

A STUDY OF THE PHYSICAL FITNESS
OF NINTH GRADE BOYS AT
DICKINSON COUNTY COMMUNITY HIGH SCHOOL,
1962-63, 1963-64, 1964-65

by

HAROLD NATHAN MOSHER

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Major Professor

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INTRODUCTION

As physical educators we are constantly pressed by both laymen and general educators to justify our program and its place in education. We are ever alert for new ideas and avenues of argument that are compatible with both the objectives of general education and physical education.

A good physical education program should contribute to the development and growth of a child organically, neuromuscularly, emotionally, socially, and intellectually. Charles C. Cowell stated:

Surely, total fitness means more than teaching them the rules and to shoot baskets. It is true that adjustment and development occur in a particular total situation, but we are fortunate that physical education situations, unlike classroom situations in mathematics or history, are unusually rich in conduct situations, which involve most of the emotions to which we can apply a name.¹

As educators, we are interested and concerned about this growth and development. A program that provides for this and evaluation procedures which show that these things are being accomplished are a problem we must solve. Modern education accepts and encourages us in the area of physical education. Administrators are allowing more money to be spent on equipment and personnel to help bring about this growth and development through physical education.

Charles A. Bucher writes:

How students achieve physical fitness varies with each individual, for fitness itself varies in relation to the individual's personal requirements. The scholar has different needs from the football player and, therefore, requires a different type of fitness. However, the basic components of fitness--such as good posture, desirable health habits, social, emotional, and mental well-being--

¹Charles C. Cowell and Hilda M. Schwehn, Modern Principles and Methods in High School Physical Education (Boston: Allyn and Bacon, Inc., 1958), p. 58.

are necessary for all. It is the responsibility of the physical education teacher to promote the development of these components to their fullest degree. Students must be made aware of their need for physical fitness and led toward achievement of this goal. This should be done through both the instructional and the noninstructional phases of the total physical education program.²

Appraisal, guidance, and testing are the basis on which a good physical education program should be built. Appraisal of fitness helps us find those who need extra or individual attention. These individuals, who rank low, are probably the people who need the most guidance through interview or just passing conversation. Testing enables us to make adjustments in the program if we are not getting the results we desired.

BACKGROUND OF PHYSICAL FITNESS

In the past physical fitness has been a by-product of living. A person became physically strong through the exercise necessary to perform the chores of making a living. Today this is not necessarily true. The Youth Fitness Test Manual states, "The Kraus-Weber test results and other research findings pointed out the need for today's national concern about fitness. Youngsters are apparently spending too much time sitting and watching rather than taking part in vigorous activities."³ The military has always placed physical fitness high in its preparations for wars, and this is even more true today. Wars have also pointed out the importance of the

²Charles A. Bucher, Methods and Materials for Secondary School Physical Education (St. Louis: C. V. Mosby Company, 1961), p. 152.

³AAHPER, Youth Fitness Test Manual (Washington, D. C.: National Education Association, 1962), Foreward.

fitness of a nation or the lack of it. The Army Chief of Staff, General Maxwell D. Taylor, has stated, "The day of deliberate mobilization and unhurried training is past."⁴

The alert was sounded some ten years ago with the exposure of comparisons between European and American children as a result of physical fitness tests using the Kraus-Weber Test. Then four years later the AAHPER, cooperating with competent Japanese fitness experts, tested some 20,000 Japanese children with the AAHPER National Fitness Test. Japanese children excelled American children in almost every basic component of physical fitness. In many cases the margins were alarming.⁵ In 1962 a report showed the British children and youth also out-performed their American counterparts. The British average over-all was fourteen per cent higher than for American boys, and twenty-three per cent higher than the American girls. "The physical fitness of a nation is definitely not displayed in the showing of its Olympic team, nor by its economic or literate stature, but by what its individuals can actually do."⁶

It is significant that all recent Presidents have had their own particular way to keep physically fit and have made this activity a daily or regular habit and a major part of their routine in living. Arthur G. Miller tells us that the basic philosophy toward exercise in the United

⁴Simon A. McNeely, "Physical Fitness in the Pentomic Age," Journal of Health, Physical Education, and Recreation, 29:21, September, 1958.

⁵AAHPER, "Physical Fitness Test Comparisons of Japanese and American Youth," Operation Fitness-U.S.A., (Washington 6, D. C.: Fitness Department, AAHPER-NEA), p. 1.

⁶AAHPER, "Physical Fitness of British Children and Youth," Operation Fitness-U.S.A., (Washington 6, D. C.: Fitness Department, AAHPER-NEA), p. 4.

States is moving toward recreation activities such as bowling, golf, and swimming, and away from calisthenics and formal exercise.⁷ Therefore, we were especially gratified when the President of the United States, Dwight D. Eisenhower, stood up and testified to the need for physical fitness. He followed this testimony by appointing a committee to formulate a test. The appointment of Charles "Bud" Wilkinson as special consultant to this committee quickly led to the development of a fitness program.

DEVELOPMENT OF A FITNESS TEST

The American Association of Health, Physical Education, and Recreation worked closely with Charles Wilkinson to develop a program which the President's Council could adopt and recommend for the use of schools over the nation. Total fitness was the objective of the original conference called by President Eisenhower. This idea gradually gave way to the area of physical fitness. "The objective of physical fitness is not the same as total fitness; but it is a major contributing element to total fitness and as such demands the full attention of educators--attention demonstrated by proper measurement and evaluation practices."⁸ In the past the use of tests of physical fitness was limited to a few colleges, but now there is widespread use and an awakening interest in tests of physical fitness and

⁷ Arthur G. Miller and Virginia Whitcomb, Physical Education in the Elementary School Curriculum (Second Edition, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963), p. 6.

