

EXPLORING STUDENT ATTITUDES TOWARD PHYSICAL EDUCATION AND IMPLICATIONS FOR POLICY

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Abstract

Psychosocial variables can mediate physical activity and health-related fitness. The purpose of this study was to explore student attitudes toward physical education among students in Georgia (US) which recently implemented a policy requiring statewide fitness testing. A paper-pencil survey and fitness testing were administered to a convenience sample of middle school students. Student attitudes toward physical education were assessed by a Likert-type scale survey that measured two attitude constructs, Enjoyment and Perceived Usefulness. Health-related fitness was assessed by the FITNESSGRAM. Overall, students (N = 122) had positive attitudes toward physical education (M = 87.51 out of a possible 100 points, SD = 10.51). Separate stepwise regression analyses indicated the PACER test was the only significant predictor of Enjoyment in physical education, accounting for 16.4% of the variance ($F(1, 120) = 20.32, p < .001$). PACER and BMI were significant predictors of Perceived Usefulness of physical education, accounting for 15.2% of the variance ($F(1, 119) = 10.69, p < .001$). Student attitudes toward physical education can serve as a mediating factor for health-related fitness. Addressing the social and emotional health of students- as advocated in the Coordinated School Health Model- may also impact health-related fitness.

Key words: *physical education and training, attitude, physical fitness*

INTRODUCTION

Obesity is a disease facing many school-aged children in the United States. Data from the National Health and Nutrition Examination Survey (NHANES) shows an increase in obesity among U.S. adolescent boys from 11.3% (1988-1994) to 19.3% (2007-2008) and an increase in girls from 9.7% (1988-1994) to 16.8% (2007-2008) (Ogden & Carroll, 2010). Recent evidence indicates that childhood obesity, glucose intolerance, and hypertension increased the likelihood of death before the age of 55 (Franks, Hanson, Knowler, Sievers, Bennett, & Looker, 2010). The persistence of obesity and its effects throughout the lifespan is influenced by physical activity patterns, which begin to decrease during early adolescence and continue decreasing into adulthood (Biddle & Chatzisarantis, 1999; McKenzie, 2003; Subramaniam & Silverman, 1999). Physical activity levels of youth in early adolescence (e.g. middle school students) are currently not monitored on the national level (Center for Disease Control [CDC], n.d.), but a longitudinal analysis of youth ages 9 to 15 found that moderate-to-vigorous physical activity significantly declined each year (Nader, Bradley, Houts, McRitchie, & O'Brien, 2008). Data from the 2011 Youth Risk Behavior Surveillance Survey (CDC, 2012) indicates only 28.7% of high school students met the current Physical Activity

Guidelines for Americans (U.S. Department of Health and Human Service ([USDHHS], 2008). Low levels of physical activity may be in part due to a lack of daily physical education, as in the same year only 31.5% of high school students attended daily physical education (CDC, 2012).

Although school-based health and physical education is seen as a promising setting to encourage adolescents to begin and maintain a physically active lifestyle, historically it has come under severe scrutiny for its inability to provide meaningful learning experiences for students (Graham, 1990; Siedentop, 1987; Stroot, 1994). The U.S. National Center for Chronic Disease Prevention and Health Promotion ([NCCDPHP], 2003) recommends that physical education implement curricula and instruction that emphasize enjoyable participation in physical activity, and help students develop the knowledge, attitudes, motor skills, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles. Among many factors, children's attitudes are considered to be a key element influencing participation in physical activity (Biddle & Mutrie, 2001; Hagger, Chatzisarantis, & Biddle, 2002; Solomon, 2003; Subramaniam & Silverman, 2007). The formation of positive attitudes toward physical activity in

physical education is essential given the decrease in physical activity among youth internationally (Biddle & Goudas, 1996; McKenzie, 2003; Silverman & Subramaniam, 2007).

Investigating attitudes toward physical activity and perceptions about physical education classes are a good way to understand physical activity intentions as they can influence an individual's decision to begin or to continue participation in an activity (Martin, Oliver, & McCaughtry, 2007; Shen, Rinehart-Lee, McCaughtry, & Li, 2012). Student attitudes toward physical education and other physical activity contexts become increasingly negative as students become older (Silverman & Subramaniam, 2007). Positive attitudes formed toward physical activity in physical education may play an important role in maintaining an active lifestyle outside school (Silverman & Subramaniam, 2007), as individual psychosocial variables can prevent declines in physical activity among adolescence (Duncan, Duncan, Strycker, & Chaumeton, 2007). Physical education, therefore, can serve as a medium to influence student attitudes toward physical activity and health, since it has the potential to reach most children (McKenzie, 2003).

