

The Relationship Between Attitude Toward Physical Education and Leisure-Time Exercise in High School Students

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Abstract

The purpose of this study was to examine the relationships between attitudes toward physical education and leisure-time exercise by gender and nationality in high school students. The subjects were 451 high school students from the United States and Taiwan. The Physical Education Activity Attitude Scale (Mowatt, Depauw, & Hulac, 1988; Park, 1995; Valdez, 1997) and Godin Leisure-Time Exercise Questionnaire (Godin & Sheppard, 1985; Sallis, Buono, Roby, Micale, & Nelson, 1993) were used to measure the students' attitudes toward physical education and leisure-time exercise. Pearson Product Moment correlation, two-way ANOVA, and MANOVA were used to analyze data. Significant relationships between attitudes toward physical education and leisure-time exercise, regardless of gender or nationality were found. Significant differences were also found in attitudes toward physical education by gender and nationality. The male students had more positive attitudes toward physical education than the females. Taiwanese students had more positive attitudes toward physical education than the students from the U.S. Significant differences were found in leisure-time exercise scores by gender and nationality. The boys had higher leisure-time exercise scores than the girls. The U.S. students had higher leisure-time exercise scores than the Taiwanese students.

Introduction

How important is physical activity or physical education for people's lives? The U.S. Department of Health and Human Services [U.S. DHHS]

(1996) and Sallis and Owen (1999) reported that physically active people live longer and have lower premature death rates than people who are physically inactive and inactivity is one of the primary reasons for losing body functions. Regular physical activity can improve health-related fitness components (e.g. lower blood pressures, lower body fat, higher levels of HDL-cholesterol) in children, especially for children with obesity, diabetes or heart disease (Sallis & Owen, 1999). For teenagers, regular physical activity has been linked to improved strength, decreases in body fat, and building bone density (Bailey & Martin, 1994; Sallis, Buono, Roby, Micale, & Nelson, 1993; U.S. DHHS, 1996).

Physical education programs have been recognized as ideal environments for the promotion of health-related physical activity because of the high percentage of students enrolled (Chase, June 07, 2000; Iverson, Fielding, Crow, & Christenson, 1985; Sallis, 1987; Sallis & McKenzie, 1990; McKenzie & Sallis, 1996). However, the Surgeon General's Report revealed that students' daily attendance in physical education classes declined from 42% to 25% from 1991 to 1995 (U.S. DHHS, 1996). Why do students elect not to enroll in physical education classes? Perhaps, a decline in students' attitudes toward physical activity is one of the causes. Carlson (1994) reported that impacts on student attitude development were cultural (gender, idolizing elite sports figures, and body and mind distinctions), social (family, media, sport and physical education experiences, skill level and perceptions of fitness, and peers), and school related (teachers). Other researchers

(Figley, 1985; Luke & Sinclair, 1991) found that teacher behavior and content of the curriculum influenced students' attitude in positive or negative ways to physical education. They concluded that the teacher was an important factor in students' attitudes toward physical education.

Some studies (Carlson, 1994; Park, 1995; Rice, 1988) have reported that students generally enjoyed physical education classes, had positive attitudes toward physical education, and considered physical education teachers as good role models. The most positive experiences in physical education classes have included providing a variety of activities, winning/success, performing well, being included, teamwork, and having fun/enjoyment (Simons-Morton, O'Hara, Simons-Morton, & Parcel, 1987; Tannehill, Romar, O'Sullivan, England, & Rosenberg, 1994; Tannehill & Zakrajsek, 1993). The most liked activities in physical education programs were playing team sports, whereas the most disliked aspects were short class periods (Rice, 1988). The time of participation in activity has been found to relate to attitude regardless of grade level. The strength of the involvement in an activity has been found to relate to a positive attitude toward that activity (Rice, 1988; Smoll, Schutz, & Keeney, 1976).

