

A STUDY OF THE NEED FOR INTEGRATING UPPER
BODY DEVELOPMENT INTO THE PRIMARY
GRADES PHYSICAL EDUCATION
COURSE OF STUDY

BY
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ABSTRACT

Technological advances have created more leisure time than any era in history, necessitating the school to provide a program of the total body development.

This study was undertaken to determine the status of the current physical education curriculum in the primary grades, the effects of the present program and a method of strengthening area of weakness.

The procedure employed was to analyze the various publications in the area of primary physical education. The writer reviewed research published in professional journals. He interviewed physical educators, directors of physical education and a physical therapist. A model of an apparatus for the development of the upper body was designed and built by the writer.

From this study the following conclusions were established: (1) Total body development is important in every day living, (2) Suggested courses of study over-emphasized the value of games and rhythms, (3) Children in the United States compared unfavorably with children of other countries in physical fitness tests, (4) American youth revealed weakness in the upper body, and (5) A need for an apparatus for primary children for the development of the upper body was indicated.

CHAPTER I

INTRODUCTION

"The strength of our democracy is no greater than the collective well being of our people. The vigor of our country is no stronger than the vitality and will of all our countrymen."¹ With the coming of more leisure time, physical fitness of every individual is of the utmost importance. The accountability of the physical well being of our citizenry rests on everyone in the United States. The schools have the facilities and access to the children therefore have assumed a large portion of this responsibility. Physical education is an important part of the total education of children.

Americans have been said to be content in watching the few that excel, with fewer and fewer people taking part in physical activities. If we are to be active participants rather than a nation of spectators, an interest for participation must be instilled in the children in the elementary schools. There is a need for not only a vigorous but a well planned program for the development of the whole body in the primary grades. A program in which all children can participate regardless of the stage of body development, for each child's needs are different. The term "meeting the individual needs" must become more than

¹President's Council on Youth Fitness, Youth Physical Fitness. Superintendent of Documents, (Washington, D. C.: U.S. Government Printing Office, July, 1961) "A Presidential Message to the Schools on the Physical Fitness of Youth."

a phrase bandied about at conventions and in the college classrooms. It must become a reality, if we are to take up the challenge placed before us by the late President Kennedy.

Although much has been done in the past few years toward developing a more dynamic program in the secondary schools, little attention has been given to the elementary school program, especially in the primary grades. There is a need for a more scientific approach to body development in the first three grades. We can no longer afford to be self satisfied with simple games and rhythm activities as a basic program of physical education for the elementary school children. These are essential in the program but much more should be done in the area of total body development.

Having been engaged in teaching physical education in the first four grades and in instructing elementary school children in gymnastics for the past four years, the writer felt that there was a definite weakness in the arms and shoulders to execute even the basic stunts requiring the use of the upper body.

The courses of study suggested by present day authors tend to be too game and rhythms oriented, concerning themselves chiefly with the social aspect and the development of the large muscles especially for the lower part of the body.

Problem

The purpose of this study is to investigate the possibility of integrating the upper body development into a curriculum. The writer felt that a program for the strengthening of the arms and shoulders should be an essential part of a course of study in the physical education of primary age children.

Procedure

During the course of this study, the procedure followed will be (1) to examine the whole area of physical fitness and its application to the primary grades, (2) to investigate the various recommendations for a physical education program in the elementary school by authorities of the field and authors of various publications, (3) to examine research on the strength of the youth of the United States concerning the upper body development, (4) to introduce a new apparatus designed by the writer for the specific purpose of strengthening the arms and shoulders for younger children in the first, second, and third grades--the primary grades.

Limitations

There have been many textbooks and courses of study in the area of physical education in the elementary school. Therefore, the writer had to limit the examination to the more frequently used materials by recognized authorities. Because the

writer was principally interested in the first three grades, it was decided to restrict the study to the primary grade physical education program. Finally, the investigation will be limited to integrating a program of the upper body development to the general program prescribed for the primary grades by authorities in the field.

Definition

Some of the terms commonly used in physical education have not been completely understood by those who are not familiar with anatomy or kinesiology. Since this is not a study of the human body, the terms defined in this study will be limited to the major muscles applied.

Biceps Brachii. This is a large muscle on the front of the upper arm. It is used to bend the elbow and to turn the palm of the hand upward. It is a muscle that has two points of attachment at its origin.²

Triceps Brachii. This is a large muscle on the back side of the upper arm. It is used to straighten the arm. As the name indicates this muscle has three points of attachment at its origin.³

²Philip J. Rasch and Roger K. Burke, Kinesiology and Applied Anatomy (Philadelphia: Lea and Febiger, 1963) p. 207.

³Ibid., p. 206.

Deltoid. This is a triangular muscle located on the shoulder, with one angle pointing down the arm and the other two bent around the shoulder to the front and the back. There are three parts to this muscle, the anterior, middle and the posterior.⁴

Pectoralis Major. This is a large fan shaped muscle lying immediately beneath the skin over the front of the chest. There are two parts to this muscle, clavicular portion and the sternal portion.⁵

Trapezius. This is a flat sheet of muscular fiber located on the upper part of the back and lying immediately beneath the skin. There are four parts to this muscle.⁶

Arms. The arm consists of the forearm muscles and the biceps brachii and the triceps brachii. There are many minor muscles that constitutes the make up of the arm.

Shoulders. The shoulder consists of many small muscles but the main muscle is the deltoid.

Upper Body. The upper body as used in this study will be all the muscles mentioned above plus many of the minor muscles too numerous to mention in this investigation.

Prime Mover. The most important muscle in the movement of any part of the body.

⁴Ibid., p. 189.

⁵Ibid., p. 191.

⁶Ibid., p. 171.

Flexors. They are the muscles that decrease the angle of a joint.⁷

Extensors. They are the muscles that return the part from flexion to normal anatomic position. These muscles also increase the angle of the joint.⁸

In chapter II, the writer will review literature concerning the general physical fitness of children and its implication to the primary grade youngsters.

