

A STUDY OF PHYSICAL FITNESS  
OF FRESHMAN GIRLS AT LUCKEY HIGH SCHOOL  
MANHATTAN, KANSAS 1964-1965

by

JAMES L. PFANENSTIEL

B. S., Kansas State University, 1964

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A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Physical Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1965

Approved by:



Major Professor

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## INTRODUCTION

Modern technology and urbanization have reduced the amount of physical activity in our everyday lives, and many of us do not get enough vigorous exercise to attain and maintain cardiovascular and respiratory fitness or good muscle tone. The result: at least one of every four Americans are overweight, and many of our children have poor posture, flabby muscles, and flagging stamina. Several thousand school children were given physical screening tests in 1961 and 1962, and nearly one-third of them failed to meet minimum established standards for strength, agility, and flexibility. Only one in ten attained satisfactory levels in all seven categories of a comprehensive test of physical achievement. The average high school student will spend from 15 to 30 hours a week watching television and less than 2 hours per week in physical education classes. More than half of our children do not get 15 minutes of planned, vigorous activity daily which is considered basic to physical fitness.<sup>1</sup>

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

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<sup>1</sup>"The President's Council on Physical Fitness"  
(Washington: U. S. Government Printing Office, 1963).

strong, agile bodies. The softening process of our civilization continues to carry on its persistent erosion.<sup>1</sup>

It is of great importance, then, that we take immediate steps to insure that every American child be given the opportunity to make and keep himself or herself physically fit--fit to learn, fit to understand, to grow in grace and stature, to fully live.<sup>2</sup>

In the absence of some organic deficiency or infection, one's lack of physical fitness is usually due to insufficient exercise. It is incumbent upon the physical education program as a part of the total school program to strengthen boys and girls in the desires and technics of being well, happy, active, powerful, co-operative human beings, able to stand the stresses and strains of present day living.<sup>3</sup>

If you are physically fit, you will be able to do your schoolwork and perform other duties without becoming unduly tired, so that you have sufficient energy left for enjoying recreation and hobbies. You will also look better and perform better mentally. Your mind will be more active and alert, and your body will be trimmer and more graceful. Your

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<sup>1</sup>Youth Physical Fitness (Suggested Elements of a School-Centered Program, Parts I and II, Washington: The President's Council on Youth Fitness, July 1961), p. 1.

<sup>2</sup>Ibid.

<sup>3</sup>Rosalind Cassidy and Hilda C. Kozman. Physical Fitness for Girls. (New York: A. S. Barnes and Company, Inc., 1943), p. XIV.

personality will be bolstered by new interests, confidence and enthusiasm.<sup>1</sup>

Physical fitness means a great deal more than freedom from sickness or passing a medical inspection. In addition, to freedom from germinal or chronic disease, possessing good teeth, good hearing, good eye sight, 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 diminished efficiency.<sup>2</sup>

#### PURPOSE OF PHYSICAL FITNESS TESTING

Physical fitness tests contribute significantly to total evaluation of the student. They also motivate toward desirable activity as pupils gain knowledge of their condition and progress. Further, they provide diagnostic evidence for guidance in advanced work and furnish data for administrative purposes such as classification, the keeping of records, and the making of reports. In addition, they provide information which helps teachers and administrators to judge the effectiveness of programs and teaching methods.<sup>3</sup>

If these purposes are to be served, the records must be

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<sup>1</sup>Vim. The President's Council on Physical Fitness. (Washington: U. S. Government Printing Office, 1964), p. 4.

<sup>2</sup>Thomas K. Cureton. Physical Fitness Appraisal and Guidance. (St. Louis: The C. V. Mosby Company, 1947), p. 18.

<sup>3</sup>Clyde Knapp and E. Patricia Hagman. Teaching Methods For Physical Education. (New York: McGraw-Hill Book Company, 1953), p. 360.

representative of total achievement; must be accurate; meaningful to the student, parents, and administrator; and is economical of teachers and student time. Marks are only means of interpreting progress, not ends in themselves.

