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Gender differences in sociodemographic and behavioral influences of physical activity in Mexican-origin adolescents

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Abstract

Background—Understanding the factors that contribute to physical activity (PA) in Mexican-origin adolescents is essential to the design of effective efforts to enhance PA participation in this population.

Methods—Multivariable logistic regression was used to identify sociodemographic and behavioral correlates of self-reported PA in school and community settings in 1,154 Mexican-origin adolescents aged 12–17 years in Houston, TX.

Results—The majority of adolescents were born in the US (74%), approximately half (51%) were overweight or obese, and nearly three-quarters (73%) watched more than 2 hours of weekday television. Similarities and differences by setting and gender were observed in the relationships between sociodemographic and behavioral characteristics and PA. In boys, parental education and attending physical education (PE) were positively associated with PA across multiple PA outcomes. Adolescent linguistic acculturation was inversely associated with participation in community sports, whereas parental linguistic acculturation was positively associated with PA at school. In girls, PA in school and community settings was inversely associated with TV viewing and positively associated with PE participation.

Conclusions—These findings highlight similarities and differences in correlates of PA among boys and girls, and point towards potential sources of opportunities as well as disparities for PA behaviors in Mexican-origin adolescents.

Keywords

Mexican American; acculturation; physical education

Introduction

Over the past three decades, the prevalence of obesity among adolescents has more than tripled,[1] with racial and ethnic minority youth disproportionately affected.[2–5] This rapid increase in prevalence, combined with the tracking of obesity into adulthood,[6, 7] makes addressing childhood and adolescent obesity a critical public health priority. Physical activity (PA) is considered an integral component of health promotion efforts to prevent excess weight gain in children and adolescents.[8–10] Further, regular participation in PA has been associated with improved cardiovascular fitness and bone health, a reduced risk of chronic diseases such as diabetes, lower lipid and cholesterol levels, and increased self-esteem in children and adolescents.[8, 11, 12] Given that PA behaviors established in youth may continue into adulthood,[13–16] fostering regular participation in PA at an early age is

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important for promoting a healthy lifestyle and preventing chronic diseases and inactivity-related conditions.

Mexican-origin adolescents are an important and understudied population regarding determinants of PA behaviors. Approximately 22% are estimated to be obese, compared with 16% for non-Hispanic Whites.[1] Previous studies indicate that Hispanic adolescents, and girls in particular, engage in considerably less PA and are more sedentary than their non-Hispanic White counterparts.[17–20] Yet, few studies have sought to investigate the factors associated with PA in Mexican-origin adolescents. A thorough understanding of the factors that influence PA participation in this population will greatly inform the development of effective interventions and policies to promote greater PA in Mexican-origin adolescents.

The sociodemographic characteristics of Mexican-origin households may represent important indicators of access to opportunities for youth to be active. For example, it has been estimated that approximately half of Mexican-origin adults have received a high school (HS) diploma,[21] and only 21% of full-time workers report annual earnings of $35,000 or more, the lowest percentage among Hispanic subgroups.[22] First-generation Mexican-origin adolescents have lower household incomes and maternal education, and live in greater linguistic isolation compared to adolescents of second or higher generations.[23] In addition, Hispanic youth watch considerably more television than non-Hispanic whites[19, 24] and attend schools that are less likely to require physical education (PE).[25] These demographic and behavioral characteristics may influence the ability of Mexican-origin youth to develop and maintain an active lifestyle.

Whether acculturation, the exchange of cultural attitudes and behaviors that occurs when people from differing cultural backgrounds come into contact,[26] is associated with PA in Mexican-origin adolescents is not well understood. Spanish language use at home has been inversely associated with PA participation in some studies[27, 28] but not others,[29] and greater orientation to the US has been associated with lower[29] as well as higher[30] PA in Hispanic adolescents.

In this study, we examined the association between sociodemographic characteristics, including parent and adolescent linguistic acculturation, BMI, school PE participation, and TV viewing with participation in PA in school and community settings in a sample of Mexican-origin adolescents in Houston, Texas. Since PA tends to decline dramatically during adolescence, particularly among girls,[31, 32] adolescence represents a critical age during which to identify the factors that contribute to or inhibit PA participation. Further, the investigation of potential correlates of PA performed at school and in the community provides a unique opportunity to examine similarities and differences across settings.

