

1. Divide the class into squads or groups.
2. Assign a tester to each squad.
3. Test each squad in the above sequence, (1), (2), (3).

In situations where only one tester is available:

1. Divide class into squads or groups.
2. Test one squad at a time in an event while the remainder of the class is assigned to other activities.
3. Test the entire class in one event before beginning the next event.

Optional Events:

1. Should be administered by a teacher or someone appointed by him.
2. The participant may select any one of three optional events.
3. They may be conducted during or outside school hours, whichever is most convenient and/or practical to the school programme.

Suggestions:

1. Allow sufficient time for practising each event before testing.
2. Train leaders to help with testing.
3. Make sure participants are properly instructed in each event before they are tested.

STANDING BROAD JUMP

Starting Position:

1. Toes behind the jumping line.
2. Feet slightly apart with legs parallel.
3. Crouch with knees and ankles bent.

Action:

1. Lean forward.
2. Swing arms forward vigorously.
3. Extend legs by pushing hard.
4. Jump as far as possible.
5. Land on both feet in a deep crouch position with weight forward to prevent backward fall.

Scoring:

1. Measure the length of the jump in feet and inches from the take-off point to the heel mark of the nearest foot.
2. Record the best of three jumps.

Controls:

1. If any part of the body touches behind the heels, the jump is void.
2. No spiked shoes can be used.

Training Suggestions:

1. Practice jumping.
2. Strengthen leg muscles.
3. Increase ankle flexing.
4. Get a good forward lean before pushing off.

Equipment:

1. An indoor gym mat is preferable, but not necessary.
2. Tape measure and chalk.

Administrative Suggestions:

1. Lay a strip of one-inch adhesive tape on a ten-foot long gym mat.
2. Use a ball-point pen to mark the tape in feet and inches.
3. Rub chalk on the jumper's heel to leave an imprint on the mat or floor.[73]

ONE-MINUTE SPEED SIT-UPS

Starting Position:

1. Lie on back, preferably on a gym mat.
2. Interlock fingers behind the head.
3. Bend knees.
4. Have partner hold feet flat on the floor.
5. Starting signal: "Ready! . . . Go!"

Action:

1. Sit up and touch both elbows to both knees.
2. Return to horizontal position.
3. Only the back must touch the floor.
4. Repeat as many times as possible in one minute.

Scoring:

1. Count one sit-up each time the elbows touch the knees.
2. A rest between sit-ups is allowed.
3. Record each valid number of sit-ups.

Control:

1. A partner kneels, straddles the participants feet and holds his calves.
2. The partner counts the sit-ups out loud.
3. The fingers must maintain contact behind the head.

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[73]Michael S. Yuhasz and Frank Hayden, Centennial Athletic Awards rogramme (1967), pp. 12-13.

Training Suggestions:

1. Increase sit-up speed with 30-second sit-ups.
2. Increase endurance by doing two-minute sit-ups.
3. Straighten the abdominal muscles by using weights held behind the head.

Equipment:

1. Gym mat.
2. Timer and stop watch.

Administrative Suggestions:

1. The tester will act as timer.
2. The tester will record the score.
3. Four pairs can be tested at a time with the tester supervising.[74]

300-YARD RUN

Starting Position:

1. Assume a crouch start or standing position.
2. Starting signal: "Ready! . . . Go!"

Action:

1. Run straight up and around the stake marker and back over the 50-yard straightaway.
2. Run the circuit three times to complete the 300 yards.

Scoring:

1. Time the participant to the nearest second for the elapsed time of the completed run.

Controls:

1. No spiked shoes are permitted.
2. Only one runner is allowed on the course at a time.

Training Suggestions:

1. Run 50 to 100 yard sprints to develop speed. Run longer distances to improve endurance.
2. Run the 300 yard distance. Rest and run it again.
3. Train regularly for several weeks before the actual test.
4. Several weeks of regular training are needed to show improvement.

Equipment:

1. A 50-yard straightaway with markers placed at each end of the course.
2. Timer, stop watch or regular watch with a sweep second hand.

Administrative Suggestions:

1. Several 50-yard courses may be laid side by side.

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[74] Ibid., pp. 14-15.

2. One tester can clock two participants at the same time using two watches or a split timer.
3. Call out the number of laps remaining to each participant.
4. Encourage the runner to pace himself to ensure completion of the event.[75]

CROSS-COUNTRY RUN

Starting Position:

1. Use a standing start position.
2. Starting signal: "Ready! . . . Go!"

Action:

1. Run the distance indicated for your age group.
2. Pace yourself so you can run the full distance.

Scoring:

1. Record the elapsed time from start to finish in minutes and seconds to the nearest second.

Controls:

1. No spiked shoes are permitted.
2. As many as four runners may be tested on a course at the same time.

Training Suggestions:

1. Run 50 to 100 sprints to develop speed.
2. Run longer distances to improve endurance.

Equipment:

1. Stake markers.
2. Timer and stop watch.

Administrative Suggestions:

1. The event must be run outside over any level terrain.
2. Carefully measure and stake out distances: 220 and 440 yards apart.
3. It is recommended that several such courses be set out.
4. The starting and finishing points should be the same.
5. The distance should be set up within sight of the tester.
6. Walking is permitted, but the object is to cover the required distance in the shortest possible time.[76]

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[75] Ibid., pp. 16-17.

[76] Ibid., pp. 18-19.

SKATING

Starting Position:

1. Feet and body should be at right angles to the starting line.
2. Bend the body forward in a crouching position.
3. Bend your knees.
4. Starting signal: "Ready! . . . Go!"

Action:

1. Push off hard on the rear skate.
2. Take short, running steps to increase speed, then lengthen stride.
3. When cornering, place one skate across the front of the other skate.

Scoring:

1. Record the elapsed time in seconds. Each participant is allowed three trials.

Controls:

1. Only one participant is allowed on the course at a time.
2. If he falls, he can start again.
3. Any type of skate can be used.

Training Suggestions:

1. Practice skating corners to improve agility and speed.
2. Skate short distances to increase speed.
3. Practice starts.

Equipment:

1. Four corner markers; boxes, wooden blocks, and bags, flags, etc.
2. Timer and stop watch.

Administrative Suggestions:

1. Skate the course counter-clockwise.
2. Skate the ends in a semi-circle.
3. Call out the number of laps to go.
4. Use a recorder to speed up the event.[77]

SWIMMING

Starting Position:

1. Use a racing dive start position.
2. Starting signal: "Ready! . . . Go!"

Action:

1. Use a shallow or racing dive.
2. Swim the distance indicated, for each age group using any swimming stroke.

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[77] Ibid., pp. 20-21.

3. The end wall, in the case of pools, or markers in other bodies of water, must be touched on each turn.

Scoring:

1. Record the elapsed time of each swimmer for the full distance in minutes and seconds.

Controls:

1. The starter will also act as timer, moving from the starting line to the finish line whenever necessary.
2. More than one swimmer may be tested at one time.
3. Whenever possible, lane markers are recommended.

Training Suggestions:

1. Practice starts and turns.
2. Perfect swimming stroke.
3. Swim longer distances for endurance.
4. Swim shorter distances for speed.

Equipment:

1. Flags, floats, lane markers.
2. Timer and stop watch.

Administrative Suggestions:

1. A diving start is always preferable to a standing start.
2. Though any stroke is permissible, the crawl is recommended.
3. Any body of water may be used.
4. Testers should watch the turns closely.[78]

The Centennial Athletic Awards Programme was instituted in anadian schools to commemorate Canada's one-hundredth birthday. The wards Programme consisted of three compulsory and three optional vents. Only one optional event, cross-country, was used in this study. he number of participants in the other two optional events, swimming nd skating, was of insufficient number and determined to be statisti- ally meaningless. The results of the Awards Programme were arrived at

[78] Ibid., pp. 22-23.

y the home-room teachers or physical education instructor. The results ere collected and put on file by the Physical Education Department of anitoba.

During most of the time that the Awards Programme was in operation, the writer functioned as an executive of CAHPER, Manitoba Branch. pon completion of Centennial Athletic Awards Programme, the Manitoba xecutive of CAHPER felt that the information collected by the Manitoba hysical Education Department should not be allowed to lay dormant. A ommittee was struck with their purpose being to investigate the number f possibilities which the raw data of the Centennial Athletic Awards ould provide. The writer was appointed chairman of that investigatory ommittee.

The writer contacted Dr. Vic Coroll of the University of Manioba Physical Education Department. A series of three meetings with r. Coroll, and the CAHPER executive, on which sat the heads of the anitoba Physical Education Department (George Nick and Dick Lapage), roduced a tentative project agenda. Funds for these projects were to ome from CAHPER, provincial government and the University of Manitoba. s it turned out only the latter funds were needed.

Dr. Coroll and the writer contacted a computer specialist and xplained the needs. Dr. Coroll had many more meetings with the Uniersity of Manitoba computer programmer and he was mainly responsible or the organization of the many projects.

The students of Sansome Junior High School, where the writer aught, were responsible for transferring information from the original entennial Athletic Awards Programme Class Record Sheet to a more

eaningful and easier to read form. This step was for the benefit of he key punch operators at the computer center. Too much time and money ould have been wasted by the key punch operators if they had to deci- her the original Class Record Sheet. So, the students of Sansome work- d every Saturday morning and afternoon for six weeks to do the deci- hering for free.

Key punch operators punched onto computer cards all the informa- ion necessary to run a number of computer programs. The writer and Dr. oroll checked the cards for error before taking them to a computer pro- ram director.

The computer program director (in the writer's case, Doug eimer) sorted out those cards necessary for a program computing urban nd rural mean for four events, for each sex and for ages 6 - 15 years. he results of this computation may be found in Tables 1 - 16. The re- ults of a program comparing urban and rural mean may be found in Tables 7 - 24. Key punch cards containing the necessary information about the AHPER fitness norms had to be punched up at this point. Doug Reimer hen ran a program comparing urban and rural mean to CAHPER mean for hree events, for both sexes and for ages 7 - 15 years. Results of his program can be found in Tables 25 - 30 (rural) and Tables 31 - 36 rban). A "t" test was run through the computer on all programs in ich comparisons took place (urban-rural, urban-CAHPER, rural-CAHPER). e purpose of the "t" test was to determine whether or not the differ- ces which existed between the mean was a significant difference.

CHAPTER III

ANALYSIS OF THE DATA

The purposes of the testing in this study were: to compare rban and rural children on the results obtained from the Centennial thletic Awards Programme; to compare urban fitness mean to the nation-l CAHPER fitness mean; and to compare rural fitness mean to national AHPER fitness mean.

Selection of Groups

The selection of the two groups (urban and rural) was made so s to show two completely contrasting geographic areas and to see how ney compared on the same physical fitness test. It was felt by the riter that to guarantee the purity of an urban sample only schools lo-ated in the heart of the city (Winnipeg School Division No. 1) would e used for the urban sample. To guarantee the purity of a rural sam-le only one-room schools would be used for the rural sample.

Procedure

The Centennial Athletic Awards Programme was administered to e school children of Canada throughout 1967. At the termination of e Awards Programme, the data were collected (in Manitoba) by the ovincial Physical Education Department. The writer obtained this

ata from the Province and then processed and programmed it through the
mputer center at the University of Manitoba.

The computer program for the Centennial Athletic Awards Pro-
ramme data consisted of determining: (1) the mean for each event,
tandard deviation, standard error of the mean at each age level, for
oth sexes, for each area (urban, rural); (2) the mean for each area
irban, rural) was then compared to each other for each event, at each
ge level, for both sexes to determine if difference between the mean of
ie two areas were significant; (3) the mean for the rural area, at each
ge, for each event and for both sexes was then compared to the nation-
l CAHPER mean for each event, at each age level, for both sexes. The
rban mean was similarly compared to the CAHPER mean.

Computation of Rural and Urban Mean

The mean, standard deviation, and standard error of the mean,
or each event, at each age level, for both sexes, for each area (rural,
rban) was computed. Results of the compilation for sit-ups, ages
- 15 years, boys, rural area may be found in Table 1. Results of the
mputation for sit-ups, ages 6 - 15 years, girls, rural areas may be
ound in Table 2. Results of the computation for sit-ups, ages 6 - 15
ars, boys, urban area may be found in Table 3. Results of the com-
itation for sit-ups, ages 6 - 15 years, girls urban area may be found
Table 4.

TABLE 1

COMPUTATION OF MANITOBA RURAL MEAN SCORES
SIT-UPS BY BOYS

Age of Boys	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	83	23.45	8.64	.95
7	126	30.57	9.34	.83
8	102	33.71	8.28	.82
9	122	34.21	10.66	.97
10	107	37.80	9.82	.95
11	129	38.99	9.97	.88
12	119	39.43	9.02	.83
13	109	42.68	8.92	.85
14	54	41.48	9.63	1.31
15	23	43.22	10.54	2.20

TABLE 2

COMPUTATION OF MANITOBA RURAL MEAN SCORES
SIT-UPS BY GIRLS

Age of Girls	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	80	24.59	8.85	.99
7	96	28.92	10.26	1.05
8	112	30.91	9.80	.93
9	101	34.08	9.23	.92
10	118	34.15	9.44	.87
11	122	37.11	10.26	.93
12	120	38.24	9.18	.84
13	105	33.95	10.76	1.05
14	40	32.57	11.98	1.89
15	19	30.11	12.84	2.94

TABLE 3

COMPUTATION OF MANITOBA URBAN MEAN SCORES
SIT-UPS BY BOYS

Age of Boys	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1244	22.45	10.01	.28
7	1462	27.60	9.99	.26
8	1488	31.95	9.95	.26
9	1496	35.88	9.47	.24
10	1601	38.22	8.68	.22
11	1530	40.10	9.37	.24
12	1446	41.15	8.92	.23
13	1158	42.76	8.69	.26
14	1043	43.94	8.39	.26
15	717	43.60	8.04	.30

TABLE 4

COMPUTATION OF MANITOBA URBAN MEAN SCORES
SIT-UPS BY GIRLS

Age of Girls	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1262	22.32	9.81	.28
7	1457	26.11	9.98	.26
8	1607	29.72	10.07	.25
9	1485	32.64	9.81	.25
10	1470	35.04	8.79	.23
11	1491	36.82	9.08	.24
12	1456	36.36	9.11	.24
13	1145	35.93	8.06	.24
14	952	34.53	8.46	.27
15	651	33.71	8.63	.34

Results of the computation for the 300-yard run, ages 6 - 15 years, boys, rural area, may be found in Table 5. Results of the computation for the 300-yard run, ages 6 - 15 years, girls, rural area, may be found in Table 6. Results of the computation for the 300-yard run, ages 6 - 15 years, boys, urban area, may be found in Table 7. Results of the computation for the 300-yard run, ages 6 - 15 years, girls, urban area, may be found in Table 8.

TABLE 5

COMPUTATION OF MANITOBA RURAL MEAN SCORES
300-YARD RUN BY BOYS

Age of Boys	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	81	83.74	12.30	1.37
7	118	76.47	9.56	.88
8	100	71.72	9.26	.93
9	123	69.76	8.98	.81
10	104	66.53	7.93	.78
11	129	64.05	8.06	.71
12	121	62.36	9.90	.90
13	104	57.02	9.25	.91
14	52	54.65	7.99	1.11
15	21	54.00	5.32	1.16

TABLE 6

COMPUTATION OF MANITOBA RURAL MEAN SCORES
300-YARD RUN BY GIRLS

Age of Girls	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	79	85.13	12.59	1.42
7	83	79.00	10.14	1.11
8	111	75.10	14.18	1.35
9	98	68.91	8.65	.87
10	119	67.15	7.68	.70
11	122	65.12	9.71	.88
12	117	61.74	7.48	.69
13	103	61.53	9.68	.95
14	43	59.00	7.49	1.14
15	19	60.53	11.74	2.69

TABLE 7

COMPUTATION OF MANITOBA URBAN MEAN SCORES
300-YARD RUN BY BOYS

Age of Boys	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1178	88.03	13.72	.40
7	1400	82.03	13.83	.37
8	1477	75.12	10.57	.28
9	1499	71.79	10.03	.26
10	1597	68.86	8.82	.22
11	1518	65.95	8.44	.22
12	1452	63.11	8.32	.22
13	1137	60.27	7.32	.22
14	1033	57.17	6.83	.21
15	702	55.13	6.07	.23

TABLE 8

COMPUTATION OF MANITOBA URBAN MEAN SCORES
300-YARD RUN BY GIRLS

Age of Girls	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1211	89.17	14.18	.41
7	1406	83.48	13.25	.35
8	1594	76.89	10.75	.27
9	1463	73.99	10.22	.27
10	1449	71.22	10.29	.27
11	1450	68.32	9.08	.24
12	1433	66.18	7.22	.19
13	1127	64.99	7.34	.22
14	946	65.19	7.62	.25
15	629	65.14	7.03	.28

Results of the computation for the long jump, ages 6 - 15 years, boys, rural area, may be found in Table 9. Results of the computation for the long jump, ages 6 - 15 years, girls, rural area, may be found in Table 10. Results of the computation for the long jump, ages 6 - 15 years, boys, urban area, may be found in Table 11. Results of the computation for the long jump, ages 6 - 15 years, girls, urban area, may be found in Table 12.

TABLE 9

COMPUTATION OF MANITOBA RURAL MEAN SCORES
LONG JUMP BY BOYS

Age of Boys	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	82	45.68	6.16	.68
7	127	51.26	7.06	.63
8	102	55.76	7.11	.70
9	120	57.68	7.10	.65
10	108	61.79	7.00	.67
11	132	65.20	7.24	.63
12	123	68.54	8.31	.75
13	113	73.79	8.96	.84
14	54	77.74	10.13	1.38
15	22	79.95	11.95	2.55

TABLE 10

COMPUTATION OF MANITOBA RURAL MEAN SCORES
LONG JUMP BY GIRLS

Age of Girls	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	78	43.36	7.13	.81
7	95	48.66	6.97	.71
8	112	53.15	7.35	.69
9	100	56.88	8.05	.81
10	120	60.21	6.96	.64
11	122	63.28	7.45	.67
12	121	66.13	8.87	.81
13	107	68.01	8.45	.82
14	43	68.05	8.09	1.23
15	19	72.32	11.60	2.66

TABLE 11

COMPUTATION OF MANITOBA URBAN MEAN SCORES
LONG JUMP BY BOYS

Age of Boys	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1255	44.00	7.09	.20
7	1474	48.47	6.78	.18
8	1499	52.01	7.16	.18
9	1498	56.07	6.88	.18
10	1611	58.87	6.95	.17
11	1542	62.60	7.39	.19
12	1459	66.00	7.87	.21
13	1155	70.75	8.78	.26
14	1033	76.42	9.42	.29
15	700	80.79	8.88	.34

TABLE 12

COMPUTATION OF MANITOBA URBAN MEAN SCORES
LONG JUMP BY GIRLS

Age of Girls	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1259	42.81	6.37	.18
7	1446	45.70	6.93	.18
8	1610	50.42	6.93	.17
9	1487	53.40	7.23	.19
10	1470	57.10	7.08	.18
11	1477	60.23	7.73	.20
12	1453	62.53	7.93	.21
13	1142	65.41	8.06	.24
14	953	66.52	8.16	.26
15	649	66.71	7.79	.31

Results of the computation for the cross-country, ages 6 - 15 years, boys, rural area, may be found in Table 13. Results of the computation for the cross-country, ages 6 - 15 years, girls, rural area, may be found in Table 14. Results of the computation for the cross-country, ages 6 - 15 years, boys, urban area, may be found in Table 15. Results of the computation for the cross-country, ages 6 - 15 years, girls, urban area, may be found in Table 16.

TABLE 13

COMPUTATION OF MANITOBA RURAL MEAN SCORES
CROSS-COUNTRY BY BOYS

Age of Boys	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	66	130.21	18.69	2.30
7	111	117.21	19.37	1.84
8	94	112.48	19.88	2.05
9	101	105.55	16.71	1.66
10	100	227.26	36.12	3.61
11	116	216.89	39.02	3.62
12	117	210.82	40.64	3.76
13	99	191.63	31.55	3.17
14	45	404.84	41.68	6.21
15	18	395.06	41.01	9.67

TABLE 14

COMPUTATION OF MANITOBA RURAL MEAN SCORES
CROSS-COUNTRY BY GIRLS

Age of Girls	Number Partici-pating	Rural Mean	Standard Deviation	Standard Error
6	71	131.73	20.71	2.46
7	91	121.32	19.07	2.00
8	100	116.67	19.31	1.93
9	82	107.66	18.32	2.02
10	112	246.04	38.95	3.68
11	113	242.96	42.62	4.01
12	113	225.42	38.39	3.61
13	100	227.72	39.87	3.99
14	35	232.06	45.63	7.71
15	17	276.59	67.13	16.28

TABLE 15

COMPUTATION OF MANITOBA URBAN MEAN SCORES
CROSS-COUNTRY BY BOYS

Age of Boys	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1118	126.95	18.29	.55
7	1357	118.64	17.20	.47
8	1392	111.74	15.19	.41
9	1282	105.24	15.14	.42
10	1506	227.44	32.88	.85
11	1437	217.92	31.85	.84
12	1368	213.12	33.02	.89
13	977	216.11	51.68	1.65
14	910	417.63	52.10	1.73
15	552	408.56	52.92	2.25

TABLE 16

COMPUTATION OF MANITOBA URBAN MEAN SCORES
CROSS-COUNTRY BY GIRLS

Age of Girls	Number Partici-pating	Urban Mean	Standard Deviation	Standard Error
6	1136	130.45	17.96	.53
7	1352	122.85	18.55	.50
8	1511	116.34	16.09	.41
9	1258	112.63	16.79	.47
10	1377	251.45	35.85	.97
11	1377	243.00	34.36	.93
12	1379	239.94	35.32	.95
13	1084	239.28	39.50	1.20
14	903	242.29	37.77	1.26
15	601	244.80	40.05	1.63

Results of Comparison Between Rural and Urban Mean

The "t" technique for testing the significance of the difference between the mean was applied to the mean of the rural areas (four events, ages 6 - 15 years, boys and girls) and urban area (four events, ages 6 - 15 years, boys and girls). The "t" technique determined whether or not there was any significant difference between the rural and urban mean.

For the sit-ups, the boys, urban and rural mean showed no significant differences at any age level (Table 17). Any observed differences in the mean were considered to be due to chance. All urban and rural boys, on the sit-ups, were considered equal.

