1953

The development of strength and power norms in South Portland Junior High School

BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Major Project

THE DEVELOPMENT OF STRENGTH AND POWER NORMS IN SOUTH PORTLAND JUNIOR HIGH SCHOOL

Submitted by

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In partial Fulfillment of Requirements for

the Degree of Master of Education

1953

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Introductory Statement

In the absence of a Physical Education Program in South Portland Junior High School, the writer feels that some kind of a testing program, on a voluntary basis, would tend to stimulate a greater interest among this age group to participate in the intramural program of athletics that is offered, if the results are properly used.

South Portland Junior High School is located in South Portland, Maine. The Junior High School is made up of the seventh and eighth grades with one hundred forty-four boys and one hundred twenty-three girls in the seventh grade, and one hundred thirty-six boys and one hundred forty-four girls in the eighth grade, making a total of two hundred eighty boys and two hundred sixty-seven girls.

The school, at the time of this project, is only one and a half years old. There is no gymnasium on the school property at the present time and only one athletic field. The school does have the use of a gymnasium that belongs to the city which is only a five minute walk from the school. This gymnasium has a basketball floor seventy-two feet in length and forty-two feet in width, and has been divided into courts for the use of the intramural program.

In addition to the intramural program the school has an intensive interscholastic athletic program for the Varsity and Junior Varsity teams. The personnel in charge of the interscholastic program are trained Physical Education Teachers, one having received his Master's degree, the other being the writer. The personnel in charge of the intramural program have had no training in Physical Education.

PURPOSE OF STUDY

The purpose of this project is to be able to take the "T-Score" gained from a battery of tests and to group the boys into different divisions for a more satisfactory participation in the intramural and interscholastic program. At present the intramural program consists of only Touch-Football, Basketball, and Baseball.

The "T-Score" would give an idea of the power or raw strength of the individual being tested. "Individuals vary tremendously in strength, power, motor ability and endurance, and in their capacity to acquire these qualities. To demand the same performance of all, regardless of their maturity, physique, or capacity, is to neglect all that is known of teaching techniques, Physiology, or the psychology of learning." 1/

A boy who feels that he is competing with a group of equal ability will have a greater interest in what he is doing. If the boy is properly classified, further use of tests will enable one to measure the pupil's progress and continue to motivate his participation and help to determine whether or not he should be advanced.

1/Miller, Bookwalter, and Schlafer, Physical Fitness for Boys, A. S. Barnes and Co., 1943, p. 340

METHODS AND TECHNIQUES

The tests that were used in this project consisted of (1) standing broad jump, (2) chalk jump, (3) push-ups, and (4) sit-ups. One hundred seventh grade boys and one hundred eighth grade boys were given the battery of tests as listed above.

As was previously mentioned, these tests were on a voluntary basis. The purpose of the tests, the type of tests, and the use of the results of the tests were announced to each room over the inter-communication system, and all boys who were interested were asked to meet at the gymnasium on the day following the announcements for further information regarding the tests. Two hundred and eight boys reported for the tests. Of these, one hundred two were eighth grade boys, and one hundred six were seventh grade boys. Eight of the boys were unable to take the tests because of the amount of time involved.

The boys were tested in groups of fifty. The tests were given in the following order: standing broad jump and sit-ups on one day with chalk jump and push-ups one day later.

Technique involved in each test were as follows:

1.-- Standing broad jump.

In the absence of a mat all markings were made on the floor with tape. The take-off line was 1½ feet by 1 inch. Three feet from the take-off line and every three inches thereafter lines were marked with ½ inch tape lines. Distances were recorded from the toe line to the nearest point touched by any part of the body. Each subject was given two tries, and of the two tries, the best distance made was recorded.

2.-- Sit-ups.

Each individual boy lay flat on his back with fingers interlaced in back of his head. Each subject spread his feet approximately one to two feet apart. From the prone position on the back with the legs as flat on the floor as possible, each subject was required to sit up and touch the left knee with the right elbow, then recover to the prone position, then sit up and touch the right knee with the left elbow. Each time that a subject was able to sit up and recover to the prone position, it was recorded as a sit-up. A helper usually held the contestant's feet and legs to the floor. Each subject did as many as he could.

3.-- Chalk-jump.

The technique used in this test made it very easy to administer. Two vertical parallel lines, two feet apart, were drawn on a very smooth wall ten feet high. On the outside of each line the distance was marked in inches. Each subject faced the wall with feet flat on the floor and with a

piece of chalk between the thumb and forefinger of the right hand. The subject, with feet flat on floor, then extended the right arm as far as possible on the wall and made a mark between the parallel lines. Then the subject would jump and make a mark at the peak of his jump. The distance was checked from the first mark to the second mark and recorded for the chalk jump. Each subject was given two chances and the best score to the nearest inch was recorded.

4.-- Push-ups.

Each subject assumes a front support position (arms vertical and straight, hands directly under the shoulders, back and legs perfectly straight, and toes bent under). The arms are bent until the chest touches the floor. The arms are then fully extended to return to the front support position. Each such complete dip and extension was recorded as a push-up. No rest was allowed between push-ups and each subject did as many ashe possibly could.