Existing research supports the notion of a strong association between increasingly negative attitudes toward physical education and the decline in physical activity and fitness levels that occurs as young people progress through the early stages of maturation (Stelzer, Ernest, Fenster & Langford, 2004). Students with negative attitudes toward physical education class may select to avoid further participation in physical activities in their daily life (Carlson, 1995). Researchers, however, found that students tend to participate in physical activities continually when they have fun (Silverman & Subramaniam, 1999). Additionally, individuals who are physically active during adolescence are more likely to be physically active during adulthood (National Association for Sport and Physical Education [NASPE], 2004). Research by health and physical education professionals into the relationship between psychosocial variables and physical activity is based on the notion that if students participate in more moderate-to-vigorous physical activity (MVPA), their physical fitness levels will improve. The goal of the health and physical education teacher is to promote lifelong physical activity, so students can maintain healthy levels of personal fitness (National Association for Sport and Physical Education [NASPE], 2004). Physical activity is a

behavior which should result in a particular outcome, namely healthy levels of physical fitness. The teacher has to take into account the many factors that can influence student physical activity behavior, both inside and outside the health and physical education context. For example, the physical activity levels of peers and social support can mediate the physical activity levels of adolescents (Duncan et al., 2007). Only 56.4% of high school students in the U.S. attend physical education classes at least once a week (CDC, 2010a). Decreases in adolescent physical activity and enrollment in physical education may be influenced by changes in affect within this population.

Expanding and improving physical education in schools is essential to fighting childhood obesity. In the U.S., national policy supports this notion. Objective PA-4 of Healthy People 2020 (HP2020) supports the need for daily health and physical education in schools. First Lady Michelle Obama is leading a national public awareness effort to address the childhood obesity epidemic. This effort, *Let's Move*, (www.letsmove.gov), is supported by the Interagency Federal Task Force on Childhood Obesity developed by President Obama. One of the main goals of this group is to increase physical activity in schools and communities. The public school system is a logical place to implement an intervention for the obesity epidemic, because of the multiple opportunities for providing physical activity and instruction about healthy behaviors. Currently, 55 million children are enrolled in US schools (Snyder, Dillow & Hoffman, 2009). The Task Force on Community Prevention Services (2002) supports the use of school-based physical education to improve physical activity and fitness levels among adolescents. During a review of 14 studies, the task force concluded that programs that used school-based physical education to increase time performing MVPA were effective in improving physical fitness. This task force also concluded that the primary barrier to implementing effective physical education programs is the school systems (Task Force on Community Prevention Services, 2002). *Let's Move*, and Healthy People 2020 support a call to action to change the way schools prioritize health and physical education programs/curriculum.

A current trend among states in the U.S. is to mandate local school districts to conduct annual fitness testing. As of 2009, 13 states required schools to measure body mass index (BMI)

compared to two states in 2006 (NASPE & American Heart Association [AHA], 2010). The state of Louisiana recently passed Act No. 256, which initiated pilot testing of fitness assessments in 12 school districts with potential for statewide implementation. The state of Ohio has filed HB 210, which requires schools to measure student BMIs in kindergarten, third, fifth, and ninth grades. The parents and legal guardians of students with unhealthy BMIs will be notified and given a summary of associated risks and preventative measures. In 2009, the state of Georgia (U.S.) filed HB 229- the Student Health and Physical Education (SHAPE) Act- which will require local school systems to administer fitness testing to all students enrolled in health and physical education classes. Although such changes in policy are positive, these fitness testing initiatives only require fitness testing of students enrolled in daily physical education leaving the health status of many youth unreported. To support further advances in policy, health and physical education research should explore mediating factors among student fitness. The purpose of this study was to investigate the relationship between middle school students' attitudes toward physical education and student fitness levels. It was hypothesized that middle school students' attitudes toward physical education would positively correlate with measures of health-related fitness.

METHODS

Participants

Participants for this study were middle school students ($N = 122$, mean age = 12.79, ranging from 11 to 15 years of age) in Georgia (U.S.). The approximate percentage of participants from each grade level was as follows: (a) Grade 6, 27.9%; (b) Grade 7, 41.8%; and (c) Grade 8, 30.3%. Of the total participants, 72 were female and 50 were male. The majority of the participants were Caucasians (61%) followed by African-Americans (37%) and others (3%). After approval from the Institutional Review Board (IRB), parental consent and minor assent to participate were obtained during physical education class. All classes were taught by health and physical education professionals (2 females, 2 males) with teaching experience ranging from 4 to 13 years. The state of Georgia (U.S.) is a dual certification state, meaning teachers must obtain certification in both content areas. Student participants were enrolled in a physical education class when this study took place.

