PHYSICAL PERFORMANCE AND ATTITUDE LEVELS FOR COLLEGE WOMEN ON SELECTED TESTS OF PHYSICAL FITNESS, MOTOR ABILITY, ATTITUDES AND ANTHROPOMETRIC MEASURES

Thesis for the Degree of M. A.

MICHIGAN STATE UNIVERSITY
Eva Lou Dillin

1957

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by

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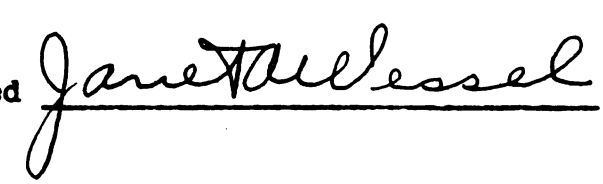
A THESIS

Submitted to the College of Education of Michigan State University of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Department of Health, Physical Education, and Recreation

1957

Approved 

ACKNOWLEDGEMENTS

The author expresses sincere appreciation to her advisor, Dr. Janet A. Wessel, whose continual encouragement, inspiration, and guidance, made this thesis possible.

Thanks are also expressed to the faculty members in the Department of Physical Education for their complete cooperation and assistance in the testing program, and to the subjects and Physical Education majors who so willingly donated their time.

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CHAPTER I

INTRODUCTION

Many physical educators have been confronted with the question "Physically fit for what?". What are the objectives and accomplishments of physical education, and how, if at all, do we benefit from them?

It must be admitted that too often inquiries of this nature have gone unsatisfactorily answered by physical educators because of the lack of established criteria by which to evaluate results.

Physical education, nevertheless, has specific aims and objectives. Most lists of objectives of a physical education program include physical fitness or health, body control, knowledges, appreciations and attitudes of physical activity, and recreational skills. Although objectives and terminology may change with the years in response to popular attitude and varying needs, there is one objective that has been accepted by most physical educators throughout the years. The responsibility of physical education to the individual lies in contributing to the development of a sound and efficiently functioning organism, with skills and capacities to

participate in activities throughout life. The objectives accepted quite universally by most physical educators to achieve this responsibility are development of physical stamina, organic tone and stimulation, muscular efficiency and skilled body or motor performance. While the terms "fitness" or "physical fitness" have become quite prevalent only in recent years, the concept and meaning of these terms to the physical educator is not new.

The extent to which the objectives of physical education are achieved serves as a measure of the success of the particular physical education program. Since this is true, the objectives of physical education should provide direction for the establishment of a program that will best accomplish the desired results. It also necessitates some means to measure, quantitatively and qualitatively, the objectives, and thus evaluate the results and outcomes of the program.

During these years of educational reorganization and expansion, physical education programs everywhere are being scrutinized and evaluated. There is, at present, a popular interest in physical fitness as a source of release from the stresses and tensions of modern living through relaxation and recreation. Medical interest has been aroused in the preventive aspects of physical activity for continual optimum functioning throughout life.[1] Governmental committees have been established which have

kindled additional interest and awareness in the value of physical activity.[2]

The intensity with which observation and interest is developing in physical education increases the responsibility of physical educators everywhere to critically evaluate their program in the light of their objectives. It is essential that evidence of the results of the programs of physical education is made available if progress is to be made.

Statement of the Problem

It was the purpose of this study (1) to establish performance levels for college women enrolled in the physical education program at Michigan State University on selected physical performance tests, motor ability tests, and anthropometric measures, and (2) to establish standards to determine favorable and unfavorable attitudes of college women enrolled in the physical education program toward physical education.

Importance of the Problem

During the last ten years workers engaged in research relating to fitness and physical fitness have contributed much to our understanding of the real meaning of these terms. Many useful and more adequate tests of fitness have been developed. Although fitness testing in our schools varies widely with respect to specific

tests employed, there are certain common characteristics that all testing possesses. These characteristics are in relation to specific phases or areas of fitness testing. The phases are commonly divided into categories such as physical efficiency or fitness and motor performance or fitness.

If fitness tests are to be utilized wisely to their fullest extent, it is essential to have standards by which to interpret the status and achievements of the performers, as well as evaluation of the results of physical education programs.

In order to obtain standards by which to interpret results, it is essential that the sample used in computing the standards be a representative one. In other words, performance levels set up for housewives, the sample being taken from a population of housewives, would undoubtedly not be accurate standards for college women or high school girls. Likewise, it seems quite feasible that standards for college women in one section of the country may not be completely reliable for college women in another section of the country. The fact that there are at present no nation-wide norms or standards for women, based on a representative sample of the total population, accentuates the need for standards in a specific area if fitness tests are to be utilized wisely.

It is hoped that the development of standards

for college women enrolled in physical education instructional courses at Michigan State University may assist in meeting a definite need in this field, and in doing this, enhance and enrich the existing program.

It is true that frequently the use of tests has been limited, to a great extent, to the determination of the status of an individual in relation to the other members of the group. It is not to be disputed that this information may be quite valuable. It is believed, however, that these tests and standards may be employed for many purposes other than this one limited function, and if they are used to their fullest extent, will provide direction, insight, and evaluation of program content at Michigan State University. The uses of these tests in providing direction, program evaluation and guidance for the women students at Michigan State may be summarized as follows:

1. Each objective held as being valid requires a means of evaluation in terms of program results. Though status may imply comparison with a group, it is equally, if not more important as a measure of progress for the individual in comparison of present score with previous scores. Measurement of one's achievement in relation to his own capacities and efforts may be of far more importance in the accomplishment of objectives, than one's status in the group.

2. Tests may be an important diagnostic tool in making apparent the strengths and weaknesses of the individual. In doing this they provide the individual, as well as the teacher an objective aid for guidance into future

physical activitiy in school and throughout life.

3. The tests and standards may be used by the physical educator to equalize teams and instructional groupings, as well as their use in providing a degree of objectivity in the difficult task of grading performance.

4. Perhaps of utmost importance, the wise use of tests may serve to stimulate the physical education instructor to individualize her program by planning for the development and needs of each person rather than subject matter.

5. Finally, tests may assist to some extent in providing a means of evaluating program results for future program planning, development, and justification.

In summary, it seems to be a recognized fact that there is a need for evaluating fitness. Many popular magazines and other current publications depict "do it yourself fitness tests" which provide the reader with a score indicative of her status in some measure. Today the teaching opportunity and promotive possibilities for favorable attitudes and understanding for the public and professional people inherent in the wise use of physical fitness tests, as well as an evaluation of the objectives of physical education and specific program content, is tremendous.

Limitations of the Study

The limitations of the present study will be presented under three headings: tests available; variables affecting test results; and, facilities and test administrators.

1. Tests available. Although literally thousands of various fitness tests are to be found in the literature, difficulty is encountered when an attempt is made to select a battery of tests to administer. This difficulty is attributable to several factors. First, the question of the validity of many tests is a real problem. Many tests do not seem to accurately measure the quality or qualities they were devised to measure. The extreme importance of selecting tests with the highest possibility validity is obvious. A second consideration of almost equal importance is that of reliability -- the degree to which two or more measurements of the same function yield similar results. A test with high validity and low reliability is of little worth. Along with these two primary requirements in the selection of tests, it was also necessary to give consideration to other factors such as the amount of time required to administer the test, the space required, the facilities involved, and the purpose for which the results were to be used.