⁸ Carl E. Willgoose, Evaluation in Health Education and Physical Education (New York: McGraw-Hill Book Company, Inc., 1961), p. 17.

measurement of the factors that constitute physical fitness.⁹ Physical fitness may be defined briefly as capacity for activity.¹⁰ Ben W. Miller writes:

The aim of physical fitness primarily is to make a unique contribution to the individual's optimum growth and development physiologically; and secondarily to contribute to such psychological and sociological development and adjustment as is possible through participation in vigorous physical activities according to social and hygienic standards.¹¹

In February, 1957 selected members of the AAHPER Research Council met and agreed on the test items which make up the Youth Physical Fitness Test. The test was administered by the Survey Research Center of the University of Michigan to 8500 boys and girls in grades five through twelve. These pupils were found in all types of schools over the nation including public, urban, rural, and private boys' and girls' schools as well as co-educational. From the data gathered in this testing national norms were established and published by the AAHPER. The norms appear in Tables I and II for the seven items tested for fourteen and fifteen year old boys. The norms are grouped in excellent, good, satisfactory, and poor classifications for each test item.

⁹ Ibid., p. 9.

¹⁰ Ibid., p. 16.

¹¹ Ben W. Miller, Karl W. Bookwalter, and George E. Schlafer, Physical Fitness for Boys (New York: A. S. Barnes and Company, Inc., 1943), p. 7.

TABLE I

CHART OF NORMS ESTABLISHED FOR 14 YEAR OLD BOYS BY THE PRESIDENT'S
COUNCIL ON YOUTH FITNESS*

Pull ups	Sit ups	Standing broad jump	Shuttle run	50 Yd. dash	Softball throw	600 Yd. run-walk
Excellent						
10	99	86"	9.4 secs	6.5 secs	190'	1:50 mins
Good						
9	98	85"	9.5	6.6	189'	1:51
	90	84"	9.6		185'	1:54
8	85	83"	9.7	6.7		1:56
	80	82"			180'	1:58
7	75	81"	9.8	6.8	175'	2:00
	70	80"			170'	2:02
	65		9.9	6.9	165'	2:04
6	60	79"	10.0	7.0	163'	2:05
Satisfactory						
5	59	78"	10.1	7.1	162'	2:06
	55	77"	10.2		160'	2:10
	50	76"	10.3	7.2	155'	2:12
		75"	10.4		150'	2:16
4	44	73"	10.5	7.3	147'	2:18
Poor						
3	43	72"	10.6	7.4	146'	2:19
	40	71"	10.7	7.5	145'	2:22
2	38	69"	10.8		140'	2:25
	36	67"	10.9	7.6	135'	2:28
1	33	67"	11.0	7.7	131'	2:30

*Youth Physical Fitness, op. cit., pp. 44-54.

TABLE II

CHART OF NORMS ESTABLISHED FOR 15 YEAR OLD BOYS BY THE PRESIDENT'S
COUNCIL ON YOUTH FITNESS*

Pull ups	Sit ups	Standing broad jump	Shuttle run	50 Yd. dash	Softball throw	600 Yd. run-walk
Excellent						
10	99	92"	9.3 secs	6.2 secs	207'	1:43 mins
Good						
9	98	91"	9.4	6.3	206'	1:44
	90	90"	9.5	6.4	200'	1:46
	85	89"	9.6		195'	1:48
8	80	88"		6.5	190'	1:50
	75	87"	9.7			1:52
	70	86"	9.8	6.6	185'	1:54
	65	85"	9.9		180'	1:56
7	60	84"	10.0	6.7	182'	1:59
Satisfactory						
6	59	81"	10.1	6.8	181'	2:00
	58	80"			180'	2:02
	54	79"	10.2	6.9	175'	2:04
	50				170'	2:06
	46	78"	10.3		165'	2:08
5	45	77"	10.4	7.0	164'	2:09
Poor						
4	44	76"	10.5	7.1	163'	2:10
	42	75"	10.6		160'	2:14
3	40	74"	10.7	7.2	155'	2:16
	38	72"	10.8		152'	2:18
2	35	71"	10.9	7.3	150'	2:20

*Youth Physical Fitness, op. cit., pp. 44-54.

PURPOSE OF FITNESS TESTING

Raymond A. Weiss makes these observations:

From all this emphasis on physical fitness, one is likely to get the impression that physical fitness is in some way responsible for physical and mental well-being. But, is physical fitness really responsible? I have some doubts. From what I have read, and in the absence of conclusive evidence to the contrary, I am beginning to believe that it is the stimulation of physical activity rather than the strength and endurance of muscle building exercises that promotes physical and mental well-being.

If I were to offer one additional bit of advice, it would be to establish physical fitness as a prerequisite to the physical education program rather than as an ultimate goal around which the program revolves. Physical activity is more important to human well-being than high levels of physical fitness.

By these remarks, I wish to make it clear that I believe in the importance of physical fitness. But I do not believe that because some physical fitness is good, more fitness is better. Fitness at higher than moderate levels requires more time than can be spared from¹² other important objectives of the physical education program.

Testing, in general, is used to determine whether a program is accomplishing the goals it was set up to reach. The Youth Fitness Test enables an instructor to locate weaknesses in his program as well as individuals who need more fundamental or additional activities. Added incentive and motivation may often result from comparing a pupil's performance with others of their age.

PURPOSE OF THE PROBLEM

The intent of this report was to show the comparative fitness of the freshmen boys at Dickinson County Community High School over the

¹² Raymond A. Weiss, "Is Physical Fitness Our Most Important Objective?" Journal of Health, Physical Education, and Recreation, 35:17, February, 1964.

past three years with that of other similar age groups over the nation. An attempt was also made to analyze the improvement in fitness shown by these boys from the fall testing to the spring testing. It was hoped that this study will also assist in the completion of a study of Physical Fitness in the Kansas area being conducted by the Department of Physical Education at Kansas State University.

