STRENGTH AND MOTOR ABILITY AS FACTORS IN
ATTITUDE TOWARD PHYSICAL EDUCATION

by

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CHAPTER I

INTRODUCTION

Favorable attitude toward physical education is one goal of physical education, since later continuation in sports is dependent on attitudes developed in school. Consequently, one of the greatest problems in physical education today is the determination of teaching methods which result in attitudes facilitating active physical participation. Before this can be accomplished, it is necessary to know the factors in physical education which influence attitudes.

It is assumed that possession of adequate strength and motor ability is a prerequisite for achieving sufficient skill in sports. Therefore, the improvement of these qualities is more likely to result in favorable attitudes toward physical education. Wessel and Nelson (17) found that strength was significantly related to attitudes toward physical education among college women. Since strength was found to relate to attitudes toward physical education (17), to achievement in physical education (12) (18), and to motor ability (8) (9) (14), it was assumed that attitudes are related to motor ability. This study will attempt to determine if attitude toward physical education among college males

is a function of strength and motor ability. In this study, attitude is considered to be a feeling of acceptance or rejection toward some object or issue which underlies any response related to the object or issue. Evaluation of attitude thus conceived is defined in terms of interpretation of verbalized expression of this feeling toward an object or issue.

Purpose of this Study

The purpose of this study was to determine whether there were differences in attitude toward physical education among individuals of various muscular strengths and motor abilities.

Review of the Literature

Attitude and Physiological Performance

Wessel and Nelson (17) determined the relationship between strength and attitude toward physical education among college women. A random selection of 200 college women from the non-major required program were tested for strength by the dynamometric strength test consisting of hand grip, back lift, and push and pull (11). The Wear Short Form Attitude Inventory (16) was used to measure attitude toward physical education. The results of this study found that strength was significantly related to attitudes toward physical education ($r = .209$). The author concluded that there was a significant relationship between strength and attitudes.

Vincent (15) determined the attitudes of college women toward physical education, and also determined the relationship between expressed attitudes and success in physical education activities. One hundred and eighty-eight freshman and sophomore women at the college level were used in the study. These women were enrolled in eight different activity courses which were archery, badminton, basic motor skills, bowling, gymnastics, modern dance, swimming, and tennis. Attitudes toward physical education were determined by the Wear Attitude Inventory (16). The success factor was the final grade received in the respective courses. The results of this study showed that there was a significant relationship ($r = .15$ at the .05 level) between expressed attitude and success in physical education. The author concluded that there was a positive relationship between attitudes and success in physical education.

Carr (6) determined the relationship between success in physical education and attitudes of high school freshmen girls toward physical activity. Final grades of 335 students, based upon achievement in physical education activities, were the first criterion of success. Activities included in the course were stunts and tumbling, games of low organization, folk dancing, and swimming. Scores from a battery of individual athletic events were obtained as a second criterion of success. Attitudes were determined by

a rating scale devised by the author. Criterion for the rating scale was a jury of ninety-six physical educators. The subjects were divided into two groups, successful and unsuccessful. The successful group consisted of subjects who received grades of A or B in physical education; the unsuccessful group received grades of C or D. In comparing the attitudes of the A and D students, it was found that the A students had a higher percent of desirable attitudes than did the D students. The results of the study showed that there was a significant difference (critical ratio = 5.25) in attitudes toward physical education in favor of the successful group as compared to the attitudes of the unsuccessful group. The conclusion of the author was that attitudes held by entering freshmen girls influence degree of success in physical education.

Attitude Toward Physical Education Among College Students.

Brumback and Cross (5) measured the attitude toward physical education of all male students entering the University of Oregon to determine if there was a difference in attitudes between athletes and non-athletes. They also determined if attitudes toward physical education differed according to the number of years students participated in high school physical education before entering college. Each of the 938 subjects were given the Wear Attitude Inventory (16) to

determine attitudes toward physical education. Each subject also filled out a questionnaire on which they reported information about their high school physical education background to establish whether they were athletes or non-athletes, and how many years of physical education that they had had. The results of this study showed that students who participated in interscholastic athletic programs had significantly higher attitude scores than those who did not participate. The athletes had a mean score of 122.01, whereas the non-athletes had a mean score of 114.32. The results also showed that the more years of physical education a student had in high school, the more favorable was the attitude. Conclusions of the author was that students who participated in physical education or interscholastic sports had a more favorable attitude toward physical education than those who did not participate.