TABLE 17

COMPARISON OF MANITOBA URBAN AND
MANITOBA RURAL MEAN SCORES
SIT-UPS BY BOYS

Age of Boys	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1244	22.45	83	23.45	-1.000	10.545	.095
7	1462	27.60	126	30.57	-2.970	8.637	.344
8	1488	31.95	102	33.71	-1.760	9.521	.185
9	1496	35.88	122	34.21	1.670	8.758	.191
10	1601	38.22	107	37.80	.420	9.288	.045
11	1530	40.10	129	38.99	1.110	8.528	.130
12	1446	41.15	119	39.43	1.720	8.871	.194
13	1158	42.76	109	42.58	.080	9.320	.009
14	1043	43.94	54	41.48	2.460	12.982	.189
15	717	43.60	23	43.22	.380	19.704	.019

For the sit-ups, the comparison between girls' urban and rural mean indicated no significant differences at any age level (Table 18). Any observed differences in the mean were considered to be due to chance; therefore, urban and rural girls, on the sit-ups, were considered equal. The null hypothesis was accepted.

TABLE 18

COMPARISON OF MANITOBA URBAN AND
MANITOBA RURAL MEAN SCORES
SIT-UPS BY GIRLS

Age of Girls	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1262	22.32	80	24.59	-2.270	10.724	.212
7	1457	26.11	96	28.92	-2.810	9.801	.287
8	1607	29.72	112	30.91	-1.190	9.091	.131
9	1485	32.64	101	34.08	-1.440	9.565	.151
10	1470	35.04	118	34.15	.890	8.900	.100
11	1491	36.82	122	37.11	-0.290	8.759	.033
12	1456	36.36	120	38.24	-1.880	8.834	.213
13	1145	35.93	105	33.95	1.980	9.485	.209
14	952	34.53	40	32.57	1.960	15.013	.131
15	651	33.71	19	30.11	3.600	21.649	.166

For the 300-yard run, the comparison between boys' urban and rural mean indicated no significant differences at any age level (Table 19). Any observed differences in the mean were considered to be due to chance and urban and rural boys, in the 300-yard run, were considered equal. The null hypothesis was accepted.

TABLE 19

COMPARISON OF MANITOBA URBAN AND MANITOBA RURAL MEAN SCORES 300-YARD RUN BY BOYS

Age of Boys	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1178	88.03	81	83.74	4.290	11.512	.373
7	1400	82.03	118	76.47	5.560	9.607	.579
8	1477	75.12	100	71.72	3.400	10.356	.328
9	1499	71.79	123	69.76	2.030	9.400	.216
10	1597	68.86	104	66.53	2.330	10.143	.230
11	1518	65.95	129	64.05	1.900	9.191	.207
12	1452	63.11	121	62.36	.750	9.438	.079
13	1137	60.27	104	57.02	3.250	10.267	.317
14	1033	57.17	52	54.65	2.520	14.244	.177
15	702	55.39	21	54.00	1.390	22.195	.063

For the 300-yard run, the comparison between girls' urban and rural mean indicated no significant differences at any age level (Table 20). Any observed differences in the mean were considered to be due to chance and urban and rural girls, on the 300-yard run, were considered equal. The null hypothesis was accepted.

TABLE 20

COMPARISON OF MANITOBA URBAN AND MANITOBA RURAL MEAN SCORES 300-YARD RUN BY GIRLS

Age of Girls	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1211	89.17	79	85.13	4.040	11.638	.347
7	1406	83.48	83	79.00	4.480	11.321	.396
8	1594	76.89	111	75.10	1.790	9.838	.182
9	1463	73.99	98	68.91	5.080	10.458	.486
10	1449	71.22	119	67.15	4.070	9.557	.426
11	1450	68.32	122	65.12	3.200	9.448	.339
12	1433	66.18	117	61.74	4.440	9.636	.461
13	1127	64.99	103	61.53	3.460	10.317	.335
14	946	65.19	43	59.00	6.190	15.627	.396
15	629	65.14	19	60.53	4.610	23.337	.198

For the long jump, the comparison between urban and rural mean indicated no significant differences at any age level (Table 21). Any observed differences in the mean were considered to be due to chance and urban and rural boys, on the long jump, were considered equal. The null hypothesis was accepted.

TABLE 21

COMPARISON OF MANITOBA URBAN AND
MANITOBA RURAL MEAN SCORES
LONG JUMP BY BOYS

Age of Boys	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1255	44.00	82	45.68	-1.680	8.573	.196
7	1474	48.47	127	51.26	-2.790	6.955	.401
8	1499	52.01	102	55.76	-3.750	7.696	.487
9	1498	56.07	120	57.68	-1.610	7.136	.226
10	1611	58.87	108	61.79	-2.420	7.476	.391
11	1542	62.60	132	65.20	-2.600	6.821	.381
12	1459	66.00	123	68.54	-2.540	7.062	.360
13	1155	70.15	113	73.79	-3.040	7.413	.410
14	1033	76.42	54	77.74	-1.320	10.499	.126
15	700	80.79	22	59.95	.840	16.285	.052

For the long jump, the comparison between girls' urban and rural mean indicated no significant differences at any age level (Table 22). Any observed differences in the mean was considered to be due to chance and urban and rural girls, on the long jump, were considered equal. The null hypothesis was accepted.

TABLE 22

COMPARISON OF MANITOBA URBAN AND
MANITOBA RURAL MEAN SCORES
LONG JUMP BY GIRLS

Age of Girls	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1259	42.81	78	43.36	.550	8.776	.063
7	1446	45.70	95	48.66	-2.960	7.966	.372
8	1610	50.42	112	53.15	-2.730	7.350	.371
9	1487	53.40	100	56.88	-3.480	7.700	.448
10	1470	57.10	120	60.21	-3.110	7.141	.436
11	1477	60.23	122	63.28	-3.050	7.085	.430
12	1453	62.53	121	66.13	-3.600	7.116	.506
13	1142	65.41	107	68.01	-2.600	7.604	.342
14	953	66.52	43	68.05	-1.530	11.726	.130
15	649	66.71	19	72.32	-5.610	17.505	.320

For the cross-country, the comparison between boys' urban and rural mean indicated no significant differences at any age level (Table 23). Any observed differences in the mean were considered to be due to chance and urban and rural boys, on the cross-country were considered equal. The null hypothesis was accepted.

TABLE 23

COMPARISON OF MANITOBA URBAN AND MANITOBA RURAL MEAN SCORES CROSS-COUNTRY BY BOYS

Age of Boys	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1118	126.95	66	130.21	-3.260	39.632	.082
7	1357	118.64	111	117.21	1.430	30.887	.046
8	1392	111.74	94	112.48	-0.740	33.342	.022
9	1282	105.24	101	105.05	-0.310	32.335	.010
10	1506	227.44	100	227.26	.180	32.309	.006
11	1437	217.92	116	216.89	1.030	30.199	.034
12	1368	213.12	117	210.82	2.300	30.136	.076
13	977	216.11	99	191.63	24.480	32.999	.742
14	910	417.63	45	404.84	12.790	47.779	.268
15	552	408.56	18	395.06	13.500	74.937	.180

For the cross-country, the comparison between girls' urban and rural mean indicated no significant differences at any age level (Table 24). Any observed differences in the mean were considered to be due to chance and urban and rural girls, in the cross-country, were considered equal. The null hypothesis was accepted.

TABLE 24

COMPARISON OF MANITOBA URBAN AND
MANITOBA RURAL MEAN SCORES
CROSS-COUNTRY BY GIRLS

Age of Girls	Urban		Rural		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
6	1136	130.45	71	131.70	-1.280	38.273	.033
7	1352	122.85	91	121.32	1.530	33.883	.045
8	1511	116.34	100	116.67	-0.330	32.306	.010
9	1258	112.63	82	107.66	4.970	35.659	.139
10	1377	251.45	112	246.04	5.410	30.742	.176
11	1377	243.00	113	242.96	.040	30.616	.001
12	1379	239.94	113	225.42	14.520	30.614	.474
13	1084	239.28	100	227.72	11.560	32.698	.354
14	903	242.29	35	232.06	10.230	53.900	.190
15	601	244.80	17	276.59	-31.790	76.948	.413

From the result of the comparison between rural and urban boys nd girls, it becamse obvious that no difference existed between the wo groups (urban, rural) and were considered equal as measured by the our physical fitness tests (sit-ups, long jump, 300-yard run and ross-country).

Results of Comparison Between
Rural and CAHPER Mean

The "t" technique for testing the significance of the differnce between the mean was applied to the mean of the rural area (three vents, ages 7 - 15 years, boys and girls) and the CAHPER mean (three

events, ages 7 - 15 years, boys and girls). The "t" technique determined whether or not there was any significant difference between the rural and CAHPER mean.

For the sit-ups, the comparison between boys' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 25). The observed significance was considered to be due to superiority of Manitoba rural boys over a sample of "Canadian" boys in sit-ups. The null hypothesis was rejected.

TABLE 25

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES SIT-UPS BY BOYS

Age of Boys	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	126	30.57	300	19.80	10.770	.996	10.813*
8	1020	33.71	584	23.50	10.210	.946	10.798*
9	122	34.21	584	26.40	7.810	.958	8.149*
10	107	37.80	499	27.30	10.500	1.018	10.313*
11	129	38.99	483	30.20	8.790	.959	9.163*
12	119	39.43	485	29.70	9.730	1.013	9.610*
13	109	42.68	446	32.50	10.180	1.073	9.485*
14	54	41.48	373	32.90	8.580	1.437	5.972*
15	23	43.22	354	33.40	9.820	2.341	4.195*

*.01 level of significance.

For sit-ups, the comparison between girls' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 26). The observed significant difference was considered to be due to superiority of Manitoba rural girls over a sample of "Canadian" girls in sit-ups. The null hypothesis was rejected.

TABLE 26

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES SIT-UPS BY GIRLS

Age of Girls	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	96	28.92	364	17.20	11.720	1.091	10.745*
8	112	30.91	632	18.80	12.110	.979	12.375*
9	101	34.08	576	20.20	13.880	1.030	13.479*
10	118	34.15	500	22.40	11.750	1.030	11.412*
11	122	37.11	477	24.80	12.310	1.036	11.881*
12	120	38.24	435	23.10	15.140	1.047	14.466*
13	105	33.95	354	22.70	11.250	1.081	10.409*
14	40	32.57	369	20.10	12.470	1.714	7.276*
15	19	30.11	340	22.20	7.910	2.330	3.395*

*.01 level of significance.

For the 300-yard run, the comparison between boys' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 27). The observed significant difference was considered to be due to superiority of Manitoba rural boys over a sample of "Canadian" boys in the 300-yard run. The null hypothesis was rejected.

TABLE 27

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES 300-YARD RUN BY BOYS

Age of Boys	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	118	76.47	307	85.80	-9.330	1.167	7.997*
8	100	71.72	588	80.50	-8.780	1.005	8.733*
9	123	69.76	579	76.70	-6.940	.901	7.699*
10	104	66.53	493	73.80	-7.270	.925	7.860*
11	129	64.05	477	71.90	-7.850	.971	8.083*
12	121	62.36	472	69.20	-6.840	.827	8.267*
13	104	57.02	437	66.00	-8.980	.833	10.781*
14	52	54.65	366	62.50	-7.850	1.031	7.614*
15	21	54.00	348	60.00	-6.000	1.340	4.476*

*.01 level of significance.

For the 300-yard run, the comparison between girls' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 28). The observed significant difference was considered to be due to superiority of Manitoba rural girls over a sample of "Canadian" girls in the 300-yard run. The null hypothesis was rejected.

TABLE 28

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES 300-YARD RUN BY GIRLS

Age of Girls	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	83	79.00	360	87.60	-8.600	1.231	6.988*
8	111	75.10	627	81.70	-6.600	.962	6.862*
9	98	68.91	571	79.10	-10.190	.913	11.159*
10	119	67.15	495	76.40	-9.250	.945	9.783*
11	122	65.12	470	74.10	-8.980	.922	9.742*
12	117	61.74	430	72.50	-10.760	.757	14.213*
13	103	61.53	353	71.90	-10.370	.925	11.211*
14	43	59.00	363	73.10	-14.100	1.267	11.125*
15	19	60.53	334	72.40	-11.870	2.029	5.850*

*.01 level of significance.

For the long jump, the comparison between boys' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 29). The observed significant difference was considered to be due to superiority of Manitoba rural boys over a sample of "Canadian" boys in the long jump. The null hypothesis was rejected.

TABLE 29

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES LONG JUMP BY BOYS

Age of Boys	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	127	51.26	300	44.00	7.260	.743	9.772*
8	102	55.76	583	48.00	7.760	.790	9.827*
9	120	57.68	581	52.00	5.68	.712	7.978*
10	108	61.79	502	54.00	7.790	.760	10.250*
11	132	65.20	484	58.00	7.200	.762	9.444*
12	123	68.54	484	60.00	8.540	.854	9.995*
13	113	73.79	442	64.00	9.790	1.007	9.72 *
14	54	77.74	370	70.00	7.740	1.485	5.213*
15	22	79.95	353	74.00	5.950	2.162	2.752*

*.01 level of significance.

For the long jump, the comparison between girls' rural and CAHPER mean indicated a significant difference at every age level in favor of the rural mean (Table 30). The observed significant difference was considered to be due to superiority of Manitoba rural girls over a sample of "Canadian" girls in the long jump. The null hypothesis was rejected.

TABLE 30

COMPARISON OF MANITOBA RURAL AND CANADIAN CAHPER MEAN SCORES LONG JUMP BY GIRLS

Age of Girls	Rural		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	95	48.66	364	43.00	5.660	.751	7.533*
8	112	53.15	631	46.00	7.150	.802	8.917*
9	100	56.88	578	49.00	7.880	.886	8.896*
10	120	60.21	500	52.00	8.210	.736	11.162*
11	122	63.28	476	55.00	8.280	.809	10.235*
12	121	66.13	438	56.00	10.130	.881	11.495*
13	107	68.01	354	58.00	10.010	.962	10.405*
14	43	68.05	371	59.00	9.050	1.641	5.514*
15	19	72.32	340	61.00	11.320	2.267	4.993*

*.01 level of significance.

From the result of the comparison between rural and CAHPER mean, it became obvious that the rural boys and girls were superior to the sample of "Canadian" youth used to determine the CAHPER mean in three tests of physical fitness (sit-ups, long jump, 300-yard run).

Results of the Comparison Between Urban and CAHPER Mean

The "t" technique was used for the reasons previously stated. For the sit-ups, the comparison between boys' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 31). The observed significant difference was considered to be due to superiority of Manitoba urban boys over a sample of "Canadian" boys in sit-ups. The null hypothesis was rejected.

TABLE 31

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES SIT-UPS BY BOYS

Age of Boys	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1462	27.60	300	19.80	7.800	.627	12.440*
8	1488	31.95	584	23.50	8.450	.472	17.903*
9	1496	35.88	584	26.40	9.480	.461	20.559*
10	1601	38.22	499	27.30	10.920	.266	41.066*
11	1530	40.10	483	30.20	9.900	.492	20.124*
12	1446	41.15	485	29.70	11.450	.484	23.640*
13	1158	42.76	446	32.50	10.260	.511	20.087*
14	1043	43.94	373	32.90	11.040	.532	20.765*
15	717	43.60	354	33.40	10.200	.590	17.285*

*.01 level of significance.

For sit-ups, the comparison between girls' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 32). The observed significant difference was considered to be due to superiority of Manitoba urban girls over a sample of "Canadian" girls in sit-ups. The null hypothesis was rejected.

TABLE 32

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES SIT-UPS BY GIRLS

Age of Girls	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1457	26.11	364	17.20	8.910	.577	15.440*
8	1607	29.72	632	18.80	10.920	.465	23.463*
9	1485	32.64	576	20.20	12.440	.479	25.988*
10	1470	35.04	500	22.40	12.640	.475	26.631*
11	1491	36.82	477	24.80	12.020	.493	24.404*
12	1456	36.36	435	23.10	13.260	.515	25.756*
13	1145	35.93	354	22.70	13.230	.511	25.914*
14	952	34.53	369	20.10	14.430	.549	26.298*
15	651	33.71	340	22.20	11.510	.603	19.089*

*.01 level of significance.

For the 300-yard run, the comparison between boys' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 33). The observed significant difference was considered to be due to superiority of Manitoba urban boys over a sample of "Canadian" boys in the 300-yard run. The null hypothesis was rejected.

TABLE 33

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES 300-YARD RUN BY BOYS

Age of Boys	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1400	82.03	307	85.80	-3.770	.844	4.455*
8	1477	75.12	588	80.50	-5.380	.499	10.791*
9	1499	71.79	579	76.70	-4.910	.479	10.260*
10	1597	68.86	493	73.80	-4.940	.453	10.906*
11	1518	65.95	477	71.90	-5.950	.467	12.748*
12	1452	63.11	472	69.20	-6.090	.432	14.104*
13	1137	60.27	437	66.00	-5.730	.410	13.971*
14	1033	57.17	366	62.50	-5.330	.415	12.844*
15	702	55.39	348	60.00	-4.610	.396	11.629*

*.01 level of significance.

For the 300-yard run, the comparison between girls' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 34). The observed significant difference was considered to be due to superiority of Manitoba urban girls over a sample of "Canadian" girls in the 300-yard run. The null hypothesis was rejected.

TABLE 34

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES 300-YARD RUN BY GIRLS

Age of Girls	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1406	83.48	360	87.60	-4.120	.749	5.504*
8	1594	76.89	627	81.70	-4.810	.476	10.106*
9	1463	73.99	571	79.10	-5.110	.480	10.654*
10	1449	71.22	495	76.40	-5.180	.527	9.833*
11	1450	68.32	470	74.10	-9.780	.480	20.391*
12	1443	66.18	430	72.50	-6.320	.396	15.942*
13	1127	64.99	353	71.90	-6.910	.455	15.203*
14	946	65.19	363	73.10	-7.910	.475	16.642*
15	629	65.14	334	72.40	-7.260	.510	14.235*

*.01 level of significance.

For the long jump, the comparison between boys' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 35). The observed significant difference was considered to be due to superiority of Manitoba urban boys over a sample of "Canadian" boys in the long jump. The null hypothesis was rejected.

TABLE 35

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES LONG JUMP BY BOYS

Age of Boys	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1474	48.47	300	44.00	4.470	.432	10.352*
8	1499	52.01	583	48.00	4.010	.353	11.366*
9	1498	56.07	581	52.00	4.070	.339	11.995*
10	1611	58.87	502	54.00	4.870	.358	13.591*
11	1542	62.60	484	58.00	4.600	.392	11.748*
12	1459	66.00	484	60.00	6.000	.421	14.242*
13	1155	70.75	442	64.00	6.750	.506	13.345*
14	1033	76.42	370	70.00	6.420	.584	11.002*
15	100	80.79	353	74.00	6.790	.589	11.352*

*.01 level of significance.

For the long jump, the comparison between girls' urban and CAHPER mean indicated a significant difference at every age level in favor of the urban mean (Table 36). The observed significant difference was considered to be due to superiority of Manitoba urban girls over a sample of "Canadian" girls in the long jump. The null hypothesis was rejected.

TABLE 36

COMPARISON OF MANITOBA URBAN AND CANADIAN CAHPER MEAN SCORES LONG JUMP BY GIRLS

Age of Girls	Urban		CAHPER		Difference	Standard Error of Difference	T Value
	Number Participating	Mean	Number Participating	Mean			
7	1446	45.70	364	43.00	2.700	.400	6.744*
8	1610	50.42	631	46.00	4.420	.339	13.041*
9	1487	53.40	578	49.00	5.40	.368	14.662*
10	1470	57.10	500	52.00	5.100	.369	13.804*
11	1477	60.23	476	55.00	5.230	.412	12.687*
12	1453	62.53	438	56.00	6.530	.440	14.853*
13	1142	65.41	354	58.00	7.410	.501	14.781*
14	953	66.52	371	59.00	7.520	.541	13.895*
15	649	66.71	340	61.00	5.710	.563	10.134*

*.01 level of significance.

From the results of the comparisons between urban and CAHPER mean, it became obvious that the urban boys and girls were superior to the sample of "Canadian" youth used to determine the CAHPER mean in the three tests of physical fitness (sit-ups, long jump, 300-yard run).

CHAPTER IV

DISCUSSION

Physical educators have been very much concerned, not only about the present physical status of their students, but also that the students develop the proper attitudes and ideals concerning fitness. Perhaps then they would understand the necessity of keeping fit throughout their entire lifetime.

The writer felt that, although a great many studies and much research had been done on physical fitness, very little research in this area had been done on Manitoba school-age youngsters. In fact, very little research had been done on the physical fitness of Canadians in any age group. This study was made to help gain more insight into the physical fitness of the Manitoban (specifically) and the Canadian (generally) youth population.

It was the prime purpose of this study to prove that no physical fitness differences existed between urban and rural children based on the Centennial Athletic Awards Programme. A second hypothesis was that no difference existed between rural and urban physical fitness mean and the CAHPER physical fitness mean. Due to the significantly large Manitoba youth population taking part in this study (approximately 25,000) and the wide scope of this study (within-province study--urban mean vs. rural mean, and a without-provincial study--urban and

rural mean vs. CAHPER mean), the writer felt that the results of this study would prove to be very interesting. It should be interesting, not only to physical educators working at the school level, but also to provincial and federal administrators responsible for initiating and maintaining physical fitness programs across Canada.

The Centennial Athletic Awards Programme was the physical fitness test chosen for this study because most Manitoba children of school age took part in the program (85-90 per cent of school population). Another factor for choosing the Centennial Athletic Awards Programme test for this study was that it contained many of the same test items that the CAHPER test contained and this made comparison of the two tests possible.

The comparison of the mean of urban and rural boys and girls on sit-ups, 300-yard run, long jump and cross-country run showed no significant difference at any age level. The writer believed this occurred because physical education specialists in their physical education classes do not really emphasize physical fitness. It has been generally understood that rural schools (one-room) have very limited physical education programs, limited facilities and generally no physical education specialist and so very little school time has been spent on physical fitness. In contrast, urban schools (Winnipeg School Division No. 1) generally have good physical education programs, good facilities and well qualified physical education specialists. However, the urban school like the rural school has spent very little time on physical fitness. Urban physical education specialists in their physical education classes have not really emphasized physical fitness to the degree that

their pupils exhibit a superiority over children (rural) who do not have physical education classes and specialized physical education instructors. The writer could see many benefits would result from regular physical education classes and specialized physical education instructors. However, this study has revealed physical fitness not to be one of the benefits.

A possible explanation of why urban children with their physical education classes, good facilities and physical education specialists are not superior to rural children in physical fitness could be due to the fact that a high degree of physical fitness cannot be obtained in the one or two physical education classes that they receive per week. Maybe a little formal physical fitness (twice a week) as most urban children are presently receiving in class was truly no better than no formal physical fitness at all. It was the writer's belief that to have any effect on an individual, formal physical fitness must be partaken in at least once a day. Physical fitness must become a daily living habit before its effects can be effectively felt.