The fact that it is extremely difficult to separate the various aspects of physical fitness, further limits test selection. It is acknowledged that in some cases the test used in the present study may not be the best measurement of a particular aspect that is available. However, the tests selected were the ones that appeared to be most appropriate for the purposes of

this study after consideration was given to all of the factors involved. Nevertheless, any limitations of the individual tests in any respect would also be a limitation of the study. Although great progress has been made in recent years in developing satisfactory performance and fitness tests, it is felt that there is still need of improvement.

2. Variables affecting test results. The lapse of a two week period between the first and second anthropometric measures proved to be a limitation due to the fact that many of the women lost considerable weight between the initial measurement and the reliability measurement.

It is possible that unknown factors such as colds, menstruation, emotional problems, etc., had an affect on the results. These, however, it was impossible to control.

3. Facilities and test administrators. Due to a lack of necessary facilities several tests which were desirable had to be omitted. The majority of tests administered required little or no equipment. Although the limited facilities did somewhat restrict the selection of tests, it is not felt that this limitation was of extreme consequence since other tests equally as valid and reliable were available for most of the aspects.

Another hindrance of the limited facilities

may have occured during the make-up tests and some of the reliability tests. This was a result of the fact that during some of these tests there were other activities in the gymnasium. It was felt that some of the women may have been hesitant to perform at their fullest capacity when other people were present.

It was impossible to obtain the same testers for all administrations of the tests. Undoubtedly greater variations in testing were encountered when it was necessary to use different administrators.

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CHAPTER II

REVIEW OF LITERATURE

It is the opinion of many leaders in the physical education field that the existing physical education programs in most schools could be improved upon. McCloy[1] makes the observation that not only physical education programs, but many teachers of physical education do not fully utilize their potentiality. He bases this observation on the following statements:

> Most of the programs are ungraded; there is far too much duplication of teaching material from year to year; classes are badly sectioned or not sectioned at all; there are few widely used standards of achievement; and most existing standards are not correlated with the individual differences in the innate capacities of the pupils; there is poor motivation of the program; there is almost no diagnosis of the causes of individual deficiencies; the grading and promotion systems are largely subjective and inadequate .....

A soundly structured program of physical education according to Bovard, Cozens, and Hagman[2], will have a set of clearly stated objectives with established means for evaluating the extent to which these objectives are achieved. Standards or norms are indisputably valuable for this purpose.

Several articles have appeared in the literature

which contain performance levels or achievement scales for women, or which deal in some respect with the establishment of such scales.

Scott and Wilson[3] in an investigation of physical efficiency tests state that there are many variations in the tests used in different batteries. They are of the opinion that these variations reflect the differences in the philosophy of the investigators, with each emphasizing the elements which to them seem most essential to efficient performance, and which best fit their particular purposes.

According to Scott,[4] a survey of tests used in the college women's program showed that the batteries used were as varied as the schools surveyed. This, however, does not necessarily indicate that the measuring is worthless. There are a variety of tests to be found that measure the same aspect of physical fitness. Although one investigator may use the 4 second dash and another the 20 yard dash as one of the measures of motor ability, the element being measured in both tests is identical. It is impossible to say that one method is superior to the other. This could only be determined by the particular testing situation, and the purposes for which the tests are being used.

The aspects of physical fitness as listed in a study done by Mohr,[5] are as follows: "endurance, strength,

flexibility, relaxation, body control, agility, freedom from disease and defect, organic soundness, cardiovascular-respiratory efficiency, motor skills, nutritional status, and morale."

As pointed out by a governmental committee organized to investigate physical fitness[6],

> There is no absolute list of the essentials to fitness, nor is it possible to think of the elements of fitness except as interactive in character, each closely related and interrelated with the others...

The committee classified tests recognizing the fact that it is impossible to devise situations where one element of fitness is entirely separated from the others. They list a series of tests which they attempted to arrange so that the specific element had the dominant influence on the score. Although complete standards are not given for all scores, the mean and standard deviation of the scores were listed with each individual test.

Gladys Scott,[7] in a study done at the University of Iowa, constructed an achievement scale for a battery of motor ability tests. The obstacle race was developed and reported on in this study with T-scores also included. The tests were administered to varying numbers of women students at the University of Iowa. This battery of tests was found to be adequate for classification purposes in sectioning the women entering college

into the various physical education courses.

In an attempt to obtain a broader concept of the fitness of women in colleges and universities, the Test Committee of the Western Society of Departments of Physical Education for Women in Colleges and Universities conducted an investigation.[8] They solicited the aid of physical education instructors in various schools in collecting the data. The instructors were requested to administer a series of tests to their students. The results obtained were sent to the chairman of the committee. Although the instructions for administration of the tests were identical in all situations, it is understandable that the conditions under which the tests were administered may have been quite varied. Norms were established from the results received by the committee. Anna Espenchade, in reporting the results obtained, states that relatively few scores were received by the chairman from which to compute the norms. Consequently, the results are not as accurate as they might have been. The mean and sigma was given for 5 different tests.

Howland[9] administered a series of physical fitness tests to the women at Battle Creek College. The tests were administered in two series by the same testers. Although no norms were given, the tests were found to be valuable in that they enabled the women to discover

their condition and thereby provided them with a starting point for corrective procedures. The author stated that the battery of tests was also valuable as a motivating device to the women.

The correlation between height and weight and a series of six tests was discussed by Scott and Mordy.[10] The tests involved were those included in the Iowa physical fitness battery. The reliability of these tests as established by Mohr was sit-ups .936, chair stepping .946, pull .932, obstable race .910, and bounce .787. The relationship indicated by the study between height and weight and the six tests was not significant except in the case of the pull test. There was also a possible relationship with the obstacle race. In view of these facts it would seem unnecessary to establish norms based on height and weight. The possible exception to this would, of course, be the pull test.

A second of the four-fold purposes of this study was to determine whether this battery or some combination of items in the battery, has a sufficiently high relationship with work capacity so that a mass testing procedure could be said to measure the fitness of individuals. The criterion for work capacity was riding the bicycle ergometer at maximum speed for 2 minutes. This criterion was previously established by a

preceding study.

The authors concluded that no single item in the battery had a high enough relationship to work capacity so that it alone could be considered an adequate measure. However, all tests showed a significant relationship, thus might be surmised that each measures a part of the total fitness picture. The battery as a whole, or a combination of the tests, was considered to be a satisfactory measure of work capacity and thus physical fitness.

Clarke[11] lists a number of factors by which norm charts may be evaluated and states that in physical education, quite frequently, samples are definitely limited to rather small geographical areas. Since satisfactory results from broader samples are extremely difficult to obtain due to the nature of performance tests, it seems advisable to construct norms for the various sections of the country. Thereby representative samples of different areas could be obtained and norms established for the specific areas. Comparisons of the results could then be made.

