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But I Like PE: Factors Associated With Enjoyment of Physical Education Class in Middle School Girls

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Abstract

The current study examined associations between physical education (PE) class enjoyment and sociodemographic, personal, and perceived school environment factors among early adolescent girls. Participants included 1,511 sixth-grade girls who completed baseline assessments for the Trial of Activity in Adolescent Girls, with 50% indicating they enjoyed PE class a lot. Variables positively associated with PE class enjoyment included physical activity level, perceived benefits of physical activity, self-efficacy for leisure time physical activity, and perceived school climate for girls' physical activity as influenced by teachers, while body mass index was inversely associated with PE class enjoyment. After adjusting for all variables in the model, PE class enjoyment was significantly greater in Blacks than in Whites. In model testing, with mutual adjustment for all variables, self-efficacy was the strongest correlate of PE class enjoyment, followed by perceived benefits, race/ethnicity, and teacher's support for girls' physical activity, as compared to boys, at school. The overall model explained 11% of the variance in PE class enjoyment. Findings suggest that efforts to enhance girls' self-efficacy and perceived benefits and to provide a supportive PE class environment that promotes gender equality can potentially increase PE class enjoyment among young girls.

Keywords

adolescents; physical activity; school climate; self-efficacy

Physical activity is an important component of a healthful lifestyle, with numerous physical and psychological benefits for youth (U.S. Department of Health and Human Services, 1996). However, physical activity declines among youth as they transition from childhood into adolescence. Among girls, this decline is of particular concern. Reports from the National Heart, Lung, and Blood Institute's Growth and Health Study indicate a decline in habitual physical activity in 9–10-year-old girls over a 7-year period (Kimm et al., 2005). Those girls who were most inactive at the start of the study self-reported no leisure time physical activity, and this remained unchanged through subsequent monitoring periods. In addition, self-reported

data from the Youth Risk Behavior Surveillance Survey found that vigorous physical activity in girls declined about 30% between grades 9 and 12 (Grunbaum et al., 2004).

As rates of overweight among children and adolescents continue to rise, public health professionals and educators look for potential strategies to address the problem. Youth spend much of their time in school, where programs and professionals are in place to address behaviors associated with healthy weight (Katz et al., 2005; Story, 1999). The school environment has the potential to positively influence childhood obesity prevention efforts (Schwimmer, 2005).

Within schools, physical education (PE) programs have the potential to assist young people in being physically active. PE curricular programs can motivate and encourage youth to be physically active during and outside PE class and develop a commitment to a lifetime of physical activity participation. However, PE programs alone may be insufficient to engage youth, especially girls, in a lifestyle of regular physical activity. Other factors, such as PE program delivery and the environment in which it is delivered, may influence physical activity participation.

It has been observed that *enjoyment* may be an important mediating factor in motivating adolescents to be physically active (Dishman, Motl, Sallis et al., 2005; Motl et al., 2001; Sallis, Prochaska, & Taylor, 2000; Trost et al., 1997). In an analysis of an intervention conducted with 9th- and 10th-grade girls, Dishman and colleagues (Dishman, Motl, Saunders et al., 2005) further found that increased enjoyment resulted in higher levels of daily physical activity in adolescent girls. In a national study of youth in grades 4–12, Sallis, Prochaska, Taylor, and Hill (1999) found that enjoying PE class was one of the strongest and most consistent correlates of physical activity and concluded that “enjoyment of physical education classes should be a health-related goal because it is related to physical activity out of school” (p. 413).

The Wallhead and Buckworth (2004) review of studies exploring the role of PE in promoting youth physical activity revealed stronger associations between enjoying PE class and physical activity levels in girls than in boys. From these findings, the authors concluded that for many girls, a positive PE experience can have a significant effect on their willingness to be involved in physical activity; thus, PE teachers and other educators must pay greater attention to the needs of this population and consider modifying existing school PE programs to accommodate girls' interests (Wallhead & Buckworth, 2004). In a study on middle school students' perceptions of PE class, Treanor, Graber, Housner, and Wiegand (1998) found lower levels of PE class enjoyment among girls than boys. Furthermore, while levels of PE class enjoyment were similar among boys from sixth through eighth grade, girls exhibited a continuous decrease in enjoyment as they transitioned from sixth grade to eighth grade.