The comparison between rural and CAHPER mean in sit-ups, long jump, and 300-yard run (based on the results of the Centennial Athletic Awards Programme and the CAHPER Fitness Performance Test Manual) showed a significant difference in favor of Manitoba youth at every age level, for both sexes and for every event. The writer believed this favorable difference could be due to the fact that the CAHPER mean are five years old and young people of today, to the writer, seemed noticeably taller, heavier and stronger in the early grades than the young people of five years ago.

Another possible explanation for the favorable showing of the anitoba youth in the rural-CAHPER comparison could be because the AHPER mean were based on a small sample (11,000) of the Canadian youth opulation. This small sample may not have been truly representative f the physical fitness of Canadian youth.

Still another reason for the favorable showing of the Manitoba hildren could be due to the fact that the Centennial Athletic Awards rogramme strongly motivated Canadian youth to do their utmost best on he test. Radio, television, posters, schools and the possibility of arning a crest greatly excited and motivated the school-age youngsters. he CAHPER tests had no such motivating force when their sample of fit- ess was taken. This motivation factor could singly be the largest eason for the significant differences between the test score results f the Centennial Athletic Awards Programme and the CAHPER Fitness Per- ormance Test.

The comparison between urban and CAHPER mean in sit-ups, long mp and 300-yard run (based on the results of the Centennial Athletic vards Programme and the CAHPER Fitness Performance Test Manual) showed significant difference in favor of Manitoba youth at every age level, r both sexes and for every event. Possible reasons for the success the Manitoba children have been discussed faully in the prior three ragraphs.

As previously mentioned, the effect of motivation looms as the largest single reason for the vast improvement of the Manitoba youth (urban and rural) physical fitness mean, as measured by the Centennial Athletic Awards Programme, over the CAHPER physical fitness mean (1964). It was the writer's belief that if a good solid job of motivating could be done by the instructor the responsibility for the task at hand can be left mainly with the students. In other words, if students can be made to see the value of being physically fit and understand the principles of how to go about becoming physically fit, then a great deal of the responsibility for their fitness can be left to themselves. As students progress through the school system, the responsibility for their physical and academic education should be left more and more to the individual student. The teacher's job, as the writer sees it, is not to teach but rather to motivate.

A question which greatly interests the writer is "Do the Centennial Athletic Awards Programme and CAHPER Fitness-Performance Test really measure physical fitness?" In fact, "Do any physical fitness tests really measure physical fitness?" The writer felt that in most cases physical fitness tests have not truly measured the physical fitness of an individual, but rather measured the amount of training done by the pupils for the test. In the case of the Centennial Athletic Awards Programme and the CAHPER test, training was definitely strongly encouraged. Also, the best score of three trials was accepted as the final score for the Centennial Athletic Awards Programme. These two factors combined with the specificity of the test items led the writer to believe that the two tests (Centennial and CAHPER) measured the

training an individual took in preparing for the tests rather than the overall physical fitness of that individual. The writer felt that to test for physical fitness, better scientific testing methods must be used by testing specialists and a far larger range of test items must be assimilated to produce more valid results. It was the writer's opinion that unqualified testers (Manitoba teachers) using four simple test items (sit-ups, long jump, 300-yard run, cross-country, swimming, skating) were not really a proper criteria for determining a validity for the Centennial Athletic Awards Programme physical fitness test.

The writer noticed an interesting phenomenon while taking part in the Centennial Athletic Awards Programme as a physical education instructor at Sansome Junior High School. The phenomena was that students show a progressive down-hill effect in their physical fitness from September to June. This down-hill effect occurred despite physical education classes, intramural activities and the extramural sports program. The writer felt that this down-hill effect could be due to five possible causes: (1) confinement to a classroom from September to June could have a negative effect on the physical fitness of an individual, whereas freedom from the classroom during the summer months could have a positive effect on an individual; (2) the climate during the summer is more conducive toward physical activity than is the winter. Increased physical activity generally meant increased physical fitness; (3) more daylight hours during the summer meant increased activity time and consequently increased physical fitness; (4) park board programs, Y.M.C.A. programs, camps, community club programs generally run the majority of their activity programs during the summer months. This

increased activity means increased physical fitness; (5) holiday trips, which generally occur during the summer months, provide opportunities for increased physical activity and consequently increased physical fitness. In general, the child has more time in which to engage in physical activity during the summer than in the winter. During the school term (September to June), the physical education classes, the intramural and extramural programs just do not provide enough physical activity to keep the child at the level of fitness he was at after the summer holidays. Perhaps this phenomena should be further studied to aid in the argument for daily physical education in all grades in all the public schools.

The writer believed that a program of physical fitness sensibly carried on throughout middle-age could prolong the life of an individual. Muscles not used or rarely used deteriorate and become ineffective. Muscles which are used constantly function effectively and efficiently. A program of physical fitness suited to the individual not only pays off in a longer life but the individual, in the present, feels better and is able to function effectively, has more resistance to disease, and in general is more contented and gets more enjoyment out of life.

The writer believed that heredity (genetic factors) do play a part in determining the potential level of physical ability an individual is capable of reaching. However, the writer strongly believes that the level of physical fitness to which an individual brings himself is determined not genetically but rather by the personality of the individual and the education he or she has received on the subject of fitness.

A practice common in many schools in 1969 was the ten-minute calisthenic program at the beginning of physical education classes. This ten-minute calisthenic program was thought to be sufficient to cover the physical fitness needs of the student--to attain and maintain a high level of physical fitness. The writer believed that this ten-minute calisthenic program was good as a warm-up to prevent injury but was nowhere near adequate enough to meet the physical fitness needs of growing boys and girls. In fact, even if the entire two periods a week which many urban children are presently receiving were devoted entirely to physical fitness, this still would be too little time to do an adequate job. The writer believes that one hour of physical activity per day for every child is not idealistic but necessary.

The writer believed, as the literature reviews bear out, that there was a positive correlation between academic success and physical fitness; between popularity and physical fitness. It was the writer's belief that this correlation existed because the same kind of caring about self and future that was necessary for academic success and popularity was also necessary in the development of a high level of physical fitness. Physically fit people are more confident, more poised and, in general, exhibit a great deal more pride in their work and in themselves than do people who cannot even be bothered to look after the condition of their own body.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to determine whether or not school students of rural areas were more physically fit than children of urban areas. Phases of this study included: a fitness comparison of pupils from one-room rural schools (purely rural) and pupils from Winnipeg School Division No. 1 (purely urban); the comparison of one-room rural physical fitness mean with CAHPER physical fitness mean, and the comparison of Winnipeg School Division No. 1 (urban) physical fitness mean with CAHPER physical fitness mean.

Approximately 144,000 students across the province of Manitoba participated in the Centennial Athletic Awards Programme sponsored by the federal government. The program ran for one full year (1967). Students were tested three times during the duration of the program by their home-room teacher or physical education teacher. Nearly all the students involved in this fitness program were tested at the beginning of the program, somewhere near the middle and at or near the end of the program. The best of three trials became the student's final recorded result.

Statistical comparisons were made between the mean scores made by students from one-room rural schools and Winnipeg School Division No. 1 on the following physical fitness test items: sit-ups, long jump, 300-yard run, and cross-country run according to age (6 - 15 Years) and sex. Comparisons were also made between rural fitness mean (one-room schools), urban fitness mean (Winnipeg School Division No. 1), and CAHPER fitness mean on the following fitness items: sit-ups, long jump and 300-yard run according to age (7 - 15 years) and sex.

The null hypothesis was assumed for this study and the "t" technique for testing the significance of the difference between mean derived from correlated scores from small samples was used to compare the mean of urban and rural children, at each age level, for each event and for both sexes. The "t" technique was also used to compare the mean of urban and rural children to CAHPER fitness mean at each age level, for each event and for both sexes.

Findings

1. No significant differences existed between urban and rural children, ages 6 - 15 based on the following physical fitness items: sit-ups, long jump, 300-yard run, cross-country run.

2. A significant difference (.01 level) did exist in favor of the rural Manitoba children's mean at all ages, in all events and for both sexes when compared with the national CAHPER fitness mean.

3. A significant difference (.01 level) did exist in favor of the urban Manitoba children's mean at all ages, in all events and for both sexes when compared with the national CAHPER fitness mean.

Conclusions

The following conclusions were believed to be justified by the analysis of the data obtained in this study:

1. That urban school children were not receiving proper physical fitness training; or

2. That rural school children were receiving their physical fitness training somewhere other than at school.

3. That Manitoba physical fitness mean (urban and rural) showed Manitoba youth to be in better shape than the "average" Canadian youth as measured by the CAHPER fitness test; or

4. That the "average" Canadian youth as determined by the CAHPER test was not truly representative of the Canadian youth population; or

5. That motivation is a very influential factor when trying to increase the fitness of youth.

Recommendations

The following recommendations were made as a result of this study:

1. It is recommended that the physical education programs of both rural and urban schools be investigated so as to determine the effect on the fitness of Manitoba youth.

2. It is recommended that an investigation be made to determine the effect physical educators (ideals, attitudes) have on the physical fitness of their students.

3. It is recommended that the Manitoba Department of Physical Education establish a set of meaningful fitness standards which are directly applicable to Manitoba youth.

4. It is recommended that a department be created at the Federal level for the express purpose of promoting physical fitness.

5. It is recommended that further investigation of the fitness of Manitoba youth be made using better trained and more consistent testers.

6. It is recommended that some type of continuous physical fitness program be established for all Canadian youth.

7. It is recommended that at no matter what level (federal, provincial, or local), a fitness program is created, some type of incentive be used to motivate the youngsters to their optimum fitness levels.

8. It is recommended that a study be conducted to determine the degree that ethnic differences played in the final outcome of the Centennial Athletic Awards Programme.

9. It is recommended that the "down-hill effect" of physical fitness of children from September to June be studied more thoroughly in the Province of Manitoba.

APPENDIX A

NECESSITY OF PHYSICAL FITNESS

Brouha commented on the necessity of physical fitness:

> Lack of physical activity is considered to be a factor in coronary insufficiency caused by fatty deposits in the arteries. Physical activity of sufficient duration and intensity, in these cases, results in improved cardiovascular economy.[1]
>
> Exercise improves each bodily system 25 percent or less, but, when taken together, all the effects may result in an improvement of total performance as high as 100 per cent.[2]

Robert Irving, Jr., stated:

> In essence, physical fitness is aimed at keeping people first alive, then dynamically alive, by educating them to its benefits and methods continuously throughout their lifetimes.[3]
>
> . . . death from major cardiovascular-renal diseases was 364.9 per 100,000 of population in 1900; in 1960 it was 518.9 per 100,000 of population.[4]

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[1]Lucien Brouha, "Training," Science and Medicine of Exercise and Sports (New York: Harper, 1960), p. 87.

[2]Ibid., p. 88.

[3]Robert Irving, Jr., "Why All the Fuss About Fitness," Educational Leadership, Vol. XX (March, 1963), p. 377.

[4]T. J. Blair, "Physical Fitness--Major Objective?", Educational Leadership, Vol. XX (March, 1963), p. 379.

Dr. Paul Dudley White has said:

> America is physically unfit as a nation and heart disease is definitely on the increase. . . . I have long advocated moderate exercise as one of the best ways to keep the heart in good condition.[5]

Hans Krause, in his book, "Hypokinetic Disease," has stated that he physically active person has better adaptability to stress, less euromuscular tension, less fatigability, ages later, tends less to verweight, has lower blood pressure, is stronger, more flexible, has greater breaking capacity, and a lower pulse rate.[6]

Bucher quoted Dr. George W. Calner's ten commandments for keeping men fit. Two of these are: "exercise rationally" and "play enthusiastically."[7] Dr. Calner counsels, "Give 5% of your time to keeping well and you won't have to give 100% getting over being sick."

Bucher quoted Dr. Edward C. Schneider as follows:

> Frequently repeated exercise, extending over months and years . . . is necessary for healthy existence; it is a physiologic need of a primitive kind which cannot safely be eliminated by civilization. It is difficult to find men who have been injured by muscular strength but easy to find men who have failed of normal development and been ruined by the lack of it.[8]

Bucher quoted Dr. Paul Dudley White as follows:

> Men who slow down at 40 years of age may have a heart attack sooner. [Dr. White cites 5 benefits from exercise]:

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[5]Paul Dudley White, "Physical Fitness--Major Objective?", ducational Leadership, Vol. XX (March, 1963), p. 379.

[6]Hans Krause, "Physical Fitness--Major Objective?", ducational Leadership, Vol. XX (March, 1963), p. 380.

[7]Charles A. Bucher, Foundations of Physical Education t. Louis: C. V. Mosby Co., 1964), p. 350.

[8]Ibid., p. 350.

1. maintains muscle tone.
2. relieves nervous tensions and provides relaxation.
3. aids digestion.
4. helps to control obesity.
5. improves functioning of the lungs by deepening of respiration.[9]

Leonard Larson stated:

Scientific evidence indicates that the individual who does hard physical work or who exercises consistently has a more efficient organism, is less susceptible to illness, and will probably live longer.[10]

. . . . . .

Exercise is required to maintain life; it is necessary for good health and fitness. Properly planned and regulated exercise can remake the physical limits of the individual. During the growing years, exercise is necessary to develop the physiological functions; after maturity it can develop an individual's functional powers to his fullest potential.[11]

. . . . . .

Regular exercise has a profound effect upon circulation, heart action, respiration, muscular power and strength, skill in movement, tolerance to stress, and the general efficiency of the organism. It is possible to extend the height of physiological functions by overloading the organism in training. By stepping up these physiological functions, the body gains greater resources.[12]

. . . . . .

Good health as it applies to longevity, appears to be closely correlated with physical fitness. By sustaining a high level of fitness, an individual is giving himself the best possible chance for long life.[13]

. . . . . .

Out of all the research evidence on man's physical state, one fact seems clear; an individual can regulate his health status

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[9] Ibid., p. 350.

[10] Leonard A. Larson, "Research Turns the Spotlight on Health and tness," Journal of Health, Physical Education, and Recreation, l. XXXVI (April, 1965), p. 86.

[11] Ibid., p. 87.

[12] Ibid., p. 87.

[13] Ibid., p. 89.

and can advance his fitness level significantly so that over a period of years it correlated favorably with health.[14]

Bortz stated that exercise is a master conditioner for the healthy and a major therapy for the ill, establishing a dynamic homeostasis to increase the ability of the organism to respond to life's physical, emotional, and social demands.[15] He also contended that the waning of power with age can be minimized with exercise. The basic tissues in which alterations appear with age are the skeleton, muscular arteries, and nerves. In all cases these changes are favorably affected by diet, exercise and rest.

Balke found that in sedentary groups, functional physiological capacities diminish with age.[16] However, regularly active individuals have a much greater potential, in general, and in later life are able to compete successfully with younger persons. Exercise and training aid the individual in the utilization of metabolic reserves.

Karvonen's work in Finland supports the findings of Raab Deterioration, which determines the length of life, may be hastened or delayed by factors which can be controlled by the individual.[17] It is reported that the frequency of non-fatal illness (age 40-59) associated

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[14]Ibid., p. 90.

[15]Edward L. Bortz, "Exercise, Fitness and Aging," Journal of Health, Physical Education, and Recreation, Vol. XXXVI (April, 1965), p. 87.

[16]Bruno Balke, "The Effect of Exercise on the Metabolic Potential," Journal of Health, Physical Education, and Recreation, Vol. XXXVI (April, 1965), p. 87.

[17]Martti J. Karvonen, "Some Effects of Long-Term Exercise on Health and Aging," Journal of Health, Physical Education, and Recreation, Vol. XXXVI (April, 1965), p. 88.

ith coronary heart disease was sufficiently lower among lumberjacks han among the lighter occupations. Karvonen stated that long term raining or exercise (as required for skiers in Finland) appeared to ave a beneficial effect on the cardiovascular system.

Another study revealed a high death rate from coronary heart isease among business executives, lawyers, judges and physicians, ontrasted by low death rates among farmers, coal miners, and general aborers.[18]

Montoye in a review of literature on aging and longevity, tated that the way of life of the individual is more important than orts participation during early life.[19] This would appear reason- le since the general effect of exercise during early years does not aintain itself throughout life unless appropriate activity is con- nued. However, an individual's way of life, while to a certain ex- nt under his control, is greatly influenced by the stresses and de- nds of the society in which he lives.

Seaton, et al. quoted the late President Kennedy as follows:

> For physical fitness is not only one of the most important keys to a healthy body, it is the basis of dynamic and creative intellectual activity. The relationship of the body and the activities of the mind is subtle and complex. Much is not yet understood, but we do know what the Greeks knew: that intelligence and skill can only function at the peak of their capacity

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[18] O. F. Hedley, "Analysis of 5,116 Deaths Reported Due to Acute ronary Occlusion in Philadelphia, 1933-1937," Journal of Health, ysical Education, and Recreation, Vol. XXXVI (April, 1965), p. 88.

[19] Henery J. Montoye, "Sports and Length of Life," Journal of alth, Physical Education, and Recreation, Vol. XXXVI (April, 1965), 90.

when the body is healthy and strong; that hardy spirits and tough minds usually inhabit sound bodies.

In this sense, physical fitness is the basis of all the activities of our society. And if the body grows soft and inactive, if we fail to encourage physical development and prowess, we will undermine our capacity for thought, for work, and for the use of those skills vital to an expanding and complex America. Thus, the physical fitness of our citizens is a vital prerequisite to America's realization of its full potential as a nation, and to the opportunity of each individual citizen to make full and fruitful use of his capabilities.[20]

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[20]Don C. Seaton, Irene A. Clayton, Howard C. Leibee, Lloyd essersmith, Physical Education Handbook, 5th ed. (Englewood: Prentice-all, Inc., 1969), p. 33.

APPENDIX B

APPENDIX B

DEFINITIONS OF FITNESS

Seeing that fitness is what this study is all about, we should know what fitness is.

The Baruch Committee on Physical Medicine, some years ago, said that:

> Physical fitness is a complex concept, difficult to define and more difficult to measure, but one, which in its most useful form, must evaluate the total individual. [The Committee felt that] "the only final test of fitness seems to be the ability to perform the task desired without undue fatigue or exhaustion, and the qualities making this possible are those of the total personality." In other words, "Physical fitness describes the functional capacity of the individual for a task. It has no real meaning unless the task or the job for which fitness is to be judged is specified," and stressed the "futility of attempting to apply one set of criteria of physical fitness to the varying types of individuals with their multiplicity of activities."[1]

Hall, Cain, and Tipton see fitness as being:

> 1. A sturdy physique--growth according to schedule; a body properly proportioned and neither under nor overweight for size and age.
> 2. Motor fitness--the ability to perform muscular movements involving balance, coordination, flexibility, endurance, power, strength, and speed.
> 3. Organic fitness--a strong heart, efficient lungs, a good digestive system, normal sensory organs, and freedom from disease and bodily defects.

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[1] J. F. Bovard, F. W. Cozens, and E. P. Hogman, Fitness Training Methods (Toronto: The Canadian Association for Health, Physical Education, and Recreation, Inc.), p. 1.

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[1] J. F. Bovard, F. W. Cozens, and E. P. Hogman, Fitness Training Methods (Toronto: The Canadian Association for Health, Physical Education, and Recreation, Inc.), p. 1.

4. Body protection--knowledge and skill in the areas of sanitation, safety, disease prevention, and first aid, and the ability to swim.[2]

Johnson and Brouha have cited the differences between trained (physically fit) and untrained (not as physically fit) men when performing physical work.[3]

I. For easy work that both can sustain in a steady state:

	Fit Men	Unfit Men
A. O_2 consumption	Lower	Higher
B. Pulse rate during work	Lower	Higher
C. Stroke volume during work	Larger	Smaller
D. Blood pressure during work	Lower	Higher
E. Blood lactate	Lower	Higher
F. Return of blood pressure to normal after work	Faster	Slower
G. Return of pulse rate to resting value after work	Faster	Slower

II. For exhausting work that neither can sustain in a steady rate:

	Fit Men	Unfit Men
A. Maximum O_2 consumption	Higher	Lower
B. Maximum pulse rate during work	Usually lower	Usually higher
C. Stroke volume	Larger	Smaller

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[2] D. M. Hall, Rolene LaHayne Caine and C. M. Tipton, "A 23-Year Study and Evaluation of Physical Fitness Tests," Keeping Fit (Co-operative Extension Service, University of Illinois), p. 1.

[3] R. E. Johnson and L. Brouha, "A Test of Physical Fitness for Strenuous Exertion," Revue Canadienne de Biologie, Vol. I (June, 1942), pp. 491-503.

	Fit Men	Unfit Men
D. Duration of work before exhaustion	Larger	Smaller
E. Return of blood pressure to normal after work	Faster	Slower
F. Return of pulse rate to resting volume after work	Faster	Slower

Thomas Cureton, Jr., stated that:

> Physical fitness means a great deal more than freedom from sickness or passing medical inspection. In addition to freedom from germinal or chronic disease, possessing good teeth, good hearing, good eyesight, and normal mentality, physical fitness means ability to handle the body well and the capacity to work hard over a long period of time without diminishing efficiency.[4]

In another article, Cureton defined motor fitness as:

> . . . a limited phase of motor ability which emphasizes the capacity for vigorous work or athletic effort.[5]

Larson and Yocom listed the following ten factors as the components of physical fitness:

1. Resistance to Disease;
2. Muscular Strength and Muscular Endurance;
3. Endurance (Cardiovascular-Respiratory);
4. Muscular Power;
5. Flexibility;
6. Speed;
7. Agility:
8. Coordination;
9. Balance;
10. Accuracy.[6]

A statement prepared by the AAHPER Fitness Conference of September, 1956, said that:

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[4]Thomas Kirk Cureton, Jr., Physical Fitness Appraisal and Guidance (St. Louis: The C. V. Mosby Co., 1947), p. 18.

[5]T. K. Cureton, Jr., Physical Fitness Appraisal and Guidance (St. Louis: The C. V. Mosby Co., 1947), p. 18.

[6]Leonard A. Larson and R. D. Yocom, Measurement and Evaluation in Physical Education and Recreation Education (St. Louis: The C. V. Mosby Co., 1951), pp. 158-162.