The attitude inventory used in the present study was the Wear Attitude Inventory.[12] This inventory was established on data obtained from college men, but it is thought to be equally suitable for use with women.

Broer[13] used this inventory in a study with women of low motor ability at the University of Washington. The results she obtained compared very favorably with those obtained by Wear with men. The reliability of .96 established on 100 cases in Broer's study checked exactly with that reported by Wear.

On a series of attitude tests given at the University of Michigan, Bell and Walters[14] concluded that there seemed to be a positive and significant relationship between attitude and the extent to which women enjoy physical education classes.

Broer, Fox, and Way[15] gave an attitude test to the women at the University of Washington. Their findings indicated a great majority of freshmen and sophomore women students enrolled in physical education activity classes at the University of Washington expressed a very favorable attitude toward physical education as a course.

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CHAPTER III

METHODS OF PROCEDURE

Selection of Tests

The tests administered in the present study were selected from those appearing in the existing literature for women on the measurement of physical fitness, motor ability, and attitudes. The advantages and disadvantages of many tests were considered and selection was made on the basis of validity, reliability, ease of administration, and the purposes of the entire testing program. It is realized that there are many other tests for measuring the same aspects of fitness that are equally as good as those used in this study. However, the following tests seemed to best fulfill the purposes of this study and suit the facilities:

Strength	Flexibility	Endurance
Grip (R & L)	Standing flexion	Chair stepping
Push-pull		
Back lift	Extension	Agility & body control
Sit-ups		
Deep Knee bend	Back extension	Obstacle race
Motor Ability		Attitude
Basketball throw		Wear Attitude Inventory
Standing broad jump		
Wall pass		
20 yard dash		

A description of each of these tests is given in the appendix.

Gathering the Data.

The subjects participating in this project were 200 women students selected at random from approximately 3300 students enrolled in the various physical education instructional courses at Michigan State University.

The women selected were contacted by means of a letter which was sent to them from the department. A copy of the letter may be found in the appendix. In addition to the letter each woman was contacted personally by her teacher in the particular physical education instructional course in which she was enrolled.

Every woman contacted was tested unless she was excused for medical reasons. In these cases a medical excuse was obtained from the Health Center and another woman was selected.

Administration of Tests.

The administrators of the battery of tests were instructors in the physical education department at Michigan State. Most, if not all, of the testers had had previous experience in the administration of physical education tests. However, in order that every precaution be taken to insure the best possible testing, each administrator was given a card containing complete

instructions concerning how to administer the test, and a laboratory period was set up to train each administrator. Two dates were scheduled prior to the actual testing period when the instructors had opportunity to practice the tests and clarify any questions or doubts they may have had. As much as was possible, the same individual gave the same test on both Tuesday nights -- and similarly for the two Thursday nights. This however, was not completely possible. Student assistants selected from the physical education majors were assigned to each instructor to aid her in recording scores, etc. Precautions to help the tester avoid common errors in administration were also listed. The tester obtained her card at the Registration desk for each testing period in case, for any reason, reference needed to be made to them. A sample of the card may be found in the appendix.

The tests were divided into two series. The tests comprising Series I were standing flexion, spinal extension, obstacle race, broad jump, grip strength, push-pull, back lifts, sit-ups, and deep-knee bends. These tests were administered on two successive Tuesday nights to 100 students each night.

The second series consisted of the basketball throw, 20 yard dash, wall pass, and chair stepping. These tests were given on two successive Thursday nights to 100 students each night.

By using this system 100 women completed the entire battery of tests by coming one week on Tuesday and Thursday nights. The second 100 women completed the battery in the same manner the following week. The testing was done between the hours of 6:30 and 9:00 P.M. Make-up times were scheduled for the subjects who missed any of the tests on Tuesday and Thursday nights of the third week.

Each subject was assigned a test number and had a score card prepared for her prior to the testing period. A sample of the score card will be found in the appendix.

Upon entering the gymnasium each subject received the attitude test which she immediately filled out. To the knowledge of the subjects these were done anonymously.

After completing the attitude inventory the subjects proceded to the various tests. Each test was given a station number and the subjects progressed individually from one station to the next.

The tests were arranged, as much as possible, so different muscles were used in successive tests in an attempt to eliminate fatigue.

It was felt that the greatest amount of fatigue resulted from the chair stepping test. Consequently, this test was administered last to all women.

The three tests given on the same night and preceding the chair stepping test did not appear to tire the subjects to the extent that the score of the latter would be affected. This observation is supported by the study of the fatigue effects completed by Scott and Matthews[1] which indicated a greater fatigue effect from chair stepping given alone than from the entire battery of tests they administered.

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CHAPTER IV

RESULTS OF THE STUDY

Definition of Terms.

Motor Ability - The measures of achievement and aptitude in basic motor skills such as running, throwing, jumping and agility were included in this category.

Physical Fitness - The components of physical fitness which were measured in this category included such elements as strength, endurance, and flexibility.

Analysis of Data.

Conventional statistical techniques were used in analyzing the data. The arithmetic mean and standard deviation were computed for all of the performance tests and are listed in the appendix.

Coefficients of objectivity were computed on all of the tests and yielded the following results:

Right grip	.81	Deep knee	.56
Left grip	.83	Back lift	.57
Push	.71	Standing flexion	.80
Pull	.74	Spinal extension	.95
Sit-up	.80	Chair stepping	.41
Wall pass	.76	Obstacle race	.77
20 Yd. dash	.81	Broad Jump	.90

The preceding coefficients of objectivity compare rather favorably with the reliability coefficients of other studies. Scott[1] obtained the following results on

a series of motor ability tests: obstacle race .91, basketball throw .89, broad jump .79, wall pass .62, four second dash .62.

Poley[2] found the reliability of spinal extension and standing flexion to be .87 and .92 respectively.

Chair stepping and sit up reliability coefficients were .95 and .94 respectively in an investigation conducted by Mohr.[4]

The only severe discrepancy between the results obtained in the present study and those of the other studies listed is in the chair stepping test. A possible explanation of this is the fact that many of the subjects experienced stiffness and sore leg muscles as a result of the initial chair stepping test. Many comments to this effect were made at the time of the second testing. It is possible that to avoid the same discomfort after the second testing, the women, either consciously or unconsciously, did not put forth the effort they exerted in the initial testing. This may have also been partly responsible for the poor objectivity of the deep knee test.

The back strength test was also low in objectivity. This was felt, to an extent, to be a weakness of the test. There were cases when two consecutive administrations of the test by the same tester varied as much as 80 to 100 pounds. With a difference of this size on two consecutive administrations, it is not surprising that the

objectivity of the test is extremely low.

Coefficients of reliability were computed for the attitude inventory and anthropometric measures which follow

Attitude inventory	.82
Hip width	.90
Chest width	.77
Iliac width	.80

The reliability of the same attitude inventory as given in a study completed by Broer[5] was .96

The validity of the attitude inventory was computed in the same manner as Broer[6] used. A comparison of the present study and Broer's study follows:

	Present Study	Broer's Study
Total inventory score:		
with self-rating scale	.81	.71
with question 1	.62	.69
with question 2	.27	.32
with question 3	.53	.61

T-scales and percentile scales were computed for each of the performance tests.

