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Considering Sport Participation as a Source for Physical Activity Among Adolescents

Jennifer Pharr

University of Nevada, Las Vegas, jennifer.farr@unlv.edu

Nancy L. Lough

University of Nevada, Las Vegas, nancy.lough@unlv.edu

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Authors: Jennifer Pharr and Nancy L. Lough

Affiliations: Pharr is with the Department of Public Health, University of Nevada Las Vegas. Lough is with the Department of Educational Psychology & Higher Education, University of Nevada Las Vegas.

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Abstract

Background: Studies have shown participation in sport is lower among girls than boys, decreases as students matriculate through high school, is lowest among Black and Hispanic girls and has a positive relationship with SES. With sport recognized as a contributor to physical activity and health in adolescents, consideration of diminishing rates of participation appears warranted. The purpose of this study was to identify patterns related to differences in self-reported sport participation between genders, ethnic groups, grades and SES.

Methods: This study was a cross-sectional, secondary analysis of data collected for a Title IX interest survey. All students in grades eight through eleven attending middle and high schools were provided an opportunity to participate in the survey. Data from 49,832 students were analyzed.

Results: Among the participants, Black girls participated more and White girls participated less than expected. Black boys participated more while White and Asian boys participated less than expected. Reported sport participation was high compared to national data when analyzed by gender and ethnic group. Sport participation was higher in low SES schools compared to high SES schools.

Conclusion: The importance of sport as a source of physical activity in underserved groups is significant.

Key Words: Health, Ethnic Minorities, Gender

Introduction

Physical inactivity is one of the most preventable risk factors for chronic disease. Previous research has shown that regular physical activity reduces the risk for chronic disease and improves overall health^{1,2}. Specifically, regular physical activity helps to reduce the risk of developing heart disease, stroke, diabetes, obesity, some forms of cancer, high blood pressure and high cholesterol and has been shown to have a positive impact on pulmonary function^{1,3}. The importance of physical activity and sport participation in adolescents has also been well documented. Adolescents who are physically active have greater bone density, less obesity and fewer cardiovascular disease risk factors than adolescents who are sedentary⁴⁻⁶. Adolescent athletes more consistently engage in vigorous physical activity, consume more fruits and vegetables, are less likely to be overweight, are more likely to use a condom and less likely to use marijuana or cocaine compared to adolescents who are not athletes⁷⁻¹⁰. Additionally, adolescents who participate in sport are more likely to be physically active as adults¹¹.

Because physical activity is important for health, two of the objectives of Healthy People 2010 were to increase 1) the proportion of adolescents who engage in moderate physical activity for at least 30 minutes five or more days per week and 2) the proportion of adolescents who engage in vigorous physical activity for 20 minutes or more three or more days per week¹². Two school based opportunities that adolescents have to be physically active are: 1) participation in physical education classes or 2) participation in sport. Participation in a daily physical education class and the amount of time spent being physically active while in a physical education class decreased significantly between 1991 and 1997¹³. Though further significant decreases have not occurred since 1997, data from the Centers for Disease Control’s Youth Risk Behavior Survey (YRBS) in 2009 revealed that only 33.3% (95% CI of 27.7 – 39.3) of adolescents across the

nation participated in a physical education class daily during the school week¹⁴. With a low percentage of students participating in physical education classes, participation in school based sport becomes one of the few opportunities that adolescents have to be physically active on a regular basis.

Although physical activity and sport contribute to health in adolescents, we see differences attributable to gender, grade and ethnicity. Studies conducted in the United States and internationally show that boys participate in physical activity and sport more than girls¹⁴⁻¹⁸. Participation differences continue when girls and boys are separated by ethnic groups of Black, White and Hispanic with boys participating more in each ethnic group¹⁴. Participation in sport is higher among boys than girls in total and higher in Black and Hispanic boys than Black or Hispanic girls^{14,19,20}.

Physical activity and sport participation decreases as students matriculate through high school^{14,19-21}. Additionally, the decrease in physical activity with age is greater in girls than in boys and greater in Black girls than White girls^{14,21,22}. Studies have also shown that sport participation decreases as students move through high school with higher participation in eighth and ninth grades and lower participation in eleventh and twelfth grades^{14,19,20,23}. The decrease in sport participation has consistently been greater among girls than boys^{14,20}.

White boys and girls are more physically active than Black or Hispanic boys and girls and they participate in sport more than Black or Hispanic boys and girls^{9,14}. Physical activity decreases with age to a greater extent in Black girls compared to White girls and physical activity is lower among Hispanic girls compared to Black or White girls^{21,23}.

Lastly, sport participation varies by socioeconomic status (SES). Studies have found that people with a low SES had lower sport participation than people with a high SES²⁴⁻²⁶. These

findings were consistent whether SES was measured by education, income or occupation ^{27,28}.

Among children twelve years and older, Chen et al. found a positive relationship between SES and sport participation with children from higher SES families participating in sport at a higher rate than children from lower SES families ²⁶. Additionally, other studies have shown girls and boys from lower social classes were less involved in sport than girls and boys from higher social classes ^{29,30}.

The majority of studies concerning physical activity and sport participation differences between ethnic groups have been conducted on the east coast (South Carolina and Maryland), the Midwest (Iowa) or have been national studies in the United States. To date, no study has been conducted to determine if the differences in sport participation are observed in the Southwestern section of the United States. Acknowledging school-based sport participation as a source for regular physical activity and improved health among high school students, the need to understand patterns in sport participation appeared warranted. The purpose of this study was to identify differences in self-reported sport participation between: 1) genders, 2) ethnic groups in each gender, 3) grades 8 -11 and 4) schools in high and low SES neighborhoods in an urban Southwest school district in the United States. Additionally, we analyzed the data to determine if sport participation in the Southwest region of the US differed from national participation rates.

