AN ANALYSIS OF A PHYSICAL FITNESS TESTING PROGRAM IN CHEROKEE COUNTY RURAL HIGH SCHOOL

by

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A MASTER'S REPORT

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INTRODUCTION

In recent years, much has been said and written about physical fitness. America has been depicted as a nation of "softies." An abundance of food has enabled us to become the best-fed people in the world. Automobiles, machines, and labor-saving devices have greatly reduced the need for work and exercise, and far too many Americans have become spectators rather than participants in sports, athletic contests, and other forms of physical activity.

Evidence of these facts is illustrated by the increasing number of selective service "rejects." Commenting on this situation, Lieutenant Colonel George Walton of the United States Army stated, "It is frightening that in this day more than half of the young men who report for examination are unfit to serve their country in uniform. Yet that is the shameful fact."[1]

Some of these young men failed to pass the written test. Others were rejected because they were found to be physically unfit. About the latter group, Colonel Walton said,

> On the physical side, the most notable trend is the rejection of a growing number of young men so grossly overweight they cannot serve. The failure to meet size standards--being overweight, underweight, too tall, too short--was the eleventh ranking cause of draft rejection for physical reasons during the Korean War. Today it has shot up to fifth place. Most of the trouble is obesity.[2]

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[1] George Walton, "Uncle Sam's Rejects," The Saturday Evening Post, 236 (December 8, 1962), 10.

[2] Ibid., p. 13.

With the facts of draft rejections becoming more obvious, certain government groups are showing increasing concern. For example, the United States Public Health Service, with the cooperation of Selective Service and the Department of the Army, has recently launched pilot projects in New York and Philadelphia to rehabilitate young men who have failed the physical examination. Local health-department officials give counsel to those who are rejected on physical grounds. If the young men are unable to consult their own physician, they are referred to available community health facilities.

Such steps should prove helpful, but they are attempts to correct conditions which should never have been allowed to exist. We need to get at the roots of the problem. We must begin with the children and youth of our country.

In a recent message to the schools on the physical fitness of youth, John F. Kennedy, President of the United States, had this to say:

> 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 importance, then, that we take immediate steps to insure 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.
>
> In answering this challenge, we look to our schools and colleges as the decisive force in a renewed national effort to strengthen the physical fitness of youth.

Since the "Seven Cardinal Principles of Education"

were announced in 1918, schools have held as an objective of education the development of good health and physical efficiency.[1]

In the absence of some organic deficiency or infection, one's lack of physical fitness is usually due to insufficient exercise. Obviously, provision for adequate exercise is a key to the solution of the problem. The school physical education program offers an excellent means of reaching America's children and youth.

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 further 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.[2]

In addition to supplying evidence of performance abilities, physical fitness tests also aid in the development of strength

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[1] Youth Physical Fitness (Suggested Elements of a School-Centered Program, Parts I and II. Washington: The President's Council on Youth Fitness, 1961), p. 3.

[2] Clyde Knapp and E. Patricia Hagman, Teaching Methods for Physical Education (New York: McGraw-Hill Book Company, 1953), p. 360.

and endurance. In fact, it has been said that many physical fitness tests are more valuable as desirable activities to be performed than as accurate measures of physical or motor fitness.

Through interpretation of test results, the physical educator will be able to prescribe activities which may result in improvement of students' deficiencies.

Another reason for testing is to provide a basis for grading. Testing also motivates and stimulates competition. Care should be exercised, however, to use a reliable set of criteria and to make due allowance for such factors as age, maturity, and physical handicaps.

PURPOSE OF THE PROBLEM

The purpose of the problem was to secure information about the physical fitness of the boys enrolled in the physical education classes at Cherokee County Rural High School in Columbus, 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 of Cherokee County Rural High, and also useful in future planning of the physical education program.

DEFINITION OF TERMS

Agility--Sometimes termed general coordination. It is characterized by the ability to handle one's body effectively during rapid changes of direction or during activities involving rapid weight shifts.[1]

Motivation--Central to all learning, motivation is a key condition that determines effectiveness in any learning experience. It is affected by desires, incentives, pressures, tensions, urges, interests, abilities and anxieties.[2]

Physical Fitness--A mixture of the best possible bodily health plus the physical condition to perform every-day tasks effectively and to meet emergencies as they arise.[3]

METHODS OF ADMINISTRATING THE TESTS

The tests and norms used were those suggested by the President's Council on Youth Fitness. The subjects tested included 65 boys, of whom 27 were thirteen years of age and 38 were fourteen years of age. The 65 boys represented 90 per cent of the boys of the freshman class. Six students, or 10 per cent, were deferred because of physical handicaps.