DEFINITIONS OF TERMS

Fitness. A state of being which characterizes the degree to which an individual is able to function.¹³

Physical Fitness. The capacity a person has for activity.¹⁴

AAHPER. American Association for Health, Physical Education and Recreation.

First Year. The 1962-63 school year which was the first year of fitness testing of freshmen at Dickinson County Community High School to collect data for the study made in this report.

Second Year. The 1963-64 school year.

Third Year. The 1964-65 school year.

Mean. The sum of a group of scores divided by the number of scores. The mean is commonly called the average.¹⁵

¹³ AAHPER, "Fitness for Youth," (Washington, D. C., AAHPER-NEA, 1956), p. 1.

¹⁴ Willgoose, op. cit., p. 16.

¹⁵ H. Harrison Clarke, Application of Measurement to Health and Physical Education, (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1956), p. 428.

Percentile. The measurement of decile points in a distribution.¹⁶

TEST ADMINISTRATION

The Youth Physical Fitness Test was used to test all the freshmen boys at Dickinson County Community High School at Chapman, Kansas. This test was administered twice a year for three years to gather the data used in this comparative study. All the boys took the test early in the fall and again late in the spring. One instructor was in charge of each class of approximately thirty boys. Some student help was used in most of the test items, but as little help as possible was used in the actual measurement involved in the scoring of each activity.

Members of each class were given directions about the test items before they performed the activity. An attempt was made to use the same methods and facilities each year. Weather conditions sometimes interfered, but the 660 yard run-walk, fifty-yard dash, pullups, and softball throw were all performed outdoors. The shuttle run, situps, and standing broad jump were held indoors. The boys wore sneakers, tennis shoes, or went barefoot but were not allowed to use track shoes or starting blocks.

The sizes of the classes tested varied: First year--fifty-nine, second year--fifty-five, and third year--seventy-one. Members of the classes ranged from thirteen to sixteen years of age. There was one boy who was seventeen in the spring of the second year. In all three years the thirteen year olds in the fall were all fourteen by the spring testing. There were never more than four pupils over fifteen years old at any one

¹⁶ Ibid., p. 431.

testing. In the classes tested there were respectively sixteen, thirteen, and fifteen thirteen-year-olds in the fall and none in the spring. The majority of those tested were in the fourteen and fifteen year old group. The tables which follow show the norm scales for the excellent, good, satisfactory, and poor classifications of the seven test items for thirteen, fourteen and fifteen year old boys.

TEST ITEMS AND RESULTS

Following are descriptions of the administration of the President's Youth Physical Fitness Test, tables of the results, and a discussion of each test item.

PULLUPS

An inch and a quarter pipe eight feet above the ground was used as a chinning bar. While using the forward grasping grip with the hands no boy was able to touch the ground with the feet as he hung, fully extended, from the bar. From this hanging position each boy raised himself by his arms to a position where his chin was above the bar. This action was repeated as many times as possible. A boy stationed in front of the performer prevented him from swinging by placing an arm across in front of him and also counted the number of times he succeeded in raising his chin above the bar. This number was recorded as the performer's score. Only one trial was allowed unless it was obvious that the boy did not get a fair chance.¹⁷ The results of the pullup test are shown in Tables IIIa, IIIb, and IIIc.

¹⁷President's Council on Youth Fitness, Youth Physical Fitness, (Washington, D. C.: U. S. Government Printing Office, 1961), p. 44.

TABLE IIIa
RESULTS OF THE PULLUP TESTS

Classification		Fall 1962		Spring 1963	
		Number	Percent	Number	Percent
Excellent	95%	4	6.78	5	8.48
Good	80%	13	22.04	10	16.95
Satisfactory	60%	15	25.42	15	25.42
Poor	40%	<u>27</u>	<u>45.76</u>	<u>29</u>	<u>49.15</u>
Total		59	100.00	59	100.00
Range 0-14 pullups		Range 0-16 pullups			
Mean 4.07 pullups		Mean 4.20 pullups			

TABLE IIIb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	5	9.09	4	7.28
Good	80%	15	27.28	12	21.82
Satisfactory	60%	12	21.82	13	23.63
Poor	40%	<u>23</u>	<u>41.81</u>	<u>26</u>	<u>47.27</u>
Total		55	100.00	55	100.00
Range 0-12 pullups		Range 0-13 pullups			
Mean 4.15 pullups		Mean 4.38 pullups			

TABLE IIIc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	6	8.46	12	16.91
Good	80%	27	38.02	24	33.80
Satisfactory	60%	15	21.12	15	21.12
Poor	40%	<u>23</u>	<u>32.40</u>	<u>20</u>	<u>28.17</u>
	Total	71	100.00	71	100.00
	Range 0-15 pullups			Range 0-16 pullups	
	Mean 4.73 pullups			Mean 6.10 pullups	

The results in this test rated at the top of the poor grouping for the first two years of the testing and just slightly into the satisfactory group for the third year. All three years showed improvement in the spring testing over the fall performances. However, the percentile ranks for the first two years went down because the increase in the average age of the classes was more than enough to offset the improvement shown in performance. The third year showed a gain of five percentile points by recording an average improvement of 1.37 pullups per pupil. A further analysis of the data shows that from four to six times as many boys rated poor in the first two years as were rated excellent. The third year shows that the number in the excellent category doubled in the spring over the fall testing and the poor group diminished by three.

SITUPS

The boys in the class were paired off. While one boy performed the partner held his legs below the knees and counted the number of times the performer was able to touch his knees with his elbows. The starting position was to lie on the back, fully extended, and the hands clasped behind the neck. The situp was completed when the performer raised his upper body to a position where he could touch his knees with his elbows. He returned to a prone position and continued this routine as long as possible or until he had done 100 repetitions. We have found through experience that some boys will continue so long that they injure themselves. Also this number is the maximum score found in the tables. The number of repetitions was the score we recorded.¹⁸ The results of the situp test are shown in Tables IVa, IVb, and IVc.