These data are presented in Tables I - V in the following order: motor ability tests, physical fitness tests, and attitude and anthropometric measures.

The range of the T-scores of some of the tests would arouse a question as to whether the scores of all the tests are normally distributed.

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6. Ibid.

TABLE I

T-SCALES FOR MOTOR ABILITY TESTS
FOR COLLEGE WOMEN

T-Score	Basketball Throw (in.)	Wall Pass (15 sec.)	Broad Jump (in.)	Obstacle Race (sec.)	20 Yd. Dash (sec.)	T-Score
83	73					83
82	72					82
81	71					81
80	70	14				80
79	69					79
78	68		85			78
77	67					77
76	66					76
75	65	13				75
74	64		82			74
73	63		81	18.1		73
72	62					72
71	61		80	18.4		71
70	60	12	79		2.4	70
69	59		78			69
68	58		77	19.0		68
67	57			19.2	2.5	67
66	56		76	19.4		66
65	55		75	19.6		65
64	54		74	19.8		64
63	53		73	20.0	2.6	63
62	52			20.3		62
61	51		72	20.6		61
60	50	11	71	20.9	2.7	60
59	49		70	21.1		59
58	48		69	21.3		58
57	47			21.5		57
56	46		68	21.8		56
55	45		67	22.0		55
54	44		66	22.2		54
53	43		65	22.4	2.9	53
52	42			22.7		52
51	41		64	22.9		51
50	40	10	63	23.2	3.0	50
49	39		62	23.4		49

TABLE I - Continued

T-Score	Basketball Throw (in.)	Wall Pass (15 sec.)	Broad Jump (in.)	Obstacle Race (sec.)	20 Yd. Dash (sec.)	T-Score
48	38			23.6		48
47	37		61	23.8	3.1	47
46	36		60	24.0		46
45	35	9		24.3		45
44	34		59	24.5		44
43	33		58	24.7	3.2	43
42	32			25.0		42
41	31		57	25.2		41
40	30		56	25.5	3.3	40
39	29		55			39
38	28		54	25.9		38
37	27			26.2	3.4	37
36	26		53	26.5		36
35	25	8	52			35
34	24		51	26.8		34
33	23		50	27.0	3.5	33
32	22			27.3		32
31	21		49	27.6		31
30		7	48	27.8	3.6	30
29				28.0		29
28				28.3		28
27				28.5	3.7	27
26				28.8		26
25			44			25
24				29.0		24
23						23
22						22
21			41			21
20			40		3.9	20
19						19
18						18
17						17
16						16
15						15
14						14
13					4.1	13

TABLE II

T-SCALES FOR PHYSICAL FITNESS TESTS
FOR COLLEGE WOMEN

T-Score	Back Strength (lb)	Rt. Grip (lb)	Left Grip (lb)	Sit Up (30sec)	Spinal Extension (in.)	Push (lb)	Pull (lb)	Deep Knee (30sec)	Chair Step (1min)	Standing Flexion (in.)
83							85			10.00
82					21.00	75	84			9.25
81						74	83			8.75
80			103		20.50	73	82			8.50
79			102		20.25	72	81			8.25
78	325	110	101		20.00	71	80			8.00
77	320	108	100		19.75	70	79			7.75
76	315	107	99		19.50	69	78			7.50
75	311	106	98		19.25	67	76	32		7.25
74	306	105	96		19.00	66	75		70	7.00
73	302	103	95	26	18.75	65	74			6.75
72	298	102	94		18.50	64	73	31		6.50
71	294	101	93		18.25	63	72		67	6.25
70	289	100	92	25	18.00	62	71	30	66	6.00
69	285	99	91		17.75	61	70		65	5.75
68	278	97	89		17.50	60	69		64	
67	275	96	88	24	17.25		68	29	63	5.50
66	270	95	87		17.00	57	67		62	5.25
65	265	94	86	23	16.75	56	66	28	61	5.00
64	260	93	85		16.50	55	65		60	4.75
63	255	92	83	22	16.25	54	64		59	4.50
62	253	90	82		16.00	53	63	27	58	4.25
61	247	89	81		15.75	52	62		57	4.00
60	242	88	80	21	15.50	51	61	26	56	3.75
59	240	87	79		15.25	50	60		55	3.50
58	234	85	78		15.00	49	59		54	3.25
57	230	84	77	20	14.75	48	58	25	53	3.00
56	225	83	76		14.50		57		52	2.75
55	220	82	74	19	14.25	45	56	24	51	2.50
54	216	80	73		14.00	44	55		50	2.25
53	211	79	72	18	13.75	43	54		49	2.00
52	205	78	71		13.50	42	53	23	48	1.75
51	201	76	70		13.25	41	52		47	1.50
50	195	75	69	17	13.00	40	51	22	46	1.25
49	190	74	68		12.75	39	50		45	1.00

TABLE II - Continued

T-Score	Back Strength (lb)	Rt. Grip (lb)	Left Grip (lb)	Sit Up (30sec)	Spinal Extension (in.)	Push (lb)	Pull (lb)	Deep Knee (30sec)	Chair Step (1min)	Standing Flexion (in.)
48	187	73	67		12.50	38	49		44	.75
47	183	71	66	16	12.25	37	48	21	43	
46	178	70	65		12.00		47		42	.50
45	171	69	63	15	11.75	35	46	20	41	0
44	166	67	62		11.50	34	45		40	-.25
43	163	66	61	14	11.25	33	44		39	
42	158	65	60		11.00	32	43	19	38	-.50
41	155	63	59		10.75	31	42		37	-.75
40	148	62	58	13	10.5	30	41	18	36	-1.00
39	145	61	57		10.25	29	40		35	-1.25
38	140	60	55			28	39		34	-1.50
37	136	58		12	9.75	27	38	17	33	-1.75
36	130	57	53		9.50	26	37		32	-2.00
35			52	11	9.25	24	36	16	31	-2.25
34	121	55	51		9.00	23	35		30	-2.50
33	117	53	50	10	8.75	22	34		29	-2.75
32	109	52	48		8.50			15	28	-3.00
31	105		47			20	32		27	-3.25
30	101	50	46	9	8.00		31	14	26	-3.50
29	95		45		7.75		30		25	-3.75
28	90		44		7.50		29	13	24	-4.00
27	85		43				28		23	-4.25
26			42				26		22	-4.50
25			40	7			25	12	21	
24							24		20	-4.75
23				6			23		19	-5.25
22							22		18	-5.50
21							21		17	-5.75
20				5				10		-6.00
19										-6.25
18				4						
17										-6.50
16										-6.75
15				3				8		-7.00
14										-7.50