Methods

Study Sample & Data Collection

Participants were randomly sampled in 2005–06 from a large, ongoing prospective cohort of Mexican-origin households in the greater Houston area and surrounding counties (hereafter referred to as the Cohort study). The Cohort study was created in 2001 by the Department of Epidemiology at The University of Texas M. D. Anderson Cancer Center to assess genetic and non-genetic risk factors for cancer in this population. Recruitment procedures for the Cohort[33] have been described in detail elsewhere. Briefly, age-eligible participants for the current study were identified from the Cohort study database, and over 90% of parents or legal guardians contacted agreed to enroll their child in the study. A total of 1,328 adolescents with a mean age of 12 years were interviewed at baseline; 1,154 were followed-

up with a second home visit an average of 30 months later. Recruitment procedures have been described in detail previously.[34]

Assessments were conducted in English (83%) or Spanish (17%), depending on participants' preference. Both assessments collected sociodemographics and measures of height and weight. Participants used a personal digital assistant to complete questions on smoking, family dynamics, and for the follow-up assessment only, PA behaviors. This study utilized follow-up data (n=1,154); the 174 participants lost-to-follow-up did not differ from followed participants with regard to age, gender, or adolescent and parent acculturation. Data on the parent enrolled in the Cohort study was obtained from the Cohort database. The Institutional Review Board at The University of Texas M. D. Anderson Cancer Center approved all aspects of this study.

Measures

Dependent variables—Dependent variables included adolescent school and community PA and participation in community team sports. Questions were adapted from the 2005 Youth Risk Behavior Survey (YRBS). [35] Questions asked, "Think about activities you do [at school, but not in physical education (PE)/in your community or at home]. On how many days of the past 7 did you exercise or participate in physical activity for at least 60 minutes per day? (moderate-to-vigorous school/community-home PA); On how many days of the past 7 did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard?" (vigorous school/community-home PA); and "Think about activities you do in your community or at home. During the past 12 months, on how many sports teams did you play?" We separated community team sports participation from community-home PA because previous research has shown sports participation in particular to be associated with greater PA in adulthood.[16] Similar items adapted from the YRBS pertaining to participation in weekly moderate-to-vigorous (MVPA) and vigorous PA have exhibited reasonable test-retest reliability in middle school and high school students (Intraclass Correlation Coefficient = 0.77 and 0.66, respectively).[36] Because of problems with linearity in regression models and similar to other studies,[37] we categorized the number of days of PA participation and the number of sports teams into low, medium, and high levels (see Table 3) based on the distribution of responses and current recommendations for youth PA.[12] These variables were then dichotomized to compare high levels of PA with medium and low levels. Adolescents were also presented with a list of ten common sports and activities and asked to indicate those in which they participated.

Independent variables—Adolescent linguistic acculturation was assessed using the Brief Acculturation Scale for Hispanics,[38] a four-item scale ascertaining language used when reading, speaking at home, speaking with friends, and thinking that exhibited acceptable reliability in participants ($\alpha = 0.70$). A mean score was obtained by averaging the five-point responses across the four items. Parent linguistic acculturation was assessed with 4 items from the Bi-dimensional Acculturation Scale for Hispanics[39]: language use and English proficiency related to speaking, watching TV, listening to the radio, and reading. The four-point responses were averaged to create a mean acculturation score, with higher scores reflecting a preference for and fluency in English ($\alpha = 0.87$).[33]

Other sociodemographics included participant and parent country of birth (Mexico, US), and parent education (<HS, HS graduate, >HS). Adolescent BMI was categorized as underweight or normal weight (<85th percentile), overweight (85th percentile ≤ BMI <95th percentile) and obese (≥95th percentile) according to the age and gender percentiles from the CDC.[40]

Weekday TV viewing and participation in PE were assessed with measures similar to the YRBS[35]: "How many hours of television do you watch on an average weekday?" (1–8 or more hours), and "In an average week when you are in school, on how many days do you go to PE classes?" (0–5 days). We dichotomized hours spent watching television (≤2 hours, >2 hours) according to national pediatric guidelines[41] and categorized the number of days attending PE (none, 1–4 days, 5 days/week).