Specific hypotheses were:

1. Participation in sport will be higher among boys than girls in total and by race/ethnicity ^{14,19,20}.
2. Sport participation will decrease for each grade level increase and the decrease will be greater in girls than in boys ¹⁴.

3. White boys will report higher participation in sport than boys from other race /ethnicities (Black, Hispanic, Asian, Native American/Alaska Native).
4. White girls will report higher participation in sport than girls from other race /ethnicities (Black, Hispanic, Asian, Native American/Alaska Native).
5. Reported sport participation will vary by race/ethnicity and gender.
6. Sport participation rates will be higher in schools located in high SES neighborhoods than schools located in low SES neighborhoods ²⁶
7. Sport participation rates in the Southwest region of the US will mirror national participation rates.

Method

Subjects

This cross-sectional, secondary analysis was conducted on data collected for a sport interest survey. All students in grades eight through eleven attending middle and high schools within an urban school district in the southwestern region of the United States were provided an opportunity to participate in the survey. The student participants represented 54 middle schools and 36 high schools.

Surveys were completed by 53,584 students. Surveys that were missing gender and ethnicity data, were omitted from the study ($n = 3752$). For the examination of sport participation by gender and by ethnicity, data from 25,339 girls and 24,493 boys were analyzed. For the analyses of data examining sport participation by grade, an additional 3,236 surveys were omitted due to missing data regarding grade. As a result, data from 23,153 girls and 23,443 boys were utilized when data was analyzed by grade.

Students were not asked to report their parent’s income, occupation or educational attainment. Because of this, neighborhood SES was used as a proxy for family SES. The two high schools located in the highest SES neighborhoods were compared to the two high schools located in the lowest SES neighborhoods. High and low SES neighborhoods had the highest and lowest median household income, percent college graduates, professional versus construction/labor occupations and percent minority populations (Hispanic and Black).

Instrument

The students answered a multiple choice survey. The survey contained two parts: 1) participation in sports currently offered and 2) interest in sports not currently offered. The sports that students could indicate participation in were the competitive sports being offered as state sanctioned high school sports. Sport choices for girls were: volleyball, cross country, tennis, golf, basketball, bowling, soccer, softball, swimming and track. Sport choices for boys were: cross country, tennis, soccer, football, basketball, bowling, wrestling, baseball, golf, swimming, volleyball and track. Data on sports not currently offered were not analyzed for this study. The instrument used to measure sport participation and interest was a modified questionnaire based on Title IX interest surveys that had been used by state high school activities associations in Colorado and Kentucky. The survey was screened by a panel of experts who helped to achieve face and content validity prior to use. The panel of experts included university professors, school district administrators, high school coaches and athletic directors.

Procedure

Interest surveys were distributed to the schools from the school district office. The survey was conducted by classroom teachers during homeroom period at each school. School district personnel provided written instructions for each teacher to use when administering the

survey. Specific instructions were read to each class by the home room teacher. The survey was designed to utilize a scantron sheet for data collection. The scantrons were then sent from each school directly to the school district office where the data files were created. The survey data were scanned by school district personnel and entered into an Excel spreadsheet. Data were collected and scanned between January and March of 2009.

Data Analysis

Descriptive statistics were calculated for gender, grade and ethnicity using proportions (95% CI). Data were grouped by gender, then by ethnic group and by grade. Specific sports participated in were also analyzed by gender, then by ethnic group and by grade. Sport participation in the high SES schools and low SES schools was analyzed by gender and grade. For each group of data, proportions of students participating (95% CI) were calculated. To determine if differences in sport participation existed between: 1) girls and boys; 2) 8th and 11th grade; 3) grades eight and nine, nine and ten, ten and eleven, and 4) high and low SES schools, odds ratios (OR) were calculated (95% CI) along with chi square (χ^2) and p values ($p < .05$). SPSS 18.0 cross tabulations were used to determine if sport participation was different by ethnic groups. A chi square test of independence was performed ($p < .05$) after the data were weighted by ethnicity. Chi square goodness of fit tests were used to calculate the expected sport participation based on the observed sport participation by ethnic group. These data were analyzed to determine if observed participation was different from expected (95% CI).

Results

Characteristics of the sample are summarized in Table 1. There were a total of 49,832 students who provided gender information with more girls (50.8%, 95% CI, 50.4 - 51.2) than boys (49.2%, 95% CI, 48.7- 49.6) completing the survey. The majority of participants were

either Hispanic (girls 37.6%, boys 35.8%) or White (girls 36.4%, boys 37.3%). For both genders, more eighth graders (girls 30.0%, boys 29.6%) completed the survey than ninth, tenth or eleventh graders.

Sport Participation by Gender

Boys were 22% more likely to report participation in at least one sport compared to girls (OR = 1.22, $\chi^2 = 103.93$, $p < .001$) with 69.1% of girls (95% CI, 68.5 - 69.6) and 73.2% of boys (95% CI, 72.6 - 73.8%) reporting participation in at least one sport. When reported participation in at least one sport was analyzed by gender and ethnic group, Black boys (OR = 1.54, $\chi^2 = 50.4$, $p < .001$) were significantly more likely to participate than Black girls. Hispanic boys (OR = 1.19, $\chi^2 = 27.35$, $p < .001$) were significantly more likely to participate than Hispanic girls, and White boys (OR = 1.26, $\chi^2 = 54.63$, $p < .001$) were significantly more likely than White girls to report participation in sport.