TABLE IVa
RESULTS OF THE SITUP TESTS

Classification	Fall 1962		Spring 1963		
	Number	Percent	Number	Percent	
Excellent	95%	3	5.08	42	71.19
Good	80%	2	3.39	10	16.95
Satisfactory	60%	15	25.42	5	8.48
Poor	40%	<u>39</u>	<u>66.11</u>	<u>2</u>	<u>3.38</u>
Total		59	100.00	59	100.00
	Range	3-100 situps		Range	11-100 situps
	Mean	37.10 situps		Mean	88.47 situps

¹⁸ibid., p. 47.

TABLE IVb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	13	23.63	27	49.10
Good	80%	8	14.55	7	12.72
Satisfactory	60%	14	25.46	13	23.63
Poor	40%	<u>20</u>	<u>36.36</u>	<u>8</u>	<u>14.55</u>
	Total	55	100.00	55	100.00
Range 1-100 situps				Range 14-100 situps	
Mean 58.58 situps				Mean 75.46 situps	

TABLE IVc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	44	61.96	58	81.68
Good	80%	11	15.49	12	16.91
Satisfactory	60%	9	12.69	1	1.41
Poor	40%	<u>7</u>	<u>9.86</u>	<u>0</u>	<u>0.00</u>
	Total	71	100.00	71	100.00
Range 20-100 situps				Range 54-100 situps	
Mean 82.06 situps				Mean 93.61 situps	

The first time this test was given the mean was 37.10 and the last time 97.20. From fall to spring the first year the boys improved on the average 51.37 situps per boy. The last two years the improvement was not so spectacular, but the first performance in each year was far superior to the fall of the first year. In fact, the mean number of situps in the fall of the last year was eight more than double the number done during the fall of the first year. It is even more interesting when we look at the grouping in the first year as compared to the third year. In the fall of the first year three had excellent ratings while thirty-nine had poor. The second year this was thirteen and twenty, and the third year it was forty-four and seven. The spring testing produced a forty-two and two distribution in the first year. It was twenty-seven and eight at the end of the second year and fifty-eight and zero in the third year. This third year finish means that fifty-eight boys out of seventy-one did ninety-nine or more situps, and none were below forty-five.

STANDING BROAD JUMP

This activity was performed on the gym floor with the side line of the basketball court as a starting line. A tape measure was stretched out ten feet at right angles to the starting line. Each boy started with his toes behind the starting line and with his feet comfortably apart he swung his arms, flexed his knees, and jumped as far as he could out from the line. His score was the distance measured from the starting line to the point where his heels touched the floor. He was allowed three trials. The recorded score was correct to the nearest inch, and was the best of the

three trials.¹⁹ The results of the standing broad jump are shown in Tables Va, Vb, and Vc.

TABLE Va
RESULTS OF THE STANDING BROAD JUMP TESTS

Classification		Fall 1962		Spring 1963	
		Number	Percent	Number	Percent
Excellent	95%	5	8.48	4	6.78
Good	80%	6	10.16	14	23.72
Satisfactory	60%	16	27.12	22	37.30
Poor	40%	<u>32</u>	<u>54.24</u>	<u>19</u>	<u>32.20</u>
Total		59	100.00	59	100.00
Range 4'2"-7'8"				Range 4'6"-7'7"	
Mean 69.24 (5'9.24")				Mean 75.81 (6'3.81")	

TABLE Vb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	3	5.46	1	1.82
Good	80%	6	10.90	9	16.37
Satisfactory	60%	17	30.91	14	25.45
Poor	40%	<u>29</u>	<u>52.73</u>	<u>31</u>	<u>56.36</u>
Total		55	100.00	55	100.00
Range 4'0"-7'6"				Range 4'4"-7'8"	
Mean 70.49 (5'10.49")				Mean 72.47 (6'.47")	

¹⁹ ibid., p. 50.

TABLE Vc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	10	14.08	17	23.95
Good	80%	12	16.90	17	23.95
Satisfactory	60%	22	30.99	15	21.11
Poor	40%	<u>27</u>	<u>38.03</u>	<u>22</u>	<u>30.99</u>
	Total	71	100.00	71	100.00
		Range 4'2"-7'8"		Range 4'6"-8'1"	
		Mean 73.97 (6'1.97")		Mean 80.10 (6'8.10")	

The first two years this item was given the fall performance showed fifty-four per cent and fifty-three per cent of those boys tested were in the poor group. This percentage fell off to thirty-two per cent in the spring of the first year, but increased to fifty-six per cent in the spring of the second year. The third year showed thirty-eight per cent in the fall testing and thirty-one per cent in the spring in the poor category. The first two years also showed a decrease of one in the excellent group in the first year and two in the second year, but the third year group showed an increase of seven in the spring over the fall testing. All three years produced an increase from fall to spring in the average number of inches jumped, but the second year showed a drop in the average percentile ranking.

FIFTY-YARD DASH

The class was lined up in alphabetical order on the goal line of the football field. They ran to the fifty-yard line individually. A boy was appointed by the instructor to be the starter. The instructor stood at the finish line and timed each boy with a stopwatch. The starter used the command "get set" and with the signal "go" would bring his arm down from a raised position so the instructor could start his watch. Since only one trial was allowed the boys being in alphabetical order saved time in recording the scores. The time which elapsed from the start until the boy crossed the finish line, correct to the nearest tenth of a second, was the score recorded for each boy as he finished the dash.²⁰ The results of the fifty-yard dash are shown in Tables VIa, VIb, and VIc.

TABLE VIa
RESULTS OF THE FIFTY-YARD DASH TESTS

Classification	Fall 1962		Spring 1963		
	Number	Percent	Number	Percent	
Excellent	95%	0	0.00	0	0.00
Good	80%	4	6.78	11	18.65
Satisfactory	60%	10	16.95	15	25.42
Poor	40%	<u>45</u>	<u>76.27</u>	<u>33</u>	<u>55.93</u>
Total		59	100.00	59	100.00
	Range	6.8-9.2 secs		Range	6.5-9.0 secs
	Mean	7.77 secs		Mean	7.34 secs

²⁰Ibid., p. 51.