Statistical Analysis

Pearson chi-square tests were used to examine gender differences in adolescent characteristics and the proportion of participants reporting high, medium, and low levels of PA in community and school settings and participation in community sports. Multivariable logistic regression examined associations between the independent variables of interest and odds of participation in high, compared to medium and low, levels of PA. Multivariable models were conducted separately by gender and included all potential correlates and age and interview season. For all analyses, differences were statistically significant if $p<0.05$. Multicollinearity was assessed with the Tolerance and the Variance Inflation Factor (VIF) for each variable. All values were >0.40 and <2.5 for Tolerance and VIF, respectively, suggesting that multicollinearity was not a concern. The Hosmer-Lemeshow Goodness-of-Fit test indicated appropriate fit for each model (i.e. $p>0.05$). Analyses were conducted using Stata 10.0.[42]

Due to missing observations, 103 boys and 79 girls were excluded from the multivariable analysis. No statistically significant differences were observed in boys; however, excluded girls were significantly older ($p=0.02$), and had significantly lower parent acculturation scores ($p=0.003$) than girls included in the models. The impact of these missing data was determined by fitting models with indicators of missing status for girls with missing values. Because these models yielded results nearly identical to the original models, the original models were used.

Results

Demographic characteristics (582 girls and 572 boys) are presented in Table 1. Participants were 12 to 17 years of age, and nearly three-quarters were born in the US. Participants' parents, 95% of whom were women, were born primarily in Mexico (83%), and only 35% had graduated from high school. Nearly 20% of adolescents were overweight but not obese, and one-third were obese, with boys significantly more likely to be overweight or obese than girls ($p=0.007$). The majority of adolescents (83%), participated in at least one day of PE per week, and 25% reported daily participation. Nearly three-quarters watched more than two hours of television on weekdays. Adolescent and parent acculturation were positively correlated ($r=0.48$, $p<0.001$).

The number of days on which adolescents reported participating in MVPA for at least 60 minutes in school and community-home settings was significantly correlated in both boys ($r=0.53$, $p<0.001$) and girls ($r=0.56$, $p<0.001$). Similar correlations by setting were observed for the number of days participating in vigorous PA for at least 20 minutes in boys ($r=0.59$, $p<0.001$) and girls ($r=0.60$, $p<0.001$). When we categorized PA into low, medium, and high levels, a greater proportion of adolescents engaged in high levels of MVPA at school than in community-home settings (Table 2), a difference more pronounced among girls. Participation in high levels of vigorous activity was similar across the two settings. Boys were more likely than girls to report greater PA participation across settings and intensity levels and to participate on a greater number of community sports teams. Although boys were more likely than girls to participate in many of the sports and activities assessed (e.g.

soccer, basketball, football, baseball), girls were more likely to report playing volleyball and dancing.

We observed similarities and differences by setting and gender in the relationships between the independent variables and PA participation (Tables 3 and 4). Boys who reported daily PE were between 2.45 and 3.51 times more likely to report high levels of PA across settings and intensity and community sports team participation compared to boys who reported no PE. Participation in one to four days of PE per week compared to 0 days was also positively associated with high levels of vigorous PA in school and community-home settings and sports team participation. Boys with a parent who completed more than a high school degree reported greater PA across multiple outcomes relative to boys with a parent reporting less than a high school education, with the greatest difference in vigorous PA at school (OR: 1.93, CI:1.12, 3.31). We did not observe consistent relationships across activity outcomes for other independent variables. Adolescent acculturation was negatively associated with community sports team participation, and was marginally associated with lower levels of MVPA at school (p=0.09) and in community-home settings (p=0.09), and vigorous PA outside of school (p=0.08). Parent acculturation was positively associated with high levels of MVPA at school. Obese boys and those who watched more than two hours of weekday TV were significantly less likely to engage in high levels of community-home MVPA relative to normal weight boys and those watching less TV, respectively. Adolescent and parent nativity were not associated with any PA outcome in boys.

Among girls, TV watching and PE participation were the only two variables for which we observed consistent patterns across intensity and settings (Table 4). With the exception of community-home vigorous PA, girls who attended PE daily were between 2.53 and 3.64 times more likely to participate in high levels of PA and sports teams compared to girls who did not attend PE. Girls who watched more than two hours of TV on weekdays were significantly less likely to engage in high levels of MVPA at school (OR:0.49, CI:0.31,0.78) and vigorous activity in both school and community-home settings (OR:0.62, CI:0.40, 0.96; OR:0.53, CI:0.35, 0.81, respectively). BMI was an important correlate for community sports team participation; girls who were overweight, but not obese, were significantly more likely than normal weight girls to participate in 2 or more teams. Adolescent and parent nativity, adolescent and parent acculturation, and parent education were not significantly associated with any PA outcome in girls.