Sport Participation by Grade

Eighth grade girls were 1.98 times more likely to participate in at least one sport than eleventh grade girls (OR = 1.98, $\chi^2 = 294.07$, $p < .001$) and eighth grade boys were two times more likely to participate in at least one sport than eleventh grade boys (OR = 2.01, $\chi^2 = 273.26$, $p < .001$). When eighth grade sports participation was analyzed by gender and ethnic group, eighth graders were significantly more likely to participate than eleventh graders among all ethnic groups for both girls and boys. Asian boys had the largest odds ratio, with eighth graders being 4.4 (OR = 4.4; $\chi^2 = 170.38$, $p < .001$) times more likely to participate in at least one sport compared to eleventh graders.

When sports participation among girls and boys was compared between grades: eight - nine, nine - ten and ten - eleven, there was significantly more participation in the lower grade of

each comparison for both girls and boys (Tables 1 and 2). However, as Table 2 demonstrates, this did not hold true when the data was further analyzed by ethnic groups. Black and Asian girls were significantly less likely to participate in 11th grade compared to 10th grade ($\chi^2 = 13.69$, $p < .001$; $\chi^2 = 7.2$, $p = .008$, respectively). Hispanic girls were significantly less likely to participate in sport in 9th grade compared to 8th grade and 11th grade compared to 10th grade ($\chi^2 = 22.77$, $p < .001$; $\chi^2 = 6.48$, $p = .01$, respectively). White girls were significantly less likely to participate in 9th grade compared to 8th grade and 10th grade compared to 9th grade ($\chi^2 = 32.05$, $p < .001$; $\chi^2 = 30.67$, $p < .001$, respectively). Asian and Hispanic boys were significantly less likely to participate in 9th grade compared to 8th grade ($\chi^2 = 6$, $p = .02$; $\chi^2 = 26.96$, $p < .001$, respectively) and 11th grade compared to 10th grade ($\chi^2 = 97.72$, $p < .001$; $\chi^2 = 10.21$, $p = .002$, respectively). Black boys were significantly less likely to participate in 10th grade compared to 9th grade ($\chi^2 = 7.4$, $p = .007$). White boys were significantly less likely to participate in 9th grade compared to 8th grade ($\chi^2 = 27.57$, $p < .001$), 10th grade compared to 9th grade ($\chi^2 = 25.42$, $p < .001$) and 11th grade compared to 10th grade ($\chi^2 = 5.36$, $p = .02$).

Sport Participation by Ethnicity

Sport participation by ethnicity and gender was analyzed with results presented in Table 3. When data was weighted based on ethnic groups, a test of independence for participation differences between ethnic groups showed that sport participation was not independent of ethnicity (girls $\chi^2 = 621.33$, $p < .001$; boys $\chi^2 = 829.21$, $p < .001$). When observed and expected sport participation was compared (Table 3), Black girls' observed participation in at least one sport was 10.42% higher than expected and White girls' observed participation in at least one sport was 5.79% lower than expected. Black boys' observed participation in at least one sport was 13.82% higher than expected while White boys' and Asian boys' observed participation in

at least one sport was 4.24% and 7.52% lower than expected. Additionally, when percent participation with its corresponding 95% confidence interval (CI) were compared, Black and Hispanic boys and girls reported significantly higher participation compared to White boys and girls (Table 3).

Differences were also observed when comparing proportions of participation by sport (95% CI) between genders and ethnic groups (see Table 5 and Table 6). When within sport participation proportions were compared, Asian girls were more likely to participate in tennis. Black girls were more likely to participate in basketball and track. Hispanic girls were more likely to participate in soccer. White girls were more likely to participate in cross country. American Indian/Alaskan Native boys were more likely to participate in wrestling. Asian boys were more likely to participate in tennis and volleyball. Black boys were more likely to participate in football, basketball and track. Hispanic boys were more likely to participate in soccer. The following section will provide interpretation of these findings.

Sports Participation by SES

Sport participation in low SES schools was compared to sport participation in high SES schools (Table 4). When all grades were combined, both girls and boys from low SES schools reported significantly higher rates of sport participation. Girls from low SES schools were 1.5 times more likely to report sports participation than girls from high SES schools ($\chi^2 = 26.8$, $p < .001$). Boys from low SES schools were 1.8 times more likely to report sports participation than boys from high SES schools ($\chi^2 = 40.6$, $p < .001$). When the data were analyzed by grade, 11th grade girls from low SES schools were 2.4 times more likely to report sports participation than 11th grade girls from high SES schools ($\chi^2 = 29.6$, $p < .001$). Sport participation in grades 9 and

10 were not significantly different for girls. Boys in low SES schools were significantly more likely to report sport participation than boys in high SES schools in each grade 9-11 (Table 4).

Southwest Region Sport Participation Compared to Nation

Our study found higher participation rates by ethnic groups and gender compared to the 2009 Center for Disease Control and Prevention (CDC) – Youth Risk Behavior Surveillance (YRBS) national survey (Table 3)¹⁴. The YRBS only included Black, Hispanic and White students’ participation results, so Asian and American Indian / Alaska Native results cannot be compared. However, our study found boys reported sports participation was 73.2% compared to YRBS rate of 63.8% and girls reported sports participation was 69.1% compared to YRBS rate of 52.3%. Further comparison by ethnic group revealed: Black girls’ reported participation of 76.3% compared to YRBS 46.7%, Hispanic girls’ reported participation of 70.1% compared to YRBS 44.5%, White girls’ participation of 65.1% compared to 57.7%, Black boys’ participation of 83.2% compared to YRBS 67.6%, Hispanic boys’ participation of 74% compared to YRBS 62% and White boys’ 70% compared to YRBS 64.0%¹⁴.

Discussion

One of the most important finding from this study was the high percentage of students who reported participation in at least one sport when analyzed by gender and ethnic group compared to a large national survey conducted in the same year. Additionally, when observed participation was analyzed compared to expected participation for each group, findings indicated a higher than expected proportion of Black girls and Black boys participating in at least one sport and a lower than expected proportion of White girls and White and Asian boys participating in at

least one sport. Lastly, girls and boys in low SES schools were more likely to participate in sport than girls and boys from high SES schools. A more in-depth look at these key patterns follows.