Identifying the factors associated with enjoying PE class among girls early in the middle school years can guide educators in their efforts to prevent the potential decline in PE class enjoyment and physical activity among girls as they transition into adolescence. Influences on girls' physical activity are multifactorial and include a variety of psychological, social, and environmental correlates (Sallis, Prochaska, & Taylor, 2000). Using a socioecological theoretical framework focusing on intrapersonal, interpersonal, and environmental factors (Elder et al., 2006), the current study examines the level of PE class enjoyment and sociodemographic, personal, and perceived school environment factors among early adolescent girls just beginning middle school. These girls are at a critical stage of physical and emotional development. These analyses can provide insight into how best to reach girls and enhance their PE class enjoyment, because they are at the period in their lives when physical activity levels often begin to decline. The data for this study are from the baseline assessments

of a large and diverse population of girls who participated in the Trial for Activity in Adolescent Girls (TAAG).

Method

Overview of TAAG study

The TAAG is a group-randomized multicenter trial sponsored by the National, Heart, Lung, and Blood Institute (NHLBI), to develop and test the effectiveness of a school- and community-based physical activity intervention for middle school girls. The six field sites involved in TAAG are the University of Maryland, University of South Carolina, University of Minnesota, Tulane University, University of Arizona, and San Diego State University. The University of North Carolina is the Coordinating Center, and NHLBI project staff participated in the study. Each field site recruited six middle schools for a total of 36 schools that were randomized to intervention or control conditions. Details of the TAAG study design have been published elsewhere (Stevens et al., 2005).

Study Sample and Data Collection

During the spring semester of the 2002–03 school year, the eligibility of all sixth-grade girls from six middle schools at each field sites was assessed for inclusion in the study. Potential participants included 4,210 girls who were given consent and eligibility forms; 2,640 met the following eligibility: were able to read English, had no contraindications to exercise, and were generally healthy. Of those, 1,880 (71%) provided consent and underwent baseline measurements. However only 1,511 girls had complete survey and body composition data and were included in the current analysis. The mean age of the girls was 12.0 years ($SD = .5$). Racial/ethnic breakdown of the population was as follows: 47% White, 21% Hispanic, 20% Black, 4% Asian or Native Hawaiian or Pacific Islander, and 8% mixed or other.

Anthropometric measures and data from student questionnaires were used for the current analysis. Measurement coordinators from each field site were trained and certified at a centralized location. The local measurement staff at each field site were then trained and certified by the measurement coordinators. Data were collected at schools over approximately two separate calendar weeks in each participating school to minimize the school-level intraclass correlation between girls within a school (Murray et al., 2004). Each participating institution's review board approved the protocol.

Measures

Sociodemographic Characteristics—The girls answered questions on race/ethnicity, parental educational levels, and participation in the free or reduced price lunch program. They identified their *race/ethnicity* on a checklist that included Caucasian (White, non-Hispanic), Black, Hispanic, Asian/Pacific Islander, American Indian, and Other. Participants were asked to check as many categories as applied. *Highest level of parental education* was based on the questions, “What is the highest grade in school completed by your father?” and “What is the highest grade in school completed by your mother?” Possible responses included: did not finish high school, finished high school, went to vocational school, took some college, graduated from college, has some professional training beyond a 4-year college degree, and don't know. Participation in the *free or reduced price lunch* program was assessed with the question, “Do you get free or low-cost lunches at school?” Possible responses included: yes, no, or don't know.

