Prevalence and Social-Environmental Correlates of Sports Team Participation Among Alternative High School Students

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Background: Alternative high school (AHS) students have low levels of physical activity (PA) and high rates of overweight/obesity. Sports team participation, a specific form of PA, is associated with increased PA and decreased overweight/obesity in general adolescent populations. However, little is known about the prevalence and correlates of sports team participation among AHS students. Methods: In 2006, students (n = 145; mean age = 17 years; 52% male; 61% minorities; 64% low-income) attending 6 AHS in Minneapolis/St. Paul completed self-administered surveys. Mixed model logistic regression was used to examine cross-sectional associations between sports team participation and school staff support for PA, friend support for PA, and perceived barriers to PA. Results: Among students, 40% participated on ≥1 sports teams. Odds of participating on a sports team were positively associated with support for PA from school staff (OR = 1.12, P = .014) and friends (OR = 1.15, P = .005), but inversely associated with perceived barriers to PA (OR = 0.95, P = .014). Conclusion: Results suggest that efforts to increase sports team participation among AHS students should target social-environmental factors. Further study is warranted.

Keywords: alternative high schools, team sports, adolescents, social support, environmental barriers

Physical activity (PA) and obesity are leading health indicators. Low levels of PA and obesity during adolescence are major public health concerns as they track into adulthood, resulting in preventable chronic diseases that adversely impact individuals and burden the health care system. Minority and low-income adolescents are among the least active youth in the U.S. and are more likely to be overweight or obese. With the adolescent population projected to become increasingly diverse over the next several decades, innovative ways to encourage physical activity and prevent overweight/obesity among diverse, low-income youth are greatly needed.

In the U.S., alternative high schools (AHS) serve nearly 1 million students at-risk for academic failure due to problems with truancy, school expulsion and emotional and behavioral problems such as violence and substance use. AHS serve disproportionate numbers of low-income and minority youth and hold untapped potential to promote PA among a population of students with low PA levels and high rates of overweight/obesity. Smaller class sizes, typical of the AHS setting, create a more personal environment and position the AHS teacher in the pivotal role of a supportive adult, which has been found to be a salient protective factor during adolescence. Although issues such as academics and emotional and behavioral problems are primary concerns of AHS staff, teachers and administrators have expressed support for promoting PA in the AHS setting.

Team sports are a specific type of PA that are commonly offered in regular high schools and provide youth with opportunities to be physically active while learning important social skills. Among youth, sports team participation has been associated with increased physical activity and decreased overweight, emotional well-being, higher fruit and vegetable intake, better grades, lower dropout rates, lower delinquency rates, and higher rates of college attendance. In the U.S., about 7 million high school students play on interscholastic school sports teams. However, rates of participation in school and organized team sports decline during the high school years, potentially due to increased competitiveness and decreased opportunities to engage in such activities. This decline is particularly strong for adolescent females.

In addition to organized and competitive team sports, recreational sports such as intramural teams, open gyms, and pick-up games in schools, community facilities, and public parks provide youth with opportunities throughout the day to be physically active in a less competitive environment and have been suggested as a way to promote PA among youth from diverse populations. Most young people engage in team sports and PA to have fun and develop skills and often stop participating when it becomes too competitive or is no longer fun; therefore the Centers for Disease Control and Prevention recommend that schools offer a range of interscholastic, intramural, and club teams so that more youth can experience the...
positive physical and social benefits that result from sports team participation. Despite this potential, only half of all schools provide intramural or club sports and inner city youth have less access to facilities that offer recreational sports team opportunities as compared with youth in more affluent suburbs.

Team sports, whether organized competitive teams or informal pick-up games, are a promising yet unexplored strategy for promoting PA among AHS students. Little is known about AHS students’ involvement in sports teams and the social and environmental factors associated with sports team participation. AHS students have identified sports as an appealing form of PA, yet they are significantly less likely to play on school (21.3%) or community (25.1%) sports teams than their peers attending regular high schools (49.5% and 38.3%, respectively). The disparities that exist in sports team participation among adolescents from different socioeconomic and cultural backgrounds underscore the importance of understanding how social and physical environments influence these adolescents’ decisions to be physically active through team sports.