Discussion

This study examined PA performed in school and community settings in Mexican-origin adolescents and their relationship to sociodemographic characteristics, including adolescent and parent linguistic acculturation, BMI, and two behaviors believed to be important to PA in Hispanic adolescents, TV viewing and PE participation. In general, boys' PA was associated with various sociodemographic characteristics and PE participation, whereas girls' PA was related primarily to PE participation and TV viewing. Our findings highlight similarities and differences in correlates of PA among boys and girls, and point towards potential sources of opportunities as well as disparities for PA behaviors in Mexican-origin youth.

Participants in this study came from households with largely immigrant parents of low education. The prevalence of obesity and extended TV viewing was exceptionally high. Approximately one-third of participants were obese, compared with 22% of Mexican American adolescents nationally.[1] Similarly, although Hispanics watch more TV than non-Hispanic whites,[19, 24] extended TV viewing (>2 hours/weekday) was more prevalent in our sample (73%) relative to national estimates among Mexican-origin adolescents (38%).[24]

These findings are disconcerting and warrant further investigation regarding the reasons for such elevated rates of obesity and sedentary behavior in this population.

Participation in daily PE was significantly associated with greater engagement in PA in both boys and girls, including PA and sports outside of school. This finding is notable, particularly given the trend in recent decades of declining enrollment in high school PE programs.[43] Although a greater proportion of participants in this study reported attending PE at least one day per week compared to high school students nationally (84% vs. 56%), fewer reported daily participation (25% vs. 33%).[20] Findings from this and other studies provide compelling evidence that PE participation is associated with greater engagement in PA in diverse samples of youth.[37, 44, 45] PE programs may represent a particularly important source of PA among youth who may not choose, qualify, or be able to afford to play on organized sports teams or be active through other avenues.[46] Moreover, as suggested by findings from this study, participation in PE may foster greater involvement in PA outside of school. Participation in PE may lead to enhanced self-efficacy or motivation to be active that translates to greater engagement in overall PA.[47, 48] Unfortunately, prior research suggests that students of lower socioeconomic status (SES) are less likely to have PE required in their schools.[25] The results here strongly suggest that participation in daily PE may enhance overall PA levels in Mexican-origin adolescents and underscore the potential impact of PE programs on adolescent PA.

Our findings suggest that the educational level of Mexican-American parents, especially mothers, who were the reporting parent in 95% of our sample, may be important to PA performed in a variety of settings, at least among boys. The positive association between parental education and PA in boys but not girls raises interesting questions regarding the mechanisms by which parental education may influence adolescent PA. Although several studies have observed positive relationships between parental education and PA in both genders, few examined this relationship separately by gender or specifically within Hispanic adolescents.[37, 49, 50] An important component of SES, parental education may facilitate PA through greater financial resources to participate in sports, purchase equipment, or attend commercial exercise facilities, greater encouragement or transportation to attend activities, improved access to safe neighborhood PA resources, or increased discretionary time.[51, 52] Parental education may also reflect attitudes and priorities regarding the importance of PA. Anderson et al.[53] observed a positive relationship between parental education and how parents valued PA among boys, but not girls. Hispanic parents in particular exhibited positive attitudes towards vigorous sports for boys but not girls. Further, a longitudinal study of young girls found that parents' logistic support for PA (e.g. transportation to places to be active) decreased between childhood and adolescence.[54] Thus, the positive relationship observed in this study between parental education and PA among boys but not girls may be mediated in part by gender-based parental attitudes towards PA.

Although it has been hypothesized that TV viewing displaces other leisure activities, such as PA, studies among youth have yielded largely null or inconsistent findings.[50, 55] In contrast, we observed a significant inverse association between TV viewing and PA participation in Mexican-origin girls across multiple PA categories. This relationship was present among boys for only one outcome, participation in MVPA in community-home settings. These findings suggest that boys may watch large amounts of TV and still be physically active, particularly in school activities. The displacement hypothesis may be more relevant for girls; however, we are unable to infer a causal relationship between TV viewing and reduced PA based on these cross-sectional data. Additional research is needed to elucidate the reasons for a strong association in Mexican-origin girls but not boys, and whether TV viewing is causally associated with reduced PA in girls or whether this relationship is confounded by other factors.