Personal Factors—Anthropometric measurements included weight and height. Body weight was measured twice to the nearest .1 kg on an electronic scale (Seca, Model 770, Hamburg, Germany). Height was measured twice to the nearest .1 cm using a portable

stadiometer (Shorr Height Measuring Board, Olney, MD). The average of the two measures was used to calculate body mass index (BMI; kg/m^2). BMI was primarily treated as a continuous variable, but analyses were also conducted in which BMI was treated as a categorical variable using sex- and age-specific cutoff points based on reference data from the Centers for Disease Control and Prevention Growth Tables: nonoverweight (BMI < 85th percentile for sex and age), at-risk for overweight (BMI $\geq$ 85th percentile to BMI < 95th percentile), and overweight (BMI $\geq$ 95th percentile; Himes & Dietz, 1994; Kuczmarski et al., 2000).

Moderate-to-Vigorous Physical Activity—Physical activity was measured by using Actigraph accelerometers (Health One Technology, Model 7164, Fort Walton Beach, FL). Participating girls wore an accelerometer during most waking hours for 7 consecutive days. Monitors were initialized prior to data collection and set to begin collecting data at 5:00 a.m. on the day after they were distributed to the participants, resulting in data for 6 complete days available for analysis. Data were collected and stored in 30-s intervals. Actigraph counts (per 30-s interval) were summarized by quantifying the time (minutes) spent at different intensity levels. TAAG thresholds per 30-s interval for activity intensities were: < 50 counts for sedentary activity, 51–1,499 counts for light activity, and $\geq$ 1,500 counts for moderate-to-vigorous activity (Treuth et al., 2004). Occasional missing actigraph data within a girl's six-day record were imputed using the Expectation Maximization algorithm (Catellier et al., 2005). On average, approximately 12 hr of data per participant were imputed. For this analysis, moderate-to-vigorous physical activity was calculated as minutes per day.

Self-Efficacy for Leisure Time Physical Activity and Perceived Benefits of Physical Activity—Self-efficacy and perceived physical activity benefits were assessed. Scales for these constructs contained statements for which the participants rated agreement on a 5-point Likert-type scale, anchored by disagree a lot (1) and agree a lot (5). The two scales were scored by taking the mean of all items, using unity weighting of each item. The mean score was only calculated for forms that had greater than or equal to 80% of the scale items as nonmissing; only 4% of the forms included had some missing data. Specific items and Cronbach's alpha for each of the scales included in the present analysis are provided in Table 1.

Self-efficacy for leisure time physical activity was assessed with a version of a previously validated scale (Saunders et al., 1997). Confirmatory factor analysis from a recent study identified eight items from the original 15-item scale that fit reasonably well for eighth-grade girls (Motl et al., 2000). The scale was further pilot tested for TAAG in a small sample of 50–100 middle school girls (Cronbach's alpha = .81, intraclass correlation coefficient = .57). The perceived benefits of physical activity scale was also adapted from previously tested items (Motl et al., 2000; Sallis, Taylor, Dowda, Freedson, & Pate, 2002) and pilot tested for TAAG in a sample of middle school girls (Cronbach's alpha = .72, intraclass correlation coefficient = .72).

Perceived School Environmental Factors

Perception of school climate for girls' physical activity was assessed with questions adapted from the Physical Education Program Improvement and Self-Study (National Association for Sport and Physical Education, 1998) as well as formative assessment with the target population (see Table 1). Girls were asked to agree or disagree with the five statements shown in Table 1. Confirmatory factor analyses using structural equation modeling indicated two distinct subscales for the influence of teachers and boys on school climate for girls' physical activity (Birnbaum et al., 2005). An additional single item assessed girls' influence on school climate for girls' physical activity. Although these factors are related (Birnbaum et al., 2005), there is

support to separate them, because teacher influence is significantly and directly associated with girls' self-reported physical activity (Birnbaum et al., 2005) but not peer influence. More specifically, the teacher influence scale items assessed perceptions of gender inequality for being physically active; the scale items for boys' influence assessed boys' behavior and girls' responses to when girls are physically active; the scale items for other girls' influence assessed other girls' perceptions of girls being physically active. For each statement, participants rated agreement on a 5-point Likert-type scale, anchored by disagree a lot (1) and agree a lot (5). Scales were scored by taking the mean of all items at the school-level, using unity weighting of each item and reversed scoring. The mean score was calculated only for forms with $\geq 80\%$ of the scale items nonmissing; only 3% of the forms had some missing data. Unlike the previously described variables, perceived school climate was examined at the aggregate level, rather than individual, to achieve a better indicator of school environment.