Ecologic models postulate that the environment directly mediates individual behavior through the interaction of interpersonal, social, cultural, and physical environmental factors. In school settings, friends and teachers can influence lifestyle practices through supportive interpersonal interactions that can shape positive attitudes toward a behavior and through a built environment that empowers healthy decision making. While self-efficacy, or belief in one’s ability to perform a task, is a strong correlate of PA among adolescents, ecological theory hypothesizes that personal factors such as self-efficacy are not sufficient for changing or sustaining behaviors unless environments are modified to support the behavior. For example, low socioeconomic status, living in unsafe neighborhoods, and lack of transportation are potential barriers to accessing facilities for PA and sports team participation and therefore might deter an otherwise motivated adolescent from playing sports. Social support, PA modeling by friends, and perceived environmental barriers to PA are powerful environmental correlates of general PA in adolescents. The purpose of this study was to assess the prevalence of sports team participation among AHS students and examine the association between sports team participation as a specific form of PA and hypothesized social and environmental factors that included PA self-efficacy, school staff support for PA, friend support for PA, and perceived barriers to PA.

Methods

Design

Data for this cross-sectional study were collected between September 20 and November 1, 2006 from students attending 6 alternative high schools in Minneapolis/St. Paul, Minnesota. Students were participants in the Team COOL (Controlling Overweight and Obesity for Life) pilot study, a group randomized obesity prevention trial.

Sample and Procedures

Schools. Four urban and two suburban alternative high schools agreed to participate in the study. Average enrollment across schools was 102 students (range: 27–142); 53% of students were male, 64% (range: 31%–96%) were racial/ethnic minorities, and 60.5% (range: 40%–96%) qualified for free/reduced school lunch. All students enrolled in school were eligible to participate in the study, which consisted of height/weight measures and a self-administered survey. For the current study, which is a secondary analysis, only select items from the survey were used.

Students. A convenience sample of 145 students completed the survey. After an initial visit to the schools to distribute parent consent forms, review measurement protocols, and answer questions, trained research staff administered the survey during a class period following a standardized procedure. The survey took 30 to 40 minutes to complete. Students received a $5 gift card for completing these measures. The participation rate across schools was 36% (range: 18%–100%). The rate was calculated by multiplying the school’s 2006–2007 enrollment by the previous year’s attendance rate. This approach was taken because attendance is a chronic problem for AHS students. The University of Minnesota Human Subjects Research Committee approved the study.

Measures

Dependent Variable

Sports Team Participation. A single-item question, taken from the Youth RiskBehavioral Survey (YRBS) measured participation on school and community sports teams. Students answered the question, “During the past 12 months, on how many sports teams did you play? Include school teams and community league teams.” Four response categories, from 0 to ≥3 teams, were included. For the analysis, responses were dichotomized as any sports (≥1) versus no sports.

Independent Variables

Physical Activity Self-Efficacy. A 6-item scale was used to measure PA self-efficacy. The scale was adapted from Dishman et al and asked participants to rate how strongly they agreed with the following statements: “1) I can be physically active no matter how busy my day is; 2) I can ask my parents or other adults to do physically active things with me; 3) I can be physically active instead of watching TV or playing video games; 4) I can be physically active even if it is very hot or cold outside; 5) I can ask a friend to be physically active with
indicating more friend support. Cronbach α was modeled as a continuous variable, with higher scores indicating higher self-efficacy. Cronbach α for the study sample was 0.90.

**School Staff Support for Physical Activity.** A 4-item scale was used to measure school staff support for PA. Students were asked: “During a usual week, how often has one of your teachers or other adults at your school 1) encouraged you to be physically active or play sports; 2) done a physical activity or played sports with you; 3) watched you participate in physical activities or sports; 4) told you that you are doing well in physical activities or sports.” Response categories ranged from none to every day, on a 5-point Likert scale. The scale was modeled as a continuous variable, with higher scores indicating more support from school staff. Cronbach α for the study sample was 0.91.

**Friend Support for Physical Activity.** A 4-item scale was used to measure friend support for PA. Students were asked: “During a usual week, how often has one of your friends 1) encouraged you to be physically active or play sports; 2) done a physical activity or played sports with you; 3) watched you participate in physical activities or sports; 4) told you that you are doing well in physical activities or sports.” Response categories ranged from none to every day, on a 5-point Likert scale. The scale was modeled as a continuous variable, with higher scores indicating more friend support. Cronbach α for the study sample was 0.89.