A study was done by Bell et al. (1) to study the attitude of college women toward physical education at the University of Michigan in an attempt to evaluate the physical education program. All freshmen and senior students who were taking, or who had taken required physical education, were studied. A questionnaire consisting of three parts was devised to study attitudes. Part I was a checklist response to informational questions pertinent to the background of the subjects; Part II consisted of questions based on the

objectives of physical education; and Part III was the Wear (16) Attitude Inventory Test. The results showed that freshmen who had some physical education in high school had a mean attitude score of 158 and a standard deviation of 19.15. Freshmen who had no physical education in high school had a mean attitude score of 153 and a standard deviation of 19.67. Seniors who had some physical education in high school had a mean attitude score of 150 with a standard deviation of 21.86. The author concluded that freshmen who had physical education in high school had a more favorable attitude toward physical education as an activity course than freshmen who had no physical education in high school and that both freshmen groups had a more favorable attitude toward physical education than did seniors who had physical education in high school.

Moyer et al. (13) determined the attitude of college freshmen and junior women toward the physical education program at Northern Illinois University. Four hundred and forty-four freshmen and three hundred and eighty-two juniors were given a two-part questionnaire inventory. Part I consisted of eleven multiple choice questions to determine the physical education class experience in high school and in college. Part II was the Modified-Wear-Forty-statement-Attitude Inventory (16). The study resulted in a majority of the subjects indicating a preference for individual sports

to team sports and there was a similar, highly favorable attitude toward the physical education program shown by both freshmen and junior students. Based on the results, the author concluded that the students had a favorable attitude toward physical education.

Keogh (7) determined if students differed in their attitude toward the benefits and values of physical education. The subjects were 136 male and 130 female undergraduate students enrolled in coed instructional classes in volleyball, badminton, and archery. Each subject was given the Wear Physical Education Attitude Inventory to determine attitudes toward physical education. The author found that men and women supported the values of physical education, but they questioned the relative value of physical education as a school subject.

The purpose of Broer's et al. (4) study was to determine University of Washington freshmen and sophomore women students' attitude toward physical education. The Wear Attitude Inventory was administered to 1,149 women students enrolled in physical education activity classes to determine attitudes. The results showed that seventy-one percent expressed a favorable attitude toward physical education while three percent expressed unfavorable attitudes and twenty-six percent expressed neutral attitudes. The author concluded that a majority of the subjects expressed a favorable attitude toward physical education.

One study (17) showed a significant relationship between strength and attitudes toward physical education, and two studies (6) (15) showed a significant relationship between motor ability and attitude toward physical education. Five studies (1) (5) (13) (7) (4) found that a majority of college students had a favorable attitude toward physical education.

CHAPTER II

METHODS AND PROCEDURES

Physical educators have long been aware of the need to determine the factors having a relationship to attitudes toward physical education. Knowledge of these factors could lead to more effective teaching methods and, thereby, result in an improvement in attitudes toward physical education. The purpose of this study was to determine whether there were differences in attitudes toward physical education among individuals of various muscular strengths and motor abilities.

Procedure

One hundred and fifty-two male students enrolled in an introductory physical education course at Texas Technological College were used as subjects. The subjects were given three different tests: a dynamic strength test, a motor ability test, and a test to determine attitudes toward physical education. The tests were administered during a two-month period in the same sequence for all subjects.

Dynamic Strength Test

To determine strength, the subjects were tested on the number of repetitive chins that they could perform. From the number of chins and bodyweight, 1-RM chin (the amount of weight with which one chin can be performed) was predicted. A study by Berger (2) showed a significantly high relationship

($r = .94$) between predicted 1-RM chin and actual 1-RM chin, and between predicted 1-RM chin, and total dynamic strength ($r = .83$) (3). Because of these high correlations, predicted 1-RM chin rather than actual total dynamic strength was employed to predict total strength. Testing was greatly simplified for this reason since using predicted 1-RM chin instead of actual 1-RM chin saved a great deal of testing time.

The starting position for the chin was with the arms extended until the subject was in a dead hang and with palms facing away from the subject while grasping an overhead bar. The subject completed a chin when the arms were sufficiently flexed to permit the chin to rise above the bar. All swaying, swinging, and kicking during the test were prevented. The body weight of each subject was determined prior to testing.