Dependent Variable: Enjoyment of PE Class—To assess enjoyment of physical education class, girls were asked to rate their agreement with the statement, “I enjoy PE” on a 5-point Likert-type scale anchored by disagree a lot (1) and agree a lot (5). The specific wording was the same as that used in a previous study with Black and White adolescent girls (Motl et al., 2001).

Statistical Analysis

Statistical analyses were conducted using SAS version 8.0 (SAS Institute, Cary, NC). Differences between sociodemographic characteristics, personal factors, or perceived school environment variables and PE class enjoyment were assessed using univariate analysis of variance, with PE class enjoyment modeled as a continuous variable.

Multivariate associations with PE class enjoyment were examined with a regression analysis based on the general linear mixed model. A model was tested with the following variables as fixed effects: race/ethnicity; BMI; receiving reduced or free lunch; highest level of parental education; moderate-to-vigorous physical activity; perceived benefits of physical activity; self-efficacy to be physically active during leisure time; and perceived influences of teachers, boys, and other girls on school climate for girls' physical activity.

The usual measure of goodness of fit in regression models is R^2 (commonly interpreted as percent of variance explained, although actually fraction of sum of squared residuals explained). However, in mixed models, the random effects contribute to the partitioning of total variance and invalidate and complicate estimation of the comparative goodness of fit attributable to the predictors in the fixed part of the model (Vonesh, Chinchilli, & Pu, 1996). For descriptive purposes only, we used a simple approach and present the R^2 from a general linear model, which treats the random effects of site and school as fixed. Unless the random effects are particularly strong, these R^2 values are not likely to be misleading.

Results

Enjoyment of PE Class: Univariate Analyses

Enjoyment was high among the girls, with 77% agreeing with the statement, “I enjoy PE.” Half of the girls (50%) agreed a lot with the statement, and about a quarter (27%) agreed a little (see Table 2). In general, the sociodemographic characteristics (race/ethnicity, reduced/free school lunch, highest level of parental education, site/geographical area) were not associated with PE class enjoyment (see Table 2).

Stronger and more consistent associations were found between personal variables and enjoyment of PE class (see Table 3). A trend toward an inverse association between BMI and

PE class enjoyment was seen, $F(1, 1,509) = 6.00, p = .015$. However, given the 11 analyses reported in Tables 2 and 3, a Bonferroni correction would suggest $p < .0045$ as a standard for statistical significance. We also examined associations with BMI in three categories: nonoverweight (BMI < 85th percentile for sex and age), at risk for overweight (BMI $\geq$ 95th percentile), and overweight (BMI > 95th percentile). Similar levels of PE class enjoyment were reported by the nonoverweight girls ($M = 4.2, SD = 1.1$) and the at risk for overweight girls, ($M = 4.2, SD = 1.1, t(1, 510) = .27, p = .788$, while the overweight girls ($M = 3.9, SD = 1.3$) reported significantly lower levels of PE class enjoyment, $t(1, 510) = -3.19, p = .0015$, than normal weight girls (data not shown in table). Minutes of moderate-to-vigorous physical activity, perceived benefits of physical activity and self-efficacy to be physically active during leisure time were positively associated with PE class enjoyment.

Mixed results were found between perceived school environmental variables and enjoyment of PE class. Perceived influences of boys and other girls on the school climate for girls to be physically active were not associated with PE class enjoyment. However, teacher influence was associated with higher levels of PE class enjoyment, $F(1, 1,509) = 19.18, p < .001$, suggesting the importance of a school environment that promotes gender equality for being physically active.