TABLE III

PERCENTILES FOR MOTOR ABILITY TESTS
FOR COLLEGE WOMEN

Percentile Rank	Basketball Throw (in.)	Wall Passes (15 Sec.)	Broad Jump (in.)	Obstacle Race (sec.)	20 Yd. Dash (sec.)	Percentile Rank
100	73	14	87	18.1	2.4	100
95	59	13	78	20.0	2.7	95
90	53	12	75	20.6	2.8	90
85	50		73	21.0	2.9	85
80	47		71	21.2		80
75	46		69	21.5		75
70	44		67	21.8	3.0	70
65	43	11	66	22.1		65
60	42		65	22.3		60
55	41		64	22.6		55
50	40		63	23.1	3.1	50
45	39		61	23.3		45
40	38	10	60	23.6	3.2	40
35	37		59	24.0		35
30	36		58	24.3	3.3	30
25	34		57	24.8		25
20	32	9	56	25.2	3.4	20
15	30		55	25.8	3.5	15
10	28	8	53	26.5	3.6	10
5	25	7	50	27.3	3.7	5
0	21	6	40	29.5	4.4	0

TABLE IV

PERCENTILES FOR PHYSICAL FITNESS TESTS
FOR COLLEGE WOMEN

·centile ·ank	Back Strength (lb.)	Right Grip (lb.)	Left Grip (lb.)	Sit Up (30 sec.)	Spinal Extension (in.)	Push (lb.)	Pull (lb.)	Deep Knee (30sec)	Chair Step (1min)	Standing Flexion (in.)
100	320	110	103	26	21	75	85	32	70	11.0
95	258	98	89	23	17	58	73	29	63	6.0
90	242	94	83		16	55	66	27	60	4.0
85	234	91	79	21		51	62	26	57	3.2
80	225	88	77	20	15	48	59	25	55	2.7
75	220	85	75			46	56		53	2.2
70	214	83	74	19	14		55	24	52	2.0
65	208	81	73			44	54		50	
60	204	79	72	18		43	52	23	49	1.5
55	200	77	71			42	51		47	
50	195	75	69		13	41	50	22	46	1.3
45	190	73	68	17		40	48		45	
40	184	71	67		12	39	47	21	44	1.0
35	180	69	66			37	46		42	.5
30	174	68	64	16		36	45	20	41	.2
25	170	66	62	15	11	35	44		39	0
20	162	64	60	14		33	43	19	37	-.5
15	156	62	58	13	10	31	41	18	34	-1.7
10	148	60	55	12	9	28	39	17	31	-2.2
5	134	58	51	9	8	25	36	15	27	-3.5
0	80	49	39	0	6	20	21	6	14	-10.

TABLE V

PERCENTILES FOR ATTITUDE TEST AND ANTHROPOMETRIC MEASURES FOR COLLEGE WOMEN

Percentile Rank	Attitude	Chest Width (in.)	Iliac Width (in.)	Hip Width (in.)	Ankle Girth (in.)	Wrist Girth (in.)	Percentile Rank
100	188	11.8	13.3	14.8	9.7	6.8	100
95	182	10.5	12.0	13.6	8.8	6.2	95
90	178	10.3	11.8	13.4	8.6	6.1	90
85	174	10.2	11.6	13.2	8.5		85
80	172	10.1	11.5	13.1	8.4	6.0	80
75	169	10.0	11.3	13.0	8.3	5.9	75
70	167	9.9			8.2		70
65	164		11.2	12.9			65
60	163	9.8	11.1	12.7		5.8	60
55	160	9.7	11.0		8.1		55
50	154	9.6	10.9	12.6	8.0	5.7	50
45	153			12.5	8.0		45
40	152	9.5	10.8	12.4	7.9		40
35	149	9.4	10.7	12.3		5.6	35
30	146	9.3	10.6	12.2	7.8	5.5	30
25	142	9.2		12.1	7.7	5.5	25
20	137	9.1	10.5	12.0	7.6		20
15	132	9.0	10.3	11.9	7.5	5.4	15
10	126	8.7	10.2	11.7	7.4		10
5	118	8.6	10.0	11.5	7.2	5.3	5
0	97	7.7	8.9	10.7	5.6	4.9	0

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to establish standards on physical fitness, motor ability, attitude, and anthropometric measures for the women enrolled in physical education instructional courses at Michigan State University.

The data for these standards were collected from a random sample of 200 women selected from the instructional courses.

The tests were administered by the faculty members in the Department of Physical Education at Michigan State University. A total of 15 measurements were taken on the subjects.

T-scales and percentile scales were computed for each of the performance tests, and percentiles were only calculated for attitude and anthropometric measures.

Conclusions and Recommendations.

The excellent cooperation given by the subjects, and the many inquiries concerning the results would seem to indicate a tremendous interest on the part of college women in (1) their physical status, (2) their physical

potential, and (3) objective measures and evaluation.

It is felt that there is need for further investigation in the development of more valid and reliable measures of physical performance.

The tests in this study employing the best of three measurements yielded the highest objectivity coefficients, and thus would seem to be the best method of test administration for future studies.

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APPENDIX

TABLE VI

TEST MEANS AND STANDARD DEVIATIONS

Test	Means	Standard Deviation
Standing Flexion	12.39	2.4
Push	40.5	10.60
Pull	50.5	10.25
Chair Stepping	45.5	10.05
Broad Jump	63.52	7.72
Sit-Ups	17.12	3.86
Deep Knee	22.4	4.18
Back Strength	195.2	47.0
Spinal Extension	13.0	2.54
Wall Pass	10.3	1.37
20 Yard Dash	3.0	.28
Basketball Throw	39.8	9.90
Left Grip	68.8	11.40
Right Grip	75.3	12.60
Obstacle Race	23.2	2.34
Attitude	139.82	18.69
Wrist Girth	5.72	
Ankle Girth	8.07	
Hip Width	12.62	
Iliac Width	10.97	
Chest Width	9.64	
Weight	126.56	
Height	64.14	

PHYSICAL EDUCATION INVENTORY

TEST NO.____

NAME_____BIRTHDATE_____

Student No._____College (Major)_____

P.E. ACTIVITIES TAKEN IN COLLEGE:

Activity	Grade
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

ANTHROPOMETRIC MEASURES

Height_____
Weight_____
Chest Width_____
Iliac Width_____
Hip Width_____
Ankle Girth_____
Wrist Girth_____
Posture Picture_____

SERIES I

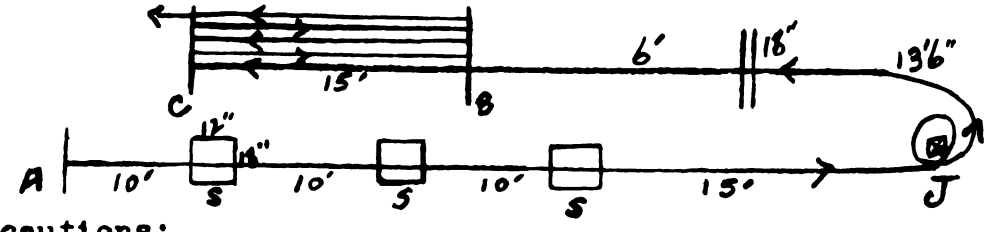
Standing Flexion_____
Spinal Extension_____
Obstacle Race_____
Broad Jump_____
Grip Strength_____
Push-Pull_____
Back Strength_____
Sit-Ups_____
Deep Knee Bend_____
Menstruation at Present_____

SERIES II

Basketball Throw_____
20 Yard Dash_____
Wall Pass_____
Chair Stepping_____
Attitude Inventory_____
Activity Inventory_____
Menstruation at Present_____

OBSTACLE RACE TEST

a. Subject starts in a back lying position on the floor with the heels at line A in the diagram. On the signal, "Ready, Go", she gets up and starts running toward J, stepping with both feet on each of the 3 spots on the floor, runs twice around J without touching the pole, turns toward D, crawls or rolls under the cross bar, gets up on the other side, runs to line C, back to B, and continues running between B and C until she comes to C for the third time. Score is the number of seconds required to run the course.