Motor Ability Test

The Barrow Motor Ability Test (10) was selected to determine motor ability. The Barrow Test has a high reliability and is considered a valid ($r = .92$) test for motor ability. The test consisted of the following items: standing broad jump, sixty yard dash, wall pass, softball throw, zigzag run, and medicine ball put.

Standing Broad Jump. The subject stands behind a restraining line and jumps with both feet together. Three successive trials are given and the distance of the best jump measured to the nearest inch is recorded.

Sixty Yard Dash. The subject employs a standing start and runs sixty yards as fast as possible. One trial is permitted and scoring is to the nearest tenth of a second.

Wall Pass. The subject stands behind a restraining line nine feet from a smooth wall. A regulation basketball is bounced against the wall and caught as many times as possible in a time period of fifteen seconds.

Softball throw. Each subject is allowed three throws with a twelve inch softball. A short run to the starting line is permitted. Scoring is to the nearest foot for the best of three throws.

Zig Zag Run. The subject runs a zig zag course three times around five standards and must not grasp the standards or obstacles. Scoring is to the nearest tenth of a second.

Medicine Ball Put. The subject stands behind a restraining line and is permitted three trials in putting a six pound medicine ball. A distance of fifteen feet behind the restraining line is designated as the area in which a run may be made up to the restraining line. Scoring is to the nearest foot, the best of three trials being recorded.

Attitude

The Wear Short Form Attitude Inventory (16) was employed to measure attitudes toward physical education (Appendix B). Wear determined the validity of the Inventory by the self-rating method which consisted of a nine point scale on which

each subject indicated his general attitude toward physical education. The possible range of self-rating scores was from 0 for a rating of strongly against, to 8 for a rating of strongly for. A correlation of .78 was found between a subject's self-rating score and his score on the Attitude Inventory. Wessel and Nelson (17) and Broer (4) also checked the validity of the Inventory using the same method and found correlations of .81 and .71, respectively. For each of the forty statements, the subjects had a choice of five responses; strongly agree, agree, undecided, disagree, and strongly disagree. On each statement a score of 5 was given if a subject indicated the most favorable response toward physical education, a score of 4 for the second favorable response, a score of 3 for a neutral response, a score of 2 for an unfavorable response, and a score of 1 for the most unfavorable response. The subjects were instructed on how to mark the response table and were asked to be completely honest and to refrain from responding undecided in too many instances.

Statistical Analysis

Correlation coefficients were used to determine the relationship between attitude toward physical education and both strength and motor ability. Multiple regression equations were employed to predict attitude from motor ability test

items. A t-test was used to determine if there was a significant difference in mean strength and motor ability of the fifty subjects scoring the highest and the fifty subjects scoring the lowest on the attitude inventory.

CHAPTER III

PRESENTATION AND ANALYSIS RESULTS

The purpose of this study was to determine whether there were differences in attitude toward physical education among individuals of various muscular strengths and abilities. Data were collected from one hundred and fifty-two male students at Texas Technological College who were tested for dynamic strength, motor ability, and attitude toward physical education. Correlation coefficients were then determined between attitude and both strength and motor ability. Multiple correlation coefficients and multiple regression equations were obtained to predict attitude from motor ability test items. Comparisons were made on strength and motor ability scores between the fifty students having the highest attitude and the fifty students having the lowest attitude toward physical education.

Analysis of Results

The correlations found in the present study between strength and motor ability and attitude toward physical education are presented in Table 1. The test items of the Barrow Motor Ability Test were related to attitude toward physical education, as well as the total score of the Barrow Motor Ability Test, in order to determine the importance of each item to attitude. A significant correlation of .198 was

TABLE 1
Correlation Coefficients Between Attitude Toward
Physical Education and Motor Ability and Strength.

VARIABLES	ATTITUDE
Strength	.198 *
Barrow Motor Ability Test	.324 **
Medicine Ball Put	.297 **
Sixty Yard Dash	.275 **
Softball Throw	.178 *
Standing Broad Jump	.292 **
Zigzag Run	.192 *
Wall Pass	.079

* Significant beyond the .05 level.