Factors Associated With PE Class Enjoyment: Regression Analyses

The relationship between PE class enjoyment and all sociodemographic, personal, and perceived school environment variables was assessed using a linear mixed model with all fixed effects entered into the model simultaneously. Results from this model suggest that race/ethnicity, BMI (inverse association), moderate-to-vigorous physical activity, perceived benefits of physical activity, self-efficacy to be physically active during leisure time, and perceived teacher support for girls being physically active were all significant predictors of PE class enjoyment ($p < .05$).

All the sociodemographic, and perceived school environment variables were entered into a general linear regression analysis to determine their contribution to the amount of variance in PE class enjoyment and to identify significant independent correlates of PE class enjoyment (see Table 4). Results were similar to those from the mixed model analysis; after adjusting for all variables included in model-testing, variables significantly associated with PE class enjoyment were: race/ethnicity, BMI (inverse association), moderate-to-vigorous physical activity, perceived benefits of physical activity, self-efficacy to be physically active during leisure time, and perceived teacher support for girls being physically active. Self-efficacy for leisure time physical activity was the strongest correlate and explained 7% of the variance in enjoying PE class, $\beta = .40, t(1, 510) = 10.45, p < .001$. After adjusting for all variables included in the model, enjoying PE class was greater in Black girls than White girls, $\beta = 0.32, t(1, 510) = 3.51, p < .001$; comparisons of other racial/ethnic groups with Whites did not result in statistically significant differences. Findings were similar when BMI was entered as a categorical variable. The overall model explained 11% of the variance in PE class enjoyment, $R^2 = .11, F(21, 1,510), p < .001$.

Discussion

The current, unique study examined PE class enjoyment and sociodemographic, personal, and school environment correlates of PE class enjoyment among ethnically diverse, early adolescent girls. Overall, PE class enjoyment was high among girls in the first year of middle school; half the girls strongly agreed with the statement, "I enjoy PE," and a quarter agreed a little with the statement. Our findings are similar to previous ones showing high levels of PE class enjoyment early in middle school (Treanor et al., 1998), regardless of demographics. These encouraging findings suggest the importance of ensuring that PE continues to be an

integral part of the school day and underscores its potential as a venue for enhancing physical activity in youth. In general, sociodemographic characteristics were not associated with PE class enjoyment and in cases with statistically significant associations, (i.e., with free/reduced price lunch eligibility and race/ethnicity); associations were not consistent across variables measuring similar constructs (i.e., free/reduced price lunch and parental level of education) or across univariate and multivariate analyses. In contrast, personal and perceived school environmental factors were significantly associated with PE class enjoyment. The findings provide insight into the types of factors that should be addressed within PE classes to promote enjoyment. Such efforts could help prevent the large decline in physical activity levels that occurs during the middle school and high school years (Grunbaum et al., 2004; Kimm et al., 2005).

Higher BMI levels were associated with lower levels of PE class enjoyment, with overweight girls expressing the lowest enjoyment levels. Although BMI was significantly associated with PE class enjoyment in this sample, the association was modest, suggesting that not all overweight girls dislike PE. It should be possible to find ways to make PE enjoyable for all girls, regardless of their body size. Moreover, not all overweight girls are inactive. Thus, it may be important to identify girls who are both overweight and inactive, because they are likely to be in the greatest need of special attention within PE classes (Trost & Ward, 2005; Ward et al., 2006). Findings from other studies examining associations between BMI and enjoyment of PE classes and physical activity have been mixed. In a 3-year longitudinal study of fourth-through sixth-grade children, BMI was not found to predict PE class enjoyment (Prochaska, Sallis, Slymen, & McKenzie, 2003). However, among seventh–twelfth-grade students, Taylor and colleagues (2002) found that overweight adolescent girls expressed lower levels of physical activity enjoyment than nonoverweight girls. It is important to develop PE interventions that meet the needs of overweight girls to increase their likelihood of being physically active. This is particularly important as girls enter adolescence and become more conscious of their body shape and appearance, with body image becoming more central to their overall self-image.