Sports participation reported by a high proportion of students in this study serves as an important reminder of the health value offered by sport. As mentioned previously, studies have found that physical activity and sport participation contribute to the over health of adolescents as well as their engagement in health behaviors such as higher levels of physical activity⁴⁻¹⁰ throughout their lifetime. Repeatedly, Black girls have been acknowledged as a group at risk for sedentary lifestyles leading to the potential for obesity, and obesity related chronic diseases³¹⁻³³. Thus, support for sport programs along with efforts to sustain sport participation among Black girls may serve as a viable strategy to alter patterns leading to a sedentary lifestyle. In contrast, although White girls in this study had a higher proportion of participation than White girls in the national survey, they had a lower than expected participation rate in this region of the US. This pattern suggests cultural and societal forces may be working to discourage sport participation among white girls in this region, despite the fact that nationally they are described as most engaged in sport and physical activity. To prevent this pattern from becoming a wider trend, strategies to encourage sport participation among girls need to take into consideration the most often selected sports and related motivations among each ethnic segment.

Similar to girls, Black boys' participation was significantly higher than expected, while White boys' and Asian boys' participation was much lower than expected. Explanations for such patterns are likely sociologically based, and beyond the purview of this study. Nonetheless, strategies to sustain the participation among Black boys and encourage more sustained participation among White and Asian boys appear warranted. While males are not as commonly identified as “at risk” for sedentary lifestyle related diseases, evidence is mounting that points to

the need for more physical activity among all ethnic groups in both genders. Sport has often been taken for granted as “natural” for boys, yet renewed efforts are needed that encourage sustained sport participation to compete with sedentary activities (videogames) and lifestyles for both girls and boys.

An important question emerging from this study is “what factors contributed to or influenced the higher than expected sport participation among Black students in this region?” Weiler has made suggestions for increasing sports participation among Black girls³⁴. These suggestions include: hire Black women coaches, actively recruit Black girls to participate in sports, provide scholarships and aid for low-income Black girls to learn new sports, and increase opportunities for Black girls to participate in a diversity of athletic activities over and beyond the traditional sports like basketball and track³⁴. Combined, both girls and boys in this school district had a relatively large number of diverse sports in which to participate, 22 in total. Girls’ sport opportunities included: volleyball, cross country, tennis, golf, basketball, bowling, soccer, softball, swimming and track. Boys’ sports opportunities included: cross country, tennis, soccer, football, basketball, bowling, wrestling, baseball, golf, swimming, volleyball and track. Although in some sports (tennis and golf), Black students participated at a lower proportion than White or Asian students, Black students did participate in every sport offered by the school district. This may be one explanation for why participation proportions were higher in this study compared to other regions and the nation. However, data on the other factors, such as ethnicity of the coaches, was not available.

The proportion of boys and girls who reported participation in at least one sport mirrored the proportions found by Sabo and Veliz²⁰. In their 2008 national study, they found that 75% of boys and 69% of girls reported playing an organized or team sport. Similar to previous studies,

sport participation was significantly lower among eleventh graders as compared to eighth graders^{9,19,35}. The current study saw a decrease in sport participation for girls and boys between each grade, 8th through 11th. Additionally, we found differing rates of decline in sport participation between girls and boys in the differing ethnic groups.

Declines in sport participation with age and lower than expected sport participation among White girls and boys, as well as Asian boys should raise concern given the health benefits lost when sport participation ends prematurely. As mentioned previously, research shows student athletes are more likely to be physically active adults compared to students who were not athletes¹⁶. Given Physical activity in adulthood reduces the risk for cardiovascular diseases (including heart disease and stroke), diabetes, and some cancers in addition to improving pulmonary function^{6,7}, strategies to sustain physical activity patterns established in adolescence are needed. Physical inactivity is considered to be one of the most easily modified risk factors for chronic disease, thus encouraging sustained sport participation among adolescents could be a means to combat physical inactivity in adulthood and offset the related long term health implications.

Girls and boys from low SES high schools reported higher levels of sport participation than girls and boy from high SES high schools. This is also an important finding because low SES high schools were located in the neighborhood with the highest minority (Hispanic and Black) populations and lowest median household income. This is contrary to previous studies which found either a positive relationship between SES and sport participation or that SES was not a significant predictor of sport involvement for students 10-15 years old^{26,28}. Chen et. al. provides three models to explain the relationship between sport participation and SES during childhood and adolescences²⁶. The first is the *persistence model* which suggests sport

participation differences based on SES, which are observed in childhood (higher SES = greater sport participation) would persist into adolescences. The second is the *childhood – limited model*, which posits that differences in sport participation by SES would be observed in childhood, but would not persist into adolescence, mostly due to the availability of sport opportunities through school-based sport. The third is the *adolescent emergent model* which suggests that differences in sport participation by SES would increase over time with adolescence from higher SES having higher rates of sport participation.

Results from this study and from White and McTeer support the *childhood-limited model*. White and McTeer found that the differences seen in sport participation by SES in childhood disappeared in adolescence²⁸. This study found that school-based sport participation was actually higher in the low SES schools. School-based sport offers students the opportunity to participate in sport at little to no cost. This is different than community-based youth sport which sustain a monetary cost and are available only to those who can afford to participate²⁸. These findings suggest that school-based sport offers girls and boys from low SES neighborhoods the opportunity to participate in sport that might not be available to them through community-based or club sport. Scheerder et. al. found that girls and boys from low SES communities were significantly less likely to participate in club sports than girls and boys from high SES communities²⁴. These findings also highlight the importance of school-based sport as a resource for physical activity. Estabrook, Lee and Gyuresik found that low SES neighborhoods had significantly fewer physical activity resources such as health clubs, fitness centers, parks or running/walking trails, than high SES neighborhoods³⁶. Because of this, schools and school-based sport become an important resource for students in low SES neighborhoods.