TABLE VIb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	0	0.00	1	1.82
Good	80%	10	18.18	4	7.28
Satisfactory	60%	20	36.36	11	20.00
Poor	40%	<u>25</u>	<u>45.46</u>	<u>39</u>	<u>70.90</u>
Total		55	100.00	55	100.00
		Range 6.7-9.8 secs		Range 6.6-9.5 secs	
		Mean 7.59 secs		Mean 7.59 secs	

TABLE VIc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	2	2.82	1	1.41
Good	80%	19	26.76	11	15.49
Satisfactory	60%	14	19.71	22	30.99
Poor	40%	<u>36</u>	<u>50.71</u>	<u>37</u>	<u>52.11</u>
Total		71	100.00	71	100.00
		Range 6.5-8.8 secs		Range 6.2-8.9 secs	
		Mean 7.45 secs		Mean 7.31 secs	

All three years of testing boys in the fifty-yard dash produced poor ratings in the fall. The percentile ranks were 42.3, 52.4, and 56.9. The spring testing was not much better, in fact, two of the years fell off in the percentile ratings while showing no improvement during the second year to .14 in the third year. The first year had an average improvement of only .43 seconds per boy, but managed to jump up ten points in the percentile ranking. The data reveals that there was no one in the excellent group until the spring of the second year, two in the fall of the third year, and one again in the spring of the third year. Most of the boys fell in the poor group or below. In fact, from fifty to seventy-five per cent of the boys were in the poor category in all but the sixth testing; in it only forty-five per cent were in the poor category.

SHUTTLE RUN

The shuttle run was run separately, as individuals, rather than in competition. The basketball side line was used as a starting line and thirty feet away was a line for the two 2"x2"x4" blocks which were placed about three feet apart. Lining up in alphabetical order the boys started with both feet behind the starting line and in a crouched position. Each boy ran the thirty feet to the blocks, picked up one, and returned to place it behind the starting line. He then ran back to the second block and after picking it up carried it back across the starting line. Two trials were allowed with the best time, correct to the nearest tenth of a second, recorded as his score.²¹ The results of the shuttle run are shown in Tables VIIa, VIIb, and VIIc.

²¹Ibid., p. 48.

TABLE VIIa
RESULTS OF THE SHUTTLE RUN TESTS

Classification		Fall 1962		Spring 1963	
		Number	Percent	Number	Percent
Excellent	95%	1	1.70	0	0.00
Good	80%	6	10.16	6	10.16
Satisfactory	60%	11	18.65	16	27.12
Poor	40%	<u>41</u>	<u>69.49</u>	<u>37</u>	<u>62.72</u>
	Total	59	100.00	59	100.00
Range 9.5-13.4 secs		Range 9.5-12.2 secs			
Mean 10.98 secs		Mean 10.70 secs			

TABLE VIIb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	0	0.00	2	3.64
Good	80%	8	14.55	6	10.91
Satisfactory	60%	19	34.55	10	18.18
Poor	40%	<u>28</u>	<u>50.90</u>	<u>37</u>	<u>67.27</u>
	Total	55	100.00	55	100.00
Range 9.5-12.6 secs		Range 9.1-12.5 secs			
Mean 10.75 secs		Mean 10.79 secs			

TABLE VIIc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	1	1.41	12	16.91
Good	80%	10	14.08	36	50.71
Satisfactory	60%	16	22.54	8	11.26
Poor	40%	<u>44</u>	<u>61.97</u>	<u>15</u>	<u>21.12</u>
Total		71	100.00	71	100.00
Range 9.5-12.5 secs		Range 8.9-12.3 secs			
Mean 10.76 secs		Mean 9.92 secs			

This activity again proved to be difficult for the boys to master. All testings averaged in the poor area except in the spring of the third year, when it jumped up to 76.8. This is toward the top of the satisfactory group and only 3.2 points below good. The second year actually showed a decrease in the average performance of .04 seconds. The first year had a .28 seconds improvement and the third year had a better spring showing of .84 seconds over the fall testing. The number of boys ranking in the poor group again was high, and those in the excellent category were minimal. There were from fifteen to forty-one in the poor rank or below and only one to twelve in the excellent rank.

SOFTBALL THROW

For this activity the boys again were paired off. The football field was used and the throws were made from behind the goal line. While

one boy threw, his partner stood on the spot of his best throw. Each boy threw the ball three times and then the best throw was measured to the nearest foot. The boys then changed places and the boys who had marked the spots did the throwing and their partners marked their best throws. The best of the three throws was recorded as the boy's score.²² The results of the softball throw are shown in Tables VIIIs, VIIIf, and VIIIfc.

TABLE VIIIf
RESULTS OF THE SOFT BALL THROW TESTS

Classification		Fall 1962		Spring 1963	
		Number	Percent	Number	Percent
Excellent	95%	2	3.39	3	5.08
Good	80%	7	11.87	11	18.65
Satisfactory	60%	16	27.12	11	18.65
Poor	40%	<u>34</u>	<u>57.62</u>	<u>34</u>	<u>57.62</u>
Total		59	100.00	59	100.00
Range 90'-192'				Range 82'-219'	
Mean 140.64'				Mean 152.98'	

²²Ibid., p. 52.