** Singificant beyond the .01 level.

found between strength and attitude toward physical education. This relationship was in agreement with the results obtained in a previous study by Wessel and Nelson (17) who found a significant correlation coefficient of .209 between the same two variables. A significant correlation of .324 was found between Barrow Motor Ability Test and attitude toward physical education. Correlation coefficients between attitude and each item of the Barrow Motor Ability Test were all significant beyond the .05 level with the exception of the wall pass. The significant relationship obtained by Vincent (15) between expressed attitude toward physical education and success in physical education activity courses was in agreement with this study. Vincent found a significant relationship of .15 among college women between expressed attitude and success in activity courses of archery, badminton, basic motor skills, bowling, gymnastics, modern dance, swimming, and tennis. These results support the fact that students who excel in strength and motor ability also have more favorable attitude toward physical education.

To determine whether strength and motor ability differed in accuracy of predicting attitude, the correlation of .198, which was obtained between strength and attitude, was compared to the correlation of .324, found between the Barrow Motor Ability Test and attitude. A t-ratio of 1.65 showed that the correlation

coefficients were not significantly different. This indicated that there was no significant difference between strength and motor ability as predictors of attitude.

In Table 2, multiple correlation coefficients were predicted from motor ability test items, with attitude as the criterion. The multiple R of .362, obtained between attitude toward physical education and a combination of medicine ball put and standing broad jump, increased to .399 after the other four motor ability items were added to the equation. The results indicated that attitude can be predicted from motor ability test items and that medicine ball put and standing broad jump are the better predictors of attitude. To determine whether strength or motor ability was the better predictor of attitude, the multiple R of .362, obtained when the predictors of medicine ball put and standing broad jump were related to the criterion of attitude, was compared to the correlation of .198, obtained between strength and attitude. A significant t-ratio of 2.19 was obtained between the two coefficients. Apparently, Barrow Motor Ability Test is a better predictor of attitude than is strength.

In Table 3, a comparison between the fifty subjects highest in attitude and the fifty subjects lowest in attitude toward physical education was made on strength and motor ability. A significant difference of seven pounds was found between the strength means of the two groups in favor of the

TABLE 2

Multiple Regression Equations and Multiple Correlation
Coefficients for Predicting Attitude Toward Physical
Education From Motor Ability Test Items

Medicine Ball Put	Standing Broad Jump	Sixty Yard Dash	Zigzag Run	Wall Pass	Softball Throw	Constant	R *
+ .671	+ .504					+81.02	.362
+ .579	+ .398	+ .240				+62.97	.375
+ .594	+ .329	+ .217	+ .671			+42.12	.385
+ .614	+ .362	+ .264	+ .824	- .877		+38.64	.396
+ .675	+ .393	+ .266	+ .866	- .849	- .027	+35.91	.399

* Significant beyond the .01 level.

TABLE 3

t-test Comparing Subjects High in Attitude to Subjects
Low in Attitude Toward Physical Education on
Strength and Motor Ability

Test	Group	No.	Mean	S.E.	t
Strength	high	50	210		
	low	50	203	2.88	2.47**
Barrow Motor Ability	high	50	521		
	low	50	466	13.54	4.06 *
Medicine Ball Put	high	50	48		
	low	50	44	1.17	3.35 *
Sixty Yard Dash	high	50	7.3		
	low	50	7.6	.029	9.39 *
Softball Throw	high	50	217		
	low	50	185	16.93	N.S.
Standing Broad Jump	high	50	95		
	low	50	89	.126	3.79 *
Zigzag Run	high	50	22.4		
	low	50	22.9	.299	N.S.
Wall Pass	high	50	16		
	low	50	14	1.03	N.S.

* Significant beyond the .01 level.