#### PURPOSE OF THE PROBLEM

The purpose of the problem was to secure information about the physical fitness of the ninth grade girls enrolled in physical education classes at Luckey High School in Manhattan, Kansas. The results were evaluated according to the norms established by the President's Council on Youth Fitness. It was expected that an analysis of the findings would be helpful in providing for the needs of the students at Luckey High, and also useful in determining some types of activities that may need more emphasis in the physical education program in the future.

#### DEFINITION OF TERMS

Flexibility--emphasizes the capacity of the body to move easily to the full range of joint flexion and extension without undue restrictions in the joints or tissues.<sup>1</sup>

Agility--emphasizes the capacity for fast reaction in controlled movement where "accuracy" is also a factor.<sup>2</sup>

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<sup>1</sup>Cureton. op. cit., p. 52.

<sup>2</sup>Ibid.

Balance--emphasizes mental control and poise, the kinesthetic sense of position, and the various anatomical and physiological capacities which regulate acts of balance.<sup>1</sup>

Strength--emphasizes the capacity of the body, or the hands or legs to exert great force.<sup>2</sup>

Power--emphasizes the capacity to release great explosive effort to execute fast or sudden efforts which move the entire body with maximum effort.<sup>3</sup>

Endurance--emphasizes capacity for continuous exertion with partial recovery during the exercise.<sup>4</sup>

Physical Fitness--that organic condition which permits the individual to skillfully utilize the body in activities involving strength, motor ability, speed or velocity, and endurance with material experience of fatigue or exhaustion.<sup>5</sup>

#### METHODS OF ADMINISTRATING THE TESTS

In giving this physical fitness test, which was recommended by the President's Council on Youth Fitness, the following procedure was followed:

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<sup>1</sup>Ibid.

<sup>2</sup>Ibid., p. 53.

<sup>3</sup>Ibid.

<sup>4</sup>Ibid.

<sup>5</sup>Ben Miller, Karl Bookwalter and George E. Schlefer. Physical Fitness for Boys. (New York: A. S. Barnes and Company, 1943), p. 2.



The ninth grade girls enrolled in physical education at Lukey High School in Manhattan, Kansas, made up the entire group of those tested for this problem. Included in this group were 11 girls of 14 years of age and 4 girls that were 13 years of age at the time of testing. For all practical purposes, the national norms for each age group were used but results and conclusions for this problem were determined as a group. A sample testing score sheet can be found in Table 1 that was used for each participating student.

The students were informed of the purpose of the tests and how the results were to be used. The tests were explained fully before they were given and each item was demonstrated completely by the instructor prior to the testing.

There were seven test items used in this study of physical fitness. They included: situps, pullups, the standing broad jump, 50 yard dash, the shuttle run, softball throw, and a 600 yard run-walk.

Students were used in assisting in the administration of the tests. They were assigned as timers, markers, recorders, and starter.

A period of three weeks was necessary to complete the entire test as the inclement weather played an important part in determining the type of activity to be tested for that particular day. Facilities included the use of the gymnasium as well as an outdoor play area.

Table 1. Sample Physical Fitness Testing Score Sheet<sup>1</sup>  
(For Girls 14 years of age)