Based on this information, interventions to keep students participating in sport should be formulated. Perhaps a renewed focus on sport opportunities such as intramurals would encourage more students to sustain sport participation. Given the elitist state of high school interscholastic sport programs in the United States, fewer opportunities to compete are available at the higher levels / grades. For example, junior varsity teams typically provide more opportunities for participation compared to varsity teams. As students matriculate into grades in which they are expected to participate on varsity teams rather than junior varsity teams, there is a decline in the number of opportunities for participation that is mirrored by the participation decreases found in this study. Additionally, as interscholastic sport becomes increasingly elite and competitive at higher grade levels, a greater allocation of the students' time is required for practice and competition³⁷. Commitment of time to varsity sport competes with other extracurricular activities in which students might engage and students are likely to have to choose between sport and other activities (i.e. participation in band, drama, music, student government, etc). Lastly, because varsity sport is more competitive, sport enjoyment may diminish. Sport enjoyment is defined as feelings such as pleasure and fun that are associated with participation in sport³⁸. This study emphasizes the importance of intramurals as an option for sport participation among high school students because there is a greater opportunity to participate and participation is more likely to be fun. Edward et. al. found that school-based sport participation was higher for intramurals than for interscholastic sport and that students who participated in intramural sports played twice as many sports³⁹.

Sport Matters

Increasingly across the U.S., school based sport programs face the potential for elimination due to budget constraints⁴⁰. Yet, concern for sport programs has not been voiced in

most health focused scholarly work. Clearly, there is a need to recognize the vital opportunity to promote health through the sanctioned physical activity known as sport. Given the national obesity crisis and calls by Healthy People 2010 to increase physical activity, school based sport can play a vital role in increasing physical activity and improving the health of adolescents¹². Phillips and Young found that students who had participated in at least one sport in the previous year had significantly higher energy expenditure and higher fitness levels the preceding year compared to those who did not participate in at least one sport⁴¹. This finding regarding the importance of sport in energy (calorie) expenditure and fitness has ramifications for the prevention of obesity and chronic diseases associated with obesity⁴⁻⁶. Continued sport participation may serve as a solution to alter the course toward a sedentary lifestyle and the resulting health implications

Unfortunately, sport programs are often either slated for elimination or students are required to pay-to-play during difficult economic times^{40,42}. In 2004, 34 states reported having some schools that charged fees for extracurricular participation⁴². Pay for play requires upfront fees paid by each student and typically range between \$75 and \$100 nationally for each sport^{42,43}. Research has demonstrated that such mandates discriminate against ethnic minorities and low SES students⁴³. The groups most at risk for sedentary lifestyle related diseases were found to represent the highest proportion of sport participants in this study. Thus, a pay-for-play policy would most likely impact sport participation negatively among minority students. Pay for play policies in general run the risk of furthering the physical activity/health gap between the advantaged and disadvantaged in society.

Alternatives to pay for play include the implementation of cost saving strategies, including a renewed emphasis on intramural activities. With knowledge of the sport most likely

participated in by both gender and ethnic group (i.e., Asian girls were more likely to participate in tennis), parents, public health advocates, health promoters and school officials have data based support for the need to sustain school based sport programs. Efforts to maintain current physical activity opportunities are needed now more than ever to offset the health implications associated with a sedentary lifestyle. Sport serves as one of the most viable opportunities for sustained physical activity. Yet more needs to be done to promote sustained sport participation throughout the adolescent years.

Limitations

Because this was a cross-sectional study, causation cannot be determined. As in similar studies, there was the possibility of bias resulting from self reported data. The participants may have over reported sport participation if they perceived sport participation as the socially desirable response or they may have under reported sport participation if they perceived it as not the socially desirable response⁴⁴. This may have resulted in an overestimation or underestimation of the prevalence of sport participation in this study.

As mentioned previously, the instrument used to measure sport participation and interest was a modified questionnaire and utilized a panel of experts to help achieve face and content validity prior to use. Additionally, the sport choices were limited to those sports offered as sanctioned sports at the high school level in the state studied. Students participating in sports not included on the survey would not have been counted as sport participants. Establishing a valid and reliable measure of sustained school-based sport participation appears to be warranted.

Conclusion

Sport participation patterns among adolescents in an urban Southwest community were examined in this study. Sport participation was considered high among the student respondents

and surprisingly, higher than expected among the Black student population. These results have positive health implications, and point to the need for further investigation. However, sport participation was lower than expected among White girls and boys, as well as Asian boys. This finding is of concern and warrants further research. For example, future studies are needed to determine if this is an emerging trend and to identify factors that may be contributing to this pattern. Development of strategies to encourage school based sport participation also appears warranted, with a need to take into consideration the variation in sport choice among each ethnic segment. Lastly, school officials and public health promoters need to advocate for more sustained school based sport options, due to the important contribution sport can make toward improved adolescent health.