Prior to administering the tests, plans were made for most efficient use of all available space and facilities in giving the tests. Included were the gymnasium floor, the wrestling room, the football field, the running track, and a small

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[1]Paul A. Hunsicker and Henry J. Montoye, Applied Tests and Measurements in Physical Education (New York: Prentice-Hall, 1953), p. 74.

[2]Knapp and Hagman, op. cit., p. 23.

[3]Fred Hein, "What Is Physical Fitness?" National Education Association Journal, 51 (February, 1962), 34.

auxiliary gymnasium.

Individual score sheets were prepared in advance. A sample copy is shown in Table 1.

The students were informed of the purpose of the tests and how the results were to be used. They were encouraged to do their best on each activity.

An explanation of the activity and a demonstration by the instructor preceded each of the seven tests.

Due to extensive inclement weather, and because it was necessary to share facilities with other classes, a period of almost three weeks was required to complete all seven tests.

Students assisted in the administration of the tests. They were assigned as timer, markers, and recorders. This saved time, and induced additional interest.

TESTS AND RESULTS

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

Situps

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

The execution of situps consists of turning the trunk to

Table 1. Sample physical fitness testing score sheet.[1]
(For boys 13 years of age)
Pupil _____ School _____ Instructor _____

Situps	Pullups	Standing broad jump	50 Yard dash	Shuttle run	Softball throw	600 Yard run-walk
Excellent						
73	8	6'8"	6.5	9.7	171'	2:00
Good						
72	7	6'7"	6.6	9.8	170	2:01
69		6'5"	6.7	9.9	168	2:03
66		6'4"	6.8	10.0	164	2:05
63	6	6'3"	6.9	10.1	160	2:07
60		6'2"	7.0	10.2	156	2:09
57		6'1"	7.1		152	2:11
54	5	6'0"	7.2	10.3	148	2:13
Satisfactory						
53		5'11"	7.3	10.4	147	2:14
50	4	5'10"	7.4	10.5	140	2:16
47		5'9"	7.5	10.6	135	2:19
44	3	5'8"	7.6	10.7	131	2:21
41		5'7"		10.9	129	2:24
39		5'6"	7.7	11.0	125	2:26
36	2	5'5"	7.8	11.1	121	2:28
Poor						
33	1	5'4"	7.9	11.2	118	2:32
					117	2:33
32		5'3"	8.0	11.3	116	2:34
					115	2:35
31		5'2"		11.4	114	2:36
						2:37
30				11.5		2:38

[1] Youth Physical Fitness, op. cit., pp. 45-55.

the left, and touching the right elbow to the left knee, then returning to the starting position. To complete the 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 his maximum number of situps, but not to exceed the number in the excellent category of his age and sex as 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	Age 13		Age 14	
	Number	Per cent	Number	Per cent
Excellent	24	88.5	31	83.5
Good	1	3.7	4	10.5
Satisfactory	2	7.8	1	2
Poor	0	0	2	4
Totals	27	100	38	100

Table 2 shows that both groups tested ranked well above the norms established by the President's Council on Youth Fitness, as over 80 per cent of each group attained a rating of "excellent." The results of this test were the only ones which showed any exceptional deviation from what was normally expected. An

explanation might be found in the fact that a large majority of those tested had been in training for football for approximately three weeks.

The thirteen year olds averaged 67 situps, while the fourteen year olds averaged 88. Only two boys from either group failed to achieve at least a satisfactory rating.

Pullups

A chinning bar, eight and one-half feet high, was used. The subject was instructed to grasp the bar with palms facing forward, arms and legs fully extended. A partner was told to stand to one side of the pupil being tested and to count each successful pullup.

The action consisted of pulling up with the arms until the chin was placed over the bar, then lowering the body until the elbows were fully extended. Kicking and snap movements were not permitted. Each student was instructed to repeat the exercise as many times as possible. One pullup was counted each time the pupil placed his chin over the bar. The results of the pullup test are shown in Table 3.

Table 3 indicates nineteen of the total of both groups tested failed to rate "satisfactory." The thirteen year olds averaged 4.7 pullups, with a range from 0 to 14. The fourteen year olds had an average of 4.5 pullups, and a range from 0 to 11. Most of the failures in this test were by boys who were excessively overweight.

Table 3. Results of the pullup test.

Classification	Age 13 Number	Age 13 Per cent	Age 14 Number	Age 14 Per cent
Excellent	5	18.5	2	5.5
Good	7	26	12	31.5
Satisfactory	8	29.5	12	31.5
Poor	7	26	12	31.5
Totals	27	100	38	100

It was felt that several of those tested were capable of a better performance, but the student elected to quit as soon as the pullups became more strenuous.