Precautions:

1. Care must be taken that the subject steps with both feet on the required squares, and runs twice around J without touching the pole.

Assistant Duties:

Record scores on the subject's score cards.

Suggestions for Instructor:

a. Next girl starts as soon as one ahead finishes circling J. Each successive runner should lie down as soon as girl ahead is up.

b. Judging

1. Demonstrate what is meant by stepping with both feet on each square. Do not call runner back if the toe or heel extends outside the square.

2. Judge performance on whether stride is adjusted to contact the square and whether there is transfer of weight from one foot to the other while in the square.

(Equipment: 2 Stop Watches)

CHAIR STEPPING TEST

a. Subject starts with one foot on the chair (bench) and the right hand in partner's. Maintain hand position throughout the test.

b. On signal, Ready Go!, rise to an erect position on the chair. The supporting knee must be straight, the other foot may be off the chair.

c. She then immediately steps down to the floor with the same foot that started on the floor. Continue as rapidly as possible until the final whistle (or signal).

d. The score is the total number of correct movements (up and down) performed in one minute. (Number of times knees extended).

Precautions:

1. Be sure chair is stable (held by someone).

2. Be sure hand (right hand) is held for balance throughout the test.

3. Be sure supporting leg is straight on chair.

4. Be sure subject knows how to alternate legs - otherwise fatigue sets in too fast during the one minute. Every 15 seconds the subject should shift legs. This should be done while both feet are on the chair.

Assistant:

1. Counts the movements (up and down) and may support subject.

2. Records the score . . . on test card.

Subjects:

1. Use one to hold chair steady.

Suggestions:

Instructor gives signal to start and to stop.

The timing does not begin until 2 seconds after the subject starts...Let the subject extend knee once and at this time the instructor must give signal for assistant to start counting the movements. Subject has 62 seconds. Two seconds to get going and then actual time begins for counting the movements. THREE SIGNALS: Ready go; subject begins; Signal: Start watch and count as soon as knee extended; Signal: Stop.

(Equipment: Bench or Chair - Stop Watch)

SIT-UP TEST

a. Subject assumes a back-lying position on a mat, with knees bent just enough to allow the feet to be flat on the mat.

b. Partner holds feet in position after they are properly placed.

c. Subject's hands are placed on her shoulders with elbows pointing upwards.

d. On signal "Ready, Go" the subject curls trunk up until her elbows touch her knees, then immediately uncurls back to starting position -- but without lowering head to mat. The hands must remain on shoulders throughout the test.

e. The score is the number of correct sit-ups performed in thirty seconds. (up and down) -- one sit-up movement.

Precautions:

1. Hands must be kept on shoulders throughout the test.

2. Subject's partner must hold the feet firmly.

3. Head never touches again during the test - just the back.

Assistant Duties:

Count the number of correct sit-ups performed in the alloted time.
Record the score on the subject's score card.
If a partner is not available, the assistant may hold the subject's feet and count the movements.

(Equipment: Stop Watch - Mat)

STANDING HIP AND TRUNK FLEXION

a. Subject stands on the bench with feet touching both sides of the stick and toes pointing straight ahead and even with the edge of the bench to which the yardstick is fastened.

b. Subject bends forward slowly and evenly, and, with hands together and fingers extended reaches down the stick as far as possible without bouncing. (Three warm-up bobs may be taken before the measurement is recorded.) Record fourth bob.

c. The score is the lowest point at which the subject can hold her position for 2-3 seconds. The score may be positive (below) or negative (above), and is recorded to the closest quarter-inch.

Precautions:

1. Subject's knees must be kept straight throughout the test.

2. Administrator must take care that subject does not bounce down but rather holds her position.

3. Be sure your eyes are on level with the reach.

Assistant Duties:

Ready to give support if performer loses balance.
Record the subject's score on her score card.
Be sure and record plus or minus with each measurement.

(Equipment: Bench)

BASKETBALL THROW TEST

a. Subject starts anywhere she wishes behind the throwing line. She must not step on or across the line when throwing.

b. The throw may be made in any manner. Three attempts are given.

c. The score is the distance from the throwing line to the spot where the ball touches the floor. The best of the three trials recorded on the girls card, is used.

Precautions:

1. Be sure to record all three trials.

2. Care must be taken that the subject throwing does not step on or across the line.

3. It is essential that careful observance be given to the exact spot where ball touches the floor if the measurement is to be accurate.

4. Explain carefully - but do not demonstrate.

5. Answer questions - except those on throwing technique.

6. Instructor - stand down the floor after explaining procedure.

Assistant Duties:

Watch the subject to see that she does not step on the throwing line or across it. Record the score on the subject's score card as it is given by the instructor.

BACK STRENGTH TEST

a. Subject stands on platform with legs straight and feet straddling the dynamometer. Pointers are set at zero.

b. Adjust the chain attachment in such a way that when the subject is grasping the bar with her legs straight, the angle at the hip joint is approximately 150 degrees.

c. Using a mixed grip, (one hand over, one hand under), the subject pulls smoothly straight upward with as much force as possible and without falling backwards.

d. Score is recorded to the closest point.

Precautions:

1. Strict attention must be given to the angle at the hip joint (150 degrees) since variability may result if the angle is not corrected.

2. Pointers must be set at zero before each trial.

3. Administrator must guard against jerky pulls by the subject.

Assistant Duties:

Record score on subject's card as it is given by administrator.

TWENTY YARD DASH

a. Subject starts 5 yards behind the starting line and runs at full speed across the 20 yard line.

b. A starter stands even with the starting line and drops a white cloth as subject crosses the starting line.

c. A timer stands even with the finish line, starts the stop watch as the white cloth falls and stops it as the subject crosses the finish line.

d. The score is the number of seconds recorded to the nearest tenth of a second.

Precautions:

1. Starter must drop cloth at the instant the girl crosses the line and do each girl exactly the same if the measurement is to be accurate.

2. Timer must start the stop watch just at the instant the cloth is dropped by the starter.

Assistant Duties:

Record score as it is given by timer.

STANDING BROAD JUMP

a. Subject stands on the beat board, toes curled over the edge, and jumps forward on the mat as far as possible. The take-off is with both feet simultaneously.

b. The distance jumped is measured from the beat board to the heel- (or other part of body in case balance is lost) nearest the beat board.

c. Score is the best jump of three trials, recorded to the closest inch.