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Figure 1. Girls' Sport Participation by Grade and Ethnicity

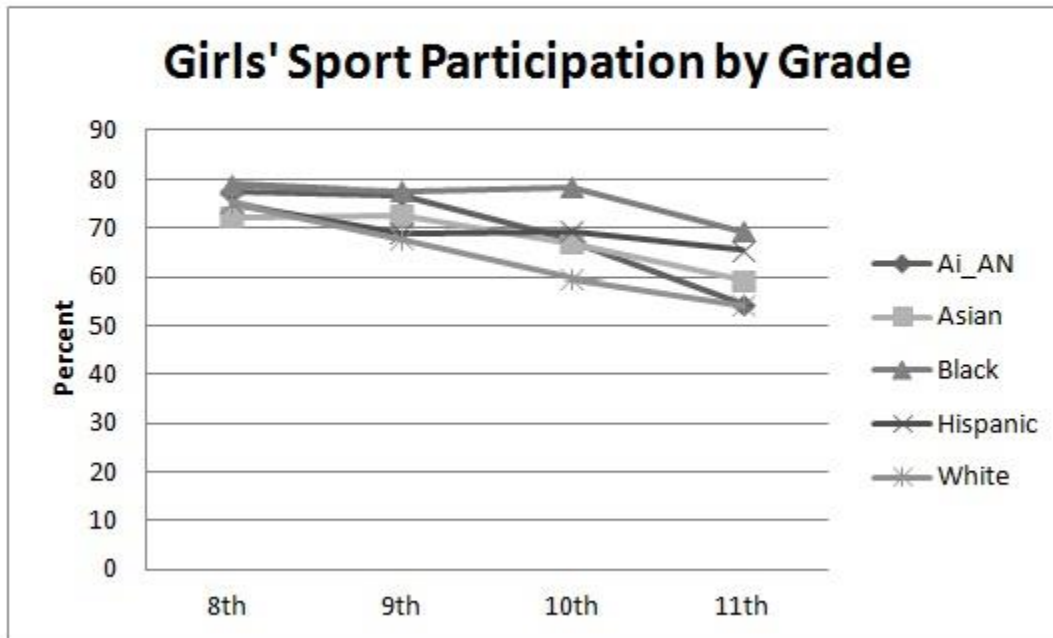


Figure 2. Boys’ Sport Participation by Grade and Ethnicity

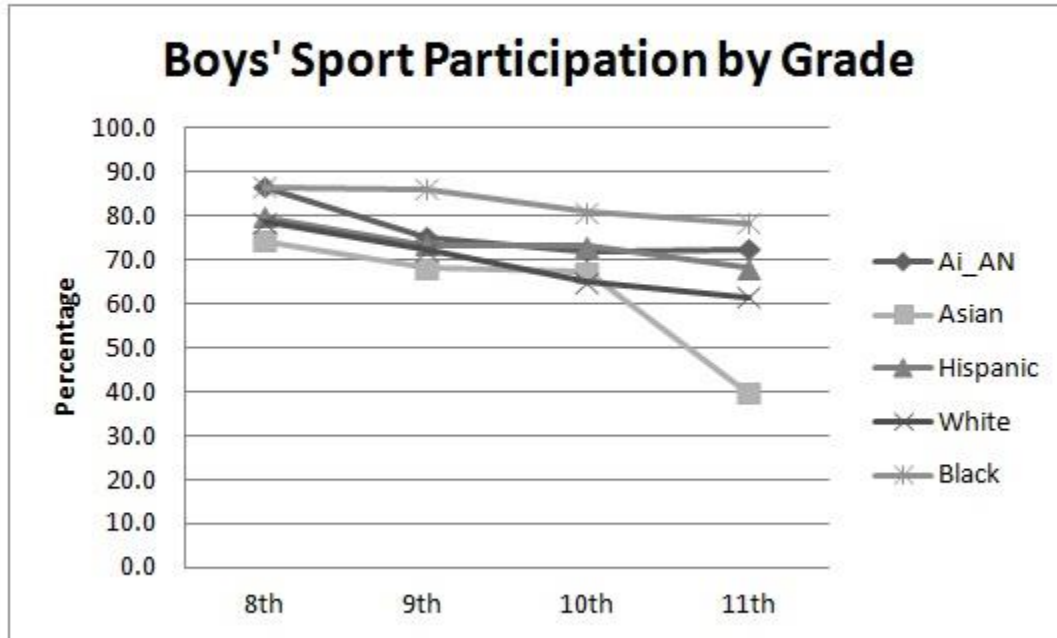


Figure 3: Percent Sport Participation by Ethnicity: Current Study Compared to YRBS National Study