> Fitness is that state which characterizes the degree to which a person is able to function. It implies the ability of each person to live most effectively within his potentialities.[7]

Hunsicker stated:

> Physical fitness is understood to include those qualities which 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.[8]

Keeney expanded on some of the points presented by the Baruch Committee when he said:

> Physical fitness is the capacity to do work. It is determined by strength, endurance, and coordination. Each of the components in turn is founded upon the underlying biologic bases of age, sex, health status, and anatomic and bio-chemical condition. Furthermore, it is characterized by a high degree of specificity which changes with growth and development. Both the measurement and practical application of fitness are strongly affected by motivation.[10]

Hein explained what fitness is:

> . . . In a broad sense, fitness may be used to refer to overall well being, which has moral, intellectual, social and emotional

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[7]American Association for Health, Physical Education, and Recreation, "All-Around Fitness for All," Journal of Health, Physical Education, and Recreation, Vol. XXVIII (September, 1957), p. 8.

[8]Paul A. Hunsicker, "AAHPER's Youth Fitness Project," Journal of Health, Physical Education, and Recreation, Vol. XXVIII (November, 1957), p. 17.

[9]Eugene W. Nixon and Fredrick W. Cozens, An Introduction to Physical Education (Fifth Edition, Philadelphia: W. B. Saunders Co., 1959), p. 213.

[10]Clifford E. Keeney, "A Professor of Biology Proposes a New Definition of Physical Fitness as Work Capacity," Journal of Health, Physical Education, and Recreation, Vol. XXXI (September, 1960), p. 29.

components as well as physical ones. These aspects of fitness are so closely related in the individual to be virtually inseparable.[11]

Consolazio defined physical fitness as:

> Quantitation of the ability to perform a specific task requiring muscular effort in which speed and endurance are the main criteria.[12]

He goes on to add, ". . . however, that at the present time there is no single test that can measure more than a few kinds of fitness."

Physical fitness has been defined as:

> The capacity to work hard, play and generally carry on life's activities without becoming physically and mentally tired within a short period of time.[13]

Soran said:

> Fitness in today's world is not a matter of mere muscle or physical capacity. A True concept of fitness must include the mental, emotional, social and spiritual as well as the physical component. Positive fitness must mean the optimum development of each of these aspects and emphasize the ability of a person to live more effectively within his potentialities.[14]

Dr. Charles Berry said:

> Physical fitness does not mean a set of bulging, weight lifters muscles. What it does mean is that the individual

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[11]Fred V. Hein, "What is Physical Fitness," National Education Journal, Vol. LI (February, 1962), p. 34.

[12]C. Consolazio, R. Johnson and L. Pecora, Physiological Measurements of Metabolic Function of Man (New York: McGraw-Hill Co., 1963), p. 340.

[13]State of North Dakota, Physical Education Guide for North Dakota Schools (Grades 7-12) (Bismarck: Department of Public Instruction, 1964), p. 19.

[14]Robert P. Soran, Circuit Training (Dubuque: Whm. C. Brown Co., 1966), p. 7.

is not overweight, his muscles are well toned, and he follows proper diet, exercise and rest.[15]

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[15]Dr. Charles Berry, Astronaut Exercise Book (Toronto: Signet Books, 1967), p. forward.

APPENDIX C

APPENDIX C

INDIVIDUALS COMMENTING ON PHYSICAL FITNESS

The Royal Canadian Air Force made the following statements on physical fitness:

> . . . Weak back muscles are associated, in many cases, with lower back pain. It has been estimated that 90% of these backaches may be eliminated by increasing the strength of the back muscles through exercise.
>
> . . . . . .
>
> A bulging, sagging abdomen resulting from weakened abdominal muscle is detrimental to good posture. . . .
>
> . . . . . .
>
> The efficiency and capacity of your heart, lungs, and other organs can be improved by regular vigorous exercise. . . .
>
> . . . . . .
>
> A fit person is less susceptible to common injuries, and if injured recovers more rapidly. . . .
>
> . . . . . .
>
> The incidence of degenerative heart diseases may be greater in those who have not followed a physically active life. . . .
>
> . . . . . .
>
> Regular vigorous exercise plays an important role in controlling your weight. . . .
>
> . . . . . .
>
> Regular vigorous physical activity can help you to reduce emotional and nervous tension. . . .
>
> . . . . . .
>
> You are never too old to begin and follow a regular exercise program.[1]

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[1]The Royal Canadian Air Force, 5BX Plan for Physical Fitness (Ottawa: Queen's Printer and Controller of Stationery, 1962), p. 6.

Bud Wilkinson warned the American people about their fitness habits. He stated:

> The trend away from physical fitness must be reversed. Ultimately we must change our habits. Fitness must become popular if this nation is to regain its vigor.[2]

Helen Young stated:

> We all recognize the basic importance of good health, and we all know that a healthy body improves the mental and emotional tone of an individual.[3]

Simon McNelly commented on the fitness movement:

> . . . If we are concerned that our children grow up to make the most of their educational opportunities and to live life fully, then we must also be concerned that they have, too, every opportunity to build a good foundation of health and vitality and that they are free from the drains of conditions of physical handicaps, or poor health, or all those other manifestations that may impede reaching their full potential. So that is really the great idea behind this fitness movement. It's as simple or as complex as that. . . .[4]

Dr. Kirk commented on fitness in the United States. He said:

> For its security, the United States needs greater self-discipline. Somewhere along the line we have become fat, smug, and spiritually anemic. In competition with other ways of life the spiritual flabbiness could be more dangerous to the countries survival than its failure to launch a missile at Cape Canaveral.[5]

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[2]Charles Bud Wilkinson, "What Is Physical Fitness?", National Education Journal, Vol. LI (February, 1962), p. 34.

[3]Helen L. Young, A Manual Workbook of Physical Education for Elementary Teachers (New York: MacMillan Co., 1963), p. 216.

[4]Simon McNeely, "Highlights from Iowa Fitness Conference," Journal of Health, Physical Education, and Recreation, Vol. XXXIV (February, 1963), p. 56.

[5]Dr. Kirk, "Highlights from Iowa Fitness Conference," Journal of Health, Physical Education, and Recreation, Vol. XXXIV No. 2 (February, 1963), p. 56.

Joseph Carlino thought the great concern for fitness in the last few years is due to the fear of becoming militarily weak. Carlino stated:

> In a large measure the mounting concern about physical fitness has been generated by fear that our military capacity was being undermined by an increasing soft population. Depressing statistics about draft rejections and United States Olympic performances have painted a dismal picture of America's inability to meet manpower needs--in terms of physical quality--for effective military defense.[6]

Dr. Philip Barba summarized the broad view on physical fitness as follows:

> If I ask of you what you want for your children in the way of fitness, I am sure you will ask for more than physical strength or agility. I want much more for my children and grandchildren and for their children and grandchildren. I hope they will have an emotional balance which lets them appreciate joy in contrast to sorrow and lets them feel sorry for others but not for themselves. I pray that they will have keen minds with intelligence not blunted by malnutrition, illness, injury or improper teaching. I want them to have properly functioning enzymes and hormones and I hope they will live in an environment where they cannot only enjoy these gifts but can use them in service for others. As a final quality of fitness may they have the spiritual strength to meet adversity, if it comes, and not to be crushed by it. This is my concept of fitness.[7]

Paul Dudley White placed the blame for the American children's poor fitness showing on the parents of the children, the teachers and physicians. White stated:

> A fascinating discovery within the last few years has been realization that physical and mental fitness in old people is

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[6]Joseph H. Carlino, "As Others See Us. . .," Journal of Health, Physical Education, and Recreation, Vol. XXXV (September, 1964), p. 35.

[7]Philip S. Barba, "Fitness of Youth, Whose Responsibility," Childhood Education, Vol. XLI (October, 1964), p. 64.

in very large part dependent on middle age fitness; that middle age fitness is dependent on the health habits of our twenty-year olds; and that they in turn are really dependent on those of our teenagers. And now it is quite obvious that those who are really responsible are the parents and teachers of our grade school children and the physicians who are advising them.

The answer is clear. The parents and teachers of the country must rise to the occasion and set the example in their own lives, which, incidentally, will probably save them too, since it is rarely too late to mend.[8]

President Kennedy spoke out on physical fitness:

Experience and medical science teach us that physical fitness improves our performance in every area of life. For this reason I have, on many occasions, stressed the need for physical fitness programs in our schools. This remains an important goal, but still more must be done. Each of you must accept--now and for the rest of your lives--responsibility for your own fitness in the great national effort to build a stronger and more vigorous America.

The young people of America have always welcomed challenge, and I am sure you will welcome this one. It is a challenge, which holds the promise of better, happier, and more useful lives for those of you who need it.[9]

Stan Musial commented on President Kennedy's attitude toward fitness:

The great thing John F. Kennedy did for sports was to change our way of looking at them. He made us see athletics not merely as exhibitions of skill, or as entertainment, but also as opportunities to improve ourselves and to participate more fully in life. That was the important thing to him: taking part, becoming involved. We can never know how much these activities contributed to his wit, courage, and youthful enthusiasm, but we do know that he considered them a vital part of his life.[10]

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[8]Paul Dudley White, "Parents and Teachers of Today Have Adopted the Soft Life . . . ," Grade Teacher, Vol. LXXXII (December, 1964), p. 90.

[9]John F. Kennedy, "Be Fit For Any Challenge," School Board Journal, Vol. XXVIII (August, 1966), p. 20.

[10]Stan Musial, "Be Fit For Any Challenge," School Board Journal, Vol. XXVIII (August, 1966), p. 20.

Marcia Barratt commented on the benefits of regular exercise. She stated:

> Medical evidence supports the statement that regular exercise, in addition to developing firm, efficient muscles, accomplishes the following:
>
> a) Increases cardiovascular efficiency
> b) Increases respiratory efficiency
> c) Helps prevent injury to the body
> d) Makes possible correct posture
> e) Encourages natural fatigue with resultant natural relaxation and sleep
> f) Aids in faster recovery from illness
> g) Increases the efficiency of the temperature regulating mechanisms of the body
> h) Makes the individual less susceptible to heart attacks, obesity, discomforts such as backaches and dymenorrhea caused by weak musculature, ulcers, early senescence and other degenerative effects of aging.
>
> In summary, regular exercise, conducted intelligently throughout one's lifetime, is undisputably and irrevocably connected with one's general health.[11]

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[11]Marcia Barratt, Fay R. Biles, Virginia P. Harvey, Gwendolyn D. Scott, Beverly L. Seidel, Glenna Rae Williams and Delores Wilson, Foundations for Movement (Dubuque: Wm. C. Brown Co., Pub., 1968), p. 62.

APPENDIX D

APPENDIX D

PHYSICAL FITNESS AND PHYSICAL EDUCATION

Billy Wireman feels that knowledge of results of physical fitness tests might motivate students to greater achievements as far as fitness is concerned. Wireman stated:

> Administrators charged with the responsibility of conducting physical fitness programs might give some consideration to the psychological principle of informing students periodically of their progress or regression. This does not imply that the planned program of calisthenics should be relegated to an inferior place in the curriculum. It does, however, suggest that two factors (calisthenics and a knowledge of results) might be combined and more effectively integrated into the physical fitness program. . . . Of the experimental variables under consideration, knowledge of the results seemed to be the most effective for the singular task of increasing the physical fitness status of male college freshmen.[1]

Bernice Waggoner studied the effects that conditioning exercises and team sports, given in physical education class, had upon improving the scores made on the AAHPER Youth Fitness Test. She stated:

> Tenth grade girls in physical education classes at Big Springs, Texas, served as subjects. One group had three weeks each in softball and basketball and the other group had conditioning exercises for six weeks. Statistical analysis was based on the improvement from pre- to post-tests. Improvement from team sports and greater improvement from conditioning

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[1]Billy O. Wiremann, "A Comparison of Four Approaches to Increasing Physical Fitness," College Physical Education Association, Vol. LXIV (December, 1960), p. 116.

> exercises was hypothesized. Both groups improved. A statistically significant difference in favor of the condition group occurred only in the shuttle run; the other six differences were not significant.[2]

George Hansell explains an experiment to show that calisthenics given in physical education classes can improve physical fitness. Mr. Hansell, using freshmen from the Pennsylvania Military College, instituted a daily dozen calisthenic program the first gym period every week. The program started with only a few repetitions done slowly and built up over a period of weeks, to ten repetitions done at a good speed.

Mr. Hansell stated:

> We believe this experiment clearly demonstrates that physical fitness can be improved. Even short periods of regular exercises two or three times a week will add muscular strength, endurance, and coordination.[3]

Robert Irving gives his views on the kinds of attitudes toward physical fitness that prevail in a community. These views are:

> The efforts of a physical educator to make our children physically fit are often greeted by a series of attitudes: those of the parents who are often dominated by a demonstrative and vocal clique of status-seeking "intellectually elite" who push their children hard academically and defend them over-protectively from things physical, and who want to maintain the status-quo at all costs; the school administrator, sometimes intimidated, who therefore follows rather than leads; and finally the teacher in the classroom whose efforts are spread far too thin, who is often

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[2] Bernice Waggoner, "The Relative Value of Team Sports and Conditioning Exercises in Improving the Scores Made on the AAHPER Youth Fitness Test," Completed Research in Health, Physical Education, and Recreation, Vol. III (1961), p. 39.

[3] George A. Hansell, "Physical Fitness Can Be Improved," Journal of Health, Physical Education, and Recreation, Vol. XXXI (February, 1962), pp. 58-60.

> unmotivated, untrained, and actually rebellious about physical education. These circumstances and attitudes set the climate in the school.[4]

Bud Wilkinson, consultant to the president on physical fitness believes that:

> The physical fitness problem will be solved only when we succeed in establishing vigorous activity and good health practices as a part of the daily routine, much as brushing the teeth is now. To do this, I am convinced we must effectively relate physical fitness to improved mental health, greater life expectancy, and better performance in all areas.[5]

Ray Duncan, a physical educator, thinks the increased interest in physical fitness should be used to secure better physical education facilities and programs. He stated:

> We must point out that physical fitness is a state of being for all people. It is highly individual, and the desirable state of physical fitness for each person will depend upon many things. . . . Our job (physical educators) is to capitalize upon the national interest in physical fitness and utilize it to secure adequate programs of health, physical education, recreation, and safety.[6]

Byron White levels some criticism at physical education and physical educators for not doing the job--education of the physical for all, correctly. White stated:

> Unfortunately, our educational system does not expose all boys and girls to such experiences (all forms of vigorous physical activity). Many youngsters have little opportunity

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[4]Robert N. Irving, Jr., "Why All the Fuss About Fitness," Educational Leadership, Vol. XX (March, 1963), pp. 376-377.

[5]Charles B. Wilkinson, "Physical Fitness--Why a Problem," Journal of Home Economics, Vol. LV (June, 1963), p. 400.

[6]Ray O. Duncan, "Fundamental Issue In Our Profession," Journal of Health, Physical Education, and Recreation, Vol. XXXV (May, 1964), p. 21.

to develop strong, efficient bodies, or to engage in activities which would help them to discover and develop the resources of physical, mental and moral strength which lie hidden in all of us. In many school sports and physical activity programs, the best facilities, topflight instruction and enthusiastic public support are reserved for those who need them least--the skilled athletes.[7]

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[7]Byron R. White, "Be Fit For Any Challenge," School Board Journal, Vol. XXVIII (August, 1966), p. 20.

APPENDIX E

APPENDIX E

PHYSICAL FITNESS COMPARISON

When the American public was informed that 57.9% of the U. S. youngsters had failed one or more of these seemingly simple six-item tests compared to only 8.7% of the European youngsters, national concern was aroused. Bovard, Cozens and Hogman quoted Kraus:

> These tests represent minimum fitness tests; that is, they were tests which indicated a level of strength and flexibility in certain key muscular groups below which functioning of the whole body as a healthy organism seemed to be endangered. Furthermore, patients whose physical fitness level fell below these minimum requirements appeared to be "sick people," individuals who bore all the earmarks of "constant strain," and who frequently manifested signs of emotional instability.[1]

Fernanda Beltrao in comparing the fitness (AAHPER Youth Fitness Test) of Brazilian and American girls the same age concluded:

> . . . The comparison of median scores within each age group showed that the Brazilian girls had consistently better results in the standing broad jump and the 600-yard run-walk than the girls represented by the standard. The United States girls had a higher median score in the softball throw in every age group. No consistent differences were found in the other test events.[2]

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[1] J. F. Bovard, F. W. Cozens, E. P. Hogman, Fitness Training Methods (Toronto: Canadian Association for Health, Physical Education, and Recreation, Inc.), pp. 2-3.

[2] Fernanda Barnoso Beltrao, "A Comparative Study of the Physical Fitness of Brazilian Girls and the United States Standards for Girls of the Same Age," Completed Research in Health, Physical Education, and Recreation, Vol. III (1961), p. 68.

Namiko Ikeda in his study comparing the fitness of children in Tokyo, Japan, and Iowa, U. S. A. on a fitness test battery (sit-ups, standing broad jump, shuttle run, forward bend, dash, grasshopper, and bent arm hang for girls and pull-ups for boys) concluded:

> Except for sit-ups, the Japanese groups exceeded the Iowa groups in all fitness tests.[3]

The AAHPER Youth Fitness Test was given to 319 male and 134 female Danish school children and the test results were compared to the U. S. norms.[4] It was found that approximately 70% of the boys' scores and 86% of the scores of the girls exceeded the various U. S. mean scores.

In 1959, the AAHPER Fitness Test was administered to 20,000 Japanese children and youth.[5] The Japanese were found to be substantially superior in all but one component.

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[3]Namiko Ikeda, "A Comparison of Physical Fitness of Children in Iowa, U. S. A., and Tokyo, Japan," Completed Research in Health, Physical Education, and Recreation, Vol. III (1961), p. 44.

[4]Howard G. Knuttgen, "Comparison of Fitness of Danish and American School Children," Research Quarterly, Vol. XXXII (May, 1961), pp. 190-197.

[5]Fred J. Hinger, "If We Are to Survive," Educational Leadership, Vol. XX (March, 1963), p. 364.

APPENDIX F

APPENDIX F

PHYSICAL FITNESS--ACADEMIC SUCCESS AND POPULARITY

Jack Adron Jones in a study comparing physical fitness to academic success stated:

> Data from 101 randomly selected male freshmen at Indiana University showed a significant correlation between physical fitness and high school athletic participation but not between physical fitness and scholastic aptitude or grade point average.[1]

McMillan investigated the relationship of fitness, as measured by the New York State Physical Fitness Test, to success in scholastic attainment of high school girls.[2] She found a correlation of .36 between these two variables.

Hart and Shay in their study on the relationship between physical fitness and academic achievement concluded:

> . . . When the effect of the verbal scores was removed, the relationship between academic success and physical fitness

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[1] Jack Adron Jones, "The Relationship of Physical Fitness to Academic Success, Academic Aptitude, and Athletic Participation," Completed Research in Health, Physical Education, and Recreation, Vol. III (1961), p. 59.

[2] Betty Jo McMillan, "A Study to Determine the Relationship of Fitness as Measured by the New York State Physical Fitness Test to the Academic Index of High School Girls" (Unpublished Master's Thesis, Springfield College, 1961).

was significant beyond the .01 level of confidence.

Although physical fitness is not a general predictor of academic success, it is high enough to be considered as a necessary factor for the improvement of academic index in the general education of the college student.[3]

Nelson Carlson concluded that there is a positive relationship between fitness and academic success.[4]

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[3]Marcia E. Hart and Clayton T. Shay, "Relationship Between Physical Fitness and Academic Success," Research Quarterly, Vol. XXXV (October, 1964), p. 444.

[4]Nelson Thomas Carlson, "The Relationship Between Physical Fitness Attainment and Academic Achievement," Completed Research in Health, Physical Education, and Recreation, Vol. IX (1967), p. 59.

APPENDIX G

APPENDIX G

THE CAHPER FITNESS-PERFORMANCE TEST PERCENTILE[a]

7-YEAR-OLD BOYS							7-YEAR-OLD BOYS
Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	42	5	3	11.0	147	7.9	70
95	33	4	7	12.0	55	8.7	73
90	31	4	4	12.3	46	8.9	75
85	30	4	2	12.8	36	9.1	76
80	28	4	1	13.0	34	9.3	78
75	27	4	0	13.2	29	9.4	79
70	25	4	0	13.4	26	9.5	80
65	24	3	11	13.5	24	9.7	81
60	23	3	10	13.7	22	9.8	82
55	21	3	9	13.9	20	9.9	83
50	20	3	9	14.0	18	10.0	84
45	19	3	7	14.1	15	10.2	85
40	18	3	6	14.3	14	10.3	85
35	15	3	6	14.4	13	10.4	86
30	13	3	4	14.7	12	10.5	88
25	12	3	3	14.9	10	10.7	89
20	11	3	1	15.0	9	11.0	91
15	9	2	11	15.4	7	11.1	93
10	6	2	10	15.7	6	11.5	95
5	3	2	8	16.3	4	12.1	101
0	0	2	2	18.8	0	16.0	179
Mean	19.8	3	8	14.12	22.9	10.21	85.8
s	9.4	7.0		1.29	18.3	1.10	11.2
Number	300	300		297	308	309	307

[a]Figures published by the Canadian Association for Health, Physical Education, and Recreation, 1966.