**Perceived Barriers to Physical Activity.** A scale used previously by Dishman et al38 was adapted to assess perceived barriers to PA. Students were asked, “How often do these things keep you from being physically active: 1) physical activity is boring; 2) the weather is bad; 3) I don’t know how to do the physical activity that I want to do; 4) I don’t have a place to be physically active; 5) my hair would get messed up; 6) I don’t like to sweat; 7) it would take time away from my friends; 8) I might get hurt or be sore; 9) it would make me embarrassed; 10) it would make me tired; 11) I don’t have time; 12) my school doesn’t have any sports teams; 13) there’s no equipment (like balls, bikes, skates) to use for physical activity; 14) I don’t have the energy; 15) it’s not safe to be physically active in my neighborhood; 16) my school doesn’t offer any physical activities.” Response categories varied from never to very often, on a 5-point Likert scale. Cronbach α for the study sample was 0.88. The scale was modeled as a continuous variable, with higher scores indicating more perceived barriers.

**Demographics**

Gender (male/female) and age (measured as a continuous variable) were obtained from school records. Race/ethnicity was measured with the following question: “Do you think of yourself as . . . ?” Respondents were instructed to select 1 or more of the following responses: American Indian or Alaskan Native, Asian, Black or African American, Hispanic or Latino, White, or other. Due to small numbers of students who identified with a race/ethnicity other than White or Black, 3 categories were created for the analysis: White, Black, and Other/Hispanic.

For most students, free/reduced lunch (FRL) status was used to create the SES variable. Students were asked, “Do you get free or low-cost lunches at school?” The question “Does your family get public assistance (welfare, food stamps, other assistance)” was used for FRL responses that were missing or reported as “I don’t know.” Students could respond yes, no, or I don’t know to both questions. For analysis, SES was dichotomized as yes = low, and no = high.

**Analysis**

Descriptive statistics were calculated for demographics and key variables of interest. Bivariate associations between sports team participation and dichotomous variables were assessed with the Pearson chi-square test; t tests were used for continuous variables. Mixed model logistic regression, which accounts for the cluster sampling design, was used to examine multivariate associations. Variables significant at P < .05 in bivariate analyses were entered into an initial multivariate model that included PA self-efficacy, school staff support for PA, friend support for PA, and perceived barriers to PA. PA self-efficacy did not retain significance at P < .05 in the initial model and was excluded from the final model. Demographic variables were also not included in the final model as there were no significant associations with sport team participation. Analyses were performed using SAS version 9.1 (SAS Institute, Cary NC).

**Results**

Among the study sample, 52% were male, the mean age was 17.26 years, 61% were minorities, and 64% were low SES. During the previous 12 months, 40% of AHS students reported participating in at least 1 school or community-based sports team. Compared with students who reported no sports team participation, those reporting any participation had significantly higher mean scores for PA self-efficacy, school staff and friend support for PA, and significantly lower mean scores for perceived barriers to PA. See Table 1.

The adjusted multivariate model is presented in Table 2. For every 1 unit increase in school staff support for PA, the odds of sports team participation increased by 12%. For every 1 unit increase in friend support for PA, the odds increased by 15%. In contrast, for every 1 unit increase in perceived barriers to PA, the odds of sports team participation decreased by 5%.
### Table 1  Characteristics of Alternative High School Students, by Total Sample and Sports Team Participation, Minneapolis/St. Paul, 2006