⁷Catherine Parker Anthony, Textbook of Anatomy and Physiology (St. Louis: The C. V. Mosby Company, 1963) p. 148.

⁸Ibid.

CHAPTER II

PHYSICAL FITNESS IN THE PRIMARY GRADES

Much has been written and said about physical fitness during the past decade. Since 1960, the late President Kennedy expanded his effort toward improving fitness, because of his concern about the mounting evidence of the lack of fitness of the American people.¹

Even before President Kennedy's expansion of the fitness program, Kraus² reported in 1955 that American children had a great many more failures than did the children from Italy, Switzerland, and Austria on the Kraus-Weber Test of Minimum Muscular Fitness. Since that time there has been a great deal of research on fitness conducted by physical educators and members of the medical profession. All the results pointed to the fact that most Americans are below acceptable standards physically. Some of the research shows that American youths are less fit than their forefathers³ and less fit than their coun-

¹Helen Fabricius, A Physical Education Curriculum for Elementary School Children, (Dubuque, Iowa: William C. Brown Company, Inc., 1965) p. 12.

²Hans Kraus and Ruth P. Hirschland, "Minimum Muscular Fitness Test in School Children," Research Quarterly, XXV (May, 1954) p. 178.

³Bryant Jack Cratty, "A comparison of Fathers and Sons in Physical Ability," Research Quarterly, XXXI (March, 1960) pp. 12-15.

terparts in England,⁴ Denmark,⁵ and Japan.⁶

"To be completely or totally fit means to be in a state of optimum health--physically and emotionally."⁷ The child should be able to meet and accomplish any goal that may be set or desired. Every child is limited in his capacity to perform because of his heredity and environment in which he lives. So physical fitness is that state of optimum health for an individual child at his stage of development.

To make its greatest contribution to the fitness of boys and girls, the physical education curriculum should concern itself mainly with the development of strength and the improvement of circulatory-respiratory endurance. Besides the development of these two facets of physical fitness, there will be improvement in the other aspects of fitness, such as flexibility and coordination, with this type of curriculum. Along with the above mentioned benefits there will be better mental health, increased self-esteem, confidence, courage and poise, and a zest

⁴Louis Means, "British Youth Take Fitness Test," Journal of Health, Physical Education and Recreation, XXXII (January, 1961) p. 75.

⁵Howard Knuttengen, "Comparison of Fitness of Danish and American School Children," Research Quarterly, XXXII (May, 1961) pp. 190-196.

⁶Louis Means, "Are Japanese Youth More Fit than American Youth?" Journal of Health, Physical Education and Recreation, XXXI (February, 1960) p. 61.

⁷Fabricius, op. cit., p. 13.

for living and achievement.⁸

The late President Kennedy described physical fitness in these words:

Physical fitness is not only one of the most important keys to a healthy body; it is the basis of a dynamic and creative intellectual activity. We know and the Greeks knew, that intelligence and skill can only function at the peak of their capacity 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 activities of our society. And if our bodies grow 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 America.⁹

There are many reasons given for the lack of fitness of the children today. The technological explosion has created for us a life that requires little physical activity. "Experts say that children need three to four hours of physical activity every day for proper growth and development."¹⁰ Since the advent of television, the three or four hours of activity seems unobtainable. Schramm said, "The average child spends on the television in his first sixteen years of life as much time as he spends in school."¹¹ If schools are to take the responsibility for the fitness of the children, it must begin to revise the curriculum to fill the needs of children.

⁸Fabricius, op. cit., p. 14.

⁹John F. Kennedy, "The Soft American." Sports Illustrated, XXI (December 26, 1961) p. 34.

¹⁰Fabricius, op. cit., p. 15.

¹¹Ibid.

Charles Nagel¹² from the University of California at Los Angeles in charge of the Elementary School Program says that since children that start school must learn to play together and learn to get along with each other, the activities offered in the primary physical education programs are largely games and rhythms. Nagel goes on to say, children are involved in various activities as rolling, jumping down, imitating animals, climbing and hanging before entering school. Many of these activities are taught by older brothers and sisters through dares or challenges. The children have accepted the challenge and performed--then Nagel asks this thought provoking question, should such activities end when children enter school?

There is increasing evidence concerning the value of fitness. Fabricius summarized the value as:

The goal in the pursuance of fitness is a body that is efficient, skilled, attractive and less susceptible to fatigue. Concomitant with physical fitness, and an "extra dividend" is improved mental health with alertness, poise, self confidence and self control.¹³

Dr. Dwight H. Murray, past president of the American Medical Association had this to say about physical activity.

All sorts of evidence points to the need for vigorous activity in childhood and youth and we are coming to recognize the necessity for maintaining appropriate

¹²Charles Nagel, "Elementary School Children Want and Need More Challenging Activities," Readings in Physical Education for the Elementary School, Ed. James H. Humphrey, Edwina Jones, and Martha J. Haverstick (Palo Alto, California: The National Press, 1960) pp. 52-58.

¹³Fabricius, op. cit., p. 16.

exercises through the middle years. This points up the importance of inculcating in boys and girls an appreciation and desire for physical activity that will persist through out life.¹⁴

A varied physical education program is the key to encouraging life long interest in vigorous activities. A comprehensive physical education program teaches all students to enjoy the benefits of exercise while promoting their physical and physiological development. Research is continually revealing that adequate exercise and physical activity contribute significantly to good health.¹⁵

It is evident that the school physical education program should include more than low organization games and rhythm activities. In chapter III, an examination of the literature will be made to determine if authorities in the field were suggesting too much of the time be spent in games and rhythms and also to determine if there is a need for integrating into the suggested curriculum an area of upper arm development.

¹⁴Clem W. Thompson, "A Source of Strength," Journal of Health, Physical Education and Recreation, XXXIII (January, 1962) p. 32.

¹⁵"Need for Varied Activities in Physical Education Program," Journal of Health, Physical Education and Recreation, XXXVI (June, 1965) pp. 6-8.