8-YEAR-OLD BOYS

8-YEAR-OLD BOYS

Per-centile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	45	5	8	10.8	136	7.2	60
95	37	4	11	11.6	63	8.3	69
90	34	4	8	12.0	55	8.5	71
85	32	4	7	12.3	47	8.6	72
80	30	4	6	12.4	40	8.9	74
75	29	4	5	12.6	37	9.0	74
70	28	4	3	12.7	33	9.1	75
65	26	4	2	12.9	31	9.2	76
60	25	4	1	13.0	28	9.3	77
55	25	4	0	13.1	25	9.4	78
50	24	3	11	13.3	23	9.5	78
45	23	3	11	13.4	21	9.6	79
40	21	3	10	13.5	19	9.7	80
35	20	3	9	13.7	17	9.9	81
30	19	3	8	13.9	15	10.0	82
25	19	3	7	14.2	13	10.2	83
20	16	3	5	14.4	12	10.4	84
15	14	3	3	14.7	10	10.5	87
10	11	3	1	15.0	9	11.0	90
5	5	2	10	15.8	6	11.5	96
0	0	2	3	19.5	0	13.4	135
Mean	23.5	4	0	13.50	28.4	9.69	80.5
s	8.9	7.4		1.27	20.3	1.00	9.3
Number	584	583		575	589	590	588

9-YEAR-OLD BOYS

9-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	52	6	0	10.8	118	6.6	59
95	40	5	3	11.3	64	8.0	66
90	38	5	0	11.6	58	8.2	67
85	36	4	11	11.8	51	8.4	69
80	34	4	10	11.9	47	8.6	70
75	33	4	8	12.1	43	8.7	70
70	31	4	7	12.2	38	8.8	71
65	30	4	7	12.3	36	8.9	72
60	29	4	6	12.5	33	9.0	73
55	28	4	5	12.6	30	9.0	74
50	26	4	4	12.7	27	9.1	75
45	25	4	4	12.9	25	9.2	75
40	23	4	3	13.0	24	9.3	76
35	22	4	2	13.1	21	9.4	77
30	21	4	0	13.3	19	9.5	79
25	19	3	11	13.6	16	9.6	80
20	18	3	10	13.8	14	9.8	81
15	16	3	8	14.1	12	9.9	83
10	14	3	6	14.4	9	10.1	85
5	10	3	4	15.2	5	10.6	91
0	0	2	8	19.6	0	15.3	133
Mean	26.4	4	4	12.97	31.4	9.23	76.7
s	9.4	7.1		1.23	18.9	.84	9.1
Number	584	581		575	584	581	579

10-YEAR-OLD BOYS

10-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	50	6	3	10.2	124	6.4	60
95	42	5	5	11.0	71	7.8	64
90	39	5	2	11.3	59	7.9	65
85	37	5	1	11.6	54	8.0	66
80	35	5	0	11.8	49	8.2	67
75	34	4	10	11.9	44	8.3	68
70	33	4	9	12.0	41	8.4	69
65	31	4	8	12.2	36	8.4	69
60	30	4	7	12.3	32	8.5	70
55	28	4	7	12.5	31	8.6	71
50	27	4	6	12.6	27	8.8	72
45	26	4	5	12.8	25	8.9	73
40	24	4	4	12.9	23	9.0	74
35	23	4	3	13.1	22	9.1	75
30	22	4	2	13.2	20	9.2	76
25	21	4	1	13.4	18	9.3	77
20	19	4	0	13.6	15	9.4	78
15	17	3	11	13.9	13	9.6	80
10	14	3	9	14.3	10	9.9	82
5	10	3	6	15.0	7	10.2	85
0	0	2	0	17.4	0	12.6	148
Mean	27.3	4	6	12.78	32.8	8.88	73.8
s	9.5	7.2		1.18	20.1	.80	8.7
Number	499	502		490	503	499	493

11-YEAR-OLD BOYS

11-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	55	6	11	10.0	148	6.9	57
95	46	5	10	10.8	70	7.4	60
90	42	5	7	11.1	61	7.6	62
85	40	5	5	11.2	55	7.8	64
80	38	5	4	11.4	50	7.9	65
75	36	5	3	11.5	46	8.0	66
70	35	5	2	11.7	42	8.1	67
65	34	5	0	11.8	40	8.1	67
60	32	4	11	11.9	38	8.2	68
55	30	4	11	12.0	34	8.3	69
50	29	4	10	12.2	31	8.4	70
45	28	4	9	12.4	29	8.5	71
40	27	4	7	12.5	27	8.6	72
35	26	4	6	12.7	24	8.7	73
30	25	4	5	12.9	22	8.8	73
25	24	4	4	13.1	20	8.9	74
20	22	4	3	13.4	17	9.1	76
15	20	4	2	13.6	14	9.3	77
10	18	4	0	14.0	12	9.6	80
5	14	3	8	14.7	6	10.0	85
0	1	1	10	18.0	0	13.0	133
Mean	30.2	4	10	12.47	34.9	8.57	71.9
s	9.6	7.9		1.25	20.4	0.80	10.2
Number	483	484		470	485	480	477

12-YEAR-OLD BOYS

12-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	55	6	10	10.2	162	6.0	43
95	45	6	1	10.8	72	7.2	59
90	42	5	10	11.0	63	7.5	61
85	40	5	8	11.2	59	7.7	62
80	38	5	7	11.4	56	7.8	63
75	36	5	5	11.4	51	7.9	64
70	34	5	4	11.5	47	8.0	65
65	33	5	3	11.6	44	8.0	66
60	32	5	2	11.8	41	8.1	66
55	31	5	1	11.9	38	8.2	67
50	30	5	0	12.0	35	8.3	67
45	29	4	11	12.2	32	8.4	68
40	27	4	10	12.3	30	8.5	69
35	26	4	9	12.5	27	8.6	70
30	24	4	7	12.7	24	8.8	71
25	23	4	6	12.9	22	8.9	72
20	21	4	4	13.0	18	9.0	73
15	20	4	2	13.4	14	9.1	75
10	18	4	1	13.8	11	9.4	78
5	13	3	10	14.7	7	9.9	83
0	0	2	8	16.9	0	12.5	116
Mean	29.7	5	0	12.32	37.5	8.45	69.2
s	10.1	8.5		1.18	20.8	.85	7.6
Number	485	484		476	477	474	472

13-YEAR-OLD BOYS

13-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	56	7	8	9.7	111	6.0	51
95	48	6	6	10.3	75	6.9	56
90	45	6	3	10.7	68	7.1	58
85	43	6	1	10.9	65	7.3	59
80	41	6	0	11.0	61	7.4	60
75	39	5	10	11.1	57	7.5	61
70	38	5	9	11.2	53	7.6	62
65	37	5	8	11.4	50	7.7	63
60	35	5	6	11.5	46	7.8	64
55	34	5	5	11.6	43	7.9	64
50	33	5	3	11.8	40	8.0	65
45	31	5	2	11.9	36	8.1	65
40	30	5	1	12.0	33	8.2	66
35	29	4	11	12.3	30	8.3	67
30	26	4	10	12.4	27	8.4	67
25	25	4	9	12.5	23	8.5	69
20	23	4	7	12.9	19	8.7	70
15	22	4	5	13.0	17	8.8	71
10	19	4	3	13.5	12	9.1	73
5	15	4	0	13.9	9	9.5	77
0	0	2	8	17.6	0	11.0	104
Mean	32.5	5	4	11.99	41.0	8.11	66
s	10.3	9.7		1.18	21.4	.79	7.2
Number	446	442		441	442	440	437

14-YEAR-OLD BOYS

14-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	57	8	7	9.0	149	6.0	44
95	49	7	2	10.1	84	6.5	53
90	45	6	11	10.3	73	6.7	55
85	43	6	8	10.5	67	6.9	56
80	41	6	6	10.6	63	7.0	57
75	39	6	4	10.8	60	7.1	57
70	38	6	2	10.9	58	7.2	58
65	36	6	1	10.9	52	7.3	59
60	35	6	0	11.0	50	7.4	60
55	34	5	10	11.2	48	7.4	61
50	32	5	9	11.3	45	7.5	62
45	31	5	8	11.4	43	7.6	62
40	29	5	7	11.5	41	7.7	63
35	28	5	5	11.7	38	7.8	64
30	27	5	4	11.9	35	7.9	65
25	25	5	2	12.0	32	8.0	66
20	24	5	1	12.2	27	8.1	67
15	22	4	11	12.5	24	8.4	68
10	20	4	8	13.0	20	8.7	70
5	18	4	4	13.6	14	9.0	74
0	0	3	10	15.3	0	11.0	87
Mean	32.9	5	10	11.55	47.1	7.67	62.5
s	9.9	10.2		1.09	21.8	.79	6.8
Number	373	370		368	369	367	366

15-YEAR-OLD BOYS

15-YEAR-OLD BOYS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	58	8	7	9.2	115	6.0	41
95	50	7	5	9.9	82	6.3	52
90	47	7	2	10.1	76	6.5	54
85	45	7	0	10.3	70	6.7	55
80	43	6	10	10.4	66	6.8	55
75	41	6	8	10.5	62	6.9	56
70	40	6	7	10.7	60	6.9	56
65	38	6	6	10.8	57	7.0	57
60	36	6	5	10.9	54	7.0	57
55	35	6	4	10.9	52	7.1	58
50	33	6	2	11.0	50	7.1	58
45	31	6	1	11.1	47	7.2	59
40	30	5	11	11.3	44	7.3	60
35	29	5	10	11.4	42	7.4	61
30	26	5	9	11.5	39	7.4	61
25	25	5	8	11.6	35	7.6	62
20	23	5	6	11.8	32	7.8	63
15	20	5	3	12.0	25	7.9	64
10	19	5	2	12.5	23	8.1	66
5	16	4	10	13.2	15	8.5	69
0	1	3	5	16.3	4	10.8	105
Mean	33.4	6	2	11.26	49.6	7.32	60.0
s	10.9	9.7		1.03	20.4	.72	6.0
Number	354	353		352	351	350	348

7-YEAR-OLD GIRLS

Per-centile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	41	5	1	11.6	168	8.0	62
95	33	4	5	12.7	54	9.1	75
90	29	4	2	13.0	38	9.4	76
85	26	4	1	13.2	32	9.6	78
80	24	4	0	13.5	26	9.7	79
75	22	3	11	13.7	22	9.8	80
70	21	3	10	14.0	19	10.0	82
65	20	3	9	14.1	16	10.0	83
60	19	3	8	14.3	14	10.2	84
55	18	3	7	14.5	12	10.3	84
50	17	3	6	14.7	11	10.5	85
45	16	3	6	14.9	10	10.6	87
40	15	3	5	15.0	9	10.7	88
35	14	3	4	15.2	8	10.9	89
30	11	3	3	15.5	7	11.0	90
25	10	3	2	15.7	6	11.3	92
20	9	3	1	16.0	5	11.5	94
15	6	3	0	16.4	4	11.8	97
10	4	2	11	16.8	3	12.3	98
5	0	2	8	17.6	1	12.8	106
0	0	2	1	19.1	0	15.6	143
Mean	17.2	3	7	14.84	18.4	10.68	87.6
a	9.3	6.4		1.46	21.7	1.15	10.1
Number	364	364		362	364	364	360

8-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	46	5	9	10.9	145	8.1	65
95	34	4	11	12.3	45	8.7	71
90	31	4	8	12.6	34	8.9	72
85	29	4	6	12.8	29	9.0	74
80	27	4	4	13.0	25	9.2	75
75	24	4	3	13.2	23	9.3	76
70	23	4	2	13.4	21	9.4	77
65	22	4	0	13.5	19	9.5	78
60	21	4	0	13.7	16	9.6	79
55	20	3	11	13.8	15	9.8	79
50	19	3	10	14.0	13	9.9	80
45	17	3	9	14.1	12	10.0	81
40	16	3	8	14.3	11	10.1	82
35	15	3	7	14.4	9	10.2	83
30	14	3	5	14.5	8	10.4	84
25	12	3	4	14.8	7	10.5	85
20	9	3	3	15.0	6	10.7	87
15	7	3	1	15.3	5	10.8	88
10	5	3	0	15.6	4	11.0	91
5	2	2	10	16.2	2	11.5	94
0	0	2	0	20.1	0	14.0	134
Mean	18.8	3	10	14.12	17.8	10.01	81.7
s	9.5	7.9		1.26	15.6	.89	8.2
Number	632	631		618	633	632	627

9-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	52	6	9	11.2	107	7.3	61
95	36	5	1	12.0	52	8.3	69
90	32	4	9	12.2	41	8.6	70
85	30	4	7	12.5	35	8.7	71
80	28	4	6	12.6	29	8.9	72
75	26	4	5	12.8	26	9.0	73
70	25	4	4	12.9	23	9.0	74
65	24	4	3	13.0	20	9.2	75
60	22	4	2	13.2	17	9.3	75
55	21	4	1	13.4	15	9.4	76
50	20	4	0	13.5	14	9.5	77
45	19	3	11	13.7	13	9.6	78
40	18	3	10	13.9	12	9.7	79
35	16	3	9	14.0	10	9.8	80
30	15	3	8	14.3	9	10.0	81
25	13	3	7	14.5	7	10.1	83
20	11	3	6	14.8	6	10.3	84
15	9	3	4	15.0	5	10.5	86
10	7	3	1	15.7	3	10.9	88
5	3	2	10	16.5	2	11.4	91
0	0	2	2	18.5	0	14.5	132
Mean	20.2	4	1	13.81	19.3	9.68	79.1
s	9.6	8.2		1.34	16.1	.98	8.3
Number	576	578		570	580	574	571

10-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	50	6	3	10.8	160	6.6	58
95	39	5	3	11.6	56	7.9	65
90	35	5	1	11.9	41	8.0	67
85	32	4	11	12.1	34	8.2	68
80	31	4	9	12.2	31	8.4	69
75	30	4	8	12.3	27	8.5	70
70	28	4	7	12.5	25	8.6	71
65	26	4	6	12.6	22	8.8	72
60	24	4	5	12.8	21	8.9	73
55	23	4	4	12.9	18	9.0	74
50	22	4	3	13.0	17	9.0	75
45	21	4	2	13.1	15	9.1	75
40	20	4	1	13.3	14	9.3	76
35	19	4	0	13.4	12	9.4	77
30	17	3	11	13.6	10	9.5	78
25	16	3	10	13.9	9	9.7	79
20	14	3	9	14.2	7	9.9	81
15	10	3	8	14.5	6	10.1	83
10	7	3	6	14.9	4	10.4	86
5	3	3	4	15.5	1	10.9	90
0	0	2	7	18.5	0	13.5	177
Mean	22.4	4	4	13.28	21.5	9.22	76.4
s	10.2	7.3		1.23	19.0	.95	9.6
Number	500	500		491	497	496	495

11-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	60	6	4	10.5	119	6.5	57
95	41	5	7	11.3	59	7.5	62
90	37	5	4	11.6	44	7.7	65
85	36	5	3	11.8	37	7.9	66
80	33	5	2	12.0	32	8.1	67
75	31	5	1	12.1	28	8.2	68
70	30	5	0	12.3	24	8.3	69
65	29	4	10	12.4	21	8.4	69
60	27	4	9	12.5	19	8.4	70
55	26	4	8	12.7	18	8.5	71
50	25	4	7	12.8	16	8.7	72
45	23	4	6	12.9	15	8.8	73
40	22	4	5	13.1	13	9.0	74
35	20	4	3	13.3	11	9.1	75
30	19	4	2	13.4	10	9.2	76
25	18	4	1	13.6	8	9.4	77
20	16	4	0	13.9	6	9.5	79
15	14	3	10	14.1	5	9.7	82
10	11	3	8	14.5	4	9.9	85
5	6	3	5	15.2	1	10.7	89
0	0	2	7	23.6	0	13.6	142
Mean	24.8	4	7	13.04	21.1	8.89	74.1
s	10.2	8.1		1.32	17.8	1.00	8.9
Number	477	476		467	472	474	470

12-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	55	6	8	10.2	110	6.8	56
95	39	5	10	11.0	46	7.5	62
90	36	5	7	11.4	38	7.7	64
85	34	5	4	11.7	33	7.8	65
80	32	5	2	11.9	30	7.9	66
75	30	5	1	12.0	26	8.0	67
70	28	5	0	12.2	23	8.1	68
65	26	4	11	12.4	20	8.2	69
60	25	4	10	12.5	18	8.3	70
55	24	4	9	12.7	16	8.4	71
50	22	4	8	12.8	14	8.5	71
45	21	4	7	13.0	13	8.7	72
40	20	4	5	13.2	11	8.8	73
35	19	4	4	13.4	10	8.9	73
30	17	4	3	13.6	8	9.1	75
25	15	4	2	13.9	7	9.2	76
20	13	4	0	14.0	6	9.4	77
15	12	3	11	14.2	5	9.6	79
10	9	3	9	14.6	3	9.9	81
5	5	3	6	15.1	1	10.4	86
0	0	2	7	19.0	0	13.0	110
Mean	23.1	4	8	13.01	18.7	8.75	72.5
s	10.4	8.5		1.27	14.9	.93	7.2
Number	435	438		434	436	433	430

13-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	46	7	10	10.0	74	6.8	57
95	37	6	0	11.0	47	7.2	61
90	34	5	9	11.2	37	7.5	63
85	32	5	7	11.4	32	7.6	65
80	31	5	5	11.7	29	7.8	65
75	29	5	3	12.0	26	7.9	66
70	28	5	2	12.1	24	8.0	67
65	26	5	1	12.2	21	8.2	68
60	25	5	0	12.3	17	8.3	69
55	24	4	11	12.5	15	8.5	69
50	23	4	10	12.6	13	8.6	70
45	21	4	9	12.7	11	8.7	71
40	20	4	8	12.9	10	8.8	72
35	19	4	6	13.0	9	8.9	73
30	18	4	5	13.1	7	9.1	74
25	16	4	4	13.5	6	9.2	75
20	14	4	3	13.6	4	9.3	77
15	12	4	1	13.9	3	9.5	79
10	9	3	10	14.2	1	9.8	81
5	5	3	6	14.9	0	10.2	85
0	0	2	11	17.0	0	13.0	111
Mean	22.7	4	10	12.77	17.6	8.66	71.9
s	9.4	8.8		1.19	14.6	.93	7.8
Number	354	354		355	353	355	353

14-YEAR-OLD GIRLS

Percentile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	44	7	4	9.9	104	6.5	58
95	36	6	2	10.9	43	7.4	62
90	33	6	0	11.2	35	7.7	63
85	30	5	11	11.4	30	7.8	65
80	28	5	8	11.6	27	7.9	66
75	26	5	6	11.8	23	8.0	67
70	25	5	4	12.0	19	8.1	68
65	24	5	3	12.1	17	8.2	69
60	23	5	2	12.2	16	8.3	69
55	22	5	0	12.3	14	8.4	70
50	20	4	11	12.4	12	8.4	72
45	19	4	10	12.6	11	8.5	72
40	18	4	9	12.7	9	8.6	73
35	16	4	7	13.0	8	8.9	74
30	15	4	6	13.1	7	9.0	75
25	13	4	4	13.4	5	9.1	76
20	10	4	2	13.5	4	9.3	78
15	8	4	0	13.8	3	9.5	80
10	5	3	9	14.2	2	9.8	84
5	0	3	6	14.8	0	10.2	88
0	0	2	2	18.0	0	13.0	103
Mean	20.1	4	11	12.65	16.4	8.67	73.1
s	10.1	10.4		1.19	14.3	.93	7.9
Number	369	371		369	367	366	363

15-YEAR-OLD GIRLS

Per-den-tile	Speed Sit-Ups No.	Standing Broad Jump Ft.	Standing Broad Jump Ins.	Shuttle Run Sec.	Flexed-Arm Hang Sec.	50-Yard Run Sec.	300-Yard Run Sec.
100	50	7	9	10.0	110	6.0	56
95	39	6	4	10.9	43	7.2	61
90	36	6	1	11.1	34	7.4	63
85	32	5	10	11.3	29	7.6	65
80	30	5	8	11.4	24	7.8	66
75	28	5	6	11.7	21	7.9	67
70	26	5	5	11.9	18	7.9	68
65	25	5	4	12.0	17	8.0	69
60	24	5	2	12.1	15	8.1	70
55	23	5	1	12.3	14	8.2	70
50	22	5	0	12.5	13	8.3	71
45	20	4	11	12.6	12	8.4	71
40	19	4	10	12.7	11	8.5	72
35	18	4	8	12.8	10	8.6	73
30	17	4	7	12.9	8	8.8	74
25	15	4	5	13.1	6	8.9	75
20	12	4	4	13.4	5	9.1	77
15	10	4	2	13.8	4	9.3	78
10	9	4	0	14.1	2	9.6	81
5	6	3	10	14.5	0	10.1	86
0	0	2	10	17.0	0	11.9	131
Mean	22.2	5	1	12.57	16.5	8.49	72.4
s	9.7	9.5		1.16	13.7	.90	8.4
Number	340	340		339	338	335	334

APPENDIX H

APPENDIX H

STANDARDS FOR THE CENTENNIAL ATHLETIC AWARDS PROGRAMME*— BOYS

		COMPULSORY EVENTS				OPTIONAL EVENTS					
		Standing Broad Jump		One-Minute Speed Sit-Ups	300-Yard Run	Cross Country Run		Skating		Swimming	
Age	Awards	Ft.	Ins.	No.	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.
6	Gold	4	3	30	1:17	440	1:45	92	0:20	25	0:17
	Silver	3	11	26	1:20	440	1:55	92	0:24	25	0:20
	Bronze	3	8	22	1:24	440	2:00	92	0:29	25	0:26
7	Gold	4	7	33	1:13	440	1:40	92	0:19	25	0:15
	Silver	4	2	30	1:16	440	1:50	92	0:23	25	0:18
	Bronze	4	0	27	1:19	440	1:55	92	0:28	25	0:24
8	Gold	4	11	37	1:09	440	1:35	184	0:32	25	0:14
	Silver	4	7	32	1:12	440	1:45	184	0:38	25	0:17
	Bronze	4	5	29	1:14	440	1:50	184	0:45	25	0:23
9	Gold	5	3	41	1:06	440	1:30	184	0:31	50	0:36
	Silver	4	11	36	1:09	440	1:40	184	0:37	50	0:37
	Bronze	4	8	33	1:10	440	1:45	184	0:44	50	0:39
10	Gold	5	5	42	1:04	880	3:20	276	0:41	50	0:34
	Silver	5	1	38	1:06	880	3:30	276	0:48	50	0:36
	Bronze	4	10	34	1:08	880	3:40	276	0:57	50	0:38

*Figures published by the Canadian Association for Health, Physical Education, and Recreation, 1967.