Pupil \_\_\_\_\_ School \_\_\_\_\_ Instructor \_\_\_\_\_

Situps	Pullups	Standing Broad Jump	50 Yard Dash	Shuttle Run	Softball Throw	600 Yard Run-Walk
<b>Excellent</b>						
49	45	6'0"	7.3	10.5	112'	2:20
<b>Good</b>						
48	44	5'11"	7.4	10.6	111'	2:21
45		5'10"	7.5		107'	2:25
42	43		7.6	10.7	105'	2:29
39	42	5'9"	7.7	10.8	103'	2:34
36				10.9	100'	2:37
33	41	5'8"	7.8		96'	2:39
30		5'7"	7.9	11.0	92'	2:42
28	40	5'6"	8.0	11.2	89'	2:45
<b>Satisfactory</b>						
27	39	5'5"	8.1	11.3	88'	2:46
	38				87'	2:48
26	37	5'4"		11.4	86'	
	36				85'	2:50
25	35	5'3"		11.5	84'	2:52
24	34		8.2		82'	2:55
	33	5'2"		11.6	80'	
23	32				78'	2:57
22	31	5'1"		11.7	77'	3:0
21	30				76'	3:2
20	29	5'0"	8.3	11.8	75'	3:5
<b>Poor</b>						
19	28	4'11"	8.4	11.9	74'	3:6
	27				73'	
18	26	4'10"	8.5	12.0		3:9
	25				72'	
17	24		8.6	12.1		3:12
	23	4'9"		12.2	70'	3:15
	22		8.7	12.3	68'	
16	21	4'8"		12.4	66'	3:18
	20					
15	19	4'7"	8.8	12.5	64'	3:21

<sup>1</sup>Youth Physical Fitness, *op. cit.*, pp. 44-54.

## TESTS AND RESULTS

Following are the instructions for each test, the results and interpretations of the testing.

Situps

Each pupil was instructed to lie on her back with legs extended, about one foot apart. She was instructed to place her hands, with fingers interlaced, behind her neck. Another student held the subject's ankles and kept her heels in contact with the floor while counting each successful situp.

The execution of situps consists of turning the trunk to the left, and touching the right elbow to the left knee, then returning to the starting position. To complete this movement, the trunk is then turned to the right, and the left elbow is touched to the right knee, then returned to the starting position.

This alternating action was continued until each student completed her maximum number of situps, but not to exceed the number in the "excellent" category of her age group listed on the score sheet.

One situp is counted each time the pupil returns to the starting position. The results of the situp test are shown in Table 2.

Table 2. Results of the situp test.

Classification	Number	Per cent
Excellent	4	26.6
Good	11	73.4
Satisfactory	0	0
Poor	<u>0</u>	<u>0</u>
Totals	15	100

Table 2 shows that the girls ranked very well according to the norms established by the President's Council on Youth Fitness, as the entire class was included in either the "excellent" or "good" classification. The average number of situps accomplished was 44, the range was from a high of 49 to a low of 37 situps. It is the opinion of the author that more pupils could have rated in the "excellent" category but seemed to be satisfied with the average score of the entire group.

#### Pullups

In the absence of a horizontal bar, a 12 foot ladder was used for the execution of the pullups. The ladder was placed at such an angle to the wall of the gymnasium that each student could adjust it to the height of the chest.

The position taken for the modified pullups was to grasp

the ladder step with palm facing out. The legs extended under the bar, keeping the body and knees straight. The heels were on the floor and the arms fully extended to form an angle of 90 degrees with the body line.

The action of the pullups was to pull the body up with the arms until the chest touches the bar and then lower the body until the elbows are fully extended. No resting was permitted and one pullup was counted each time the chest touched the bar. The results of the pullup test are shown in Table 3.

Table 3. Results of the pullup test.

Classification	Number	Per cent
Excellent	0	0
Good	2	13.4
Satisfactory	6	40.0
Poor	7	<u>46.6</u>
Totals	15	100

Table 3 indicates that 13 of the 15 girls were rated either satisfactory or poor. The average number of pullups was 23 and is far below the standards set by the President's Council. There were three individuals who could not do one pullup. Most of the failures in this test was attributed to the degree of body development of the girls. Those extremely over-weight or those under-weight found difficulty in this test.