CHAPTER III

REVIEW OF LITERATURE

In the review of literature for this study, attention was given to the current programs of physical education, and the research on the physical fitness of youth with special interest in the upper body development.

The present program found in various publications and curriculum guides, for the primary grades, indicates that there is too much emphasis on the low organization games and rhythms. Miller and Whitcomb¹ show that forty per cent of the allotted time for physical education should be for low organization activities, which includes running and tag games, simple ball games, and relays. Another thirty per cent of the time for rhythmic activities, and fifteen per cent for apparatus, tumbling and stunts.

Dauer² allotted forty-five per cent of the time to simple games and athletic skills, with the emphasis on the simple games and thirty-five to forty-five per cent of the time to rhythms and movement exploration. He allowed ten per cent of the time for stunts and tumbling.

¹Arthur G. Miller and Virginia Whitcomb, Physical Education in the Elementary School Curriculum (Englewood Cliffs: Prentice-Hall, Inc., 1957) p. 40.

²Victor P. Dauer, Fitness for Elementary School Children through Physical Education (Minneapolis: Burgess Publishing Co., 1958) p. 9.

Vannier and Foster³ recommended twenty-five per cent of the time for rhythmic activities and fifty-five per cent of the time to play skills, relays, story plays and team games. They suggested fifteen per cent of the time be spent on stunts, apparatus and self testing skills.

The Idaho Study Guide for Physical Education⁴ recommended thirty-five per cent of the time for rhythms, sixty per cent for low organization activities, including games, relays, mimetics, and five per cent of the time for self testing, tumbling and stunts for the first grade, ten per cent for the second grade and fifteen per cent for the third grade.

The North Dakota Physical Education Guide⁵ recommended the following time allotment; forty-five per cent for low organization games, forty-five per cent for rhythm activities, and ten per cent for tumbling and stunts.

Fabricius⁶ suggested thirty per cent of the time for games and sports, thirty per cent for rhythms and forty per cent for self testing. After close examination, she included

³Maryhelen Vannier and Mildred Foster, Teaching Physical Education in Elementary Schools (Philadelphia: W. B. Saunders Co., 1958) p. 12.

⁴Idaho, State Department of Education, Idaho Study Guide for Physical Education, Grades 1-6 by D. R. Engelking (Boise, 1960) p. 12.

⁵North Dakota, Department of Public Instruction, Physical Education Guide for Elementary Schools by M. R. Peterson (Bismark, 1960) p.12.

⁶Fabricius, op. cit., p. 67.

skills in athletic events as throwing, catching, bouncing, running in the self testing activities, while other authors mentioned above included them in the games and athletic skills. Also included in the self testing were the locomotive skills usually taught in the rhythms activities. After a more critical analysis, Fabricius suggested approximately fifteen per cent of the time for stunts, tumbling and apparatus work.

Nagel⁷ felt that games and rhythms are not enough to satisfy the total physical, mental, and social needs of children. He suggests a well balanced program with the use of stunt play activities. The reasons given are:

1. Physiologically, a stunt play program for children will:
 - a. Offer essentials needed for maintaining and developing physical fitness.
 - b. Develop better body control through the use of both large and small muscles which helps to eliminate injuries.
 - c. Develop agility, flexibility, strength, and balance quicker than any other activities in the program.
 - d. Develop ability to handle their bodies more effectively when not standing. Positions of body inverted and in other positions are essential safety factors.
 - e. Release physical and emotional tension.
2. Sociologically, a stunt play program for children will:
 - a. Satisfy the basic need of approval from peers and adults.
 - b. Offer an opportunity to entertain and enjoy a degree of popularity.
 - c. Offer a feeling of dual and group cooperation in working the stunts with others.
 - d. Give opportunity for leadership and followership roles.
 - e. Offer opportunity to participate with opposite sex.

⁷Nagel, op. cit., p. 54.

3. Psychologically, a stunt play program for children will:
 - a. Give them a greater opportunity to achieve success in either simple or complex stunts.
 - b. Provide an opportunity for quicker recognition and attention from peers and older friends.
 - c. Obtain personal satisfaction in creating artistic expression.
 - d. Build their confidence, courage and perseverance.
 - e. Provide for opportunities in leadership.

Other writers in the field felt that the primary grade physical education curriculum consisted chiefly of games and rhythms.

If we were to investigate the program of physical education offered in our elementary schools, our suspicions would be confirmed as to the weak link in our chain of education. Usually the program is rhythms and games and seldom is there any physical education on the elementary school level. We are still in the "game playing" stage. We have forgotten that physical fitness should be part of the objectives of physical education.⁸

"Too much time is often placed on highly organized competitive situations in the primary grades."⁹ This type of atmosphere creates a high degree of pressure and tension, especially to the low achiever in the basic skills. Even when teaching the basic skills, there is an air of competitiveness as relays and contests are used for motivation.

Primary grade children are easily frustrated when they can not achieve a certain amount of success in a hurry. They

⁸J. P. Doherty, "Let's Stop Playing Games," The Physical Educator, XXII (March, 1965) p. 34.

⁹Larry Gray, "Games Can Wait," Journal of Health, Physical Education and Recreation, XXXVI (May, 1965) p. 79.

fear ridicule from their peers or they have a desire to please or impress the gym teacher or classroom teacher. There should be a program to meet the needs of each individual where he can feel free to experiment and improve himself without being self-conscious. The games can wait.¹⁰

The games and rhythms oriented physical education program in the primary grades has produced youth that fall far short of youth in other countries in physical fitness. It has been revealed in studies that the American youth are especially weak in the upper body development.

The American Association of Health, Physical Education and Recreation Physical Fitness Test was administered to almost 30,000 Japanese children from all parts of Japan, both urban and rural. "The Japanese children excelled American youth in arm strength by considerable margins, for both boys and girls."¹¹ In Britain 10,000 boys and girls were tested and the Americans trailed in almost every component of the physical fitness test. "In all tests and at all ages, the British boys finished fourteen per cent higher than the United States average, the British girls were twenty-three per cent ahead of the United States girls."¹² Another test was conducted in Denmark with 319 boys

¹⁰ Ibid., p. 79.