Recommendations to increase activity participation among overweight girls include introducing girls gradually to enjoyable forms of physical activity and building confidence in their physical abilities with the goal to improve their sense of self-mastery (Rhea, 1998; Taylor et al., 2002). An example of a physical education program designed to meet the needs of older adolescent girls who are overweight (or at risk for overweight) and inactive is New Moves (Neumark-Sztainer, Story, Hannan, & Rex, 2003). New Moves provides a supportive and noncompetitive environment for PE within an all-girls setting. It was designed to meet the needs of girls who might feel uncomfortable in a coed PE class. Interviews conducted following the intervention suggested that an all-girls PE environment met the needs of some girls. Interviews further suggested the importance of meeting girls where they were with their physical activity behaviors and working toward gradual changes, helping them feel good about their bodies, and providing a supportive environment in which they feel comfortable being physically active.

Perceived benefits of physical activity and, particularly, self-efficacy to be physically active during leisure time, were strongly correlated with PE class enjoyment. Although findings from previous studies have been mixed, self-efficacy has been shown to be consistently related to physical activity (Dishman, Motl, Sallis et al., 2005; Sallis et al., 2000; Trost, Pate, Ward, Saunders, & Riner, 1999) and has been shown to partially mediate the effect of physical activity interventions. Increased self-efficacy results in increased physical activity (Dishman et al., 2004). To enhance self-efficacy, girls should be encouraged to take gradual steps toward being physically active, learn about time management to fit physical activity into their daily routines, and explore strategies for enlisting social support from family and friends. These types of

strategies were used in the TAAG intervention, and future analyses will explore their acceptability and effectiveness.

Our findings demonstrate the importance of a girl-friendly PE environment in the school. A teacher-supportive climate for physical activity was associated with girls' PE class enjoyment. In a longitudinal study of inactive adolescent girls (Neumark-Sztainer, Story, Hannan, Tharp, & Rex, 2003), perceived support from teachers, peers, and parents was also found to be one of the strongest and most consistent predictors of change in physical activity. As outlined in the Methods section, students' perceptions of the environmental equality provided by teachers has been found to be significantly and directly associated with girls' self-reported physical activity level (Birnbaum et al., 2005). These findings suggest the importance of working with teachers to enlist their support for promoting physically active lifestyles, enhancing self-efficacy for leisure time physical activity among girls, ensuring that boys are respectful of girls when physically active, and promoting social norms of physical activity in girls. It is important to ensure that PE classes meet girls' needs and provide an environment in which they feel comfortable, supported, and encouraged to be physically active in the presence of boys. This strategy was used in the TAAG intervention, and future analyses will explore the success of this approach. The Lifestyle Education for Activity Program (LEAP), which was aimed at increasing physical activity in high school girls, used a combination of same-sex and coeducational PE classes designed to be noncompetitive and inclusive, thus promoting a supportive class environment (Dishman et al., 2004; Pate et al., 2005). In the LEAP study, girls who took PE classes were more likely to report regular vigorous physical activity than girls who did not.

The current study had a number of strengths. The large and diverse study sample and the geographic diversity enhanced our ability to make extrapolations from this analysis to the broader population of early adolescent girls within the United States. The girls in our study population were at an age that is crucial to study, as it is at the beginning of the decline in physical activity seen in many girls, and, as such, a point at which enjoyment of PE class has the potential to play an important role in establishing life-long physical activity habits. An additional strength of the study is the broad array of variables that assessed potential correlates of PE class enjoyment and their strong psychometric properties.

Study limitations also need to be taken into account in drawing conclusions from the findings in the design of future studies. Although the study population was drawn from across the United States, it is not a nationally representative sample of sixth-grade girls. Although it was similar to that used in other studies (Treanor et al., 1998; Trost et al., 1997; Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994), only one question was used to assess PE class enjoyment. Future studies may expand on this measure to assess enjoyment of different aspects of PE class (Motl et al., 2001). Furthermore, the assessment of school climate was based only on girls' perceptions and could be biased by their comfort level and enjoyment of physical activity. Future studies could obtain teachers' perceptions of the school climate or observe the teachers' and students' behaviors in PE classes. Finally, although the current study included an array of potential correlates of PE class enjoyment, variables only explained 11% of the variance in PE class enjoyment, suggesting that other key factors may influence the level with which girls enjoy PE class. Such factors may include peer or teacher support as well as girls' motivation level (Motl et al., 2005). Future studies may explore factors associated with PE class enjoyment qualitatively to enhance our understanding and provide a basis for more comprehensive survey development.