Students tend to participate in activities they most enjoy (Silverman & Subramaniam, 1999). Stucky-Ropp and DiLorenzo (1993) reported that enjoyment was significant correlate to girls and boys. Students who have disliked physical education may select to avoid participation in physical activity in their daily life (Carlson, 1994; Portman, 1995). Adults have chosen not to exercise or participate in physical activity because they did not have positive sport or physical education experiences in adolescence (Simon-Morton et al., 1987). Gillam (1986) noted that over 90% of students believed physical education to be relevant and useful in later life and that there was a need for physical education in school curricula. The benefits of physical activity are not

only in improving physiological functions, but also are good for mental and emotional health (Reichler, 1998). These benefits of physical activity should be taught to students in physical education programs. Mowatt, DePauw, and Hulac (1988) reported that students significantly increased their belief of the importance of physical activity following a lecture intervention.

There appear to be gender differences in attitudes toward physical education. Smoll & Schutz (1980) found boys displayed more positive attitudes toward activities that were challenging and had an element of risk and girls were found to exhibit positive attitudes toward physical activities for social reasons. Boys generally reported more positive attitudes towards physical activity than girls. Tannehill et al. (1994) noted that boys more frequently indicated they liked physical education because of their perceived excellence in the activities. Park (1995) found significant gender differences in overall attitude, general attitude, and physical education attitude. Males were more positive than females in all of the attitude measures. Mowatt et al. (1988) found gender difference in attitudes favoring boys when they considered if participation in physical activity was essential for a quality life. Valdez (1997), however, found no significant relationships between gender, ethnicity or social-economic status and attitudes.

In a study involving different cultures, Tannehill and Zakrajsek (1993) reported the most important reasons for liking physical education: Anglo-American students and Asian American students indicated "being with friends," whereas, Hispanic American students were motivated by "becoming more fit". Asian American students reported a greater liking for volleyball than other ethnic groups. Over 80% of the African American students favored learning to play team sports. Hispanic American students (66%) attached more importance to physical education than the other ethnic groups. All ethnic groups reported fitness and team sports as the most important activities.

Social and cultural differences were reflected in student effort, behavior, attitudes, sportsmanship, and teamwork.

Nationality differences can provide help in understanding the cultural and social problems in students learning. Perhaps, school physical education programs might refocus in order to promote physical activities in children and adolescents for a lifetime of physical activity which would have a major impact on public health. Fergusen, Yesalis, Pomrehn, and Kirkpatrick (1989) suggested that physical education programs could develop students' belief in their own ability and encourage participation in physical activity. The amount of enjoyment in the participation could influence students long-term exercise behaviors. The main purpose of this study was to identify the attitudes of high school students toward physical education and their leisure-time exercise and to examine the relationship between them. The second purpose was to compare the attitudes of high school students toward physical education and their leisure-time exercise between a group of students in the United States and a similar group in Taiwan.

Gender is one of the important evidences in determinant of physical activity in youth (Sallis & Owen, 1999). Physical inactivity is a social problem that will lead to high health care costs in our society. These cross-country results can provide some information for physical educators to increase awareness of the differences in gender and nationality. Teachers are an important element in the teaching process of attitude modification for students. Literature reviews found that positive experiences in physical education classes can enhance lifelong participation in physical activity and link to the quality of life (Oldridge & Streiner, 1990). If teachers can understand the differences in gender and nationality, the teaching methods and activity contents selection could more easily be fit to the needs of individual student.

Methodology

Subjects

Eight schools and 15 classes of 451 high school students (230 boys, 221 girls) were selected as subjects in this study. All schools and students volunteered to participate in this study. The classes were coeducational, required courses in physical education. In the U.S., 222 subjects (118 boys, 104 girls) were selected from eight intact classes. All subjects were from 9th to 12th grade. In Taiwan, 229 subjects (112 boys, 117 girls) were selected from seven 10th to 12th grade intact high school classes. The high school education system in Taiwan is from 10th to 12th grade, 9th grade is included in junior high school. The subjects by grade and nationality are found in Table 1.

Procedure

Eight high school physical educators in the U.S. and one director of high school physical education program in Taiwan were contacted to obtain permission to conduct this study. Physical educators were given an explanation of the purpose of the research and the questionnaire. The data collection occurred during fall semester of 1999. Questionnaires were mailed to teachers who administered the surveys for attitudes toward physical education and leisure-time exercise. No attempt was made to evaluate the quality of the physical education programs in the schools. The physical educators administered the questionnaires to students who volunteered to participate in this survey. Subjects were instructed to read the directions carefully and mark their responses in one of the response headings. It took 10-15 minutes to complete the questionnaire.