¹¹ Namiko Ikeda, "A Comparison of Physical Fitness of Children in Iowa, U.S.A. and Tokyo, Japan." Research Quarterly, XXXIII (December, 1962) pp. 541-551.

¹² Means, op. cit., p. 75.

and 334 girls; again the American youth lagged far behind the Danish youth in arm and shoulder strength. The researcher attributed the arm and shoulder strength to the extensive work in the area of gymnastics. The gymnastics program in Denmark is carried on through winter months.¹³

The weakness of the arm strength manifested itself in a survey conducted at Yale University. "The pull-up test showed the greatest number of failures, in that a little over forty percent of the 10,000 entering freshmen failed to meet the standard of eight chins."¹⁴

The development of the upper body should have its start in the primary grades. McCloy,¹⁵ recognized as the leading researcher in the area of physical education, says:

It is believed that the development of the strength of the upper limbs would improve the performance of any type of athlete, and that in justice to the pupil from the stand point of promoting more skillful performance and with it greater interest and pleasure in participation--such development should be assured fairly early in his school life.

¹³Howard G. Knuttengen, "Comparison of Fitness of Danish and American School Children," Research Quarterly, XXXII (May, 1961) pp. 190-196.

¹⁴T. Erwin Blesh and Alfred E. Scholz, "Ten Year Survey of Physical Fitness Tests at Yale University," Research Quarterly, XXVIII (December, 1957) pp. 321-326.

¹⁵C. H. McCloy, "The Apparent Importance of Arm Strength in Athletics," Research Quarterly, V (March, 1934) p. 7.

In chapter IV, the writer will attempt to integrate a program of developing the arms and shoulders of the primary grade children into an existing curriculum.

CHAPTER IV

INTEGRATING UPPER BODY DEVELOPMENT INTO CURRICULUM

It has been revealed in the previous chapter that the physical education curriculum suggested by authors and authorities in the field is over emphasizing low organization games and rhythmic activities. It can not be denied that games and rhythms are an important part of the total physical education program. Today, there is an obvious need for development of the upper body which is not met by these two types of activities. A little de-emphasis on low organization games and rhythmic activities would leave adequate time for a program designed to develop the upper body. This program should not be limited to a specific period but spread throughout the school year.

Gymnastic skills can help in the improvement of the poor upper body muscular efficiency of American boys and girls. "A basic gymnastics program for elementary grades will contribute to the development of big muscle groups where it is needed--arms, shoulders, and abdomen." A good gymnastics program should solve some of the basic problems confronting physical education in the schools today. "It specifically helps to develop that part of the body which has been so neglected in American youth--the upper arms and shoulders."²

¹John Piscopo, "Gymnastics," Journal of Health, Physical Education and Recreation XXXV (October, 1964) p. 24.

²"Gymnastics," Journal of Health, Physical Education and Recreation XXXV (October, 1964) p. 21.

In order to have a basic gymnastics program in the elementary school, there must be a prerequisite to this type of activity. The chinning bar, horizontal ladder and the peg boards are for the development of the upper body, but most of the primary children find the apparatus much too difficult to use as intended. After meeting failure time and again the apparatus is left for the few that can effectively use them.

New Apparatus

The writer designed a new apparatus that would provide the physical development necessary for success with the chinning bar, horizontal ladder, peg boards and other equipment. Since the revelation of the weakness in the upper body of children in grades four, five and six, the writer felt the need for some kind of apparatus to strengthen the upper body, while the children are still in the primary grades. After conceiving the idea for the apparatus, the writer consulted physical educators actively engaged in elementary school physical education as to its application and use of the apparatus in the primary grades. The physical educators whole heartedly endorsed the idea as practical, useful and feasible.

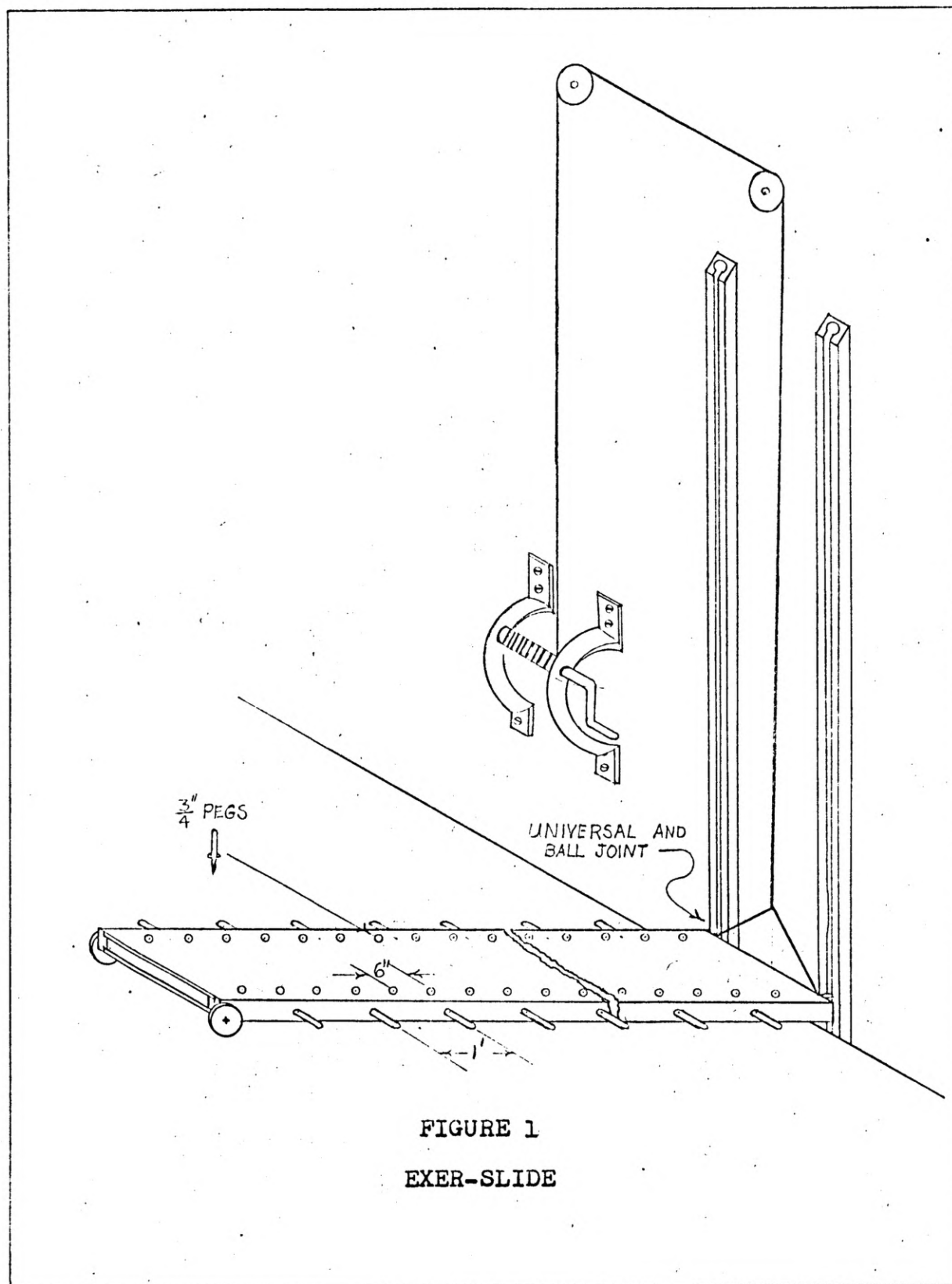
The apparatus, called the "EXER-SLIDE", challenges every individual regardless of his stage of upper body development. It is important for most children to be successful in physical education most of the time as in other skills.