Chart I

Computations of Norms for Records in Push-ups for Seventh Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point [1]	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	VIx100 / N	T-Score [2]
40-42	2	41	0	1	1	1	73
37-39	2	38	2	1	3	3	68.5
34-36	4	35	4	2	6	6	65.5
31-33	2	32	8	1	9	9	63
28-30	4	29	10	2	12	12	61.5
25-27	5	26	14	2.5	16.5	16.50	60
22-24	11	23	19	5.5	24.5	24.50	57
19-21	31	20	30	15.5	45.5	45.50	51
16-18	14	17	61	7	68	68	45.5
13-15	7	14	75	3.5	78.5	78.50	42
10-12	9	11	82	4.5	86.5	86.50	39
7- 9	4	8	91	2	93	93	35
4- 6	5	5	95	2.5	97.5	97.50	30.5

Range = 38 Mean = 19.73 Mode = 19-21

N = 100 Median = 19.36

Note: The same reference was used in computing all charts.

1/Frederick Rand Rogers, Fundamental Administrative Measures in Physical Education, The Pleiades Co., Boston, Mass., 1932, pp. 55 - 72.

2/Charles Harold McCloy, Tests and Measurements in Health and Physical Education, pp. 89 - 102.

Chart II

Computations of Norms for Records in Sit-ups for Seventh Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	$\frac{VI \times 100}{N}$	T-Score
97-102	1	99.5	0	.5	.5	.50	76
91- 96	3	93.5	1	1.5	2.5	2.50	69.5
85- 90	3	87.5	4	1.5	5.5	5.50	66
79- 84	5	81.5	7	2.5	9.5	9.50	63
73- 78	3	75.5	12	1.5	13.5	13.50	61
67- 72	3	69.5	15	1.5	16.5	16.50	60
61- 66	6	63.5	18	3	21	21	58
55- 60	3	57.5	24	1.5	25.5	25.50	56.5
49- 54	6	51.5	27	3	30	30	55.5
43- 48	9	45.5	33	4.5	37.5	37.50	53
37- 42	22	39.5	42	11	53	53	49.5
31- 36	8	33.5	64	4	68	68	45.5
25- 30	9	27.5	72	4.5	76.5	76.50	43
19- 24	9	21.5	81	4.5	85.5	85.50	39.5
13- 18	10	15.5	90	5	95	95	33.5

Range = 87 N = 100 Mean = 28.29 Median = 39.33 Mode = 37-42

Chart III

Computation of Norms for Records in Standing Broad Jump for Seventh Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	VIx100 / N	T-Score
81"-83"	1	82	0	.5	.5	.50	76
78"-80"	1	79	1	.5	1.5	1.50	71.5
75"-77"	1	76	2	.5	2.5	2.50	69.5
72"-74"	6	73	3	3	6	6	65.5
69"-71"	4	70	9	2	11	11	62
66"-68"	10	67	13	5	18	18	59
63"-65"	18	64	23	9	32	32	54.5
60"-62"	20	61	41	10	51	51	49.5
57"-59"	16	58	61	8	69	69	45
54"-56"	14	55	77	7	84	84	40
51"-53"	5	52	91	2.5	93.5	93.50	35
48"-50"	4	49	96	2	98	98	29

Range = 35
N = 100
Mean = 61"
Median = 60.55
Mode = 60-62

Chart IV

Computation of Norms for Records in Chalk-Jump for Seventh Grade Boys

I	II	III	IV	V	VI	VII
Interval	Frequency	Number Exceeding Each Score	½ of Those Making Each Score	III&IV	$\frac{Vx100}{N}$	T-Score
18"	1	0	.5	.5	.50	76
17"	1	1	.5	1.5	1.50	71.5
16"	2	2	1	3	3	69
15"	3	4	1.5	5.5	5.50	66
14"	6	7	3	10	10	63
13"	7	13	3.5	16.5	16.50	60
12"	8	20	4	24	24	57
11"	12	28	6	34	34	54
10"	20	40	10	50	50	50
9"	18	60	9	69	69	45
8"	14	78	7	85	85	39.5
7"	6	92	3	95	95	33.5
6"	2	98	1	99	99	26.5

Range = 12 Mean = 10.03 Mode = 10
N = 100 Median = 10.50

Chart V

Computation of Norms for Records in Push-ups for Eighth Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	$\frac{VI \times 100}{N}$	T-Score
40-42	1	41	0	.5	.5	.50	76
37-39	3	38	1	1.5	2.5	2.50	69.5
34-36	5	35	4	2.5	6.5	6.50	65
31-33	7	32	9	3.5	12.5	12.50	61.5
28-30	9	29	16	4.5	20.5	20.50	58
25-27	12	26	25	6	31	31	55
22-24	25	23	37	12.5	49.5	49.50	50
19-21	14	20	62	7	69	69	45
16-18	10	17	76	5	81	81	41
13-15	3	14	86	1.5	87.5	87.50	38.5
10-12	8	11	89	4	93	93	35
7- 9	3	8	97	1.5	98.5	98.50	28