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 just behind the takeoff line. The pupil jumped, swinging his arms forcefully upward and forward, taking off from the balls of the feet. Three trials were allowed, each measured to the nearest inch, and the best of the three was recorded. Table 4 shows the results of the standing broad jump.

The boys of Cherokee County Rural High School rated slightly above average as compared to the national norms. Approximately 75 per cent attained a rating of "satisfactory" or better. In the broad jump, the thirteen year old group

Table 4. Results of the standing broad jump test.

Classification	Age 13 Number	Age 13 Per cent	Age 14 Number	Age 14 Per cent
Excellent	6	22	3	7.9
Good	11	40.7	10	26.3
Satisfactory	3	11	16	42.2
Poor	7	26.3	9	23.6
Totals	27	100	38	100

averaged 6 feet, 4 inches, and the fourteen year old pupils averaged 6 feet, 2 inches per jump.

Shuttle Run

Equipment consisted of two blackboard erasers and a stop-watch. Two parallel lines were marked, thirty feet apart. The pupils were instructed to stand behind the line away from the erasers, ready to run on the starting signal. On the signal, the pupil ran to the erasers, picked up one, returned and placed it behind the starting line. He then ran and picked up the second eraser and carried it across the starting line. Two trials were allowed, and the best time was recorded in seconds to the nearest tenth. A trial was disqualified if the eraser was dropped or thrown. The results of the shuttle run test are shown in Table 5.

Only one boy in each group ranked "excellent" in this activity. Approximately one third of each group rated less than

Table 5. Results of the shuttle run test.

Classification	Age 13 Number	Age 13 Per cent	Age 14 Number	Age 14 Per cent
Excellent	1	4	1	2
Good	8	30	8	24
Satisfactory	9	33	14	35
Poor	9	33	15	39
Totals	27	100	38	100

satisfactory.

In the thirteen year old group, there was a range of 9.6 to 12.7 seconds, and the fourteen year old group showed a similar range of 9.4 to 12.8 seconds. The mean score for the thirteen year olds was 10.9 seconds as compared to 10.6 for the fourteen year olds.

The shuttle run test proved to be the most popular among the students at Cherokee County High. It was assumed that this interest was due to the need for using several skills and the challenge of competing against the stop-watch in a short space of time. Many requested a third trial, and this was done when time permitted, but the third trial, though timed, was not recorded.

50 Yard Dash

A starting line and a finish line were marked off on the outdoor running track which surrounded the football field. The

students were advised to use any desirable starting position at the starting line and then wait for the starter's signal. Student timers used stop-watches to record the time of each student. The time was recorded to the nearest tenth of a second. The results of the 50 yard dash are shown in Table 6.

Table 6. Results of the 50 yard dash test.

Classification	Age 13		Age 14	
	Number	Per cent	Number	Per cent
Excellent	0	0	0	0
Good	8	30	7	18
Satisfactory	10	37	14	36
Poor	9	33	17	46
Totals	27	100	38	100

Table 6 shows that of the sixty-five students tested, none were capable of achieving an "excellent" rating in the 50 yard dash. The results as shown in Table 6, when compared with the results of the other activities, indicated that the pupils were least proficient in this event. Nearly one half of the fourteen year olds' scores fell in the "poor" classification, and one third of those thirteen years of age scored less than satisfactory.

For the thirteen year olds, there was a range from 6.9 seconds to 9.5 seconds, with a mean score of 7.8 "poor", as compared to the national norms. The fourteen year olds' scores ranged from 6.7 to 9.4 seconds, with a mean score of 7.9 seconds,

which was also "poor."

Softball Throw

The equipment used included a regulation (12 inch) softball, a tape measure, and numbered wire stakes. The football field, marked in conventional fashion, was the testing site. The pupil was instructed to stand several feet behind the goal line preparatory to throwing and to use only an overhand throw.

Three throws were allowed and the best of the three throws was recorded to the nearest foot. The results of the softball throw are shown in Table 7.

Table 7. Results of the softball throw test.

Classification	Age 13		Age 14	
	Number	Per cent	Number	Per cent
Excellent	7	26	6	15
Good	10	37	7	18
Satisfactory	9	33	17	43
Poor	1	4	8	24
Totals	27	100	38	100

The results of the softball throw showed a range for the thirteen year olds of 102 to 198 feet, with an average throw of 151 feet. This was comparable to the statistics of the fourteen year old group, which showed a range of 102 to 207 feet, and an average of 157 feet. However, the former had 96 per cent of its members in the "satisfactory" classification or higher, while

the latter had 24 per cent of its pupils rating "poor."