Consequently, children of low physical ability and children of greater dexterity and strength can perform on this apparatus without feeling inferior or superior to other children, since they are working individually.

Figure 1 shows that the apparatus is a board that has been built with two pieces of two-by-fours sixteen feet long. The two-by-fours are placed ten inches apart with the narrow side as the top and bottom. A slot was routed one-half inch deep and one inch wide out on the top and bottom of the two-by-four along the length of the inner edge. There are four pieces of one-half inch plywood cut twelve inches wide and eight feet long. The plywood was fitted into the slots in the two-by-four on the top and bottom to make the surface flush and smooth. Formica has been adhered to the top surface to make a continuous smooth surface.

The handles as shown in Figure 1 are placed on the side at twelve inch intervals in the center of the two-by-fours. The right side was started six inches from the end and the left side started a foot from the end, thus giving a staggered effect. The handles are protruding six inches on the side and are one and one-fourth inches in diameter.

The top surface has holes three-fourths inch in diameter located one inch from either side along the length of the board. These holes are located six inches apart starting nine inches from the end. The holes are drilled two inches deep. The pegs to fit these holes are made of three-fourth inch



doweling with one end slightly pointed for easier insertion as shown in Figure 1.

The apparatus is attached to the wall as shown in Figure 1. The winch and pulley system will hoist the attached end near the wall. As shown in Figure 1, the attached end was fitted into a track to keep the alignment, while the far end rolls on wheels toward the wall. When the board is perpendicular, it is in storage position, so no more than six or seven inches of floor space is used.

Use of Apparatus

To use the apparatus, the cable is released through the winch and the wheels start to roll the board out on to the gym floor. It can be stopped at any height to control the incline from the maximum to the minimum pull of gravity.

The exer-slide is placed in the position least taxing to the child at first; that is with the board parallel to the floor. This insures that the child meets success from the beginning. The child lies down on the board in a prone position as shown in Figure 2. He extends his right arm as far forward as possible and grasps the handle with the right hand. The left arm is not fully extended for the left hand is grasping a handle six inches closer to the body. The child flexes his right arm and pulls himself forward with the help of the left side as a guide. The next step is for the left hand to release the handle

and reach for the next handle away from him on the left side. The left arm is flexed moving the body forward with the aid of the right side as a guide. By alternating the releasing and grasping of the hands, and the flexion of the arms, the child propels himself forward. Almost every child can complete this process for there is minimal gravitational pull with the board parallel to the floor. If a child is a very low achiever he can still move himself forward with the help of his feet pressing against the handles--this step is only recommended for the child that shows very slow physical development.

As the child pulls himself forward, the active flexors are the deltoids, pectoralis major, and biceps brachii. The biceps brachii being the prime mover. The stabilizing muscles, the muscles that hold up the shoulder, are the upper trapezius, mid-trapezius and other muscles in the back.

The next exercise is with the child lying on the board with his feet toward the attached end in a prone position as shown in Figure 3. The child grasps the handle closest to him with one hand and pushes away from the handle by extending the arm. By alternating the extension of the arms, the child will push himself backwards to the other end of the board.

As the child pushes himself backwards, the active extensors are the three points of the triceps and the serratus anterior. The prime mover being the triceps. The stabilizing muscles are the same as the ones used in the flexion.