TABLE VIIIb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	2	3.64	1	1.82
Good	80%	10	18.18	7	12.72
Satisfactory	60%	8	14.55	11	20.00
Poor	40%	<u>35</u>	<u>63.63</u>	<u>36</u>	<u>65.46</u>
	Total	55	100.00	55	100.00
Range 67'-206'		Range 76'-205'			
Mean 131.18'		Mean 138.47'			

TABLE VIIIc

Classification		Fall 1964		Spring 1965	
		Number	Percent	Number	Percent
Excellent	95%	9	12.69	3	4.23
Good	80%	15	21.12	11	15.49
Satisfactory	60%	19	26.76	14	19.72
Poor	40%	<u>28</u>	<u>39.43</u>	<u>43</u>	<u>60.56</u>
	Total	71	100.00	71	100.00
Range 75'-213'		Range 70'-213'			
Mean 151.70'		Mean 151.79'			

Each year showed an improvement in the spring testing over the fall performance. These improvements were not enough in the second and third years to keep the percentile ratings from falling lower in the spring than they were in the fall of the year. The first year increased only .8 of a percentile point and the second year dropped 1.8 points, while in the third year the drop was 10.7 points. The cause of the poor improvement showing in the second and third years resulted from an increase in the poor performances in the spring over the fall testing. In the second year the number of boys in the poor or below rank was thirty-six in the spring compared to thirty-five in the fall. The third year this number was forty-three in the spring and twenty-eight in the fall. There was even a drop in the number of pupils in the excellent rank from two to one in the second year while it was from nine to three in the third year.

600 YARD RUN-WALK

We used the track around the football field and made use of the pairing system again. While half the class ran, the other half caught the time of his partner when he crossed the finish line from the instructor who was reading off the times each second from a stop watch. Then the process was repeated with the second half of the class doing the running. The time was recorded to the nearest second.²³ The results of the 600 yard run-walk are shown in Tables IXa, IXb, and IXc.

²³ Ibid., p. 54.

TABLE IXa
RESULTS OF THE 600 YARD RUN-WALK TESTS

Classification		Fall 1962		Spring 1963	
		Number	Percent	Number	Percent
Excellent	95%	8	13.56	25	42.37
Good	80%	29	49.15	19	32.20
Satisfactory	60%	15	25.42	11	18.65
Poor	40%	<u>7</u>	<u>11.87</u>	<u>4</u>	<u>6.78</u>
	Total	59	100.00	59	100.00
		Range 1:43-4:14 mins		Range 1:34-3:40 mins	
		Mean 2:08.6 mins		Mean 1:55.4 mins	

TABLE IXb

Classification		Fall 1963		Spring 1964	
		Number	Percent	Number	Percent
Excellent	95%	6	10.91	20	36.36
Good	80%	18	32.73	23	41.81
Satisfactory	60%	17	30.91	3	5.46
Poor	40%	<u>14</u>	<u>25.45</u>	<u>9</u>	<u>16.37</u>
	Total	55	100.00	55	100.00
		Range 1:39-3:07 mins		Range 1:28-2:34 mins	
		Mean 2:10.6 mins		Mean 1:53.8 mins	

TABLE IXc

Classification	Fall 1964		Spring 1965		
	Number	Percent	Number	Percent	
Excellent	95%	17	23.94	36	50.71
Good	80%	29	40.85	28	39.43
Satisfactory	60%	20	28.17	3	4.23
Poor	40%	<u>5</u>	<u>7.04</u>	<u>4</u>	<u>5.63</u>
Total		71	100.00	71	100.00
Range 1:36-3:32 mins		Range 1:32-2:43 mins			
Mean 2:03.2 mins		Mean 1:49.7 mins			

In this activity the boys performed at the satisfactory level the first and second years and at the good level the third year in the fall testings. Each class showed a decided improvement by spring and all three reached the good grouping. The improvement averaged 13.2, 16.8, and 13.5 seconds in each of the respective years. The number of boys in the excellent rank compared to those in the poor or below group again shows why each class improved. The first year in the fall there were four boys in the excellent group and this increased to twenty-five in the spring while there were seven rated poor in the fall and only four in the spring. The second year the excellent group had six in the fall and twenty in the spring, and the poor and below rating showed fourteen and nine. The third year the increase in the excellent group from fall to spring was from seventeen to thirty-six and the poor and below had five in the fall and four in the spring.

SUMMARY

The freshmen boys at Dickinson County Community High School were tested on the President's Youth Council Physical Fitness Test in the fall and spring of the school years 1962-63, 1963-64, and 1964-65. They showed improvement in all test items during the first and third years as shown in Tables Xa, Xb, and Xc. In the spring testing of the second year there was improvement in all test items except in the shuttle run. The improvement varied considerably from test item to test item and from year to year. The first year had a greater over all improvement than the second and third years. However, the performances of the freshmen boys at the end of the first year averaged 8.9 percentile points less than the average performance of the freshmen boys at the end of the third year as shown in Table X. The freshmen boys made only .6 of a percentile point improvement during the second test year. The first and second year percentile rankings classified the boys' average over all performances as poor. The boys' over all average performances in the third year were classed as satisfactory at the beginning of the year and missed the good classification by only seven percentile points in the spring.

The freshmen boys in the third test year improved in the pullup test twenty-nine per cent in the spring over their fall performance with 1.37 more pullups on the average. The first and second years improved only 3.2 per cent and 5.5 per cent with .13 and .23 pullups more on the average per boy. A classification of poor was attained by the first and second year classes, but the third year was classed good.