600 Yard Run-Walk

The running track was marked with starting and finish lines, and the students instructed as to their location. Students were advised that they could walk if necessary, but were encouraged to run all the way if possible.

Three or four pupils ran in each race and students were employed to serve as timers and judges. The time was recorded in minutes and seconds. The results of this test are shown in Table 8.

Table 8. Results of the 600 yard run-walk test.

Classification	Age 13		Age 14	
	Number	Per cent	Number	Per cent
Excellent	9	33	4	10
Good	8	30	16	43
Satisfactory	6	22	11	29
Poor	4	15	7	18
Totals	27	100	38	100

Table 8 indicates that freshman boys of Cherokee County Rural High School rated quite well when the results of the 600 yard run-walk were compared to the national norms. Approximately 85 per cent of each group received a rating of "satisfactory" or higher. In the thirteen year old group, 33 per cent attained a rating of "excellent," and 30 per cent were classified

as "good." The average time for the first group was 2 minutes, 20 seconds, and for the second 2:23. The range for the former was 1:50 to 2:52 and for the latter it was 1:45 to 3:22.

SUMMARY

Table 9 shows each group's average score for each of the tests.

Table 9. Average score for each test.

Activity	13 year olds	14 year olds
Situps	67	88
Pullups	4.7	4.5
Shuttle Run	10.9 sec.	10.6 sec.
Standing Broad Jump	6'4"	6'2"
50 Yard Dash	7.8 sec.	7.9 sec.
Softball Throw	151 feet	157 feet
600 Yard Run-Walk	2 min. 20 sec.	2 min. 23 sec.

The boys in the physical education classes at Cherokee County Rural High School performed satisfactorily in most of the activities tested and their performance was outstanding in the situp test. Their poorest showing was in the 50 yard dash and the shuttle run.

CONCLUSIONS

The freshman boys of Cherokee County Rural High School made their lowest scores in the 50 yard dash and in the shuttle run. Both of these tests measure speed and the shuttle run, in addition, measures agility. These results indicate that activities which aid in improving these qualities should receive greater emphasis. The need of running, particularly sprinting, is apparent. Tumbling and acrobatics involving rolling, somersaulting, diving, and various stunts would be advisable. As Mitchell[1] points out, these activities develop agility and coordination.

The results of the pullup tests showed that improvement is needed in the strength of the arms and shoulders. Although the average was approximately 4.5 pullups for each group, 27 per cent of the thirteen year olds and 35 per cent of the fourteen year olds rated a classification of "poor." Activities, such as pullups, exercises on bars and rings, and rope climbing, should be selected which will develop the muscles of this region.

The two areas of the body listed above require most immediate attention. However, other activities that develop skills and abilities, such as endurance, flexibility and coordination should not be neglected in the physical education program.

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[1] Elmer D. Mitchell and Bernard S. Mason, The Theory of Play, New York: A. S. Barnes and Company, 1939, p. 107.

Re-testing should be done at least twice each year to determine improvement in the tests and to ascertain the extent to which the physical education program is achieving desired results.

The tests, in addition to measuring abilities and skills, are valuable as physical activities and undoubtedly aided in the development and improvement of such qualities as they were designed to measure.

An important aim of the testing was to help the pupils to become "fitness conscious," and to provide them a basis for self-evaluation. It is believed that these aims were accomplished to a satisfactory extent.

ACKNOWLEDGMENTS

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In recent years, there has been increasing concern about the physical fitness of the young men of the United States. The large percentage of "rejects," men who are physically unfit to serve their country in uniform, has been a major factor in the current emphasis on physical fitness. The school physical education department is an excellent position to approach the problem.

The President's Council on Youth Fitness, in their publication, Youth Physical Fitness, has provided a series of tests and norms which are well-suited to a school physical education program.

These tests were administered to approximately 90 per cent of the boys enrolled in the required physical education classes at Cherokee County Rural High School in Columbus, Kansas. Data were accumulated and the results were analyzed.

The results obtained in the 50 yard dash indicated a definite need for improvement, as approximately 40 per cent of all students tested were classified as "poor." The results in the shuttle run were similar to the results of the 50 yard dash.

The students of Cherokee Rural High School rated about average in pullups, standing broad jump, softball throw, shuttle run, and the 600 yard run-walk.

In the situp test, 55 of the 65 students tested rated "excellent." The performance in the situp test might be explained by the fact that most of these pupils were candidates for the freshman football team, and were involved in extensive

conditioning for endurance.

An important aim of the testing was to provide the students with basis for self-evaluation.

The results should be useful in future planning of the physical education program and helpful in reorganizing the present program.