When the child feels sufficiently secure and competent,

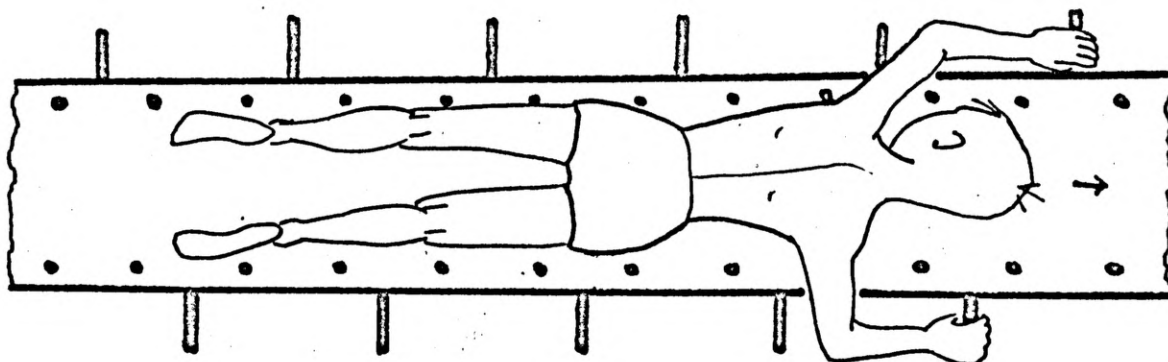


FIGURE 2

TOP VIEW OF CHILD PULLING ON HANDLE
MOVING FORWARD ON EXER-SLIDE

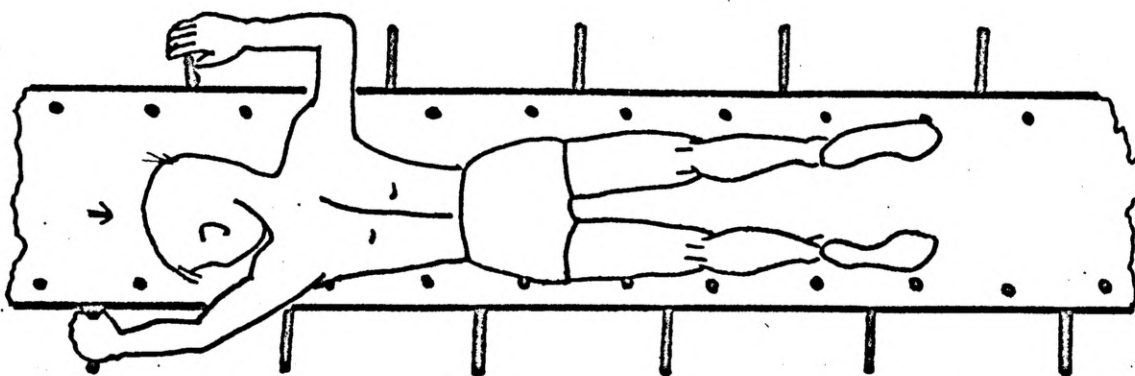


FIGURE 3

TOP VIEW OF CHILD PUSHING ON HANDLE
MOVING BACKWARD ON EXER-SLIDE

the attached end of the board is raised slightly. The gradual incline forces the child to pull or push against the force of gravity, requiring more strength of the arms and shoulders. As the child's strength increases, the incline is increased, thus adjusting to individual challenge and need.

Another use of the board is utilizing the holes along the top side of the board. The child lies on the board in a prone position with a peg in each hand as shown in Figure 4. The right arm is fully extended with the peg placed in the hole on the right side. The left arm is partially extended with the peg in the hole on the left side six inches behind the peg on the right side. The right arm is flexed and simultaneously the peg on the left side is pulled out and the left arm is fully extended. The left hand inserts the peg into the hole twelve inches (two holes beyond the one vacated) ahead. By continually alternating the pulling from the right arm to the left arm, the child moves toward the attached end of the board. In this exercise the same flexors are used as in the previously described pulling exercise. The added advantage of this exercise is the improvement of the eye-hand coordination.

The pushing exercise is used with the child lying in a prone position with his feet toward the goal as shown in Figure 5. The child employs the same technique as the pushing exercise mentioned above with the handles. The pegs are inserted into the hole instead of releasing and grasping the handles. He pushes himself backwards by the use of the extensors rather

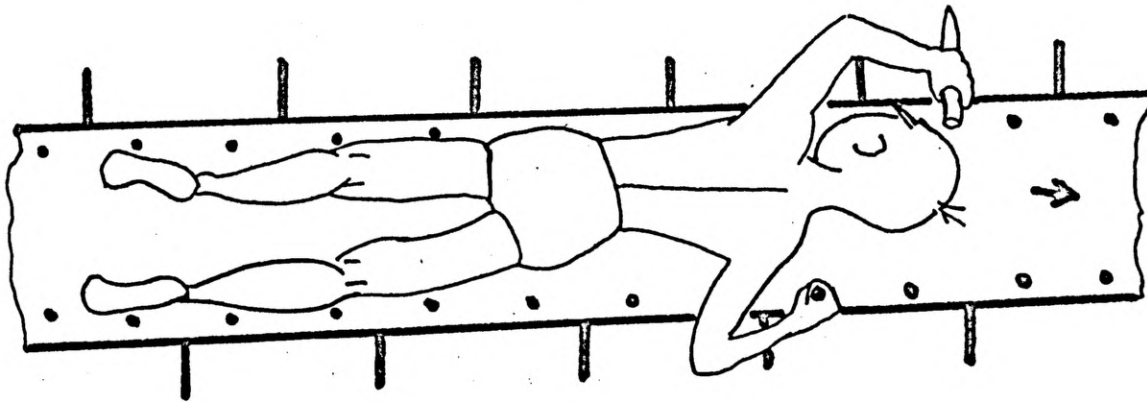


FIGURE 4

TOP VIEW OF CHILD INSERTING PEGS
TO MOVE FORWARD BY PULLING

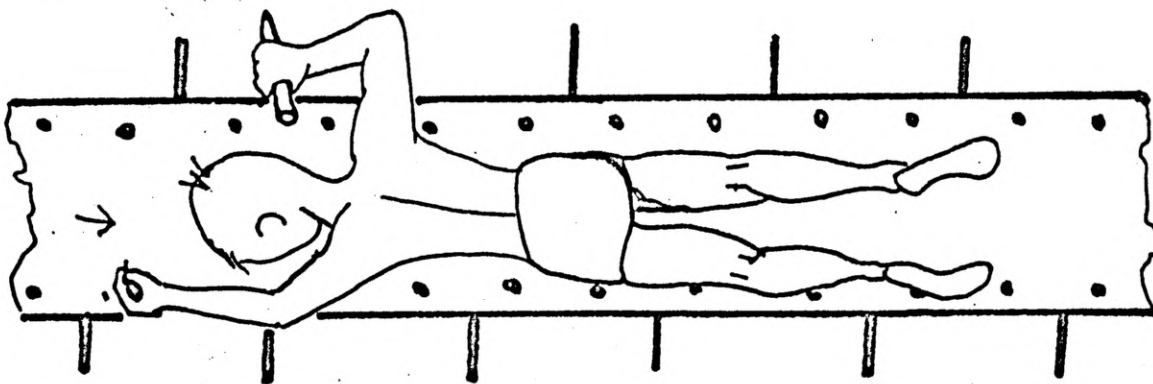


FIGURE 5

TOP VIEW OF CHILD INSERTING PEGS
TO MOVE BACKWARD BY PUSHING

than the flexors. Again the eye-hand coordination is developed, with this exercise the hand is brought closer to the eye.