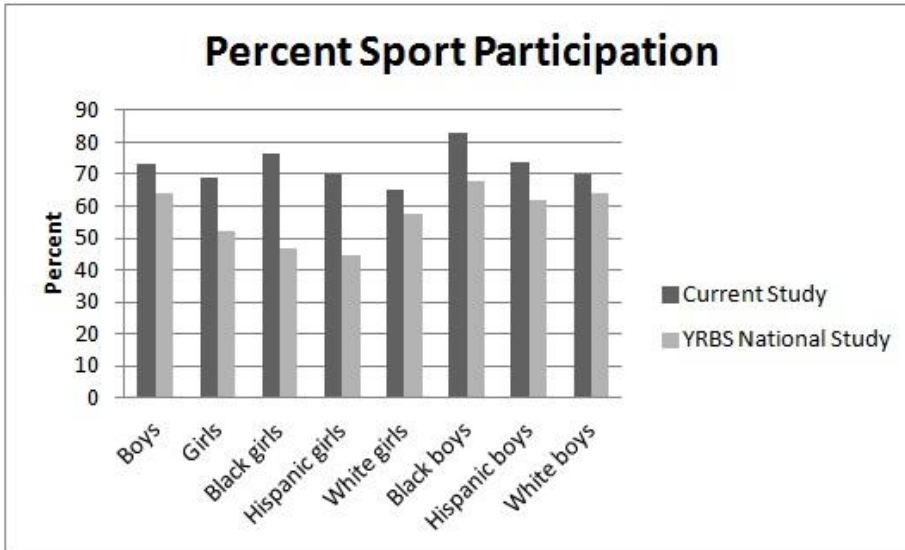


Table 1 - Descriptive Statistics

	Girls			Boys		
	n	%	CI	n	%	CI
Total	25,339	50.8	(50.4-51.2)	24,493	49.2	(48.7-49.6)
AI/AN	349	1.4	(1.2-1.5)	360	1.5	(1.3-1.6)
Asian	2,768	10.9	(10.5-11.3)	2,789	11.4	(11.0-11.8)
Black	3,448	13.6	(13.2-14.0)	3,426	14.0	(13.6-14.4)
Hispanic	9,540	37.6	(37.1-38.2)	8,777	35.8	(35.2-36.4)
White	9,233	36.4	(35.8-37.0)	9,143	37.3	(36.7-37.9)
8th Grade	6,942	30.0	(29.4-30.6)	6,933	29.6	(29.0-30.2)
9th Grade	5,682	24.5	(24.0-25.1)	6,182	26.7	(25.8-26.9)
10th Grade	5,511	23.8	(23.3-24.4)	5,423	23.1	(22.6-23.7)
11th Grade	5,018	21.7	(21.1-22.2)	4,905	20.9	(20.4-21.4)

AI/AN = American Indian/Alaskan Native

CI = 95% Confidence Interval

Table 2 - Sports Participation by Grade Comparison

Girls	8th Grade Compared to 9th Grade				9th Grade Compared to 10th Grade				10th Grade Compared to 11th Grade			
	OR	CI	χ^2	p-value	OR	CI	χ^2	p-value	OR	CI	χ^2	p-value
Total	1.31	1.21-1.41	44.31	<0.001*	1.19	1.10-1.29	17.89	<0.001*	1.28	1.18-1.38	35.86	<0.001*
AI/AN	1.06	0.49-2.27	0	1	1.58	0.76-3.31	1.31	0.25	1.74	0.84-3.62	2.1	0.15
Asian	0.98	0.76-1.26	0.01	0.92	1.31	1.02-1.71	4.34	0.04	1.38	1.10-1.76	7.2	0.008*
Black	1.10	0.85-1.40	0.42	0.51	0.96	0.74-1.24	0.09	0.77	1.59	1.24-2.03	13.69	<0.001*
Hispanic	1.36	1.20-1.55	22.77	<0.001*	0.98	0.86-1.11	0.09	0.75	1.2	1.04-1.38	6.48	0.01*
White	1.45	1.27-1.65	32.05	<0.001*	1.43	1.26-1.62	30.67	<0.001*	1.24	1.10-1.4	11.7	0.001*
Boys	8th Grade Compared to 9th Grade				9th Grade Compared to 10th Grade				10th Grade Compared to 11th Grade			
	OR	CI	χ^2	p-value	OR	CI	χ^2	p-value	OR	CI	χ^2	p-value
Total	1.37	1.26-1.49	57.68	<0.001*	1.21	1.12-1.32	21.45	<0.001*	1.21	1.11-1.31	19.38	<0.001*
AI/AN	2.14	0.94-4.92	3.21	0.07	1.19	0.58-2.43	0.11	0.74	0.97	0.46-2.05	0	1
Asian	1.34	1.06-1.71	6	0.02*	1.04	0.82-1.33	0.08	0.78	3.15	2.49-3.99	97.72	<0.001*
Black	1.04	0.79-1.38	0.08	0.82	1.47	1.11-1.93	7.4	0.007*	1.17	0.90-1.52	1.33	0.25
Hispanic	1.43	1.25-1.64	26.96	<0.001*	1.02	0.89-1.17	0.06	0.81	1.27	1.10-1.48	10.21	0.002*
White	1.42	1.25-1.62	27.57	<0.001*	1.39	1.22-1.59	25.42	<0.001*	1.17	1.02-1.33	5.36	0.02*

AI/AN = American Indian/Alaskan Native

* p < .05

OR = Odds Ratio

CI = 95% Confidence Interval

Table 3 - Observed vs Expected Participation in at Least 1 Sport

Girls	Observed Participation	Expected Participation
Ai/AN	248	241
%	71.1	69.1
95% CI	66.3-75.8	64.2-73.9
Asian	1872	1911
%	67.6	69.1
95% CI	65.8-69.3	67.3-70.8
Black*	2631	2381
%	76.3	69.1
95% CI	74.8-77.7	67.5-70.6
Hispanic	6737	6588
%	70.1	69.1
95% CI	69.7-71.5	68.1-70.0
White*	6008	6376
%	65.1	69.1
95% CI	64.1-66.0	68.1-70.0
Boys		
Ai/AN	275	263
%	76.4	73.1
95% CI	72.0-80.1	68.5-77.6
Asian*	1886	2041
%	67.6	73.1
95% CI	65.9-69.4	71.5-74.8
Black*	2851	2508
%	83.2	73.1
95% CI	82.0-84.5	71.7-74.7
Hispanic	6503	6425
%	74	73.1
95% CI	73.2-75.0	72.3-74.1
White*	6417	6691
%	70	73.1
95% CI	69.3-71.1	72.3-74.1

* Observed is statistically different than expected

CI = 95% Confidence Interval

AI/AN = American Indian/Alaskan Native

Table 4: Low SES schools Compared to High SES Schools

Low SES schools Compared to High SES Schools					
		OR	CI	χ^2	p-value
Girls	Total	1.5	1.3-1.8	26.8	<0.001*
	9th grade	1.2	0.89-1.6	1.3	0.26
	10th grade	1.3	0.95-1.7	2.4	0.12
	11th grade	2.4	1.7-3.3	29.6	<0.001*
Boys	Total	1.8	1.5-2.1	40.6	<0.001*
	9th grade	1.4	1.1-1.9	5.6	0.02*
	10th grade	2.3	1.6-3.3	25.9	<0.001*
	11th grade	1.8	1.3-2.6	13.1	0.001*