** Significant beyond the .05 level.

the high group. This result was in agreement with the results found by Wessel and Nelson (17) who found a significant difference in strength between two groups of subjects who ranked high and low in attitudes toward physical education. Comparing the two groups on motor ability showed that a significant difference existed between them. Subjects in the high group were found to have a higher motor ability score than subjects in the low group. Three items of the Barrow Motor Ability Test were also found to be significantly different between the two groups; medicine ball put, sixty yard dash, and standing broad jump. The softball throw, zigzag run, and wall pass were found not to be significantly different between the two groups. These results indicate that subjects who differ in attitude toward physical education also differ in strength and motor ability, and that students who excel in strength and motor ability have the more favorable attitude toward physical education.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

The purpose of this study was to determine whether there were differences in attitude toward physical education among individuals of various muscular strengths and motor abilities. Data were collected from one hundred and fifty-two male college students at Texas Technological College. Each subject was measured for dynamic strength, motor ability, and attitude toward physical education. Dynamic strength was measured by predicted 1-RM chin which was found by Berger (3) to relate highly to total dynamic strength. Motor ability was measured by the Barrow Motor Ability Test (10), and attitude toward physical education was determined by the Wear Short Form Attitude Inventory (16). A significant correlation coefficient of .198 was found between strength and attitude, and a significant correlation coefficient of .324 was found between motor ability and attitude toward physical education. Multiple regression equations were devised to permit the prediction of attitude from motor ability test items. The significant multiple correlation of .399 obtained between motor ability test items and attitude showed that attitude can be predicted with some accuracy from motor ability test items. A t-test was used to determine

whether there were differences in strength and motor ability between fifty subjects having the highest attitude and the fifty subjects having the lowest attitude toward physical education. A significant difference was found between strength and motor ability of the two groups.

Conclusions

Based on the results of this study, it was concluded that there is a significant relationship between attitude toward physical education and both strength and motor ability of college males. This relationship is sufficient to distinguish with some accuracy between groups of individuals having varying attitudes toward physical education, on the basis of strength and motor ability.

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APPENDIX A

BASIC DATA

Subject	Medicine Ball Put	Sixty Yard Dash	Softball Throw	Broad Jump	Zigzag Run	Wall Pass	Barrow Motor Ability	Strength	Attitude
1	40	7.5	140	86	24.0	17	401	169	163
2	40	7.6	192	86	21.4	17	457	196	141
3	45	7.1	156	86	22.6	19	466	228	170
4	31	7.1	102	85	20.8	22	396	146	180
5	40	7.0	155	85	22.7	18	404	163	125
6	34	7.7	160	87	25.5	13	376	170	186
7	46	6.7	176	90	22.7	16	470	207	153
8	34	8.5	103	73	24.0	15	283	188	71
9	42	6.7	250	94	20.8	19	559	217	165
10	39	7.4	192	83	23.3	12	408	194	165
11	50	8.0	198	78	24.0	13	410	198	180
12	40	7.4	183	93	21.5	13	463	170	175
13	46	7.5	105	78	21.9	16	365	224	162
14	45	7.5	157	88	23.2	15	431	204	156

15	52	7.5	183	88	22.7	15	517	207	161
16	53	7.4	210	92	22.1	12	501	201	163
17	38	7.8	156	86	22.1	11	390	165	140
18	42	8.0	171	85	22.7	13	408	180	172
19	40	7.3	210	89	21.2	16	492	198	165
20	49	7.4	170	85	25.0	13	415	201	174
21	52	7.0	176	91	21.4	17	538	247	192
22	50	7.5	150	90	24.6	11	421	205	162
23	57	6.6	239	92	21.5	17	569	196	176
24	39	7.2	180	95	23.6	10	450	169	147
25	52	7.2	220	93	23.2	17	527	193	171
26	54	7.1	198	100	22.5	15	552	212	162
27	51	8.1	210	76	24.5	14	412	241	186
28	52	7.0	192	93	23.6	15	497	200	174
29	54	6.8	215	94	23.2	14	524	255	161
30	49	7.19	195	104	21.4	13	536	188	183
31	50	7.4	184	93	23.2	15	484	213	164
32	42	8.0	168	80	22.8	13	386	206	153

33	42	7.1	220	101	23.5	12	517	197	176
34	49	7.5	243	96	22.6	14	537	217	162
35	45	7.0	225	90	24.0	14	485	188	166
36	48	7.9	177	88	25.0	13	438	190	137
37	41	7.4	193	87	21.2	13	448	185	162
38	46	7.5	237	96	23.2	15	527	194	161
39	41	7.4	174	82	23.6	14	400	176	148
40	46	7.5	208	93	22.5	14	475	240	163
41	54	7.8	220	95	23.3	12	512	218	153
42	50	7.3	252	96	22.0	14	570	208	174
43	38	7.2	182	93	22.9	13	451	239	161
44	49	7.8	220	88	24.5	13	470	234	175
45	43	8.1	230	76	24.0	12	408	221	140
46	40	8.1	141	84	23.5	12	356	187	150
47	50	7.8	230	84	21.6	15	486	214	141
48	42	7.4	239	95	21.2	18	540	201	177
49	47	7.3	158	101	22.1	13	499	241	173
50	55	7.2	244	102	20.9	18	610	240	167
51	45	8.0	190	90	22.2	16	473	180	139