<table>
<thead>
<tr>
<th></th>
<th>Total&lt;sup&gt;a&lt;/sup&gt;</th>
<th>≥1 sports team</th>
<th>No sports teams</th>
<th>P&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>145 (100%)</td>
<td>57 (40%)</td>
<td>87 (60%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>76 (52%)</td>
<td>34 (60%)</td>
<td>42 (48%)</td>
<td>0.181</td>
</tr>
<tr>
<td>Female</td>
<td>69 (48%)</td>
<td>23 (40%)</td>
<td>45 (52%)</td>
<td></td>
</tr>
<tr>
<td>Age&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>17.26 (1.19)</td>
<td>17.11 (1.17)</td>
<td>17.34 (1.19)</td>
<td>0.253</td>
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<tr>
<td>Race/ethnicity</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>White</td>
<td>57 (39%)</td>
<td>19 (33%)</td>
<td>38 (44%)</td>
<td>0.158</td>
</tr>
<tr>
<td>Black</td>
<td>46 (32%)</td>
<td>23 (40%)</td>
<td>22 (25%)</td>
<td></td>
</tr>
<tr>
<td>Other/Hispanic</td>
<td>42 (29%)</td>
<td>15 (26%)</td>
<td>27 (31%)</td>
<td></td>
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<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Low</td>
<td>91 (64%)</td>
<td>36 (64%)</td>
<td>54 (63%)</td>
<td>0.857</td>
</tr>
<tr>
<td>High</td>
<td>52 (36%)</td>
<td>20 (36%)</td>
<td>32 (37%)</td>
<td></td>
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<tr>
<td>Physical activity self-efficacy&lt;sup&gt;d&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>21.44 (4.00)</td>
<td>22.61 (4.20)</td>
<td>20.67 (3.72)</td>
<td>0.004</td>
</tr>
<tr>
<td>School staff support for physical activity&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mean (SD)</td>
<td>9.31 (4.86)</td>
<td>11.49 (4.48)</td>
<td>7.85 (4.60)</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Friend support for physical activity&lt;sup&gt;f&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>10.03 (4.65)</td>
<td>12.46 (4.20)</td>
<td>8.40 (4.25)</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>Perceived barriers to physical activity&lt;sup&gt;g&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>33.01 (10.31)</td>
<td>28.77 (9.78)</td>
<td>35.55 (9.63)</td>
<td>&lt; .0001</td>
</tr>
</tbody>
</table>

Abbreviations: SD, standard deviation.
<sup>a</sup> Total sample may vary from 143–145 due to missing data.
<sup>b</sup> Significance testing used t tests, except gender, race/ethnicity, and socioeconomic status which were assessed using Pearson χ².
<sup>c</sup> Range 14.07–19.81 years.
<sup>d</sup> 6-item scale, range 6–30, Cronbach α = 0.90.
<sup>e</sup> 4-item scale, range 4–20, Cronbach α = 0.89.
<sup>f</sup> 4-item scale, range 4–20, Cronbach α = 0.91.
<sup>g</sup> 16-item scale, range 16–66, Cronbach α = 0.88.

### Table 2  Association Between Sports Team Participation and Social and Environmental Factors Among Alternative High School Students (n = 144), Minneapolis/St. Paul, MN, 2006<sup>a</sup>

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio</th>
<th>95% Confidence Interval</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>School staff support for physical activity&lt;sup&gt;b&lt;/sup&gt; (1-unit increase)</td>
<td>1.12</td>
<td>1.023, 1.221</td>
<td>0.014</td>
</tr>
<tr>
<td>Friend support for physical activity&lt;sup&gt;c&lt;/sup&gt; (1-unit increase)</td>
<td>1.15</td>
<td>1.045, 1.274</td>
<td>0.005</td>
</tr>
<tr>
<td>Perceived barriers to physical activity&lt;sup&gt;d&lt;/sup&gt; (1-unit increase)</td>
<td>0.95</td>
<td>0.911, 0.989</td>
<td>0.014</td>
</tr>
</tbody>
</table>

<sup>a</sup> Gender, age, race/ethnicity, and socioeconomic status were not included in this final multivariate model as no significant associations with sports team participation were found in bivariate analyses. Each variable is adjusted for all other variables in the model.
<sup>b</sup> Modeled as a continuous variable using a 4-item scale. Cronbach α = .89.
<sup>c</sup> Modeled as a continuous variable using a 4-item scale. Cronbach α = .91.
<sup>d</sup> Modeled as a continuous variable using a 16-item scale. Cronbach α = .88.
Discussion

Sports team participation during adolescence has been associated with many positive outcomes, including increased PA and decreased overweight.\textsuperscript{15–18,20} The current study supports the low prevalence of sports team participation among AHS students and is among the first to identify social and environmental factors associated with participation among a population of youth who have low levels of PA, high rates of overweight/obesity and are disproportionately low-income.\textsuperscript{2,6–10}