Conclusions

Findings from the current study suggest the importance of helping girls enhance their self-efficacy to be physically active during leisure time and appreciate the benefits of physical

activity in a manner relevant to their lives. Our findings also suggest the need to recognize that a girl's size may impact her enjoyment of PE class. PE specialists should strive to ensure that the PE class is a comfortable, enjoyable, and reinforcing environment for all students, regardless of their size, physical fitness, or competence levels. Strategies worthy of exploration include girl-only classes, noncompetitive environments, different types of activities that are fun for girls with different skill levels and interests, skill-enhancing programs to increase self-efficacy, and an environment in which girls are encouraged and supported in their efforts to be physically active. The high prevalence of early middle school girls who reported enjoying PE class is encouraging; the challenge before us is to keep this level high throughout middle and high school.

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Table 1

Scale items

Self-Efficacy for Leisure Time Physical Activity Scale

(Cronbach's alpha = .81)

1. I can be physically active during my free time on most days.
2. I can ask my parent or other adult to do physically active things with me.
3. I can be physically active during my free time on most days even if I could watch TV or play video games instead.
4. I can be physically active during my free time on most days even if it is very hot or cold outside.
5. I can ask my best friend to be physically active with me during my free time on most days.
6. I can be physically active during my free time on most days even if I have to stay at home.
7. I have the coordination I need to be physically active during my free time on most days.
8. I can be active during my free time on most days, no matter how busy my day is.

Perceived Benefits of Physical Activity Scale (Cronbach's

alpha = .89)

If I were to be physically active during my free time on most days...

1. ...it would help me spend more time with my friends.
2. ...it would help get or keep me in shape.
3. ...it would help me control my weight.
4. ...it would put me in a better mood.
5. ...it would make me better in sports, dance, or other activities.
6. ...it would be fun.
7. ...it would make me look better.
8. ...I would make new friends.
9. ...I would feel better about myself.

Perceived school climate for girls' physical activity

Subscale: Influence of teachers on school climate for girls'

physical activity (Cronbach's alpha = .82; reverse scored)

1. In my school PE teachers act like they think it is more important for boys to be physically active than girls.
2. In my school, most teachers think it is more important for boys to be physically active than girls.

Subscale: Influence of boys on school climate for girls'

physical activity (Cronbach's alpha = .66; reverse scored)

1. In my school, boys make rude comments around girls who are being physically active.
2. In my school, being physically active around boys makes me uncomfortable.
3. In my school, boys stare too much at girls who are being physically active.

Single item: Influence of girls on school climate for

girls' physical activity

1. In my school, most girls think it is important to be physically active.

Enjoyment of physical education class

1. I enjoy PE.

Table 2
Descriptive statistics and associations of physical education class enjoyment and sociodemographic characteristics