Standing Broad Jump

This test was given on a ten foot line, marked in inches, along the sidelines of the gymnasium floor. The pupil was instructed to stand with the feet comfortably apart, with toes behind the takeoff line. Prior to the jump the pupil was allowed to swing her arms backward and forward and bend the knees in a rhythmic fashion. The jump was made by simultaneously extending the knees and swinging the arms forward and pushing off the floor with the balls of the feet and the toes. Three trials were allowed, each measured to the nearest inch, and the best of the three was recorded. Measurement of the distance of the jump was made from the front edge of the take off line to the heel of the foot or part of the body landing nearest the take off line. Table 4 shows the results of the standing broad jump.

Table 4. Standing Broad Jump Test

<u>Classification</u>	<u>Number</u>	<u>Per cent</u>
Excellent	1	6.7
Good	3	20.0
Satisfactory	7	46.6
Poor	4	<u>26.7</u>
Totals	15	100

The girls at Luckey High School were evaluated to be slightly below the national average as 73.3 per cent of the pupils were rated in the "satisfactory" or "poor" category. The best jump was recorded at 5'10" and the shortest jump measured at 4'7". The average jump for the entire group was 5'2" which is below the national average. This test definitely brings out the weaknesses in the explosive power of the girls legs.

#### 50 Yard Dash

The pupils were taken outdoors on the playing field for this test and shown a designated starting line from which they would run 50 yards to a finish line. The girls were advised to use any desirable starting position they wished. Other students were given stopwatches to record the time of each participant.

The pupil would stand in her starting position while the starter took a position behind the finish line. The starter gave the starting signal by raising the hand and then bringing it down quickly.

The time was recorded to the nearest tenth of a second. The time or score was the lapsed time between the starter's signal and the instant the pupil crossed the finish line. The students were instructed not to slow down or stop until they had completely crossed the finish line. The results of the 50 yard dash are shown in Table 5.

Table 5. Results of the 50 Yard Dash Test

Classification	Number	Per cent
Excellent	2	13.3
Good	9	60.0
Satisfactory	3	20.0
Poor	1	<u>6.7</u>
Totals	15	100

Table 5 indicates that the freshmen girls were evenly distributed in the three classifications of "excellent", "satisfactory", and "poor". The 60 per cent of girls in the "good" category, however, brought the average score above the national average. The best time recorded was 7.3 seconds while the slowest time was 8.4 seconds. The average or mean score was 7.8 seconds.

The girls, in the opinion of the author, seemed to excel in this test item because of the motivation factor that was evident as a result of keen competition and the relationship of running with other physical education activities.

#### Shuttle Run

Equipment necessary for this test was a stopwatch and two blackboard erasers. Two lines were placed on the gymnasium floor, thirty feet apart.

The pupil stood behind the line opposite the erasers



ready to run. On the signal, "Ready! Go!" the pupil runs to the erasers, picks one up, returns and places it behind the starting line. She then runs and picks up the second eraser and carries it back across the starting line. A trial was disqualified if the eraser was dropped or thrown. Two trials were allowed and the best time was recorded in seconds to the nearest tenth. Table 6 illustrates the results of the shuttle run.

Table 6. Results of the Shuttle Run Test

<u>Classification</u>	<u>Number</u>	<u>Per cent</u>
Excellent	1	6.7
Good	2	13.3
Satisfactory	6	40.0
Poor	<u>6</u>	<u>40.0</u>
Totals	15	100

The best time recorded in the shuttle run was 10.8 seconds while the slowest time was above 12.5 seconds. The average time was 11.7 seconds. Only one individual rated in the "excellent" category while 80 per cent rated below the norms suggested by the President's Council on Youth Fitness.

The low scores on this test are attributed to the fact that the shuttle run is the combination of many skills rather than only one.

Softball Throw

The equipment used included a regulation (12 inch) softball, a tape measure, and numbered wire stakes. The play field was marked at 5 yard intervals within the limitations of the girls. Each girl was instructed to stand several feet behind a designated line from which to throw the softball. Moving forward, the participant throws the ball, overhand, from behind the restraining line. Three throws were allowed with the measurement being taken at the mark farthest from the restraining line. The distance was measured to the nearest foot. The results of the softball throw test are shown in Table 7.