Our results revealed interesting patterns suggesting that the relationship between linguistic acculturation and PA differs by gender, and among boys, varies by parental and youth acculturation. In boys, we observed a significant inverse association between adolescent acculturation and participation in community team sports, whereas parental acculturation was positively associated with MVPA at school. No significant relationships were observed in girls. These findings contribute to a small but growing body of literature focused on understanding how language and acculturation may influence PA in Hispanic youth.[23, 27–29, 56, 57]

These findings maintain some similarities but are generally inconsistent with the results of previous studies, which may be due in part to the heterogeneity in populations studied, and/or the PA and acculturation measures used. Unger et al.[29] found that PA in Hispanic adolescents was inversely associated with orientation to the US, whereas McHale et al.[30] observed positive associations between Anglo-oriented cultural practices and time engaged in sports. Studies examining proxy measures (generation status, English use at home) observed positive relationships with PA,[27, 28, 56] whereas we did not find parent or adolescent nativity to associate with PA.

The differing relationships between PA participation and parental and youth linguistic acculturation observed in boys may be indicative of different phenomena assessed. Linguistic acculturation in parents may reflect important influences for youth PA relevant to parent communication, financial resources, and access to safe and affordable places to be active, in addition to possible cultural values or attitudes. Because acculturation is closely linked with SES, the limited resources of less acculturated parents may restrict opportunities available to adolescents. Similarly, parents with limited English may be less aware of opportunities for PA at school.

Adolescent linguistic acculturation, in addition to representing language use at home, may also characterize the language used to learn and communicate with friends. The composition of adolescents' schools and neighborhoods and whether youth feel a sense of belonging may affect their PA participation in these settings. Increased participation in community sports among less acculturated boys in this study may reflect feelings of alienation or exclusion from organized school activities, as has been found previously.[58]

The lack of an association between adolescent and parent linguistic acculturation and PA in girls is consistent with our finding that behaviors such as TV viewing and PE participation were more important to PA than sociodemographic characteristics, although the reasons for this are unclear. These results differ from those of Springer and colleagues[28] who found that PA participation in Hispanic girls was positively associated with English use with parents. Additional research is needed to understand how gender, culture, and socioeconomic factors may interact to influence adolescent PA, recognizing that girls are more likely than boys to have competing responsibilities in the home (e.g. child care, chores) and elevated parent protectiveness regarding safety that may interfere with their PA participation.

In general, our results do not indicate a strong relationship between BMI and overall PA in Mexican-origin adolescents. Obesity was inversely associated with one PA outcome in boys, whereas being overweight, but not obese, was positively associated with girls' participation in team sports. Previous studies have observed similar findings,[59] including greater PA in overweight relative to normal weight Hispanic girls.[60] The lack of a consistent relationship may reflect limitations of the self-report PA measures, the importance of energy intake, rather than energy expenditure, to BMI, and the limitations of BMI as a measure of adiposity in adolescents.

This study is among the first to examine PA behaviors and sociodemographic and behavioral correlates of PA in a large, ethnically homogeneous and understudied sample of Mexican-origin adolescents, for whom PA behaviors are poorly understood. This research is further strengthened by the investigation of correlates of PA performed in school and community-home settings, and the examination of the relationships of both parental and adolescent acculturation with adolescent PA. Nonetheless, our analysis has several limitations. First, the measures of PA are based on self-report items adapted from the YRBS, which have been shown to underestimate moderate PA and overestimate vigorous PA relative to objective measures.[61] Second, the PA measures specific to school and community settings were adapted for this study and have not been validated, limiting the comparability of our findings to other research. Third, the use of cross-sectional data prohibited inferring causality from the observed relationships. Fourth, because the research setting was limited to the greater Houston metropolitan area, the research findings may not be generalizable to Mexican-origin adolescents in other locations. Fifth, parental measures are based on data from one parent only, 95% of whom were women. Finally, the language-based linear acculturation measures used here were not designed to assess other cultural dimensions (e.g. values, behaviors), and implicitly assume that greater English usage is associated with increased orientation to US society and decreased orientation to Latino culture.

In conclusion, we observed similarities and differences by gender and setting in the correlates of PA among Mexican-origin adolescents that indicate important targets for intervention as well as directions for future research. Participation in daily PE was associated with high levels of PA in all adolescents across settings, underscoring the potential impact of these programs and suggesting increased attention to their availability and quality, particularly for low-income populations. We also found that TV viewing was more strongly related to reduced PA in girls than boys; improved understanding of these relationships will inform interventions to reduce sedentary behaviors and increase PA in Mexican-origin adolescents. Interestingly, our findings suggest that parental education and linguistic acculturation exerted a stronger influence over boys' participation in school PA than PA performed in the community or at home. These gender-based differences observed between parental characteristics and PA warrant additional investigation regarding the mechanisms through which parental education and acculturation may influence PA in this population. Finally, incorporating attributes of the physical, social, and economic contexts of adolescents' lives will enhance our understanding of how factors at multiple levels interact and contribute to adolescent PA and provide a strong foundation for effective health promotion in this area.