		COMPULSORY EVENTS				OPTIONAL EVENTS					
		Standing Broad Jump		One Minute Speed Sit-Ups	300-Yard Run	Cross Country Run		Skating		Swimming	
Age	Awards	Ft.	Ins.	No.	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.
11	Gold	5	10	45	1:00	880	3:10	276	0:40	100	1:11
	Silver	5	5	40	1:04	880	3:20	276	0:47	100	1:14
	Bronze	5	3	36	1:06	880	3:30	276	0:56	100	1:19
12	Gold	6	1	46	0:59	880	3:00	368	0:50	100	1:08
	Silver	5	8	41	1:02	880	3:15	368	0:59	100	1:11
	Bronze	5	5	37	1:04	880	3:25	368	1:10	100	1:14
13	Gold	6	6	48	0:56	880	2:55	368	0:49	100	1:03
	Silver	6	1	43	0:59	880	3:00	368	0:58	100	1:06
	Bronze	5	10	39	1:01	880	3:15	368	1:09	100	1:10
14	Gold	7	2	49	0:53	1760	6:20	368	0:48	100	1:01
	Silver	6	8	43	0:56	1760	6:35	368	0:57	100	1:04
	Bronze	6	4	40	0:57	1760	6:45	368	1:08	100	1:08
15	Gold	7	5	50	0:52	1760	6:15	368	0:47	100	0:59
	Silver	7	0	45	0:55	1760	6:30	368	0:56	100	1:01
	Bronze	6	8	41	0:56	1760	6:40	368	1:07	100	1:05

STANDARDS FOR THE CENTENNIAL ATHLETIC AWARDS PROGRAMME -- GIRLS

		COMPULSORY EVENTS				OPTIONAL EVENTS					
		Standing Broad Jump		One Minute Speed Sit-Ups	300-Yard Run	Cross Country Run		Skating		Swimming	
Age	Awards	Ft.	Ins.	No.	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.
6	Gold	4	1	30	1:19	440	1:55	92	0:22	25	0:21
	Silver	3	10	25	1:24	440	2:10	92	0:26	25	0:24
	Bronze	3	7	21	1:29	440	2:15	92	0:32	25	0:28
7	Gold	4	5	33	1:14	440	1:45	92	0:21	25	0:19
	Silver	4	1	26	1:18	440	2:00	92	0:25	25	0:22
	Bronze	3	11	23	1:20	440	2:10	92	0:31	25	0:26
8	Gold	4	10	34	1:11	440	1:45	184	0:35	25	0:17
	Silver	4	6	29	1:14	440	2:00	184	0:41	25	0:25
	Bronze	4	3	24	1:16	440	2:10	184	0:49	25	0:25
9	Gold	5	1	36	1:09	440	1:40	184	0:34	50	0:38
	Silver	4	7	30	1:11	440	1:55	184	0:40	50	0:40
	Bronze	4	5	26	1:13	440	2:05	184	0:48	50	0:42
10	Gold	5	3	39	1:05	880	4:00	276	0:44	50	0:36
	Silver	4	11	32	1:08	880	4:15	276	0:52	50	0:38
	Bronze	4	8	30	1:10	880	4:30	276	1:02	50	0:40

		COMPULSORY EVENTS				OPTIONAL EVENTS					
		Standing Broad Jump		One Minute Speed Sit-Ups	300-Yard Run	Cross Country Run		Skating		Swimming	
Age	Awards	Ft.	Ins.	No.	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.	Yards	Min.-Sec.
11	Gold	5	7	40	1:03	880	3:45	276	0:43	100	1:15
	Silver	5	3	34	1:06	880	4:00	276	0:51	100	1:17
	Bronze	5	1	31	1:08	880	4:20	276	1:01	100	1:22
12	Gold	5	10	40	1:02	880	3:30	368	0:54	100	1:12
	Silver	5	4	35	1:05	880	4:00	368	1:04	100	1:15
	Bronze	5	1	31	1:07	880	4:15	368	1:15	100	1:18
13	Gold	6	0	39	1:02	880	3:30	368	0:54	100	1:08
	Silver	5	7	34	1:04	880	4:00	368	1:04	100	1:10
	Bronze	5	3	31	1:06	880	4:15	368	1:14	100	1:15
14	Gold	6	2	40	1:01	880	3:30	368	0:53	100	1:07
	Silver	5	10	34	1:04	880	4:00	368	1:03	100	1:09
	Bronze	5	5	29	1:06	880	4:15	368	1:14	100	1:13
15	Gold	6	3	39	1:01	880	3:30	368	0:53	100	1:04
	Silver	5	10	34	1:04	880	4:00	368	1:03	100	1:06
	Bronze	5	6	29	1:06	880	4:15	368	1:13	100	1:10

APPENDIX I

APPENDIX I

PHYSICAL FITNESS TESTS

The Kraus-Weber test is a simple pass or fail test in which all tests must be passed:

Test 1. Sit-up--Lie on back with hands behind your neck and someone holding your feet, roll up into a sitting position.

Test 2. Sit-up--Lie on back with hands behind your neck, knees up and someone holding feet, roll to a sitting position.

Test 3. Leg Raising--Lie on back, with hands behind your neck, raise both feet off the floor ten inches and hold for ten seconds.

Test 4. Upper Back--Lie prone with pillow under lower abdomen and hips and hands behind neck. Tester places hands on feet and buttocks and hold down while subject raises chest, head, and shoulders for ten seconds.

Test 5. Lower Back--Same position as 4, tester hold chest and buttocks down while subject raises both knees extended for ten seconds.

Test 6. Back and Hamstrings--Standing with feet together, slowly bend forward and touch fingertips to floor for three seconds. Do not bend knees or "bounce" down.[1]

The AAHPER Youth Fitness Test is a battery of seven test items designed to give a measure of physical fitness for both boys and girls in grades 5 - 12.[2] The items include: pull-up for boys (Diag. 1),

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[1]J. F. Bovard, F. W. Cozens, E. P. Hogman, Fitness Training Methods (Toronto: Canadian Association for Health, Physical Education, and Recreation, Inc.), pp. 2-3.

[2]American Association of Health, Physical Education, and Recreation, AAHPER Youth Fitness Test Manual (1958, 1961, 1965).

flexed-arm for girls (Diag. 1A), sit-ups for boys and girls (Diag. 2), shuttle run for boys and girls (Diag. 3), standing broad jump for boys and girls (Diag. 4), 50-yard dash for boys and girls (Diag. 5), softball throw for distance, for boys and girls (Diag. 6), 600-yard-run-walk for boys and girls (Diag. 7).

The following exercises are suggested developmental exercises and activities for boys and girls, grades 4 - 12, and are included in the Youth Physical Fitness Manual: jumping jack (Diag. 8), tortoise and the hare, windmill (Diag. 9), squat thrust (Diag. 10), twist and bend (Diag. 11), back stretcher (Diag. 12), body bender (Diag. 13), wing stretcher (Diag. 14), push-up (Diag. 15), up oars (Diag. 16), squat jump (Diag. 17), jump and touch (Diag. 18), bobbler (Diag. 19), snap and twist (Diag. 20), body bender (Diag. 21), back twist (Diag. 22), bend and squat, reclining pull-ups (Diag. 23), bear hug (Diag. 24), side flex (Diag. 25), one-foot balance (Diag. 26), riding the bicycle, leg raiser (Diag. 27), bouncing ball (Diag. 28), deep breather (Diag. 29), grass drills, astronaut drills, carries (firemans, cross-carry single-shoulder, arm), apparatus (ropes, horizontal, ladder, peg board, tumbling), running relays, crawling relays, carrying relays.[3]

The following exercises are suggested developmental exercises and activities for boys and girls, grades K - 3 and are included in the Youth Physical Fitness Manual: tortoise and the hare, trees in the wind, gorilla walk (Diag. 30), bunny hop (Diag. 31), sawing wood

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[3]American Association of Health, Physical Education, and Recreation, AAHPER Youth Fitness Test Manual (1958, 1961, 1965).

(Diag. 32), hop, choo choo train, Russian hop (Diag. 33), bear walk (Diag. 34), crossing the river, rabbit race, knee down (Diag. 34A), frog stand (Diag. 35), coffee grinder (Diag. 36), measuring norm (Diag. 37), wheelbarrow (Diag. 38).

The Youth Physical Fitness: Suggested Elements of a School-Centered Programme was designed for boys and girls between the ages of 10 - 17 (grades 4 - 12).[4] The materials presented in this manual were designed as suggestions and not as directives. This manual does not present a program which could stand alone; rather, it presents material to supplement an existing physical fitness program.

The manual suggests that a good place to begin a physical fitness program is by screening, to discover who can and who cannot do the vigorous physical activities. The screening test consists of pull-ups for boys (Diag. 1), modified pull-ups for girls (Diag. 1A), sit-ups (Diag. 2) and squat thrusts (Diag. 10) for boys and girls. Certain standards in these fitness items must be attained to be allowed to go into the regular AAHPER Youth Fitness Test program.

The Youth Physical Fitness Manual also provides a remedial program for those who fail the screening test. The remedial program consists of wing stretchers (Diag. 14), sawing wood (Diag. 32), push-ups (Diag. 39), biceps builder (Diag. 40), chest builder (Diag. 41), bear hug (Diag. 24), one foot balance (Diag. 26), pull stretcher (Diag. 42), squat thrust (Diag. 10), knee raise (Diag. 43), head raiser (Diag. 44),

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[4]President's Council on Youth Fitness, Youth Physical Fitness: Suggested Elements of a School-Centered Program (1961).

leg extension (Diag. 45), head and shoulder curl (Diag. 46), jump and reach (Diag. 47), kangaroo hop (Diag. 48), blast off, the sprinter (Diag. 49), the coordinator (Diag. 50).

The 5BX Plan is composed of six charts arranged in progression. Each chart is composed of five exercises which are always performed in the same order and in the same maximum time limit, but as progress is made from chart to chart, there are slight changes in each basic exercise with a gradual demand for more effort. The 5BX diagrams may be found in Appendix J, pp. 183-185.

5BX CHART 1: Physical Capacity Rating Scale

	EXERCISES					One-Half Mile Run	One-Mile Walk
Level	1	2	3	4	5	Minutes	Minutes
A plus	20	18	18	13	400	5 1/2	17
A	18	17	17	12	375	5 1/2	17
A minus	16	15	16	11	335	5 1/2	17
B plus	14	13	15	9	320	6	18
B	12	12	14	8	305	6	18
B minus	10	11	13	7	280	6	18
C plus	8	9	12	6	260	6 1/2	19
C	7	8	10	5	235	6 1/2	19
C minus	6	7	8	4	205	6 1/2	19
D plus	4	5	6	3	175	7	20
D	3	4	5	3	145	7 1/2	21
D minus	2	3	4	2	100	8	21
Minutes for each exercise:	2	1	1	1	6		

Age Groups--6 years maintains B, 7 years maintains A.

1. Feet astride, arms upward.
   --Forward bend to floor touching then stretch upward and backward bend.
   --Do not strain to keep knees straight.
2. Back lying, feet 6" apart, arms at sides.
   --Sit up just afr enough to see your heels.
   --Keep legs straight, head and shoulders must clear the floor.
3. Front lying, palms placed under the thighs.
   --Raise head and one leg, repeat using legs alternately.
   --Keep leg straight at the knee, thighs must clear the palms.
   (Count one each time second leg touches floor.)
4. Front lying, hands under the shoulders, palms flat on the floor.
   --Straighten arms lifting upper body, keeping the knees on the floor. Bend arms to lower body.
   --Keep body straight from the knees, arms must be fully extended. Chest must touch floor to complete one movement.
5. Stationary run (count a step each time left foot touches floor).
   --Lift feet approximately 4" off floor.
   --Every 75 steps do 10 "scissor jumps."
   (Repeat this sequence until required number of steps is completed.)
   --Scissor jumps--Stand with right leg and left arm extended forward, and left leg and right arm extended backward.
   --Jump up--Change position of arms and legs before landing. Repeat (arms shoulder high).

5BX CHART 2: Physical Capacity Rating Scale

	EXERCISE					One-Mile Run	Two-Mile Walk
Level	1	2	3	4	5	Minutes	Minutes
A plus	30	23	33	20	500	9	30
A	29	21	31	19	485	9	31
A minus	28	20	29	18	470	9	32
B plus	26	18	27	17	455	9 1/2	33
B	24	17	25	16	445	9 1/2	33
B minus	22	16	23	15	440	9 1/2	33
C plus	20	15	21	14	425	10	34
C	19	14	19	13	410	10	34
C minus	18	13	17	12	395	10	34
D plus	16	12	15	11	380	10 1/2	35
D	15	11	14	10	360	10 1/2	35
D minus	14	10	13	9	335	10 1/2	35
Minutes for each exercise	2	1	1	1	6		

Age Groups--8 years maintains D minus, 9 years maintains C minus, 10 years maintains B minus, 11 years maintains A minus, 45-49 years maintains A plus, 50-60 years maintains C plus.

1. Feet astride, arms upward.
   --Touch floor and press (bounce) once then stretch upward and backward bend. Do not strain to keep knees straight.
2. Back lying, feet 6" apart, arms at sides.
   --Sit-up to vertical position, keep feet on floor even if it is necessary to hook them under a chair. Allow knees to bend slightly.
3. Front lying, palms placed under thighs.
   --Raise head, shoulders, and both legs.
   --Keep legs straight, both thighs must clear the palms.
4. Front lying, hands under the shoulder, palms flat on the floor.
   --Straighten arms to lift body with only palms and toes on the floor. Back straight.
   --Chest must touch floor for each completed movement after arms have been fully extended.
5. Stationary run (Count a step each time left foot touches floor).
   --Lift feet approximately 4" off floor.
   --After every 75 steps, do 10 "astride jumps."
   (Repeat this sequence until required number of steps is completed.)
   --Astride Jumps--Feet together, arms at side. Jump and land with feet astride and arms raised sideways to slightly above shoulder height. Return with a jump to the starting position for count of one. Keep arms straight.

5BX CHART 3: Physical Capacity Rating Scale

	EXERCISE					One-Mile Run	Two-Mile Walk
Level	1	2	3	4	5	Minutes	Minutes
A plus	30	32	47	24	550	8	25
A	30	31	45	22	540	8	25
A minus	30	30	43	21	525	8	25
B plus	28	28	41	20	510	8 1/4	26
B	28	27	39	19	500	8 1/4	26
B minus	28	26	37	18	490	8 1/4	26
C plus	26	25	35	17	480	8 1/2	27
C	26	24	34	17	465	8 1/2	27
C minus	26	23	33	16	450	8 1/2	27
D plus	24	22	31	15	430	8 3/4	28
D	24	21	30	15	415	8 3/4	28
D minus	24	20	29	15	400	8 3/4	29
Minutes for each exercise	2	1	1	1	6		

Age Groups--12 years maintains D plus, 13 years maintains C plus, 14 years maintains B plus, 35-39 years maintains B, 40-44 years maintains C. Flying Crew--40-44 years maintains A plus, 45-49 years maintains B.

1. Feet astride, arms upward.
   --Touch floor 6" outside left foot, again between feet and press once, then 6" outside right foot, bend backward as far as possible, repeat, reverse direction after half the number of counts. Do not strain to keep knees straight, return to erect position.
2. Back lying, feet 6" apart, arms clasped behind head. Allow knees to bend slightly.
   --Sit up to vertical position, keep feet on floor, hook feet under chair, et cetera, only if necessary.
3. Front lying, hands interlocked behind the back.
   --Lift head, shoulders, chest and both legs as high as possible.
   --Keep legs straight, and raise chest and both thighs completely off floor.
4. Front lying, hands under the shoulders, palms flat on floor.
   --Touch chin to floor in front of hands -- touch forehead, to floor behind hands before returning to up position.
   --There are three definite movements: chin, forehead, arms straightened. Do not do in one continuous movement.
5. Stationary Run (count a step each time left foot touches floor).
   --Lift feet approximately 4" off floor. After every 75 steps do 10 "half knee bends."
   (Repeat this sequence until required number of steps is completed.)
   --Half knee bends--Feet together, hands on hips, knees bent to form an angle of about 110 degrees. Do not bend knees past a right angle. Straighten to upright position, raising heel off floor, return to starting position each time. Keep feet in contact with floor--the back upright and straight at all times.

5BX CHART 4: Physical Capacity Rating Scale

	EXERCISE					One-Mile Run	Two-Mile Walk
Level	1	2	3	4	5	Minutes	Minutes
A plus	30	22	50	42	400	7	19
A	30	22	49	40	395	7	19
A minus	30	22	49	37	390	7	19
B plus	28	21	47	34	380	7 1/4	20
B	28	21	46	32	375	7 1/4	20
B minus	28	21	46	30	365	7 1/4	28
C plus	26	19	44	28	355	7 1/2	21
C	26	19	43	26	345	7 1/2	21
C minus	26	19	43	24	335	7 1/2	21
D plus	24	18	41	21	325	7 3/4	23
D	24	18	40	19	315	7 3/4	23
D minus	24	18	40	17	300	7 3/4	23
Minutes for each exercise	2	1	1	1	6		

Age Groups--15 years maintains D minus, 16-17 years maintains C plus, 25-29 years maintains A plus, 30-34 years maintains C minus, Flying Crew--30-34 years maintains B, 35-39 years maintains C minus.

1. Feet astride, arms upward.
   --Touch floor outside left foot, between feet press once then outside right foot, circle bend backwards as far as possible, reverse direction after half the number of counts. Do not strain to keep knees straight.
   --Keep arms above head and make full circle, bending backward past vertical each time.
2. Back lying, legs straight, feet together, arms straight overhead.
   --Sit up and touch the toes keeping the arms and legs straight. Use chair to hook feet under only if necessary.
   --Keep arms in contact with the sides of the head throughout the movement. Allow knees to bend slightly.
3. Front lying, hands and arms stretched sideways.
   --Life head, shoulders, arms, chest and both legs as high as possible.
   --Keep legs straight, raise chest and both thighs completely off the floor.
4. Front lying, palms of hands flat on floor, approximately 1' from ears directly to side of head.
   --Straighten arms to lift body.
   --Chest must touch floor for each completed movement.
5. Stationary Run (count a step each time left foot touches floor).
   --Lift knees waist high. Every 75 steps do 10 "semi-squat jumps." (Repeat this sequence until required number of steps is completed.)
   --Semi-squat Jumps--Drop to a half crouch position with hands on knees and arms straight, keep back as straight as possible, right foot slightly ahead of left.
   --Jump to upright position with body straight and feet leaving floor. Reverse position of feet before landing. Return to half crouch position and repeat.

5BX CHART 5: Physical Capacity Rating Scale

Level	EXERCISE 1	2	3	4	5	One-Mile Run Min.-Sec.
A plus	30	40	50	44	500	6:00
A	30	39	49	43	485	6:06
A minus	30	38	48	32	475	6:09
B plus	28	36	47	40	465	6:12
B	28	35	46	39	455	6:15
B minus	28	34	45	38	445	6:21
C plus	26	32	44	36	435	6:27
C	26	31	43	35	420	6:33
C minus	26	30	42	34	410	6:39
D plus	24	28	41	32	400	6:45
D	24	27	40	31	385	6:51
D minus	24	26	39	30	375	7:00
Minutes for each exercise	2	1	1	1	6	

Age Groups--18-25 years maintains C. Flying Crew--Under 25 years maintains B plus, 25-29 years maintains D plus.

1. Feet astride, arms upward, hands clasped, arms straight.
   --Touch floor outside left foot, between feet, press once then outside right foot, circle bend backwards as far as possible. Reverse direction after half the number of counts. Do not strain to keep knees straight.
2. Back lying, legs straight, feet together, hands clasped behind head.
   --Sit up and raise legs in bent position at same time twist to touch right elbow to left knee. This completes one movement. Alternate the direction of twist each time.
   --Keep feet off floor when elbow touches knee.
3. Front lying, arms extended overhead.
   --Raise arms, head, chest and both legs as high as possible. Keep legs and arms straight, chest and both thighs completely off floor.
4. Front lying, hands under shoulders, palms flat on floor.
   --Push off floor and clap hands before returning to starting position.
   --Keep body straight during the entire movement. Hand clap must be heard.
5. Stationary Run--(count a step each time left foot touches floor, lift knees waist high).
   --Every 75 steps do 10 "semi-spread eagle jumps."
   (Repeat this sequence until required number of steps is completed.)
   --Semi-spread eagle jumps--Feet together, drop to a half crouch position, hands on knees with arms straight. Jump up to feet astride swing arms overhead in mid-air, return directly to starting position on landing.
   --Raise hands above head level, spread feet at least shoulder width apart in stride position before landing with feet together.

5BX CHART 6: Physical Capacity Rating Scale

	EXERCISE					One-Mile Run
Level	1	2	3	4	5	Min.-Sec.
A plus	30	50	40	40	600	5:00
A	30	48	39	39	580	5:03
A minus	30	47	38	38	555	5:09
B plus	28	45	37	36	530	5:12
B	28	44	36	35	525	5:18
B minus	28	43	35	34	515	5:24
C plus	26	41	34	32	505	5:27
C	26	40	33	31	495	5:33
C minus	26	39	32	30	485	5:39
D plus	24	37	31	28	475	5:45
D	24	36	30	27	460	5:51
D minus	24	35	29	26	450	6:00
Minutes for each exercise	2	1	1	1	6	

Physical Capacities in this chart are usually found only in champion athletes.

1. Feet astride, arms upward, hands reverse clasped, arms straight.
   --Touch floor outside left foot, between feet, press once then outside right foot, circle bend backwards as far as possible. Reverse direction after half the number of counts.
   --Keep hands tightly reverse-clasped at all times.
2. Back lying, legs straight, feet together, arms straight over the head.
   --Sit up and at the same time lifting both legs to touch the toes in a pike (V) position.
   --Keep feet together, legs and arms straight, all of the upper back and legs clear floor, fingers touch toes each time.
3. Front lying, arms extended over head.
   --Raise arms, head, chest and both legs as high as possible then press back once.
   --Keep legs and arms straight. Chest and both thighs completely off floor.
4. Front lying, hands under shoulders, palms flat on floor.
   --Push off floor and slap chest before returning to starting position.
   --Keep body straight during the entire movement, chest slap must be heard.
5. Stationary Run--(count a step each time left foot touches floor, lift knees waist high).
   --Every 75 steps do 10 "jack jumps." Repeat this until required number of steps is completed.
   --Jack jumps--Feet together, knees bent, sit on heels, finger tips touch floor.
   --Jump up, raise legs waist high, keep legs straight and touch toes in mid-air.
   --Keep legs straight, raise feet level to "standing waist height." Touch toes each time.

The CAHPER Fitness-Performance Test Manual is a battery of six items designed to measure the physical fitness of boys and girls ages 7 - 17 (grades 2 - 12).[5] The items include: speed sit-up (Diag. 2), standing broad jump (Diag. 4), shuttle run (Diag. 3), flexed-arm hang (Diag. 1 and Diag. 1A), 50-yard run (Diag. 5), and 300-yard run (Diag. 51).

The Centennial Athletic Awards Programme is comprised of four events: three compulsory and one optional, open to all Canadian boys and girls from ages 6 - 18 (grades 1 - 12).[6] The test items include: standing broad jump--compulsory (Diag. 4), one-minute speed sit-ups--compulsory (Diag. 2), 300-yard run--compulsory (Diag. 51), cross-country run--optional (Diag. 52), skating--optional (Diag. 53), swimmingOOoptional (Diag. 54).

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[5]Michael S. Yuhasz and Francis J. Hayden, The CAHPER Fitness-Performance Test Manual (1966).

[6]Michael S. Yuhasz and Francis J. Hayden, Centennial Athletics Awards Programme (1967).

APPENDIX J

1

1A

pull-up

flexed-arm hang

BOYS

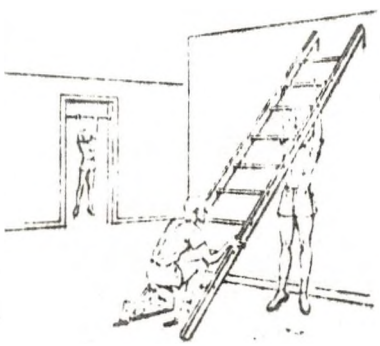


FIGURE 1
Improvised equipment for pull-up—doorway gym bar in background, ladder in foreground.