52	44	8.0	190	83	23.5	12	410	152	151
53	45	7.7	220	90	22.8	19	503	191	133
54	51	7.2	250	109	21.5	15	614	251	169
55	43	8.5	210	91	21.8	15	477	161	147
56	44	8.5	193	96	21.7	13	480	217	179
57	59	6.5	255	103	21.0	19	643	240	173
58	39	7.8	180	82	22.9	15	449	175	157
59	58	7.5	210	81	24.1	16	469	228	142
60	54	7.4	250	90	21.5	18	552	224	162
61	44	8.0	232	78	24.1	15	428	201	171
62	55	7.5	248	85	22.0	17	526	237	156
63	45	7.8	260	83	21.8	13	438	236	178
64	45	7.0	245	100	22.5	17	564	201	184
65	50	7.7	222	83	24.1	14	488	215	165
66	43	8.0	205	82	220	16	442	207	152
67	50	7.9	192	95	23.8	14	517	191	157
68	52	6.4	245	99	21.1	15	582	213	169
69	45	6.4	266	97	22.9	17	573	216	156
70	48	6.8	222	102	20.8	15	568	219	172

71	50	7.2	236	83	21.8	13	483	204	188
72	53	7.0	244	89	22.0	15	549	250	150
73	50	7.0	196	105	24.0	17	555	206	168
74	40	8.3	183	100	24.0	12	464	169	165
75	40	7.8	161	72	25.3	13	326	160	128
76	50	7.9	193	98	23.7	14	517	229	155
77	48	8.0	219	95	21.9	16	523	186	179
78	41	8.5	145	74	25.9	19	321	175	152
79	50	8.0	229	84	25.5	14	452	194	126
80	53	7.2	225	90	22.0	16	524	214	153
81	48	7.8	194	86	26.8	15	429	206	144
82	48	7.6	241	99	22.8	17	560	205	155
83	56	7.6	233	95	21.2	17	573	235	173
84	48	7.4	201	88	24.6	17	472	217	159
85	61	7.4	225	86	22.9	15	515	251	155
86	43	6.15	194	90	25.0	17	472	181	161
87	53	7.3	256	102	24.0	17	589	258	167
88	47	7.0	180	86	25.8	17	483	215	161
89	39	8.4	160	83	21.5	13	384	219	139

90	48	7.8	201	93	22.1	15	505	240	175
91	42	8.3	180	83	24.1	15	404	205	149
92	53	7.4	254	95	23.7	18	561	241	152
93	55	7.0	242	111	23.7	17	623	208	160
94	40	8.2	188	88	252	14	419	165	153
95	52	7.3	244	97	23.0	16	557	187	192
96	45	7.5	253	103	209	17	519	210	165
97	45	8.1	215	85	209	17	478	217	158
98	40	7.7	232	97	216	19	538	217	165
99	47	7.3	191	105	215	17	555	205	179
100	42	7.9	178	95	226	17	564	200	154
101	43	7.5	216	91	22.0	15	490	187	145
102	45	6.9	225	99	21.9	15	545	182	168
103	46	7.2	190	103	20.5	18	558	224	188
104	48	7.6	197	93	23.5	15	486	251	157
105	49	7.5	231	94	20.1	16	454	229	141
106	39	8.5	161	82	21.5	13	384	150	135
107	37	7.0	207	91	20.6	16	489	165	154
108	44	7.1	247	105	21.5	17	592	202	170