TABLE Xa
 AVERAGE SCORE, PERCENTILE, AND IMPROVEMENT OF EACH EVENT

Activity	Fall 1962		Spring 1963		Improvement
	Mean	Percentile	Mean	Percentile	
Pullups	4.07	58.5	4.20	54.4	.13
Situps	37.10	43.2	88.47	92.3	51.37
Standing Broad Jump	69.24"	51.4	75.81"	61.6	6.57
Fifty-Yard Dash	7.77 sec	42.3	7.34 sec	52.2	.43 sec
Shuttle Run	10.98 sec	46.5	10.70 sec	49.8	.28 sec
Softball Throw	140.64'	54.3	152.98'	55.1	12.34'
600 Yard Run-Walk	2:08.6 min	<u>76.4</u>	1:55.4 min	<u>83.7</u>	13.2 sec
Average		53.2		64.1	

TABLE Xb

Activity	Fall 1963		Spring 1964		Improvement
	Mean	Percentile	Mean	Percentile	
Pullups	4.15	57.9	4.38	55.7	.23
Situps	58.58	66.6	75.46	81.7	16.88
Standing Broad Jump	70.49"	54.4	72.47"	51.0	1.98"
Fifty-Yard Dash	7.59 sec	52.4	7.59 sec	42.0	0.00 sec
Shuttle Run	10.75 sec	53.9	10.79 sec	47.4	- .04 sec
Softball Throw	131.18'	45.1	138.47'	43.3	7.29'
600 Yard Run-Walk	2:10.6 min	<u>70.3</u>	1:53.8 min	<u>83.3</u>	16.8 sec
Average		57.2		57.8	

TABLE Xc

Activity	Fall 1964		Spring 1965		Improvement
	Mean	Percentile	Mean	Percentile	
Pullups	4.73	64.9	6.10	70.1	1.37
Situps	82.06	88.1	93.61	97.2	11.55
Standing Broad Jump	73.97"	63.7	80.10"	71.0	6.13"
Fifty-Yard Dash	7.45 sec	56.9	7.31 sec	53.9	.14 sec
Shuttle Run	10.76 sec	53.5	9.92 sec	76.8	.84 sec
Softball Throw	151.70'	64.5	151.79'	53.8	.09'
600 Yard Run-Walk	2:03.2 min	<u>80.1</u>	1:49.7 min	<u>88.4</u>	13.5 sec
Average		67.4		73.0	

Situps was one of the two test items where the boys were outstanding. In the fall of the first test year the performance averaged poor with only 37.10 situps per boy. The best over all improvement was made in this activity during the first year. Spring testing produced an increase of 51.37 situps per boy. This average of 88.47 situps per boy raised the classification from poor to the top of the good class or the 92.3 percentile. The second test year had a better average score in the fall with 58.58 situps per boy for a classification of satisfactory and improved to the good class by increasing 16.88 situps per boy. The third year had the lowest improvement but began the year with a better performance than the freshmen boys finished with in the spring of the second year. From an average of 82.06 situps per boy, the class improved during the year to 93.61 situps per boy and from a good classification to the excellent class. This

was the highest ranking made during the three years of testing and the only excellent rating.

All three years the boys ranked poor to low satisfactory in the standing broad jump. The improvement was about the same in the first and third years, but in the second year it was much less. The poorest showing was in the spring of the second year when the boys ranked in the 51.0 percentile, or middle poor class. However, their average performance of 72.47 inches per jump was better than the 70.49 inches per jump made by the boys in the fall of the first test year. The best performance was in the spring of the third year when the average jump was 80.10 inches, and this performance was classed as satisfactory in the 71.0 percentile.

The poorest showing as well as the lowest classification attained in all test items was made in the fifty-yard dash. In the spring of the second year the boys averaged only 7.59 seconds which classifies them as very poor at the 42.0 percentile level. Because this performance was exactly the same as their average in the fall of the year, their improvement was 0. Because of the increase in age during the year, they dropped an average of 10.4 percentile points. The first test year was a reverse of the second year in the percentile ranking. The boys began the year at the 42.3 percentile level and improved to a 52.2 percentile ranking. The best performance was made in the spring of the third year with an average of 7.31 seconds per boy. This was a .14 of a second improvement during the year, but this was not enough to keep the average percentile ranking from dropping three points.

In the shuttle run the three classes ranged from the middle forties to the mid-fifties in percentile rankings except in the spring testing of

the third year when the average percentile rank was 76.8. This rank is only 3.2 percentile points from a classification of good. The spring testing of this item in the second year shows the only negative improvement in any item in the three years of testing.

The first year, testing in the softball throw was classed as moderately poor, while the second year was very poor. The third year began in the satisfactory class but dropped to a poor rank in the spring, although the boys had improved very slightly in performance from 151.70 feet per throw per boy to 151.79 feet. Each year there was improvement with 12.34 feet, 7.29 feet, and .09 feet shown in each of the respective years.

The 600 yard run-walk was second to situps in the best average performance per item tested. The percentile rankings ranged from 70.3 in the fall of the second year to 88.4 in the spring of the third year. All three years showed improvement during the year from 13.2 seconds the first year, 16.8 seconds the next year, to 13.5 seconds the third year. The best average performance was 1:49.7 minutes in the spring of the third year. This was classed as moderately good.

Each year the average percentile rankings of all items tested improved. The first year the improvement was 10.9 percentile points. The improvement was only .6 of a point the second year, and the third year showed a jump of 5.6 points. The average of all percentile rankings in each testing ranged from 53.2, which is middle poor, in the fall of the first year to 73.0, or middle satisfactory, in the spring of the third year.

CONCLUSIONS

The three year testing program for freshmen at Dickinson County Community High School has helped to point out some possible changes and additions in the physical education area. The evaluation of these test findings have also renewed our faith in the use of valid tests as appraisal tools. Although all these tests were administered by the same instructor as carefully as was possible, there is always the possibility of human error as well as the possibility of faulty measuring devices. In spite of these weaknesses this evaluation seems to indicate certain possible conclusions.

The freshmen boys improved each spring in all but two test items in the three years of testing. In the second year there was no improvement in the fifty-yard dash and a negative improvement in the shuttle run of .04 of a second. The natural growth and development of a boy would indicate that he should improve in his performances by merely leading a normal life. However, this is not always true, as in the case of the heavy boy who eats too much and exercises less than the average boy. The physical education program should contribute enough exercise to the normal activity of each of the individual boys tested that he should improve more than he normally would without the benefits of a program. Thus, it was disappointing that many poor performances as well as low improvement in some test scores were recorded.