The Physical Education Activity Attitude Scale (PEAAS) (Mowatt et al., 1988; Park, 1995; Valdez, 1997) consisted of 20 statements and is divided into three subcategories as follows: 1. General attitude: statements numbered 1, 3, 4, 10,

and 20, represented one's personal feelings or attitudes toward physical activity. 2. Physical education attitude: statements numbered 5, 8, 13, 14, 16, and 18, represented how one viewed physical education as an offering in the curriculum. 3. Scientific basis attitude; statements numbered 2, 6, 7, 9, 11, 12, 15, 17, and 19, represented how one assessed the scientific benefits of exercise. A 5-point Likert Scale ranging from strongly agree-5, agree-4, don't know-3, disagree-2, to strongly disagree-1 was used to record responses. Content validity has been established for this instrument by previous researchers (Mowatt et al., 1988; Park, 1995; Valdez, 1997). A test-retest procedure was used with an established minimum reliability coefficient of .80 (Park, 1995; Valdez, 1997).

The Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985; Sallis et al., 1993) is a 7-day physical activity recall survey. It consists of four statements divided into two categories as follows: 1. Weekly frequencies of strenuous, moderate, and light activities: statements numbered 22, 23, and 24. Total leisure time physical activity was found by multiplying the number of minutes in each intensity category by the following MET values: (strenuous * 9 METS) + (moderate * 5 METS) + (light * 3 METS). 2. The frequency of each weekly leisure-time activity: statement numbered 21. Sallis et al. (1993) reported a reliability coefficient of $r = .82$ and established content validity with a group of 5th, 8th and 11th grade students.

The questionnaire was translated from English into Chinese for the Taiwanese students. Three Taiwanese professionals (physical education major doctoral student, high school physical educator, and English major doctoral student) checked the accuracy of the translated questionnaire. Content validity again was used to establish the validity. The test-retest reliability was $r = .89$ using a group of 43 Taiwanese high school students as subjects.

The researchers checked all questionnaires and eliminated incomplete responses or those that had at least one unanswered question. There were 16 incomplete questionnaires from the U.S. subjects and 67 incomplete questionnaires from the Taiwanese subjects.

Data Analysis

All of the attitudes toward physical education and leisure-time exercise data were analyzed by gender and nationality. Descriptive statistics were performed on all variables including means and standard deviations. Pearson Product Moment correlation was used to compute the correlation among the attitudes and leisure-time exercise variables. Multivariate analysis of variance (MANOVA) was used to determine differences between the mean scores of attitudes toward physical education by gender and nationality. Two-way ANOVA was also used to examine the differences between the mean scores of leisure-time exercise by gender and nationality. The alpha level was set at .05. Data was analyzed using SPSS 9.0 for Windows.

Results

Pearson Product Moment correlation coefficients were computed between the scores on the PEAAS and Godin Leisure-Time Questionnaire. The correlation coefficients were computed between students' general attitude (one's personal feelings or attitudes), physical education attitude (how one viewed physical education as an offering in the curriculum), scientific basis attitude (how one assesses the scientific benefits of exercise) and overall attitude with leisure-time exercise scores.

Each of the correlations between the attitudes toward physical education and leisure-time exercise scores was found significant. The significant correlation coefficients ranged from $r = .36$ to $r = .19$ ($p < .05$). The correlations of attitude subscale scores with leisure-time exercise

scores are shown in Table 2. The r^2 's ranged from a low of .04 for the relationship between general attitude and leisure-time exercise in the Taiwanese subjects to .13 between overall attitude and leisure-time exercise in the U.S. subjects.

The means and standard deviations for gender and nationality by attitudes toward physical education are found in Table 3. The U.S. high school boys were higher in general attitude, physical education attitude, and overall attitude than high school girls. The general attitude scores ranged from a low of 19.15 for the Taiwanese girls to a high of 20.09 for the Taiwanese boys. The means for the Taiwanese boys were also higher than for other groups in the remaining two attitude subscales and for the overall score. The scientific basis subscale ranged from a high of 36.92 for the Taiwanese boys to a low of 33.80 for the U.S. boys. The standard deviations were consistently higher for the U.S. subjects across all subscales.