Instruments

FITNESSGRAM. Fitness testing was conducted following the FITNESSGRAM testing protocol (Meredith & Welk, 2010) for Aerobic capacity, muscular strength/endurance, flexibility, and body composition. The FITNESSGRAM uses criterion-referenced standards established by the Cooper Institute to evaluate students on each dimension of fitness based on age and gender. The components included the Progressive Aerobic Cardiovascular Endurance Run (PACER) test, curl-up test, push-up test, back saver sit and reach test, trunk lift test, and BMI. Participants received instructions from the physical education teachers on the purpose and protocols of fitness testing. All data collectors were certified health and physical education teachers who received training on administration of the FITNESSGRAM during undergraduate coursework. Prior to data collection, teachers reviewed the latest version of the FITNESSGRAM manual and protocols (Meredith & Welk, 2010). Data collectors allotted time in three class periods for students to practice each fitness test.

Middle School Students' Attitudes toward Physical Education.

A survey grounded in attitude theory and developed by Subramaniam and Silverman (2000) was used to measure middle school students' attitudes toward physical education. The 5-point Likert-type scale survey consisted of 20 items that measured two attitude constructs, anchored with 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, and 5 = strongly agree. The affective construct was categorized as *Enjoyment* and cognitive construct was categorized as *Perceived Usefulness*. Additionally, each construct contained the sub-domains of teacher and curriculum. The validation of the instrument was carried out in multiple phases, which included: elicitation study, pilot study, content validity, reliability and validity. Each construct demonstrated acceptable psychometric evidence of reliability for the targeted population, with Cronbach's alpha reported as .86 for enjoyment and .84 for perceived usefulness (Subramaniam & Silverman, 2000). A separate study demonstrated construct-related validity of the instrument (Subramaniam & Silverman, 2002).

Procedures

Investigators obtained a convenience sample ($N = 122$) for the study by sending home 620 home parental consent and minor assent forms to all middle school students during health and physical education classes at one middle school in central

Georgia. The investigators selected students who returned both documents to participate in the study.

Physical education professionals selected the location for instrument administration. A place that offered the least amount of distraction to the students when completing the attitude instrument and FITNESSGRAM was used as the reason for the selection process. No other classes were using the space when the instrument or fitness testing was administered. Students were informed that the completed questionnaire would assist researchers and physical education professionals with better understanding their thoughts and feelings about their current physical education experiences; which was included in the instructions for the questionnaire. Fitness tests were conducted during health and physical education classes using the FITNESSGRAM before administering the surveys. The FITNESSGRAM was explained to participants before data collection began. Participants were placed in small groups to measure height and weight, trunk lift, and back saver sit and reach. Once participants complete the three stations, the researcher(s) conducted the curl-up test, push-up test, and PACER as an entire class; with the PACER test being conducted on a separate day. Data collectors monitored participants for correct form during tests. For testing protocol, see FITNESSGRAM testing manual (Meredith & Welk, 2010). All data collectors were certified health and physical education teachers with extensive training and experience in FITNESSGRAM administration. Following the FITNESSGRAM, participants completed the 20 question Likert-scale attitude instrument that measured attitudes toward

physical education (Subramaniam & Silverman, 2000). Data were collected in January 2011.

Statistical Analysis

Using SPSS v.19, descriptive data analysis was conducted for each fitness component (BMI, push-ups, trunk lift, curl-ups, Back-Saver Sit-and-Reach, and PACER) independently as well as for the two dimensions of attitude (enjoyment & perceived usefulness). A correlation analysis was used to compare the summed scores of enjoyment and perceived usefulness to separate standardized FITNESSGRAM score for each component of physical fitness. These scores were standardized using SPSS to allow for direct comparison of all components of physical fitness. Two stepwise multiple regressions were then run to determine if individual components of physical fitness predicted the two dimensions of attitude among participants.

RESULTS

Descriptive statistics for FITNESSGRAM tests in raw score format and student attitudes can be found in Table 1. To adequately analyze the descriptive statistics of the sample, scores on the attitude measure were examined as a total score and separated into their two dimensions. With regards to the overall attitude score, students had moderately positive attitudes toward physical education ($M = 87.51$ out of a possible 100 points, $SD = 10.51$). Females ($M = 86.76$, $SD = 10.99$) and males ($M = 88.6$, $SD = 9.78$) had similar attitudes. The mean attitude scores for grade level were statistically similar as well, (Grade 6: $M = 87.73$, $SD = 11.53$; Grade 7: $M = 86.8$, $SD = 10.17$; Grade 8: $M = 88.29$, $SD = 10.2$).