Table 7. Results of the Softball Throw Test

<u>Classification</u>	<u>Number</u>	<u>Per cent</u>
Excellent	5	33.3
Good	4	26.7
Satisfactory	1	6.7
Poor	5	33.3
Totals	15	100

An unusual breakdown of percentages occurred in each classification in the softball throw test. Thirty-three and one-third per cent of all pupils were rated in each of the

"excellent" and "poor" classes while the identical per cent was combined in the "good" and "satisfactory" classes. There were three girls who threw the softball beyond the "excellent" mark of 112 feet. The shortest distance that the girls threw was 64 feet. This mark was reached by two girls. For the entire group, the girls had an average of 90 feet which placed them in the "good" classification in relation to the national norms.

#### 600 Yard Run-Walk

A running area of 200 yards was marked off for administering this phase of the test. The girls were paired off so that one-half of the group could run at one time while the other girls listened for their partners time as they finished the test.

From a standing position and on the signal, "Ready! Go!" each pupil started running the distance and covered the course three times. The girls were encouraged to run all the way but walking was permitted. The time was recorded in minutes and seconds. The results of this test are shown in Table 8.

Table 8 indicates that the freshman girls rated about average with the norms suggested by the President's Council. Fifty-three and three tenths per cent finished in the "excellent" and "good" ratings, while the other forty-six

and seven tenths were situated in the "satisfactory" and "poor" classifications. The best time recorded for this test was 2 minutes and 16 seconds. The poorest time was 3 minutes and 43 seconds. The average time for all 15 girls was 2 minutes and 39 seconds.

Table 8. Results of the 600 Yard Run-Walk Test

<u>Classification</u>	<u>Number</u>	<u>Per cent</u>
Excellent	2	13.4
Good	6	40.0
Satisfactory	3	20.0
Poor	<u>4</u>	<u>26.6</u>
Totals	15	100

#### SUMMARY

The freshman girls at Luckey High School rated about average for the entire series of seven tests. Their performance in the situp test was outstanding for all the girls while they ranked "poor" in the pullup test. Their scores of "satisfactory" in the standing broad jump and shuttle run tests was more than equaled by their "good" performances in the 50 yard dash, softball throw and 600 yard run-walk.

Table 9 shows the average score and classification that was recorded for each individual test.

Table 9. Average Score and Classification for All Tests.

Test	Score	Classification
Situps	44	Good
Pullups	23	Poor
Standing Broad Jump	5'2"	Satisfactory
50 Yard Dash	7.8 sec.	Good
Shuttle Run	11.7 sec.	Satisfactory
Softball Throw	90 feet	Good
600 Yard Run-Walk	2 min. 39 sec.	Good

#### CONCLUSIONS

The freshman girls at Luckey High School with their rating of "poor" in the pullup test showed a need for a type of activity that would develop strength and endurance in their arms and shoulders. Such activities that would be essential in this development would be the parallel bars, a side-horse, rope climbing, tumbling, and weight training. It is the opinion of the author that this area of body development is usually neglected in most physical education programs.

On the other hand, the girls ranked extremely well in the situp test. Their average of 44 situps was only 5 situps short of being classified in the "excellent" category.

This is surely an indication of proficient strength in the trunk and hip areas. For ninth grade girls at this stage of their body development, this rating should be termed as outstanding.

The broad jump test showed a weakness of leg power, especially of the explosive nature. This test requires the coordination and strength of the entire body. The average distance of 5'2" in this test and the time of 11.7 seconds in the shuttle run shows a definite need for activities that will produce agility in relation to the whole body.

The other test scores were sufficient to rate above the national average but activities are needed to maintain these areas of fitness. It is important that we do not look at the group average when testing such a small number as this but that we watch each participant individually to see any deficiencies in total fitness.