Multivariate Analysis of Variance (MANOVA) was used to determine differences by gender and nationality for the four attitude variables. These data are found in Table 4. Significant difference in attitudes toward physical education by gender (Wilks' Lambda $F(1, 447) = 6.37, p < .05$) were found. In tests between subject effects by gender, results showed significant differences in general attitude ($F(1, 477) = 5.62, p < .05$), physical education attitude ($F(1, 447) = 13.43, p < .05$), and overall attitude ($F(1, 447) = 7.73, p < .05$). In all instances the boys scored significantly higher than the girls. Significant differences in attitudes toward physical education by nationality (Wilks' Lambda $F(1, 447) = 29.26, p < .05$) were also found. In tests between subject effects, results showed significant differences in physical education attitude ($F(1, 447) = 77.59, p < .05$), scientific basis attitude ($F(1, 447) = 39.15, p < .05$), and overall attitude ($F(1, 447) = 55.57, p < .05$) between nationalities. In each instance the Taiwanese subjects scored higher than their U.S. peers. No significant interaction for gender by

nationality (Wilks' Lambda $F = .90, p = .44$) was found for any attitude subscales.

The means and standard deviations by gender and nationality for the leisure-time exercise score are found in Table 5. The leisure-time exercise score adjusted for intensity ranged from a low of 46.8 for Taiwanese girls to a high of 81.5 for the U.S. boys. The U.S. girls had higher leisure-time exercise score than the Taiwanese boys. Two-way Analysis of Variance was used to compute the differences by gender and nationality for the leisure-time exercise score. These data are found in Table 6. Significant differences were found in leisure-time exercise score by gender ($F(1, 447) = 11.90, p < .05$) and by nationality ($F(1, 447) = 154.67, p < .05$). A significant interaction for gender by nationality ($F(1, 447) = 4.17, p < .05$) was also found. The boys for both nationalities scored higher than the girls. The U.S. subjects scored higher in both gender groups than the Taiwanese subjects.

Discussion

Perhaps three findings in this study warrant discussion and comparative analysis. Low significant correlations were found between the attitude scores and the adjusted physical activity scores. Gender differences favoring the boys for both attitudes and leisure-time exercise were also found. Finally nationality differences were also revealed. The Taiwanese subjects reported higher attitude scores, whereas, the U.S. subjects reported significantly more leisure-time exercise.

This study showed a significant relationship between attitudes toward physical education and leisure-time exercise. The result supports the findings of other researchers who have reported significant relationships between attitudes toward physical education and the amount of participation in physical activity (Rice, 1988; Silverman & Subramaniam, 1999; Smoll et al., 1976). Valdez (1997), however, found no significant relationships between gender, ethnicity, and attitudes. Ferguson et al. (1989) reported that attitudes

toward physical education did not significantly correlate with current exercise behavior but did relate with exercise intent.

Attitude toward physical activity was one of the effects found to influence young people and adults to participate in physical activities (Simons-Morton et al., 1987; Tannehill et al., 1994). Students can increase their belief of the importance of physical activity and need to exercise through physical education programs, if the programs are designed to promote their belief (Ferguson et al., 1989; Mowatt et al., 1988). Physical educators are an important factor in this relationship because of their contact with students. They can design an enjoyable learning environment that may influence students' attitudes toward physical activity.

This study also found significant gender differences in attitudes toward physical education and leisure-time exercise. Some studies (Carlson, 1994; Park, 1995; Rice, 1988; Silverman & Subramaniam, 1999; Smoll et al., 1976; Smoll & Schutz, 1980; Tannehill et al., 1994) reported similar findings. The boy students in this study showed higher mean attitudes toward physical education and leisure-time exercise scores than girls. The U.S. girl students scored higher than the boy students on the scientific basis attitude subscale. Mowatt et al. (1988) reported a similar result. For physical educators, this finding provides the suggestion that physical education curricula planners should pay attention to differences in gender and cultural backgrounds of students (Tannehill & Zakrajsek, 1993; Valdez, 1997). Physical education programs should provide involvement for all students. The teaching process and evaluation should reflect gender and cultural backgrounds in the real teaching setting.