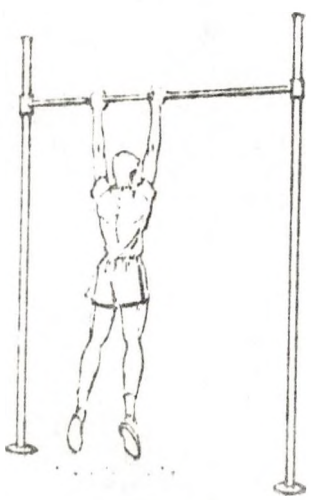


FIGURE 2
Starting position for pull-up.

GIRLS

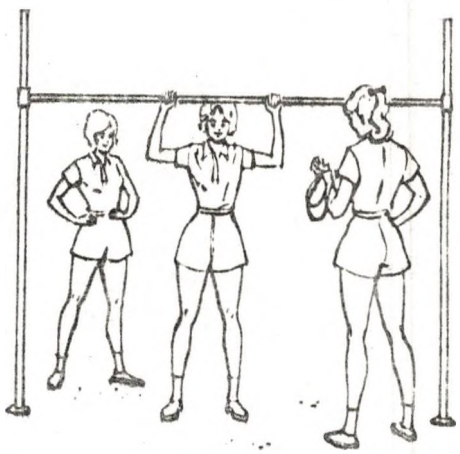


FIGURE 3
Starting position for flexed-arm hang.

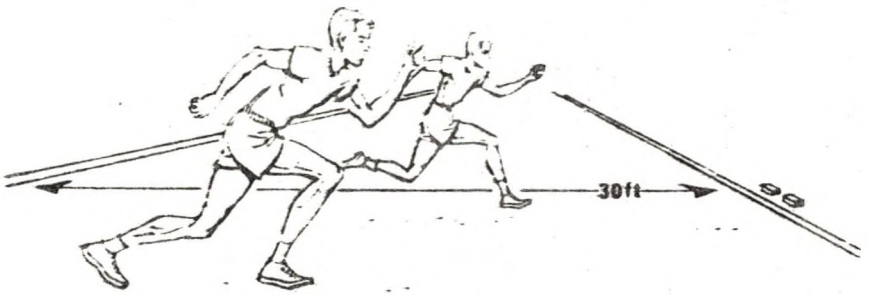
FIGURE 4

2

sit-up
BOYS AND GIRLS

3

shuttle-run
BOYS AND GIRLS



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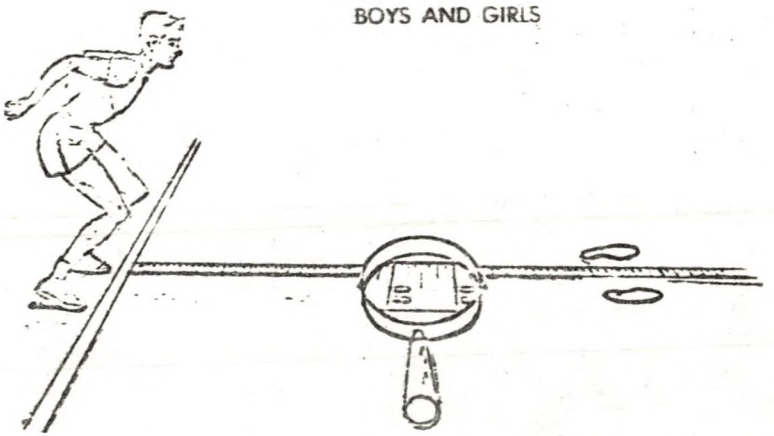
standing broad-jump
BOYS AND GIRLS



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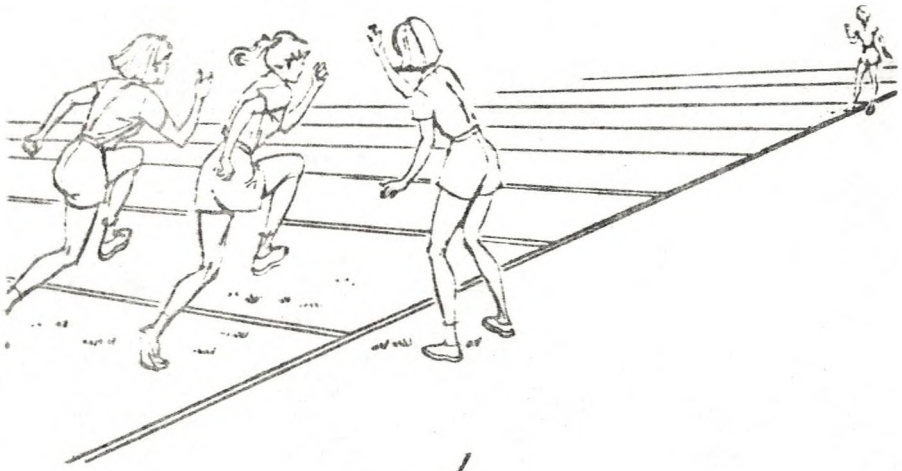
50-yard dash

BOYS AND GIRLS



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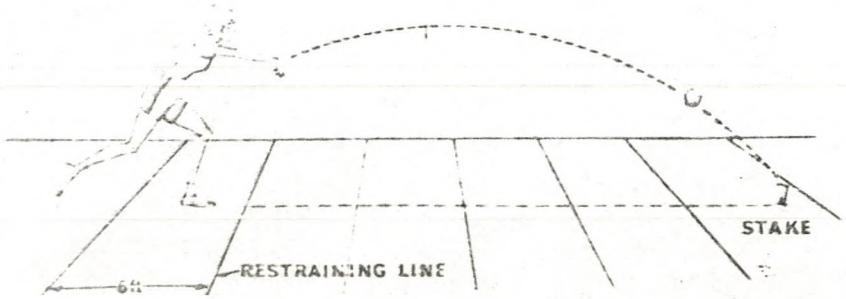
softball throw for distance

BOYS AND GIRLS



7

600-yard run-walk

BOYS AND GIRLS

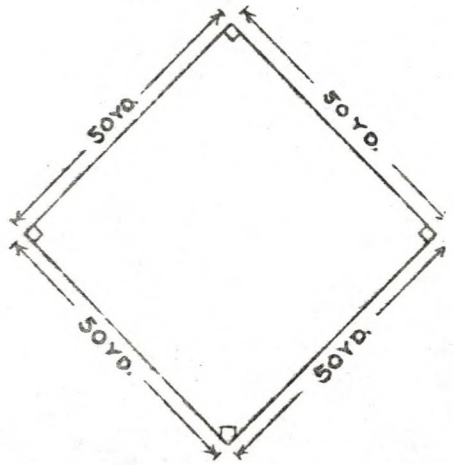
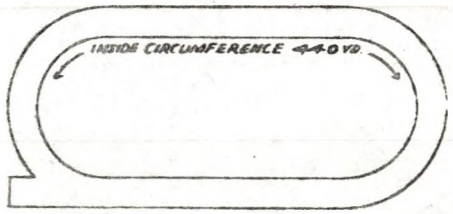
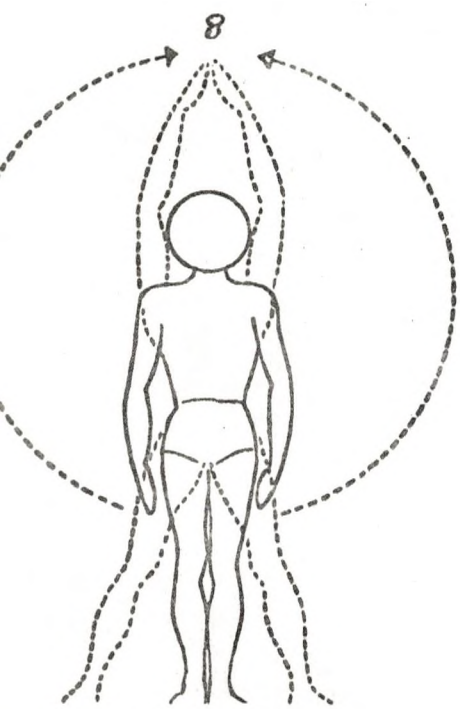


FIGURE 12
Using any open area for 600-yard run-walk.

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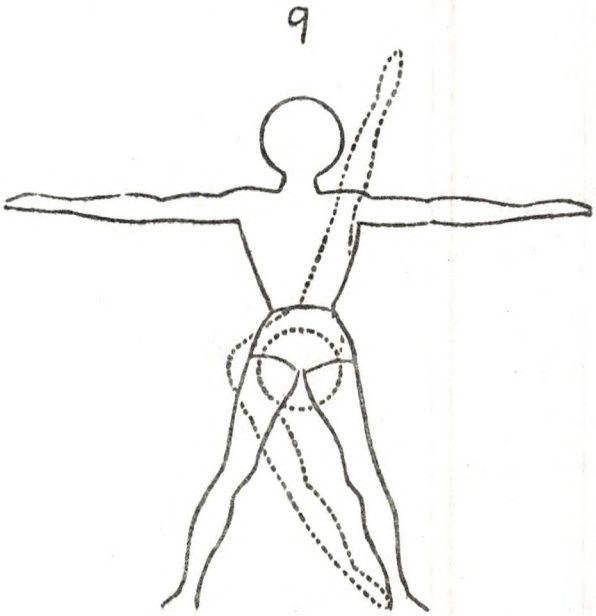
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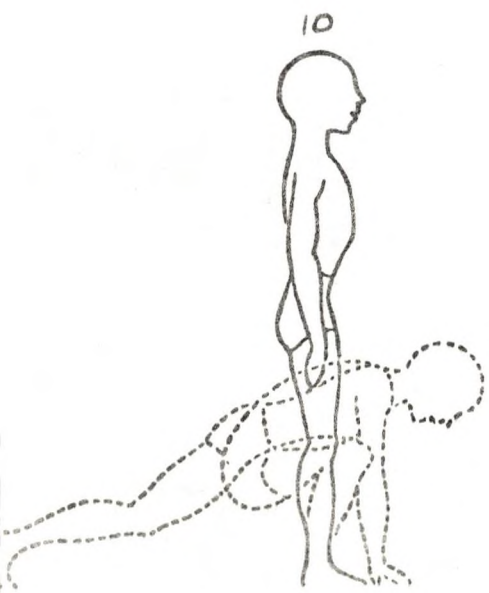
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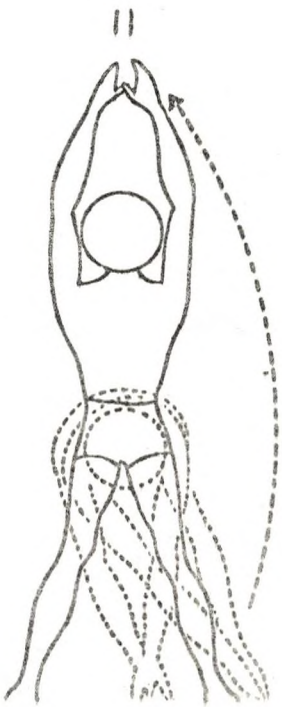
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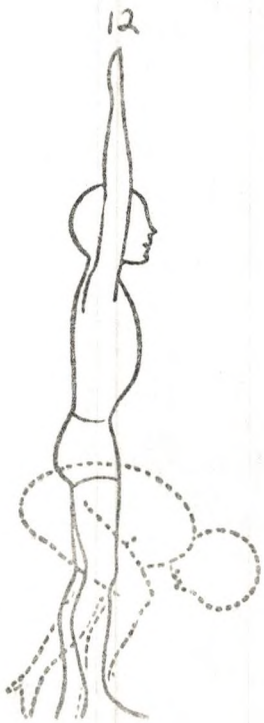
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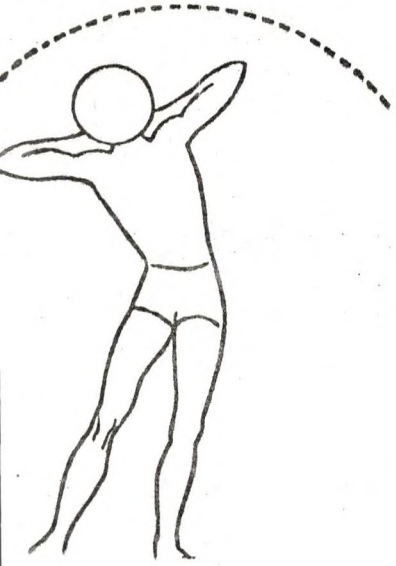

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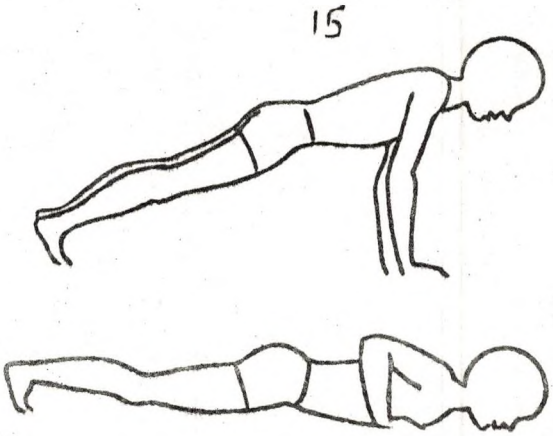

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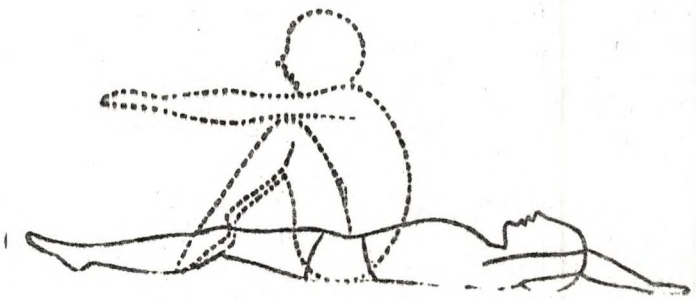

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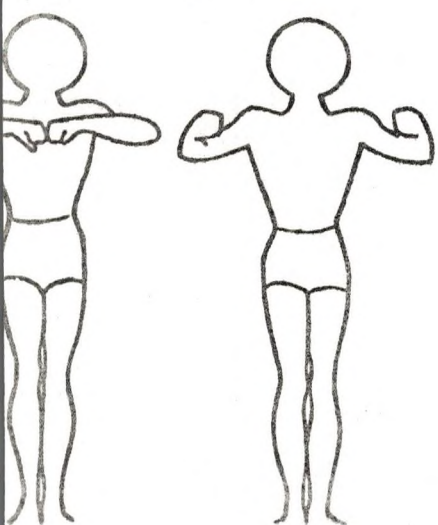

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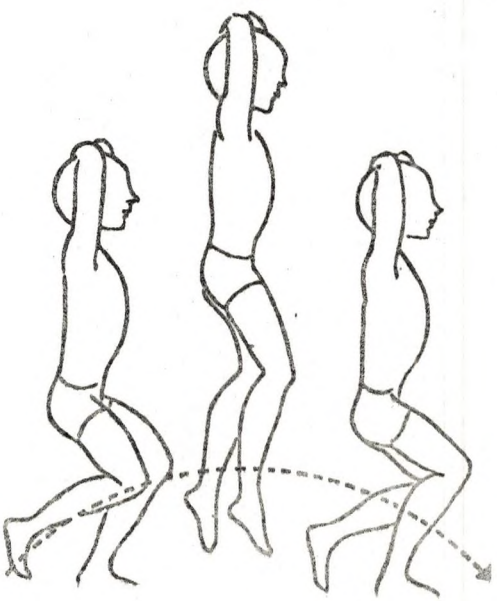

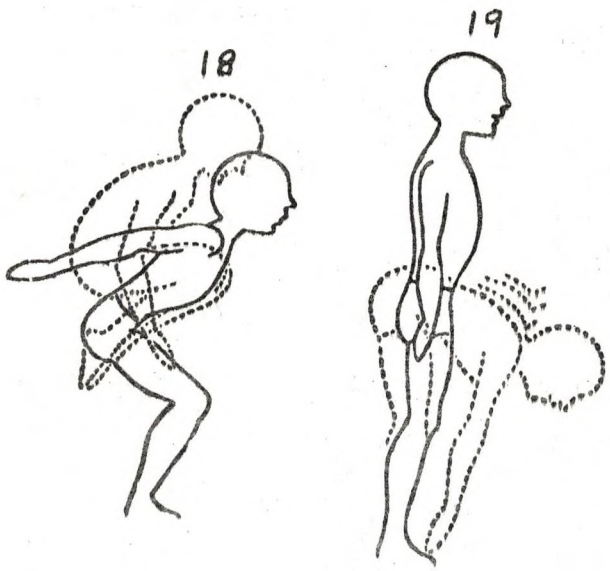
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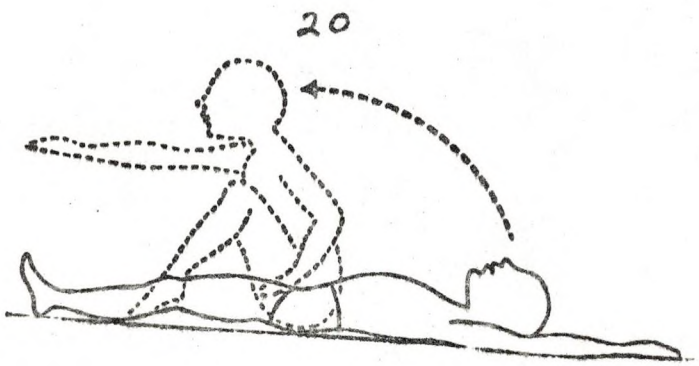
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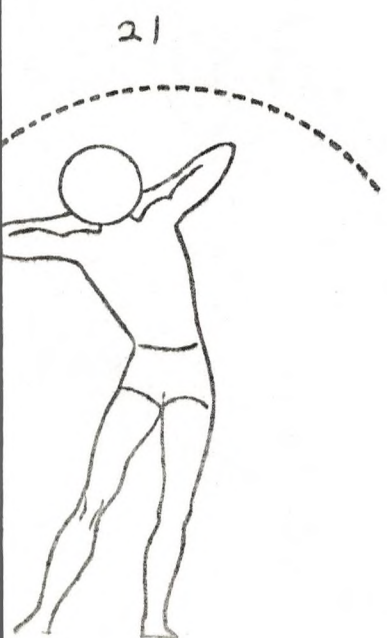
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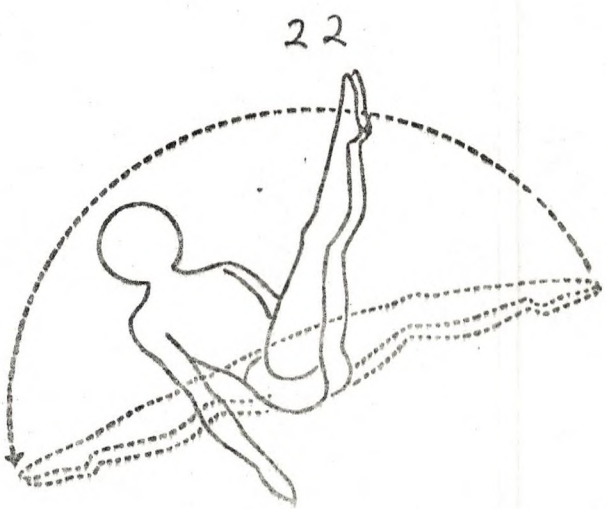
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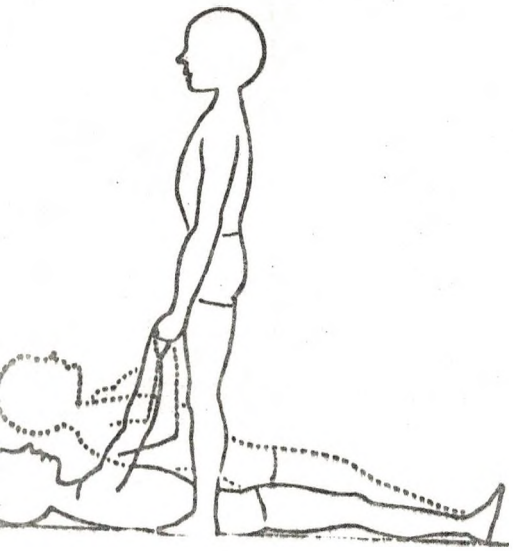

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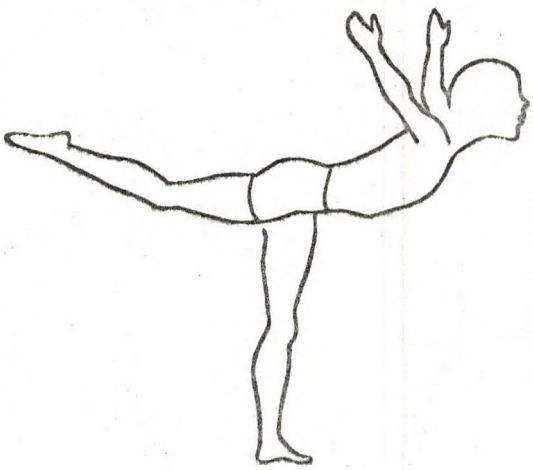

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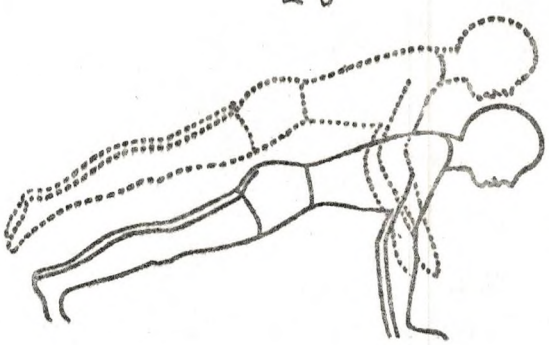

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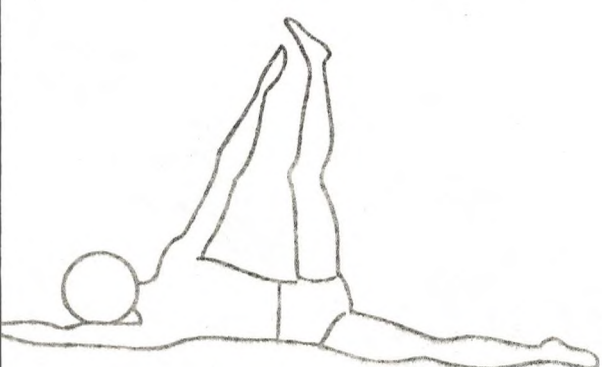