	Total	I enjoy physical education				M	SD
		Disagree a lot (%)	Disagree a little (%)	Neither agree nor disagree (%)	Agree a little (%)	Agree a lot (%)	
Total:	1,511	5.7	4.4	12.5	27.3	50.2	1.14
Sociodemographics							
Race/ethnicity:							
White (non-Hispanic)	706	4.8	4.7	13.6	31.0	45.9	.94
Black (non-Hispanic)	295	7.5	3.4	8.5	24.4	56.3	1.19
Asian or Native Hawaiian or Pacific Islander	66	1.5	4.6	13.6	34.9	45.5	1.32
Hispanic	323	5.3	4.6	13.6	22.9	53.6	1.15
Other/mixed	121	9.9	4.1	12.4	19.8	53.7	1.10
						<i>p</i> value = .598	
Reduced/free school lunch:							
Yes	612	6.2	4.4	10.0	24.7	54.7	1.16
No	706	5.4	4.3	13.2	29.2	48.0	1.12
Don't know	193	5.2	4.7	18.1	28.5	43.5	1.13
						<i>p</i> value = .177	
Highest parental level of education							
Did not finish high school	97	7.2	4.1	9.3	22.7	56.7	1.21
Finished high school/some college	377	6.9	2.9	13.0	26.5	50.7	1.17
College graduate or more	646	4.6	4.2	13.0	28.8	49.4	1.09
Don't know	391	5.9	6.1	12.0	26.6	49.4	1.18
						<i>p</i> value = .779	
Site/geographical area							
Arizona	259	4.3	5.0	15.8	24.3	50.6	1.11
California	264	3.0	3.8	13.3	34.1	45.8	1.00
Louisiana	238	8.8	4.2	11.8	27.7	47.5	1.28
Maryland	264	8.7	4.9	10.23	20.1	56.1	1.25
Minnesota	273	1.8	3.7	11.4	30.4	52.8	0.93
South Carolina	213	8.5	4.5	12.7	26.8	47.4	1.25
						<i>p</i> value = .055	

Associations between physical education class enjoyment and personal and perceived school environmental factors in middle school girls

Table 3

Personal factors	Disagree a lot <i>n</i> = 86		Disagree a little <i>n</i> = 66		I enjoy physical education Neither agree nor disagree <i>n</i> = 189		Agree a little <i>n</i> = 412		Agree a lot <i>n</i> = 758		<i>p</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Body mass index	21.4	4.51	22.1	5.87	20.9	4.95	20.6	4.57	20.5	4.73	.015
MVPA (min/day)	21.7	12.88	20.8	9.90	23.3	10.88	23.0	10.80	24.8	12.81	< .001
Perceived benefits of physical activity	3.8	.90	3.8	.77	3.9	.66	4.1	.60	4.2	.65	< .001
Self-efficacy for leisure time physical activity	3.0	.78	3.2	.79	3.5	.77	3.7	.74	3.9	.75	< .001
Perceived school environmental factors											
School climate											
(PE classes: Teachers)	3.9	.27	3.9	.23	3.9	.23	4.0	.24	4.0	.24	< .001
(PE classes: Boys)	3.6	.25	3.6	.25	3.7	.22	3.7	.21	3.6	.23	.143
(PE classes: Girls)	3.1	.33	3.2	.30	3.3	.34	3.3	.35	3.2	.38	.927

Note. *M* = mean; *SD* = standard deviation; MVPA = moderate to vigorous physical activity; PE = physical education.

Table 4Summary of regression analysis for variables predicting physical education class enjoyment ($N = 1,511$)

	B	SE B	% Explained variance	p value
Race/ethnicity			.93	.007
Asian	.236	.140		
Black (non-Hispanic)	.318	.091		
Other	.083	.109		
Hispanic	.171	.084		
White (non-Hispanic)	Referent			
Reduced/free school lunch	.14	.342		
Don't know	-.116	.095		
No		-.085	.067	
Yes	Referent			
Highest parental level of education			.12	.623
College graduate or higher	.040	.073		
Did not finish high school	.163	.124		
Don't know		.032	.078	
Finished high school /some college	Referent			
Site/geographic location		.41	.297	
Arizona	-.007	.115		
California	-.016	.200		
Maryland	-.097	.113		
Louisiana	-.083	.136		
Minnesota	.161	.125		
South Carolina	Referent			
Body mass index	-.012	.006	.28	.043
Moderate to vigorous physical activity	.006	.002	.43	.011
Perceived benefits of physical activity	.177	.045	1.05	< .001
Self-efficacy for leisure time physical activity	.401	.038	6.83	< .001
School climate:				
Teachers	.529	.149	.84	< .001
Boys	-.329	.184	.04	.465
Girls	-.084	.114	.21	.075

Note. $R^2 = 11.29$, $p = < .001$; % explained variance and corresponding p value from general linear regression.