109	43	7.2	202	91	23.5	17	481	214	61
110	37	7.4	250	101	22.1	13	535	194	135
111	42	7.2	172	99	23.0	13	478	203	107
112	47	7.6	274	96	19.6	17	586	234	152
113	45	7.5	224	96	23.4	17	522	222	137
114	40	7.6	194	103	23.2	17	520	200	157
115	32	8.2	201	84	22.5	15	411	167	115
116	54	7.6	197	88	24.0	15	474	216	180
117	33	9.4	131	74	28.8	10	254	161	137
118	40	7.5	232	104	22.4	17	558	171	152
119	52	7.1	195	105	21.0	16	576	269	145
120	55	7.5	248	99	21.4	18	597	252	169
121	48	7.5	230	105	21.8	18	588	217	145
122	36	8.0	173	94	23.5	18	452	198	170
123	47	7.6	216	87	22.7	17	471	256	167
124	43	8.0	213	92	20.8	18	507	192	160
125	43	7.1	207	99	24.5	16	512	188	166
126	49	7.8	227	104	23.2	17	567	252	193
127	47	6.8	188	100	22.2	20	550	241	166

128	35	7.5	195	92	22.8	14	450	210	151
129	54	7.1	254	102	22.5	18	617	260	172
130	39	8.0	180	96	22.0	15	469	205	158
131	69	7.3	314	96	22.8	20	647	278	158
132	48	8.0	205	96	21.6	16	518	180	155
133	50	7.6	207	90	21.7	19	518	200	152
134	49	7.8	227	108	24.5	19	580	262	136
135	49	7.0	202	96	21.8	14	519	204	158
136	44	8.0	200	96	22.2	14	461	242	177
137	41	7.6	169	96	22.5	15	467	202	131
138	55	7.5	195	96	22.8	16	524	248	152
139	62	7.0	259	102	22.3	17	626	315	163
140	40	8.2	141	96	21.8	14	439	191	154
141	48	7.2	218	96	21.3	19	550	247	163
142	39	7.9	190	90	24.0	14	435	210	162
143	52	6.9	230	102	21.2	18	594	237	184
144	46	7.6	192	96	22.8	13	486	209	159
145	36	7.7	148	84	22.8	15	386	200	136
146	51	7.9	202	96	22.0	15	515	262	163

147	48	8.5	157	84	22.5	13	406	204	158
148	42	8.0	175	90	22.8	17	451	195	157
149	36	9.0	173	84	23.0	15	389	223	140
150	42	8.0	223	96	22.2	20	531	196	153
151	44	8.5	179	90	23.5	12	427	186	160
152	40	8.3	206	72	23.2	12	362	165	132

APPENDIX B

PHYSICAL EDUCATION ATTITUDE INVENTORY

SHORT FORM

DIRECTIONS

Please read carefully. Below you will find forty statements about physical education as a high school subject or as a course for college freshmen. We would like to know how you feel about these statements. No reference is intended in any of the statements to interscholastic or intramural athletics. You are asked to consider physical education only from the standpoint of its place as activity course or activity subject taught as a part of the regular school program. 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 Attitude Inventory Sheet for recording your reactions to each statement. (1) Read each statement carefully. (2) Go to the answer sheet and (3) to the right of the number which corresponds to 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 you read each statement, you will know at once, in most cases, whether you agree or disagree with the statement. Take statement number 1, for example. If you agree, then decide whether to place an "x" under "strongly agree" or under "agree" opposite number 1. If

you disagree, then decide whether to place an "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. Wherever possible, let your own impersonal experience determine your answer. Do not spend much time on any statement. WORK RAPIDLY. This is not a rest, 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.

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. Association in physical education activities gives people a better understanding of each other.
3. Physical education activities provide no opportunities for learning to control the emotions.
4. Physical education contributes little toward the improvement of social behavior.
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 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 activity 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 each 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 are not necessary for leading the fullest kind of life.

18. It is possible to make education a valuable subject by proper selections of activities.
19. Physical education does more harm physically than it does good.
20. Developing a physical skill brings mental relaxation and relief.
21. Associating with others in some physical 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 2 1-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 no 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 toward the enrichment of living.

30. No definite beneficial results come from participation in physical education.
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 physically able will profit from an hour of physical education each day.
34. Physical activities tend to upset a person emotionally.
35. Physical education makes a valuable contribution to 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 outlook on life.
40. As far as improving physical health is concerned, a physical education class is a waste of time.

ATTITUDE INVENTORY ANSWER SHEET

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
27.					
28.					
29.					
30.					
31.					
32.					
33.					
34.					
35.					
36.					
37.					
38.					
39.					
40.					