In the current study, 40% of students reported sports team participation in the year preceding the survey, which is lower than the 56% reported in the 2007 YRBS by students attending regular high schools.\textsuperscript{24} Although some school districts allow AHS students to participate on sports teams offered through regular high schools,\textsuperscript{24} it is possible that students may also be reporting on other types of sports team participation such as recreational sports and open gyms. Because AHS students have expressed interest in team sports,\textsuperscript{27} working with alternative schools to provide opportunities for participation in both competitive and recreational settings may be a way to increase PA levels among students. The potential to promote other positive social, emotional, and academic outcomes associated with sports team participation should also be considered.\textsuperscript{15–18,20}

Among our student sample, the odds of sports team participation increased as support for PA from school staff and friends increased and the perception of barriers decreased. These findings support a well-established link between friend support and PA, sports team participation, and involvement in other extracurricular activities among adolescents, including those from low SES backgrounds.\textsuperscript{30,33,35,42–45} Findings are also consistent with studies that have found correlations between perceived environmental barriers and PA.\textsuperscript{19,28,34} Study findings suggest that AHS staff are an influential source of support for students who participate on sports teams and are consistent with the notion that a sense of connectedness to caring adults can promote healthy behaviors among adolescents.\textsuperscript{12} Altogether, the current study suggests that social-environmental factors correlate with sports team participation among AHS students in much the same way they correlate with PA among students attending regular schools. This finding highlights the importance of social support and supportive environments for all youth.

It is important to note that the measures used in this study to assess PA self-efficacy and barriers to PA were not specific to sports team participation. To our knowledge, measures of sports team self-efficacy and barriers for sports team participation have not been published. Therefore, because team sports are a type of physical activity this was considered a reasonable approach. In the current study, PA self-efficacy and barriers to PA were positively associated with sports team participation in bivariate analyses. However, PA self-efficacy did not retain significance in the multivariate model. It is possible that because self-efficacy is a domain specific construct, PA self-efficacy may be more predictive of overall PA than of a specific type of PA such as sports team participation. On the other hand, because team sports facilitate socialization and social skills development,\textsuperscript{28} there may be attributes of team sports that are more sensitive to social and environmental influences than to self-efficacy. This hypothesis would be consistent with an ecological framework and merits further testing.

In the current study, more males reported sports team participation than females, but the difference was not significant. This may have been related to the small sample size and the generally lower rates of PA common among AHS students.\textsuperscript{7} Because it is well documented that rates of PA and sports team participation differ significantly by gender\textsuperscript{19,28,46} future studies should be conducted with larger samples that allow stratification by gender. Another study examining accelerometer-measured PA among the same sample of students used in this study found that females had significantly lower levels of moderate-to-vigorous PA than males.\textsuperscript{8} Some studies suggest that girls who participate on sports teams are as physically active as boys and have higher levels of PA than girls who do not play sports.\textsuperscript{57} Therefore, future studies should also examine the potential to increase PA levels among girls through sports team participation.

This study has several strengths. It is one of the first to examine the prevalence and correlates of sports team participation among AHS students, a population of youth who are disproportionately minority and low-income. Study findings contribute to a growing body of literature that recognizes the influence of social and environmental factors on the health behaviors of adolescents. Reliable measures were used to assess variables of interest. There are also study limitations. The low participation rate limits generalizability and may have introduced response bias; however the sample was representative of the students attending the study schools and the economic and racial/ethnic diversity of the sample reflects national data describing AHS students.\textsuperscript{2,6,7,10} Because data were self-reported, social desirability bias may be a concern. The small sample size may have limited the ability to detect significant differences between sports team participation and certain variables, such as demographic characteristics. Future studies with larger sample sizes are warranted. Finally, causality cannot be assessed with a cross-sectional study.

In conclusion, this study is important because it is among the first to examine the association between social and environmental factors and sports team participation among AHS students, a population of youth who have been overlooked in previous studies. Findings suggest that AHS students who receive more social support for PA from school staff and friends and perceive fewer barriers to PA are more likely to participate on sports teams. Given the interest in team sports expressed by AHS students\textsuperscript{27} and the low levels of PA and sports team participation found in this study and others,\textsuperscript{2,7,10} creating
environments that are socially and environmentally supportive of involvement in competitive and recreational team sports is a promising way to increase PA levels and prevent overweight/obesity and warrants further attention.

Acknowledgments

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References