AI/AN = American Indian/Alaskan Native

* p < .05

OR = Odds Ratio

CI = 95% Confidence Interval

Table 5 - Boys Participation by Sport and Ethnic Group

	N	Cross country	Tennis	Soccer	Football	Basketball	Bowling	Wrestling	Baseball	Golf	Swim	Volleyball	Track
All	24493	1230	1257	4102	9003	5773	2596	3434	4907	1413	1925	1597	4368
%		5	5.1	16.7	36.8	23.6	10.6	14	20	5.8	7.9	6.2	17.8
95% CI		4.7-5.3	4.9-5.4	16.3-17.2	36.2-37.4	23.0-24.1	10.2-11.0	13.6-14.5	19.5-20.5	5.5-6.0	7.5-8.2	5.9-6.5	17.4-18.3
Ai_AN	360	31	25	56	143	81	42	76	68	30	35	28	74
%		8.6	6.9	15.5	39.7	22.5	11.7	21.1	18.8	8.3	9.7	7.8	20.6
95% CI		5.7-11.5	4.3-9.6	11.8-19.3	34.7-44.8	18.2-26.8	8.4-15.0	16.9-25.3	14.8-22.9	5.5-11.2	6.7-12.8	5.0-10.5	16.4-24.7
Asian	2789	162	315	222	807	731	351	299	349	175	229	273	484
%		5.8	11.3	8	28.9	26.2	12.6	10.7	12.5	6.3	8.2	9.8	17.4
95% CI		4.9-6.7	10.1-12.5	7.0-9.0	27.3-30.6	24.6-27.8	11.4-13.8	9.6-11.9	11.3-13.7	5.4-7.2	7.2-9.3	8.7-10.9	15.9-18.8
Black	3426	124	116	167	1978	1590	273	396	578	150	236	200	1156
%		3.6	3.4	4.9	57.7	46.4	7.9	11.6	16.9	4.4	6.9	5.8	33.7
95% CI		3.0-4.2	2.8-4.0	4.1-5.6	56.1-59.4	44.7-48.1	7.1-8.9	10.5-12.6	15.6-18.1	3.7-5.1	6.0-7.7	5.1-6.6	32.2-35.3
Hispanic	8777	313	320	2908	2832	1940	957	1285	1926	402	685	505	1223
%		3.6	3.6	33.1	32.3	22.1	10.9	14.6	21.9	4.5	7.8	5.8	13.9
95% CI		3.2-4.0	3.3-4.0	32.1-34.1	31.3-33.2	21.2-23.0	10.3-11.6	13.9-15.4	21.1-22.8	4.1-5.0	7.2-8.4	5.3-6.2	13.2-14.7
White	9143	600	481	749	3243	1431	973	1378	1986	656	740	591	1431
%		6.5	5.3	8.2	35.5	15.7	10.6	15.1	21.7	7.2	8.1	6.5	15.7
95% CI		6.1-7.1	4.8-5.7	7.6-8.8	34.5-36.5	14.9-16.4	10.0-11.3	14.3-15.8	20.9-22.6	6.6-7.7	7.5-8.7	6.0-7.0	14.9-16.4

AI/AN = American Indian/Alaskan Native

CI = Confidence Interval

Table 6 - Boys Participation by Sport and Ethnic Group

	N	Cross country	Tennis	Soccer	Football	Basketball	Bowling	Wrestling	Baseball	Golf	Swim	Volleyball	Track
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95% CI		4.7-5.3	4.9-5.4	16.3-17.2	36.2-37.4	23.0-24.1	10.2-11.0	13.6-14.5	19.5-20.5	5.5-6.0	7.5-8.2	5.9-6.5	17.4-18.3
Ai_AN	360	31	25	56	143	81	42	76	68	30	35	28	74
%		8.6	6.9	15.5	39.7	22.5	11.7	21.1	18.8	8.3	9.7	7.8	20.6
95% CI		5.7-11.5	4.3-9.6	11.8-19.3	34.7-44.8	18.2-26.8	8.4-15.0	16.9-25.3	14.8-22.9	5.5-11.2	6.7-12.8	5.0-10.5	16.4-24.7
Asian	2789	162	315	222	807	731	351	299	349	175	229	273	484
%		5.8	11.3	8	28.9	26.2	12.6	10.7	12.5	6.3	8.2	9.8	17.4
95% CI		4.9-6.7	10.1-12.5	7.0-9.0	27.3-30.6	24.6-27.8	11.4-13.8	9.6-11.9	11.3-13.7	5.4-7.2	7.2-9.3	8.7-10.9	15.9-18.8
Black	3426	124	116	167	1978	1590	273	396	578	150	236	200	1156
%		3.6	3.4	4.9	57.7	46.4	7.9	11.6	16.9	4.4	6.9	5.8	33.7
95% CI		3.0-4.2	2.8-4.0	4.1-5.6	56.1-59.4	44.7-48.1	7.1-8.9	10.5-12.6	15.6-18.1	3.7-5.1	6.0-7.7	5.1-6.6	32.2-35.3
Hispanic	8777	313	320	2908	2832	1940	957	1285	1926	402	685	505	1223
%		3.6	3.6	33.1	32.3	22.1	10.9	14.6	21.9	4.5	7.8	5.8	13.9
95% CI		3.2-4.0	3.3-4.0	32.1-34.1	31.3-33.2	21.2-23.0	10.3-11.6	13.9-15.4	21.1-22.8	4.1-5.0	7.2-8.4	5.3-6.2	13.2-14.7
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95% CI		6.1-7.1	4.8-5.7	7.6-8.8	34.5-36.5	14.9-16.4	10.0-11.3	14.3-15.8	20.9-22.6	6.6-7.7	7.5-8.7	6.0-7.0	14.9-16.4

AI/AN = American Indian/Alaskan Native

CI = Confidence Interval