Precautions:

1. Subject must take off with both feet.

2. Mat must be tight against beat board before each jump.

Assistant Duties:

Record score as given by instructor.

(Equipment: Beat Board - Mat)

SPINAL EXTENSION

a. Subject lies on mat in a prone position, legs together, and hands interlaced behind head. Partner holds thighs.

b. Subject then raises head and shoulders from the floor by arching the upper back; legs and feet remain on the floor and lower corner of the ribs must also be kept on the floor.

c. The score is the distance from the suprasternal notch (top of the sternum) to the floor, recorded to the closest quarter-inch.

Precautions:

1. Subject's thighs must be held firmly by partner.

2. Administrator must make measurement rapidly to obtain best score.

Assistant Duties:

Record score as given by administrator.

(Equipment: String - yard stick)

DEEP KNEE BEND TEST

a. Subject stands erect with one foot slightly ahead of the other. The heel of the forward foot is about opposite the toes of the back foot. Arms are bent with the elbows close to the sides (in thrust position). Buttock touches heel.

b. On a signal "Ready, Go", subject squats down and simultaneously extends both arms forward at shoulder height to help maintain balance.

c. Return to erect position and repeat as rapidly as possible. Foot position may be reversed or alternated at will.

d. Score is the number of times knees are extended in thirty seconds.

Precautions:

1. Administrator should be sure that the subject's knees are fully bent when in squat position.

2. Knees fully extended.

Suggestions:

1. Arms may be kept on hips.

2. If subject loses balance but regains balance without pause she may continue -- otherwise stop the test.

3. No rest allowed.

Assistant Duties:

Counts the number of times knees extended in the alloted time. Records the subject's score on her score card.

(Equipment: Stop Watch - Mat)

WALL PASS TEST

a. Subject stands facing the wall, behind the restraining line which is 9 feet from the wall, and throws into area eight feet square.

b. On signal "Ready, Go", the subject throws the ball against the wall, catches it, and repeats the act as rapidly as possible. This continues until the timer stops the action.

c. Any type of throw and catch may be used, but the performer must stay behind the line at all times.

d. The score is the number of hits on the wall by the ball completed in 15 seconds.

e. Give two trials. Run a group through and then repeat. Record both on test card.

Precautions:

1. Subject must remain behind restraining line at all times.

Suggestions:

1. A player who steps across the line slightly should be called back. If the feet are in position for next throw, error is not considered. If fouls are continuous, entire test must be repeated.

2. Allow each person time for 3 or 4 practice throws before taking test.

3. If ball drops between the wall and the line, player can cross the line to recover the ball. Next throw must be made from behind the line.

Assistant Duties:

Watch subject so that she stays behind the restraining line. Record score on subject's score card as it is given by the instructor. Any interference, second trial should given. If in doubt, repeat test.

(Equipment: stop watch - Basketball)

GRIP STRENGTH TEST*

a. Subject places dynamometer in the palm of hand with the dial toward the palm and set at zero.

b. Subject grips as tightly as possible while standing on both feet, with the entire arm away from the body and without touching any object with either hand or arm.

c. Score is recorded to the closest pound.

d. Repeat with opposite hand.

e. Two times each hand.

f. Record both on card.

g. Label R-right and L-left.

h. Star dominant hand.

Precautions in Administering the Test:

1. Administrator must be certain the dial of the dynamometer is turned toward the palm so that the pointer will not be stopped by the subject's hand. The pointer must be set at zero before each trial.

* Since the grip dynamometer must also be inserted into the push and pull attachment, it might be wise to administer the grip test to 3 or 4 girls and then insert the dynamometer into the push and pull attachment and give the push and pull test to the same girls. This procedure would be faster than inserting the dynamometer for each individual girl. The best procedure to follow will be determined by the speed at which the girls come through for the test.

PUSH AND PULL TEST

a. Subject stands erect holding apparatus in front of the chest with elbows raised to shoulder height and lower arms parallel to the floor.

b. Subject then pushes the two handles toward each other as hard as possible, keeping dynamometer free from the chest.

c. Score is recorded to the closest pound and dial is returned to zero.

d. In the same manner the subject then pulls the two handles apart as hard as possible.

e. Score is again recorded to the closest pound. The two scores are added together to get the subject's total score.

Precautions:

1. The subject must be watched so that she does not pull or push with a jerky movement, thus raising her score. The push and pull must be a smooth constant motion.

2. Dynamometer must be kept free from body so that no leverage is possible.

3. Dial must be turned to zero before each trial.

Assistant Duties:

Record the scores on the subject's card as it is read off by the administrator.

Push score first - then pull score.

Physical Education Inventory of Activities

Date_____

Directions: Check activities you have engaged in before coming to college. If there are activities you have engaged which are not listed add them at bottom of the list. Place a ____mark in the proper column to show where you learned this activity. Check your ability on a scale: 1-very good; 2-good; 3-some; 4-a little; 5-very little.

This is not a test, but simply a survey to determine the extent of activities engaged in by girls before coming to college. We are not interested in connecting any person with any paper - so please answer each statement as you actually feel about it.

Activity	High School	Jr. High School	Elem. School	Camp	Home	Others Ability
Archery						
Badminton						
Basketball						
Bowling						
Camping						
Canoeing						
Diving						
Fencing						
Field Hockey						
Golf						
Lacrosse						
Life Saving						
Ping Pong						
Sailing						
Skating (ice)						
Skiing						
Softball						
Soccer						
Speedball						
Swimming						
Tennis						
Track						
Volleyball						
Modern dance						
Square dance						
Folk dance						
Social (ballroom)						
Tap dance						

Physical Education Activities

Directions - Please read carefully: Below you will find some statements about physical education. We would like to know how you feel about each statement. Read each statement carefully. On the answer sheet place an "X" in the square which is under the word (or words) which best expresses your feeling about the statement. After reading a statement you will know at once, in most cases, whether you like or dislike the statement. If you like, then decide whether to place an "X" under "very much" or "quite a bit". If you "disliked", then decide whether to place "X" under "a litte" or "not at all".

Statements

1. How important do you consider physical education activity at the present time as part of your personal recreation program?

2. How much of your leisure time do you devote to swimming, bowling, golf, tennis, and other similar sports activities?

3. To what extent do you like to participate in sport activities?

4. If you took physical education in high school as an activity subject during school hours did you like it?

5. If you did not take physical education in high school do you think you would have liked it?

6. While in high school did you actually take part in any athletic game or contest for your school against another school?