It is hoped that other physical educators, in reading this study, will see a need for fitness testing before deciding on their physical education program. It is important that we determine the physical needs of the students so that then, through planned activities, we can give every child the opportunity to make and keep himself or herself physically fit, "fit to learn, fit to understand, to grow in grace and stature, to fully live".

## BIBLIOGRAPHY

Books

- Bookwalter, Karl W. and Bookwalter, Carolyn W. Fitness for Secondary School Youth. (Washington: American Association For Health, Physical Education and Recreation, 1956).
- Cassidy, Rosalind and Kozman, Hilda Clute. Physical Fitness for Girls. (New York: A. S. Barnes and Company, Inc., 1943).
- Cureton, Thomas K. Physical Fitness Appraisal and Guidance. (St. Louis: The C. V. Mosby Company, 1947).
- Fleishman, Edwin A. The Structure and Measurement of Physical Fitness. (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964).
- Knapp, Clyde and Hagman, E. Patricia. Teaching Methods For Physical Education. (New York: McGraw-Hill Book Comp., 1953).
- Miller, Ben and Bookwalter, Karl and Schlafer, George E. Physical Fitness for Boys. (New York: A. S. Barnes and Company, 1943).

Periodicals

- Hein, Fred. "What Is Physical Fitness?" National Education Association Journal, 51 February 1962, p. 34.

Publications of the Government

- "The President's Council on Physical Fitness" (Washington: U. S. Government Printing Office, 1963).
- Youth Physical Fitness. The President's Council on Youth Fitness. (Washington: U. S. Government Printing Office, July, 1961).
- Via. The President's Council on Physical Fitness. (Washington: U. S. Government Printing Office, 1964).

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Modern technology and urbanization have reduced the amount of physical activity in our everyday lives, and many of us do not get enough vigorous exercise to attain and maintain cardiovascular and respiratory fitness or good muscle tone. The result: at least one of every four Americans are overweight, and many of our children have poor posture, flabby muscles, and flagging stamina. Several thousand school children were given physical screening tests in 1961 and 1962, and nearly one-third of them failed to meet minimum established standards for strength, agility, and flexibility. Only one in ten attained satisfactory levels in all seven categories of a comprehensive test of physical achievement. The average high school student will spend from 15 to 30 hours a week watching television and less than 2 hours per week in physical education classes. More than half of our children do not get 15 minutes of planned, vigorous activity daily which is considered basic to physical fitness.

The President's Council on Youth Fitness, in their publication, Youth Physical Fitness--Suggested Elements of A School-Centered Program, has provided a series of seven tests and norms which are suggested to be used in every physical education program to determine the fitness of their students.

These tests were administered to 15 girls enrolled in physical education at Luckey High School in Manhattan, Kansas.

The following tests were evaluated to determine the total fitness of the girls: situps, pullups, standing broad jump, 50 yard dash, shuttle run, softball throw, and a 600 yard run-walk.

The results of the pullup test produced a group rating of "poor" on the national scale. This indicates a definite need for activities that will concentrate on the development of strength in the arms and shoulders. Such activities may be volleyball, ball throwing, and battle ball.

The situp test ranked the highest for an over-all average of the group. There 44 situps per girl was only 5 situps short of the "excellent" classification. The stamina and rhythmic coordination of the girls seemed to help in this test.

The results of the standing broad jump and shuttle run were below the average of the national norms. This is an indication of lack of explosive power in the legs as well as the agility to coordinate different parts of the body to work together. Basketball and volleyball would aid in this development.

The 50 yard dash, softball throw, and 600 yard run-walk tests were evaluated to be above the suggested national average by the President's Council.

The girls at Luckey High School ranked about average in relation to their total physical fitness. It is hoped that through these tests, other physical educators will be able to see the need for determining activities that will produce a total physically fit individual.