Table 1. *Descriptive Statistics for FITNESSGRAM Performance (raw scores) and Student Attitudes Questionnaire*

Variable	<i>M</i>	<i>SD</i>	Cronbach's Alpha
BMI	22.35	7.86	--
Push Up	14.82	8.19	--
Trunk Lift	11.20	1.40	--
Curl Up	41.30	18.78	--
Back-Saver Sit-and-Reach	13.00	3.94	--
PACER	30.38	14.19	--
Enjoyment Score	4.38*	.54	.82
Usefulness Score	4.28*	.57	.77

*While Enjoyment and Perceived Usefulness means were calculated, the summed values of each dimension were used in the analysis.

When the two dimensions of attitude (*Enjoyment* and *Perceived Usefulness*) were separated, the overall values were 43.81 ($SD = 5.92$) for Enjoyment and 43.46 ($SD = 5.92$) for Perceived

Usefulness, out of a total possible score of 50. Females and males had similar scores on both components of attitude. Means for Perceived Usefulness and Enjoyment for females were 43.26

($SD = 6.19$) and 43.5 ($SD = 5.66$), and for males were 43.76 ($SD = 5.55$) and 44.28 ($SD = 5.21$), respectively. In addition, grade levels mean scores were similar for enjoyment (Grade 6: $M = 45.21$, $SD = 4.66$; Grade 7: $M = 43.37$, $SD = 5.60$; Grade 8: $M = 43.16$, $SD = 5.90$) and Perceived Usefulness (Grade 6: $M = 43.85$, $SD = 5.38$; Grade 7: $M = 43.94$, $SD = 6.01$; Grade 8: $M = 42.46$, $SD = 6.30$).

Correlation analysis revealed significant and weak positive relationships between Enjoyment and pushups, trunk lift, curl-ups, and PACER. This was also the case with Perceived Usefulness. As expected, the correlation between BMI, Enjoyment, and Perceived Usefulness was significant, negative and moderate. These correlations can be found in Table 2.

Table 2. *Correlations between FITNESSGRAM Performance and Student Attitudes*

	1	2	3	4	5	6	7	8
1. BMI	1							
2. PACER	-.43**	1						
3. PushUp	-.45**	.67**	1					
4. TrunkLift	-.23*	.27**	.39**	1				
5. CurlUp	-.31**	.70**	.61**	.29**	1			
6. Back-Saver Sit-and-Reach	-.11	.01	.04	.27**	.14	1		
7. Enjoyment	-.27**	.41**	.28**	.20*	.40**	.09	1	
8. Perceived Usefulness	-.31**	.35**	.25**	.23**	.30**	.17	.77**	1

* $p < .05$, ** $p < .01$

Stepwise regression analyses were run using the individual FITNESSGRAM scores in standardized format as predictor variables. The analysis revealed the standardized PACER score as the only predictor of Enjoyment. PACER accounted for 16.4% of the variance in Enjoyment ($F(1, 120) = 23.58$, $p < .001$). For Perceived Usefulness, the regression indicated standardized PACER scores and BMI were the only predictors ($F(1, 119) = 10.69$, $p < .001$) (Table 3).

Table 3. *Predictors of Enjoyment and Perceived Usefulness*

Criterion	Variable	β	t	Sig.
Enjoyment	PACER	.41	4.86	<.001
Perceived Usefulness	PACER	.27	2.85	.005
	BMI	-.19	-2.05	.043

DISCUSSION

The purpose of this study was to examine the relationship between middle school students' attitudes toward physical education and health-related fitness as measured by six FITNESSGRAM tests. The study was conducted at a middle school in Georgia (U.S.), where new policy was passed to draw attention to the health status of youth. The policy requires health and physical education teachers perform fitness testing for all students and send individual results to parents and school level results to the district and state.

This study used an attitude instrument grounded in attitude theory as the guiding framework to discern the attitudes of middle school students' toward physical education (Subramaniam & Silverman, 2000). Students' attitudes were investigated based on the two-component view of attitude (*Enjoyment* and *Perceived Usefulness*). Attitudes were measured by students answering questions pertaining to enjoyment and perceived usefulness of the physical education teacher and curriculum.