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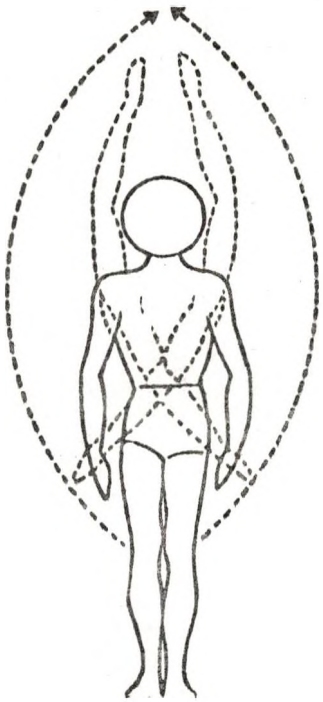

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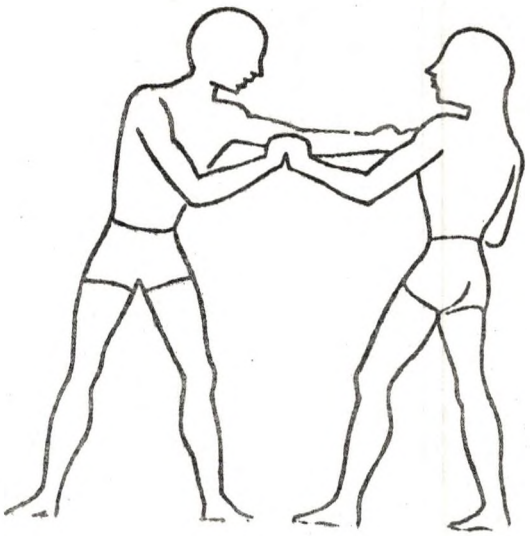

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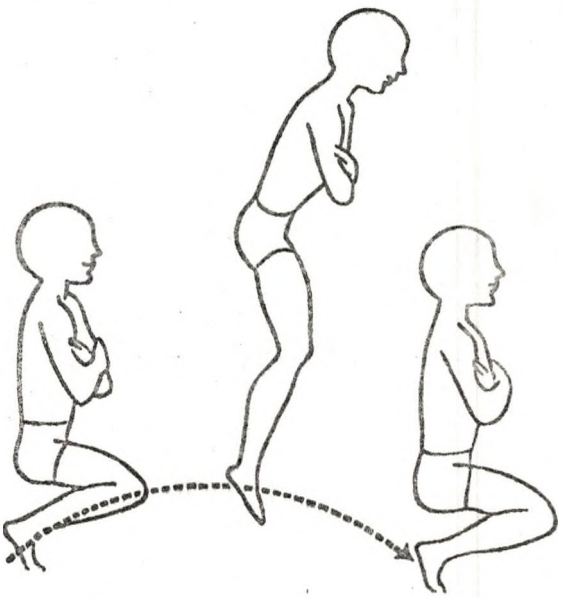

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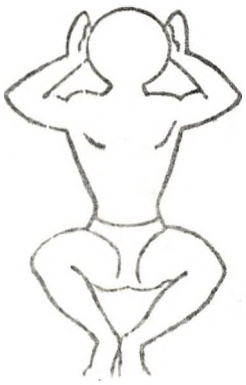

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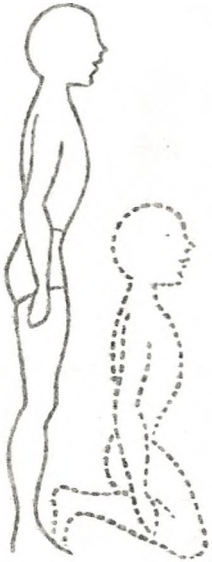

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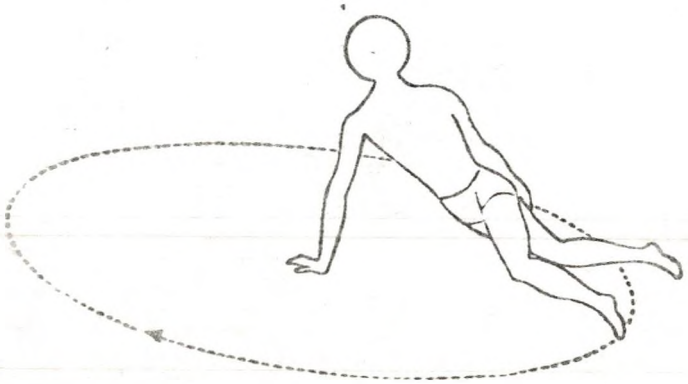

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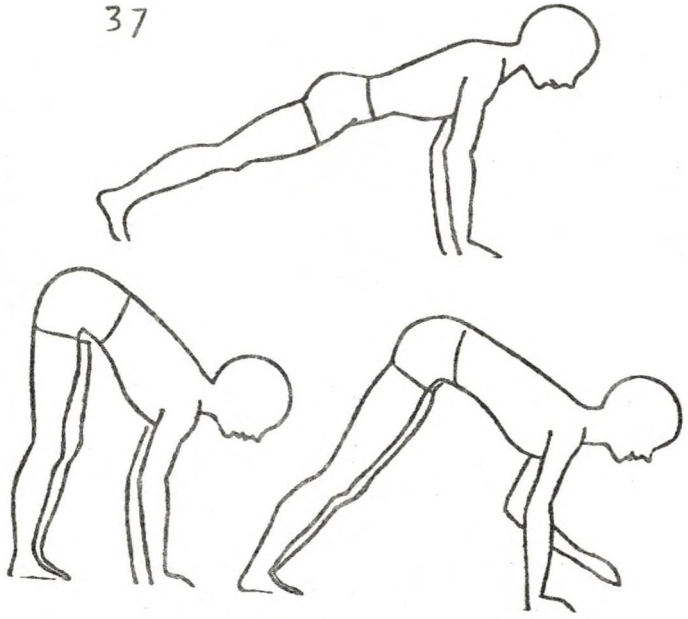

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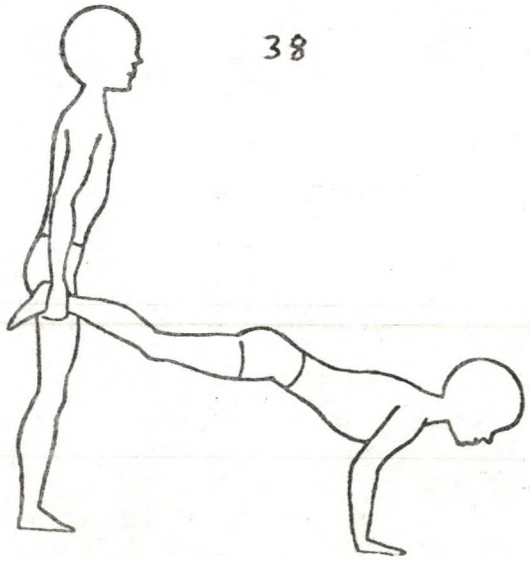

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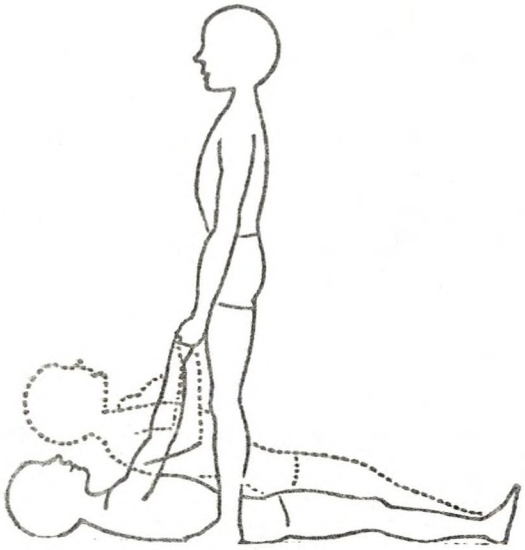

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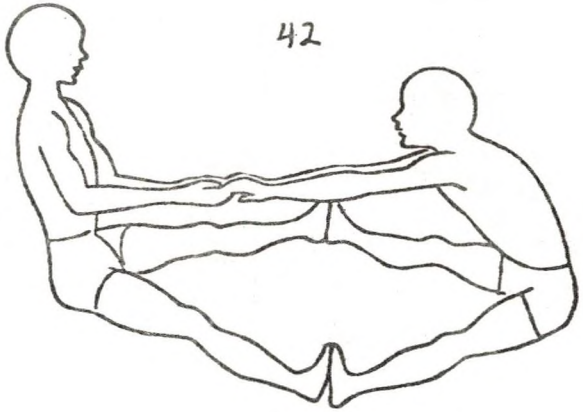

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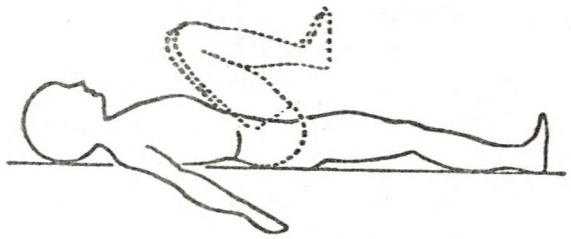

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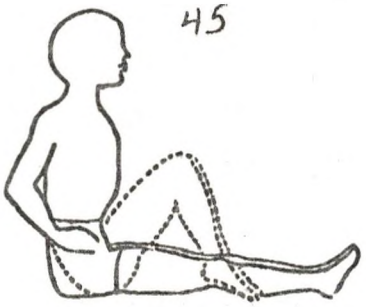

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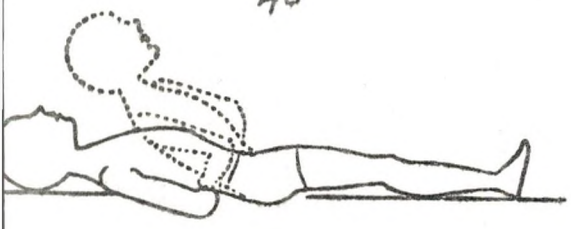

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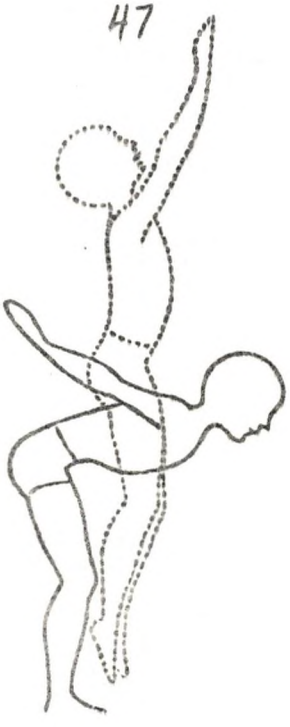

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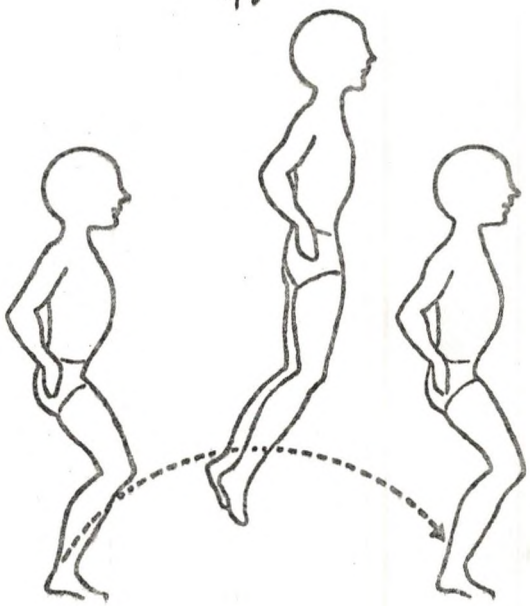

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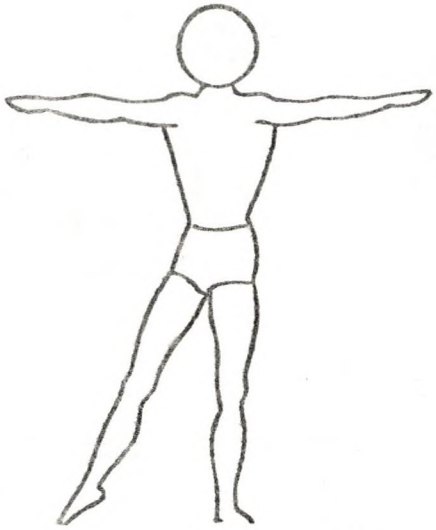

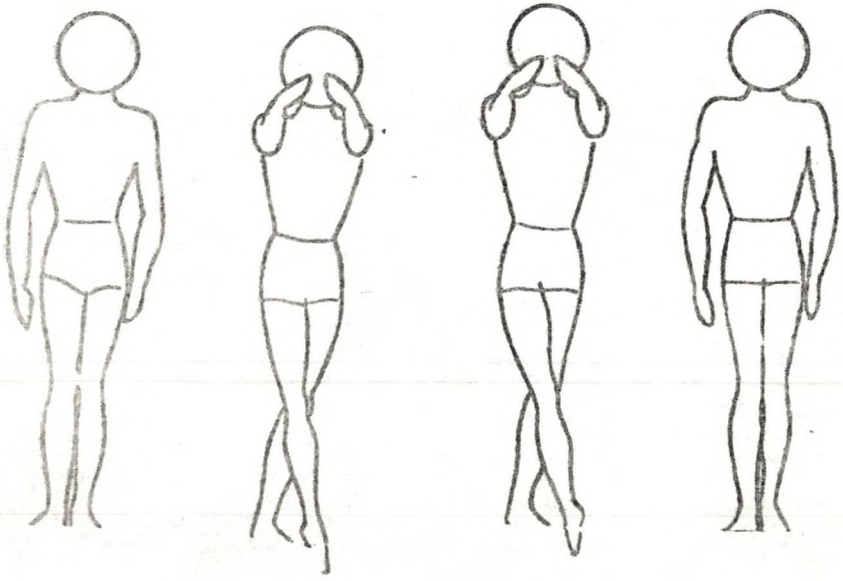

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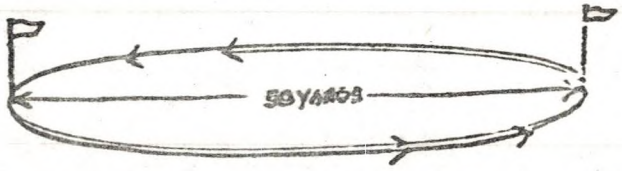

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Cross Country Run

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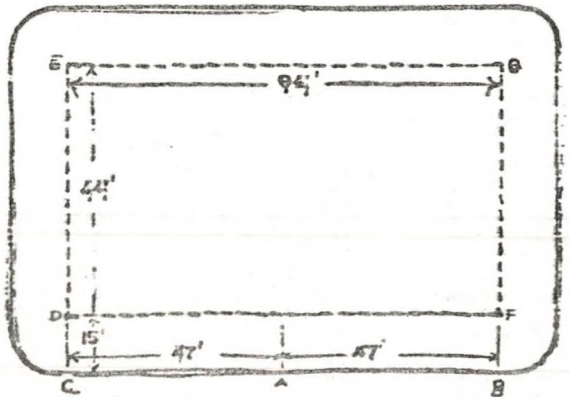
Skating



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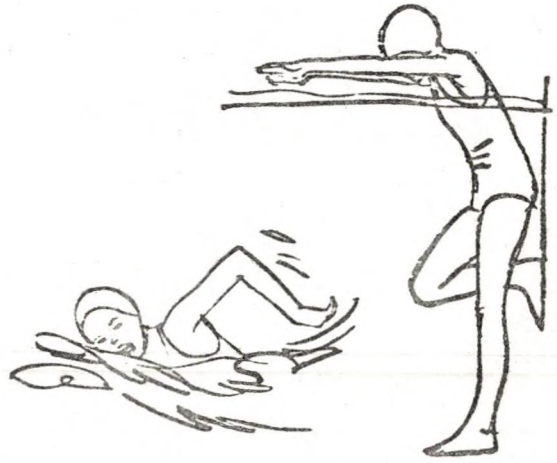
Swimming



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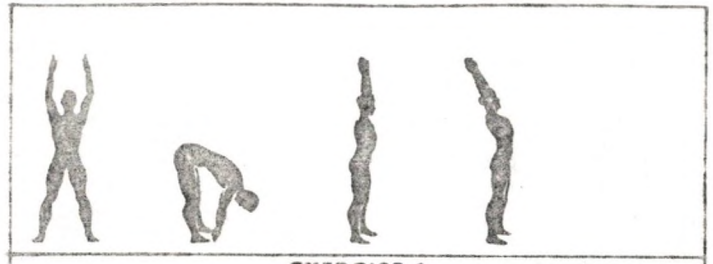

EXERCISE 1

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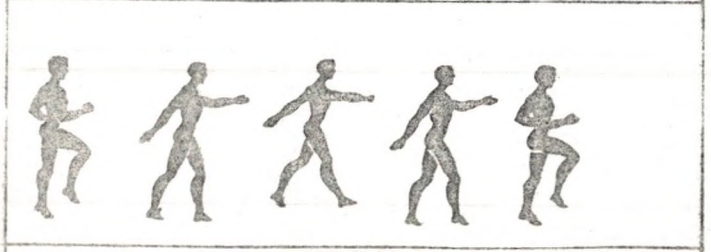

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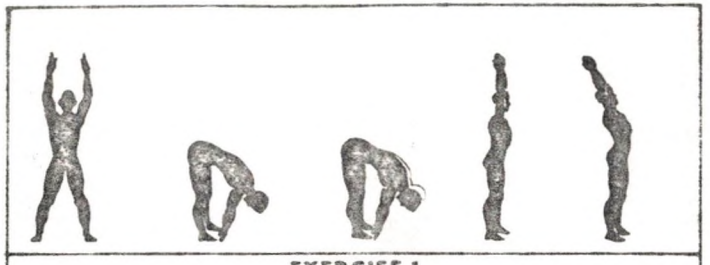

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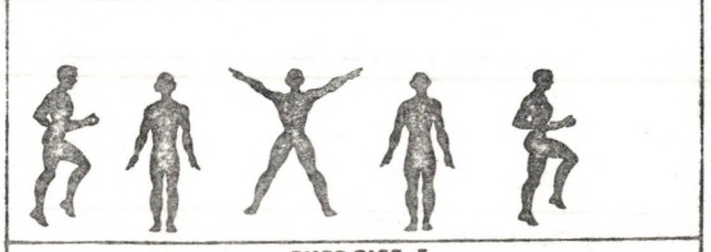

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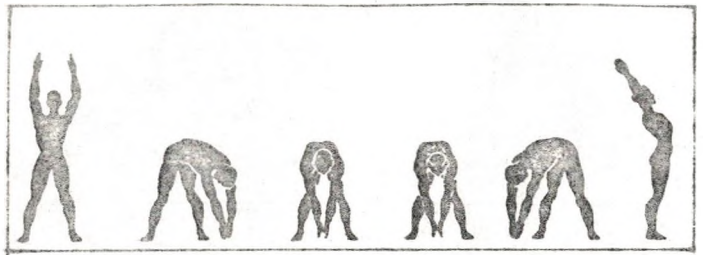

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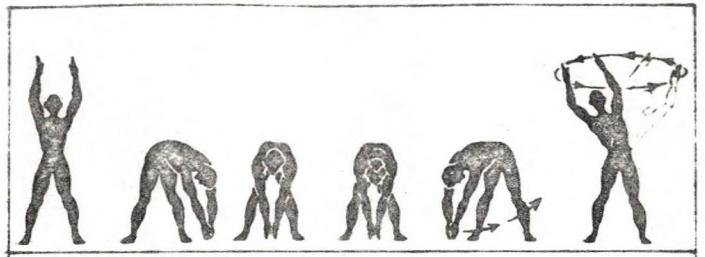

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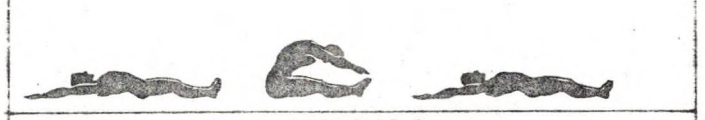

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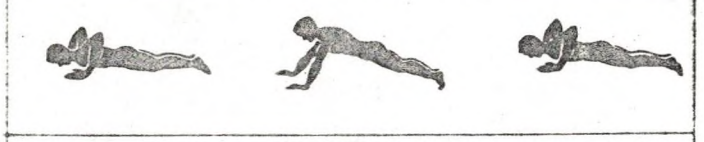

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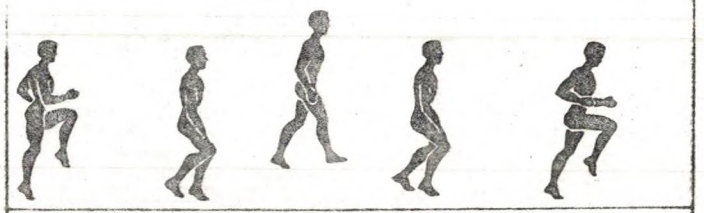

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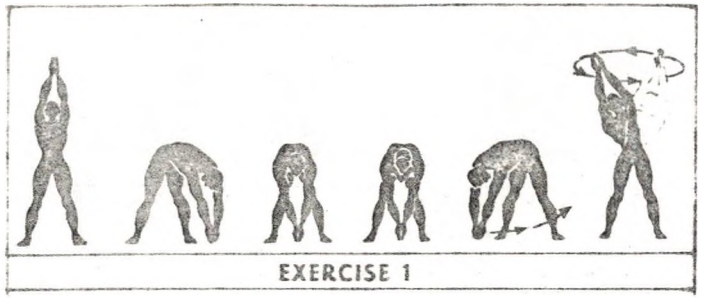

EXERCISE 1

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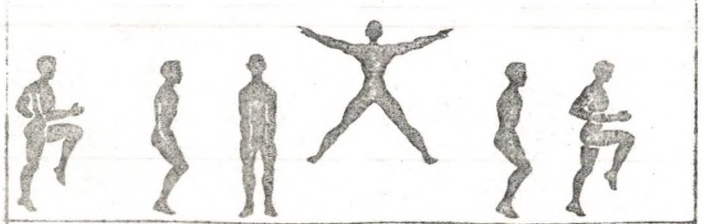

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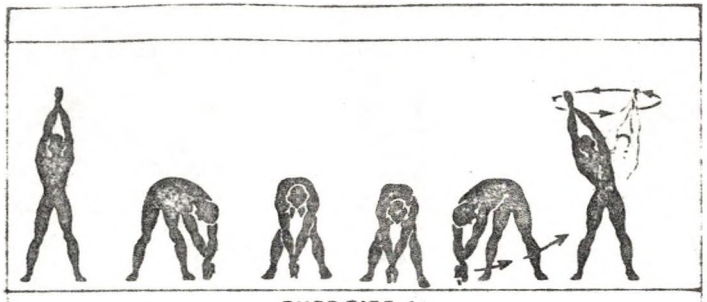

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