Range = 35
N = 100

Mean = 23.06
Median = 22.42

Mode = 22-24

Chart VI

Computation of Norms for Records in Sit-ups for Eighth Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	$\frac{VI \times 100}{N}$	T-Score
122-129	1	125.5	0	.5	.5	.50	76
114-121	2	117.5	1	1	2	2	70.5
106-113	2	109.5	3	1	4	4	67.5
98-105	4	101.5	5	2	7	7	65
90- 97	2	93.5	9	1	10	10	63
82- 89	1	85.5	11	.5	11.5	11.50	62
74- 81	4	77.5	12	2	14	14	61
66- 73	5	69.5	16	2.5	18.5	18.50	59
58- 65	6	61.5	21	3	24	24	57
50- 57	7	53.5	27	3.5	30.5	30.50	55
42- 49	8	45.5	34	4	38	38	53
34- 41	24	37.5	42	12	54	54	49
26- 33	14	29.5	66	7	73	73	44
18- 25	12	21.5	80	6	86	86	39
10- 17	8	13.5	92	4	96	96	33

Range = 119
N = 100

Mean = 46.42
Median = 34.63

Mode = 34-41

Chart VII

Computation of Norms for Records in Standing Broad Jump for Eighth Grade Boys

I	II	III	IV	V	VI	VII	VIII
Step Interval	Frequency	Mid Point	Number Exceeding Each Score	½ of Those Making Each Score	IV & V	VIx100 / N	T-Score
94"-96"	1	95	0	.5	.5	.50	76
91"-93"	2	92	1	1	2	2	70.5
88"-90"	2	89	3	1	4	4	67.5
85"-87"	2	81	5	1	6	6	65.5
82"-84"	3	83	7	1.5	8.5	8.50	64
79"-81"	5	80	10	2.5	12.5	12.50	61.5
76"-78"	6	77	15	3	18	18	59
73"-75"	10	74	21	5	26	26	56.5
70"-72"	15	71	31	7.5	38.5	38.50	53
65"-69"	20	66	46	10	56	56	48.5
64"-66"	14	65	66	7	73	73	44
61"-63"	10	62	80	5	85	85	39.5
56"-60"	5	57	90	2.5	92.5	92.50	35.5
55"-57"	5	56	95	2.5	97.5	97.50	30.5

Range = 41
N = 100

Mean = 69.60
Median = 65.80

Mode = 65"-69"

Chart VIII

Computation of Norms for Records in Chalk-Jump for Eighth Grade Boys

I	II	III	IV	V	VI	VII
Interval	Frequency	Number Exceeding Each Score	½ of Those Making Each Score	III&IV	$\frac{Vx100}{N}$	T-Score
20"	2	0	1	1	1	73
19"	3	2	1.5	3.5	3.50	68
18"	4	5	2	7	7	65
17"	6	9	3	12	12	61.5
16"	7	15	3.5	18.5	18.50	59
15"	8	22	4	26	26	56.5
14"	10	30	5	35	35	54
13"	20	40	10	50	50	50
12"	10	60	5	65	65	46
11"	9	70	4.5	74.5	74.50	43.5
10"	6	79	3	82	82	41
9"	6	85	3	88	88	38.5
8"	5	91	2.5	93.5	93.50	35
7"	4	96	2	98	98	29

Range = 13" Mean = 13.04 Mode = 13"
N = 100 Median = 13.50

SUMMARY

The purpose of this project is to set up norms for all Junior High School boys with the results to be used by the Director of intramural athletics in grouping boys for participation in the intramural program.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings in this project, the writer believes that certain conclusions can be drawn and some recommendations should be made.

Conclusions

The following conclusions are based on preceding statements and concern the various tests considered in this project:

1. In a program which endeavors to promote the general education of all youth, adequate provision should be made to include a well-balanced testing program in Physical Education for the purpose of studying the entire individual and to stimulate and motivate interest.

2. No pupil should leave Junior High School without a record of having been classified according to his strength or power as compared to his age group.

3. The present program of intramural athletics does not answer the need of the majority of the students.

4. A satisfactory method of evaluating the results of Activities of this type should be considered by members of the Faculty and School

Board in arriving at some conclusions in an attempt to meet the needs of the students and to provide for the same.

5. From the results of the tests, desired groupings of boys for participation in intramural athletics may be obtained.

6. Grouping boys according to the results of the battery of tests used in this project would tend to stimulate a greater interest in participation, and help reach a nearer one hundred per cent of the boys in the absence of a Physical Education Program.

Recommendations

1. The results of the tests, on the outgoing Eighth Grade, should be passed on to the High School Director of Physical Education to assist him in grouping of classes.

2. Every boy entering the seventh grade should be given a battery of tests in order to find his standing with his age group.

3. The information gained from these tests should be kept on file in the Principal's office.

4. The supervising School Committee and Superintendent of Schools should use the results in studying the need to introduce a much-needed Physical Education Program in the Junior High School.

5. Test conditions to be standardized and recorded to insure validity of the test.

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