7. If your high school had an intramural sports program, did you take part in any of the sports?

8. If you took physical education in high school, did you like your instructor (or instruction)?

9. How many years did you participate in physical education in high school.

10. Have you or are you actually taking part in the intramural sports program at Michigan State University?

ANSWER SHEET

1. Very important ☐ quite a bit ☐ some ☐ a little ☐ not at all ☐

2. Very much ☐ quite a bit ☐ some ☐ a little ☐ not at all ☐

3. Very much ☐ quite a bit ☐ some ☐ a little ☐ not at all ☐

4. Liked it very much ☐ liked it a little ☐ diff. to say ☐ disliked it somewhat ☐ disliked very much ☐

5. Very much ☐ quite a bit ☐ some ☐ a little ☐ not at all ☐

6. Yes ☐ No ☐

7. Yes ☐ No ☐

8. Yes ☐ No ☐

9. 4 Years ☐ 3 years ☐ 2 years ☐ 1 year ☐ none ☐

10. Yes ☐ No ☐

Physical Education Attitude Inventory

Directions - Please read carefully: Below you will find some statements about physical education. We would like to know how you feel about each statement. You are asked to consider physical education only from the standpoint of its place as an activity course taught during a regular class period. No reference is intended in any statement to interscholastic or intramural activities. People differ widely in the way they feel about each statement. There are no right or wrong answers.

You have been provided with a separate answer sheet for recording your reaction to each statement. (a) Read each statement carefully, (b) go to the answer sheet, and (c) opposite the number of the statement place an "x" in the square which is under the word (or words) which best expresses your feeling about the statement. After reading a statement you will know at once, in most cases, whether you agree or disagree with the statement. If you agree, then decide whether to place an "x" under "agree" or "strongly agree". If you disagree, then decide whether to place the "x" under "disagree" or "strongly disagree". In case you are undecided (or neutral) concerning your feeling about the statement, then place an "x" under "undecided". Try to avoid placing an "x" under "undecided" in very many instances.

Whenever possible, let your own personal experience determine your answer. Work rapidly, do not spend much time on any statement. This is not a test, but is simply a survey to determine how people feel about physical education. Your answers will in no way affect your grade in any course. In fact, we are not interested in connecting any person with any paper - so please answer each statement as you actually feel about it. Be sure to answer every statement.

Statements

Part I

1. If for any reason a few subjects have to be dropped from the school program, physical education should be one of the subjects dropped.

2. Associations in physical education activities give people a better understanding of each other.

3. Physical education activities provide no opportunities for learning to control the emotions.

4. Engaging in vigorous physical activity gets one interested in practicing good health habits.

5. Physical education is one of the more important subjects in helping to establish and maintain desirable social standards.

6. The time spent in getting ready for an engaging in a physical-education class could be more profitably spent in other ways.

7. Vigorous physical activity works off harmful emotional tensions.

8. A person's body usually has all the strength it needs without participation in physical education activities.

9. I would take physical education only if it were required.

10. Participation in physical education activities tends to make one a more socially desirable person.

11. Participation in physical education makes no contribution to the development of poise.

12. Physical education in schools does not receive the emphasis that it should.

13. Because physical skills loom large in importance in youth it is essential that a person be helped to acquire and improve such skills.

14. Physical education classes are poor in opportunities for worthwhile social experiences.

15. Calisthenics taken regularly are good for one's general health.

16. A person would be better off emotionally if he did not participate in physical education.

17. Skill in active games or sports is not necessary for leading the fullest kind of life.

18. It is possible to make physical education a valuable subject by proper selection of activities.

19. Physical education does more harm physicall than it does good.

20. Developing a physical skill brings mental relaxation and relief.

21. Associating with others in some physical education activity is fun.

22. Physical education classes provide nothing which will be of value outside of the class.

23. Physical education classes provide situations for the formation of attitudes which will make one a better citizen.

24. There should not be over two one-hour periods per week devoted to physical education in schools.

25. Physical education situations are among the poorest for making friends.

26. Belonging to a group, for which opportunity is provided in team activities, is a desirable experience for a person.

27. There is not enough value coming from physical education to justify the time consumed.

28. Physical education is an important subject in helping a person gain and maintain all-round good health.

29. Physical education skills make worthwhile contributions to the enrichment of living.

30. No definite beneficial results come from participation in physical education activities.

31. People get all the physical exercise they need in just taking care of their daily work.

32. Engaging in group physical education activities is desirable for proper personality development.

33. All who are physicallyable will profit from an hour of physical education each day.

34. Physical education activities tend to upset a person emotionally.

35. Physical education makes a valuable contribution toward building up an adequate reserve of strength and endurance for everyday living.

36. For its contributions to mental and emotional well-being physical education should be included in the program of every school.

37. Physical education tears down sociability by encouraging people to attempt to surpass each other in many of the activities.

38. I would advise anyone who is physically able to take physical education.

39. Participation in physical education activities makes for a more wholesome out-look on life.

40. As far as improving physical health is concerned a physical education class is a waste of time.

Part II

1. College physical education programs ought to provide as many class situations as possible for co-recreational sports.

2. College intra-mural programs ought to provide activities for co-recreational competition.

3. College physical education classes for teaching camping skills and other out-door living skills ought to be included in the curriculum.

4. Every college girl ought to be able to engage in at least two or three physical education sport activities with sufficient confidence to enjoy doing them with men.

5. Every college girl ought to be able to swim with sufficient confidence to enjoy swimming and to save a life.

6. Every college girl ought to be able to dance with sufficient confidence to enjoy dancing with men.

7. Every college girl ought to have sufficient knowledge to be an appreciative and intelligent spectator of sports (varsity and professional).

8. Every college girl ought to have sufficient knowledge to understand the need of continual activity throughout her life and how to exercise to maintain her figure and health.

9. Colleges which do not provide varsity competition deprive highly skilled girls of the opportunity of making use of their skills.

10. Intramural programs and occasional intramural tournaments with other colleges meet the needs of college girls interested in competition.

11. Under sound leadership and high standards a schedule of varsity games should be included in the program for college girls.

April 5, 1957

Dear Mary:

YOU have been selected as one of 200 students to assist the Women's Physical Education Department in developing a set of standards for a series of physical performance tests. Some 200 girls have been chosen as representatives from the various P. E. courses offered, and you are one of the girls selected to participate.

The tests will be administered by faculty members and standards will be established from the results obtained. These standards will be used as a basis for determing physical performance of girls in P. E. courses in the future, so it is essential that all of you who are contacted participate in the testing program if the results are to be meaningful.

You will need gym shoes, and any shorts and shirt you may wish to wear.

Your appointment has been scheduled for April _____ at_____, on the second floor in the women's gym.

If you have any questions concerning this matter, or if for any reason it will be impossible for you to be there at the time scheduled, please contact Dr. Wessel at her office in the women's gym. You may see her personally or phone her at 2956. If she isn't in leave your number with the office secretary and she will contact you.

Your P. E. instructor this Spring term will notify you of your selection.

We are pleased you have been chosen to take part in this testing experiment. Thank you in advance for your cooperation and participation.

Cordially yours,

Dorothy Kerth, Chairman
Instructional Program for
Women

Dear Mary:

Sincere thanks for participating in the Research Project sponsored by the faculty.

It may not be possible to obtain the results until the middle of June or the beginning of fall term, 1957. When they are completed we shall announce them.

If you wish to see how you did on the physical performance tests, we shall be most happy to discuss the results with you.

Your cooperation in this entire project was greatly appreciated.

Cordially yours,

Dorothy Kerth
Chairman, Instructional
Program for women

DK:et

May 6, 1957