In the following exercise the child is lying in a prone position with pegs in both hands as shown in Figure 6. The child extends both arms fully and inserts both pegs into the holes equi-distant from the end of the board simultaneously. Pulling on both pegs, the child moves himself forward as far as possible. He then pulls out the pegs and fully extends his arms and inserts the pegs into the holes at the same time. He continues to pull himself forward by using both hands together. The same flexing and stabilizing muscles are used as mentioned above in this exercise. In addition to the upper body development and the improvement of the eye-hand coordination, the student's use of peripheral vision should improve.

The pushing exercise with the use of the pegs at the same time is accomplished in the same manner described above, except the child is lying in a prone position with his feet toward the attached end as shown in Figure 7. Again as in the other pushing exercises the extensors are used. Since the hands are brought close to the eyes, there is more demand on the student's peripheral vision as he inserts the pegs in the holes at the same time.

When development of the upper body is achieved to the extent that the child can benefit from the peg board, horizontal ladder, and the chinning bar, he can achieve success and enjoyment in gymnastics or most any other athletic endeavor in which

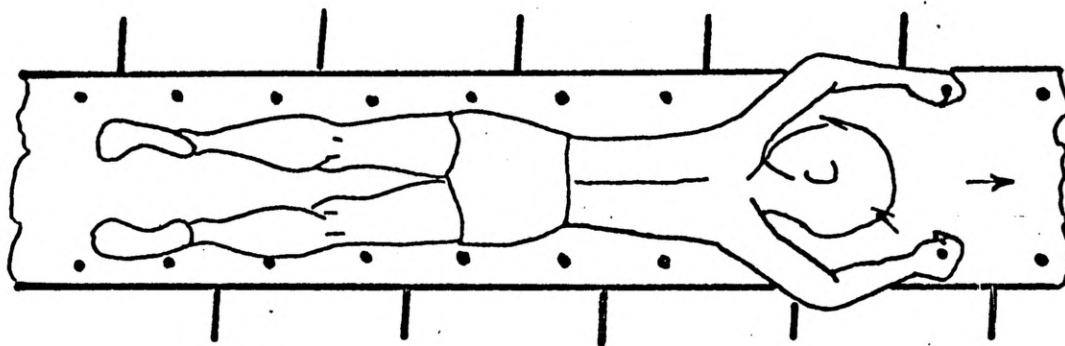


FIGURE 6

TOP VIEW OF CHILD PLACING PEGS INTO HOLES
TO PULL HIMSELF FORWARD WITH
USE OF BOTH ARMS

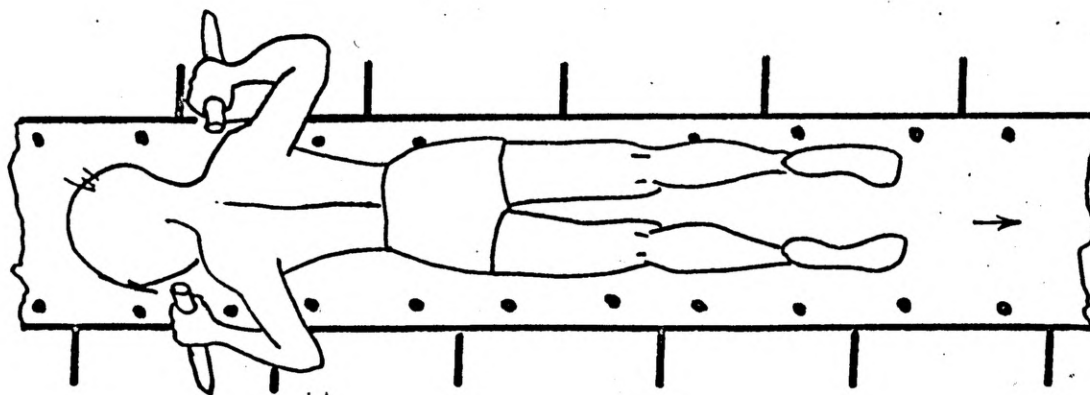


FIGURE 7

TOP VIEW OF CHILD PLACING PEGS INTO HOLES
TO PUSH HIMSELF BACKWARD WITH
USE OF BOTH ARMS

he participates. The upper body development is not only important for athletics but for every day living. Every day as people move about in their daily routines, the need for stronger upper bodies becomes apparent.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The problem of this study was to examine the literature regarding physical education in the primary grade, because there seemed to be considerable time spent on low organization games and rhythmic activities. It was also believed that the youth of today lacked physical development, especially in the arms and shoulders. The upper body development should be integrated into a course of study. It was further opinioned through experience with children by the writer that the apparatuses in the elementary schools were generally too difficult for primary grade children to master.

According to the literature, the youth of America do not compare favorably with youths of other countries in physical fitness. The technological advances has made the citizens of the United States a nation of button pushers and the need for physical activity has nearly been eliminated. If we are to gain and maintain respect as a nation worthy of world leadership, physical fitness as well as academic fitness is a factor with which we must be concerned, since evidence shows generally that our youth are sub-standard. Consequently a major share of the responsibility for physical fitness rests with the schools offering an adequate program of physical fitness and establishing in

primary children the importance of physical health.