Even though there was an improvement in all but two test items in performance, the percentile rankings from fall to spring indicated a different story. The percentile rank of six test items increased in the

spring of the first year, but one was lower than in the previous fall. However, during the second year five test items showed a decrease in percentile points and only two improved from fall to spring. This number was reversed in the third year when five items improved and two were lower in the spring than those in the fall. Forty per cent of the items were lower in percentile rankings at the end of the year compared to the previous fall test. This study seems to indicate that the freshmen boys at Dickinson County Community High School are not improving so fast as the boys in their age group on the average over the United States.

There were several indications of physical weakness shown by the test results. The pullups and softball throw were low in improvement performance. Two of the three percentile rankings in both the pullups and softball throw declined during the year as is shown in Table X. Probably more work needs to be done in building strength in the upper body, arms, and shoulders to improve these test scores. The fifty-yard dash results showed little or no improvement and again two of the three percentile rankings went down during the year. This change indicates a weakness in the explosive power of the legs. However, the results of the standing broad jump in two of the three years show a decided improvement of more than six inches during the year. This test item also measures explosive power in the legs.

The results of the 600 yard run-walk was next to the best in performance. Each class improved a considerable amount and all ranked high in the good classification. This performance indicated the endurance of most of the boys was quite good, not only in the leg muscles but also in the cardio-respiratory system as well. A good track program in both grade

and high school has probably also contributed to the results in the 600 yard run-walk. Improvements in the shuttle run were so varied that it is difficult to evaluate. The shuttle run should indicate the general agility of the individual. The third freshman class, empirically speaking, has a larger number of good athletes in comparison to the first and second groups. The first class had some good athletes and showed an improvement in the shuttle run. However, the second class has few athletes and shows a negative improvement in this test item. Perhaps the general natural ability in each class shows up more in this activity than in the other six. The good improvement and the fine performances in the situps would probably indicate good strength in the abdominal and hip areas.

The boys at Dickinson County Community High School averaged above the fiftieth percentile in all three years tested. The results in the pullups, fifty-yard dash, shuttle run, and softball throw indicate that improvement could be made in the physical education program. An attempt to strengthen the legs could be made by using activities such as soccer, speed ball and weight lifting in the program. The upper body strength would probably be improved if rope climbing and parallel bar exercises were added to the class routine. Changes have been made at Dickinson County Community High School in the physical education activity program, and more changes will probably be made as a result of this study.

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A STUDY OF THE PHYSICAL FITNESS
OF NINTH GRADE BOYS AT
DICKINSON COUNTY COMMUNITY HIGH SCHOOL,
1962-63, 1963-64, 1964-65

by

HAROLD NATHAN MOSHER
B. S., Kansas State University, 1949

AN ABSTRACT OF A MASTER'S REPORT

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KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Each year more physical educators are becoming more aware of the importance of the contribution they can make to every pupil in his over all development. A good testing program is invaluable in their search to improve their physical education programs. Evaluation of the test data often leads to a change of some part of the physical education program. Many administrators are placing physical education higher on the priority list as the improved programs prove their worth.

The recognition of the need for improved physical fitness by President Eisenhower and President Kennedy has spurred physical educators to greater efforts. The appointment of "Bud" Wilkinson and later his replacement, Stan Musial, added to the growing awareness by the average layman that they should exercise more. The development of the President's Youth Fitness Test has probably been a very real contribution as an evaluation tool. The wide use of this test indicates the enthusiastic acceptance by physical educators over the country.

Three years of fall, then spring, testing of the freshmen boys at Dickinson County Community High School has been rather revealing. The instructor thought the boys were considerably better fit than the study made in this report indicates.

The averages of the percentile rankings were above the fiftieth percentile in each item of each testing in comparison with other boys the same age over the nation. These averages ranged from the 53.2 percentile rank in the fall of the first year to 73.0 percentile rank in the spring of the third year. Using the classifications in Tables I and II in this report it can be seen that the 53.2 percentile rank is poor, and the 73.0 percentile rank is classed as satisfactory. The first year the boys

improved from 53.2 average percentile ranking to 64.1 percentile ranking. This was an improvement from a classification of poor to a classification of barely satisfactory. The second year ranked higher in the poor class in the fall than did the first year, but failed to improve enough to reach the satisfactory class in the spring. Their average percentile ranking was 57.2 in the fall and 57.8 in the spring. The third year was classed satisfactory in both fall and spring testings with percentile rankings of 67.4 and 73.0 respectively.

The pullup test was classed poor in both the fall and spring of the first and second year, but was classed satisfactory in both testings the third year. The situp test was classed very poor in the fall of the first year, but improved from satisfactory to good, and the third year class improved from good to excellent. The boys were classed poor in the broad jump in the fall of the first year, but improved to the satisfactory class in the spring. The freshmen class in the second year were in the poor class both in the fall and spring, but the third year class was in the satisfactory grouping in both the fall and spring testings. All three freshmen classes were rated poor in the fifty-yard dash in all six testings. Five of the six testings in the shuttle run were classed as poor, but in the spring of the third year the boys performed well up in the satisfactory class. The recordings for the softball throw were classed as poor in both fall and spring testing the first year, but the third year the fall recording was satisfactory, and the spring recording dropped to poor again. The first and second year freshmen classes were rated as satisfactory in the 600 yard run-walk after the fall testing, and improved during the year to a rating of good for both years. The third year class was barely in the good classi-

fication after the fall test, and improved to well up in the good class in the spring test.

It is true that the boys averaged above the fiftieth percentile, but their showing in the pullups, fifty-yard dash, shuttle run, and softball throw indicate much work should be done to improve the leg and upper body strength. Running games and activities such as soccer, speed ball, and track might be emphasized to improve the legs. Rope climbing, weight lifting, and apparatus work would probably help strengthen the upper body. Definite changes have been made in the physical education program as a result of this study at Dickinson County Community High School, and more are in the offing.