Taiwanese high school students had more positive attitudes toward physical education than the U.S. students in this study. No research has been completed that can compare or support this nationality result. A multicultural study (Tannehill & Zakrajsek, 1993) found that the ethnic differences in physical education were:

liking physical education, favorite sport, and values. The U.S. high school students had higher leisure-time exercise scores than their peers from Taiwan. The Taiwanese students had lower leisure-time exercise scores but they had higher attitudes toward physical education scores than the U.S. students.

The nationality differences in leisure-time exercise may be explained from two perspectives. The first reason focuses on the educational system in Taiwan. Education is a high priority in most Taiwanese families. High schools and universities use competing examinations to decide entrance into future schools. Parents and teachers encourage students to focus on academic performances and not on physical activities or other non-examination courses. The second reason is that most students do not know the connections between physical activity, mental health, and their total education (Mowatt et al., 1988; Tannehill & Zakrajsek, 1993). The benefits of physical activity in their mind are in improving physical fitness but they do not make the link to personal psychological wellness and overall health.

These research results can provide some information for understanding the differences in gender and nationality. The benefits of physical activity and the connection of physical activity to quality of life are important and should be provided in all physical education classes. Teachers are important in the process of attitude modification for students. Through the teaching of physical activity they can work to change some cognitive insight and affect behaviors of their students. In future research, teacher behaviors, curricula, and facilities/equipment needs might be examined in relation to attitudes by gender and by nationality.

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Table 1

The Subjects by Gender and Nationality

Grade	Nation		U.S.		Total
	(n) Boys	Girls	Boys	Girls	
9			44	39	83
10	37	34	31	27	129
11	42	42	22	23	129
12	33	41	21	15	110
Total	112	117	118	104	451

Table 2

The Correlations of Attitude Subscale Scores with Leisure-time Exercise Score

		Leisure-time Exercise Score	
		n	r
General	U.S.	222	.31*
Attitude	Taiwan	229	.19*
Physical education			
Attitude	U.S.	222	.31*
	Taiwan	229	.31*
Scientific basis			
Attitude	U.S.	222	.29*
	Taiwan	229	.31*
Overall	U.S.	222	.36*
Attitude	Taiwan	229	.34*

* $p < .05$

Table 3

Means and Standard Deviations of Students' Attitude Toward Physical Education by Gender and Nationality

Attitude	Taiwan ($n = 229$)		U. S. ($n = 222$)	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<u>Boys</u>	($n = 112$)		($n = 118$)	
General	20.09	2.44	19.40	2.54
Physical education	26.26	3.36	21.95	4.82
Scientific basis	36.92	3.51	33.80	4.72
Overall	82.27	7.69	75.14	10.08
<u>Girls</u>	($n = 117$)		($n = 104$)	
General	19.15	2.35	19.19	2.75
Physical education	24.18	4.70	20.86	5.01
Scientific basis	36.05	4.24	33.94	4.88
Overall	79.38	9.34	73.99	10.56

Table 4

Summary of MANOVA Results by Gender and Nationality

Source	df	F	p
<u>Gender</u>			
General	1	5.62	.018*
Physical education	1	13.43	.000*
Scientific basis	1	0.75	.387
Overall	1	7.73	.006*
<u>Nationality</u>			
General	1	1.83	.176
Physical education	1	77.59	.000*
Scientific basis	1	39.15	.000*
Overall	1	55.57	.000*
<u>Gender * Nationality</u>			
General	1	2.29	.131
Physical education	1	1.31	.253
Scientific basis	1	1.48	.225
Overall	1	2.28	.132

* $p < .05$

Table 5

Means and Standard Deviations of Leisure-Time Exercise Scores

	Taiwan (<u>n</u> = 229)			U.S. (<u>n</u> = 222)		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
<u>Boys</u>	58.8	23.9	112	81.5	22.5	118
<u>Girls</u>	46.8	20.3	117	78.4	24.9	104

Table 6

Summary of Two-way ANOVA for Leisure-time Exercise Scores by Gender and Nationality

Source	<u>df</u>	<u>F</u>	<u>p</u>
Gender	1	11.90	.001*
Nationality	1	154.67	.000*
Gender*Nationality	1	4.17	.042*

* $p < .05$