Although most students held positive attitudes toward physical education, some possessed negative attitudes toward the subject. Subramaniam & Subramaniam (2007) noted a similar distribution of student attitudes in a study using the same instrument. Physical activity behavior of youth can be influenced by internal and external factors (Ballinger, 2011). Gender, age, and race are possible internal influences on physical activity behavior (Subramaniam and Silverman, 2007). Like Subramaniam and Silverman (2007), the present study found enjoyment of physical education to be an indicator of student attitudes toward physical education regardless of gender. Studies investigating gender and age factors have shown clear trends: boys generally show more positive attitudes toward physical activity and are more active than girls (Biddle and Chatzisarantis, 1999; CDC, 2012; Subramaniam and Silverman, 2007). Puberty may

be an influence as well as social and lifestyle factors that lead to this decline (Ballinger, 2011). Unlike results found in previous studies that have investigated student attitude compared to age (Biddle & Chatzisarantis, 1999; Biddle & Goudas, 1996; Biddle & Murdie, 2001; Subramaniam & Silverman, 2007), this trend was not evident in this sample.

Subramaniam and Silverman (2007) suggested that experiencing enjoyment in physical activity settings leads to positive attitudes toward physical education and perhaps lifelong pursuits of being physically active. Carlson (1995) found that many students become bored as a result of the repetitive nature of activities included in physical education. The results of this study suggest that health and physical education teachers should strive to achieve a balance of promoting physical activity through fun, developmentally appropriate content. Enjoyment is the primary intrinsic motivation for student participation in physical activity, both in the physical education setting and in the community (Blankenship, 2008). Therefore, health and physical education teachers should also strive to make connections of their content to recreational opportunities for physical activity in the community.

The overarching goal of the health and physical education teacher has long been deemed to promote lifelong physical activity (NASPE, 2004). The importance of physical activity is now receiving increased attention in the field of public health. The importance of physical activity is now highlighted in policy in the U.S. Of the 41 topic areas of HP2020, eight of these areas can be addressed by improving the physical activity-related behaviors of youth due to the many potential health benefits of physical activity (Bouchard, Blair, & Haskell, 2012). Conversely, physical inactivity is associated with increased rates of obesity, body fat composition, and mortality among young people (Koezuka et al., 2006). Although engaging in MVPA during physical education is important, results of this study suggest that promoting positive attitudes towards physical education can also influence health-related fitness. Positive attitudes can also promote sustained physical activity behavior (Subramaniam & Silverman, 2007). As time spent in physical education decreases among public school students (CDC, 2012), more pressure is placed on health and physical education teachers to design learning experiences that will promote student health. Although state policy that requires fitness testing

may promote awareness of the health status of youth, testing during class time can also take away from time that could be spent promoting enjoyment.

PRACTICAL ASPECTS

The study adds to the growing body of literature on mediating factors of student health-related fitness. National physical activity promotion campaigns such as *Let's Move!* in the U.S. and changes in state policy to require fitness testing present the clear benefits of increased awareness of the daily recommendations for physical activity and the obesity epidemic. However, such campaigns should not overshadow the importance of addressing the social and emotional health of students as advocated in the Coordinated School Health (CSH) model (Sweeney & Nichols, 1998). With approximately two-thirds of adults (Flegal, Carrol, Ogden, & Curtin, 2010) and one-third of children (Ogden & Carroll, 2010) being obese in the U.S., it is clear that more research on the relationship between student attitudes toward physical education and physical fitness is needed to ensure that today's children grow up to be adults who value and practice health enhancing behaviors.

Given the magnitude of the obesity epidemic in the U.S., particularly in the Southeast, the results of this study offer several implications for school health and physical education practices. If states, like Georgia (U.S.), are going to require fitness testing, it is important for health and physical educators to understand the internal and external factors that might influence a student's fitness scores. Students who have positive attitudes scored better on the FITNESSGRAM. As these results relate to practice, it indicates that health and physical education teachers should choose developmentally appropriate activities that foster enjoyment. Teachers should also encourage students to participate in activities outside the classroom setting, by promoting participation in community and recreational opportunities for physical activity. Participation in such activities such as youth sport has shown to be a significant predictor of adult physical activity (Telama, Yang, Hirvensalo, & Ratakari, 2006). This study reveals that internal factors like attitudes and perceptions might influence student performance during fitness testing. If states are going to require health and physical education teachers to take away from limited class time to perform the FITNESSGRAM, testing methods must continuously

be improved to ensure the efforts produce valid results. For example, accelerometry data could compliment PACER data.

As new policy requires fitness testing, it is important that school health and physical education professionals understand how their practice impacts student health. It is also

important that professionals understand that their students' health can be improved by means other than fostering high levels of physical activity during the school day. Quality school programming can focus on affective and cognitive outcomes, making it more likely for students to engage in positive health behavior out of school.

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