The literature states that the youth in the United States are in need of strengthening the upper body. Various studies have revealed that the youth of today are weaker in the arms and shoulders than any of their contemporaries in other countries, where fitness tests were given.

Gymnastics, especially the apparatus work, has been long recognized as one of the best means of upper body development. If children in the upper elementary grades are to take part in gymnastics, better apparatus for the primary grade children seemed necessary as a prelude to gymnastics apparatus. Hence, the development of the exer-slide, principally for the growth of the upper body, directed at the primary grade children. The apparatus was so designed that no child should meet failure. Even the lowest achievers can meet some form of success and with success comes the challenge and acceptance of the challenge to greater success.

Physical educators, directors of physical education and a physical therapist, that the writer contacted, all endorsed the new exer-slide as an apparatus that provides the needed upper body development and could find nothing that would be detrimental to children in any respect.

Conclusions

The following conclusions were drawn from the study:

1. Generally suggested courses of study over emphasized the values of low organizational games and rhythmic activities.
2. The general fitness of children in the United States does not compare favorably with children of other countries.
3. A weakness exists in the upper body development of American youth.
4. There is a need for an apparatus for the primary children for the development of the arms and shoulders.

Recommendations

Research should be conducted with the new exercising board to determine the amount of benefit derived from the various exercises prescribed in the study. The research should follow a control and an experimental group of children from the first grade through the sixth grade for valid and reliable results.

Apparently there is a need to investigate the present curriculum in the area of primary physical education in the state of Montana.

The writer recommends that the State Department of Public Instruction for the State of Montana develop a course of study in physical education for the elementary schools that provides for a well balanced program.

With this view in mind toward the future physical development of youth, an exercising board of the writer's design to develop the upper body is needed. An awareness of this lack of physical development prompted the writer to make this study. It is hoped that further studies in this area will result in definite steps being taken.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Anthony, Catherine Parker. Textbook of Anatomy and Physiology. St. Louis: C. V. Mosby Company, 1963.
- Blesh, Erwin T. and Alfred E. Scholz. "Ten Year Survey of Physical Fitness Tests at Yale University," Research Quarterly, XXVII (December, 1957), pp. 321-326.
- Clarke, H. Harrison and David H. Clarke. Developmental and Adapted Physical Education. Englewood Cliffs: Prentice-Hall, Inc., 1963.
- Cratty, Bryant Jack. "A Comparison of Fathers and Sons in Physical Ability," Research Quarterly, XXXI (March, 1960), pp. 12-15.
- Dauer, Victor P. Fitness for Elementary School Children through Physical Education. Minneapolis: Burgess Publishing Co., 1965.
- Doherty, J. P. "Let's Stop Playing Games," The Physical Educator, XXII (March, 1965), pp. 33-35.
- Fabricius, Helen. A Physical Education Curriculum for Elementary School Children. Dubuque, Iowa: William C. Brown Co. Inc., 1965.
- Gray, Larry. "Games Can Wait," Journal of Health, Physical Education and Recreation, XXXVI (May, 1965), pp. 35-36.
- "Gymnastics," Journal of Health, Physical Education and Recreation, XXXV (October, 1964), p. 21.
- Idaho, State Department of Education. Idaho Study Guide for Physical Education, Grades 1-6. Boise, 1960.
- Ikeda, Namiko. "A Comparison of Physical Fitness of Children in Iowa, U.S.A. and Tokyo, Japan," Research Quarterly, XXXIII (December, 1962), pp. 542-552.
- Kennedy, John F. "The Soft American," Sports Illustrated, XXI (December 26, 1961), pp. 32-35.
- Knuttengen, Howard G. "Comparison of Fitness of Danish and American School Children," Research Quarterly, XXXII (May, 1961), pp. 190-196.
- Kraus, Hans and Ruth P. Hirschland. "Minimum Muscular Fitness Test in School Children," Research Quarterly, XXV (May, 1954), pp. 4-7.

- Mathews, Donald K. Measurement in Physical Education. Philadelphia: W. B. Saunders Company, 1963.
- McCloy, C. H. "The Apparent Importance of Arm Strength in Athletics," Research Quarterly, V (March, 1934), pp. 4-7.
- Means, Louis. "Are Japanese Youth More Fit than American Youth?" Journal of Health, Physical Education and Recreation, XXXI (February, 1960), p. 61.
- Means, Louis. "British Youth Take Fitness Test," Journal of Health, Physical Education and Recreation, XXXII (January, 1961), p. 75
- Miller, Arthur B. and Virginia Whitcomb. Physical Education in the Elementary School Curriculum. Englewood Cliffs: Prentice Hall, Inc., 1957.
- Nagel, Charles. "Elementary School Children Want and Need More Challenging Activities," Readings in Physical Education for the Elementary School. Ed. James H. Humphrey, Edwina Jones, and Martha J. Haverstick. Palo Alto: The National Press, 1960.
- "Need for Varied Activities in the Physical Education Program," Journal of Health, Physical Education and Recreation, XXXVI (June, 1965), pp. 6-8.
- North Dakota, Department of Public Instruction. Physical Education Guide for Elementary Schools. Bismark, 1960.
- Piscopo, John. "Gymnastics," Journal of Health, Physical Education and Recreation, XXV (October, 1964), pp. 23-25.
- President's Council on Youth Fitness. Youth Physical Fitness. Superintendent of Documents, Washington D. C.: U.S. Government Printing Office, 1961.
- Rasch, Philip J. and Roger K. Burke. Kinesiology and Applied Anatomy. Philadelphia: Lea and Febiger, 1963.
- Staley, Seward Charles. Physical Exercise Programs. St. Louis: The C. V. Mosby Company, 1953.
- Thompson, Clem W. "A Source of Strength," Journal of Health, Physical Education and Recreation, XXXIII (January, 1962), pp. 31-33.
- Vannier, Maryhelen and Mildred Foster. Teaching Physical Education in Elementary Schools. Philadelphia: W. B. Saunders Company, 1958.