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Table 1

Participant characteristics, N (%)* unless otherwise indicated

	Total (n=1154)		Boys (n=572)		Girls (n=582)	
	N	**%**	**N**	**%**	**N**	**%**
Sociodemographic						
Age (yrs)						
12–13	279	(24.2)	126	(22.0)	153	(26.3)
14–15	716	(62.0)	356	(52.2)	360	(61.9)
16–17	159	(15.8)	90	(15.7)	69	(11.9)
Country of birth						
Mexico	293	(25.7)	147	(25.8)	146	(25.4)
United States	851	(74.3)	422	(74.2)	429	(74.6)
Acculturation, mean (SD)	3.5	(0.7)	3.5	(0.8)	3.5	(0.7)
Parent country of birth						
Mexico	949	(83.8)	463	(83.0)	486	(85.0)
United States	181	(16.2)	95	(17.0)	86	(15.0)
Parent acculturation, mean (SD)	2.1	(0.9)	2.1	(0.9)	2.0	(0.9)
Parent education						
Less than high school	740	(65.5)	370	(66.2)	370	(64.8)
High school graduate	195	(17.2)	91	(16.3)	104	(18.2)
More than high school	195	(17.3)	98	(17.5)	97	(17.0)
Adolescent BMI						
Normal and underweight (BMI<85th percentile)	546	(48.2)	258	(45.7)[a]	288	(50.5)
Overweight (85th≤BMI<95th percentile)	213	(18.8)	95	(16.8)	118	(20.7)
Obese (BMI≥95th percentile)	375	(33.1)	211	(37.4)	164	(28.8)
School PE						
0 days	202	(17.5)	98	(17.1)	104	(17.9)
1–4 days/week	663	(57.5)	321	(56.1)	342	(58.8)
5 days/week	289	(25.0)	153	(26.8)	136	(23.4)
Weekday TV viewing >2 hrs	752	(73.3)	355	(70.9)	397	(75.6)

*Percentages based on the number of valid responses for each item.

[a] $p<0.01$ for Pearson chi-square test comparing normal, overweight, and obese weight categories by gender

Table 2

Participation in physical activity among Mexican-origin boys and girls

	Total (n=1,154)		Boys (n=572)		Girls (n=582)	
	N	(%)	N	(%)	N	(%)
Participation in MVPA for ≥ 60 min/day						
At school						
Low (0–1 days)	348	(30.2)	128	(22.4)*	220	(37.8)
Medium (2–3 days)	422	(36.6)	215	(37.6)	207	(35.6)
High (4+ days)	384	(33.3)	229	(40.0)	155	(26.6)
At home/in the community						
Low (0–1 days)	447	(38.7)	167	(29.2)*	280	(48.1)
Medium (2–3 days)	388	(33.6)	190	(33.2)	198	(34.0)
High (4+ days)	319	(27.6)	215	(37.6)	104	(17.9)
Participation in vigorous PA for ≥ 20 min/day						
At school						
Low (0–1 days)	510	(44.2)	220	(38.5)*	290	(49.8)
Medium (2 days)	184	(15.9)	89	(15.6)	95	(16.3)
High (3+ days)	460	(39.9)	263	(46.0)	197	(33.9)
At home/in the community						
Low (0–1 days)	502	(43.5)	204	(35.7)*	298	(51.2)
Medium (2 days)	198	(17.2)	94	(16.4)	104	(17.9)
High (3+ days)	454	(39.3)	274	(47.9)	180	(30.9)
Participation in community sports						
Low (0 teams)	431	(37.4)	186	(32.5)*	245	(42.1)
Medium (1 team)	285	(24.7)	127	(22.2)	158	(27.2)
High (2+ teams)	438	(37.9)	259	(45.3)	179	(30.8)
Commonly reported activities						
Soccer	655	(56.8)	355	(62.1)+	300	(51.6)
Running	610	(52.9)	291	(50.9)	319	(54.8)

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	Total (n=1,154)		Boys (n=572)		Girls (n=582)	
	N	(%)	N	(%)	N	(%)
Basketball	551	(47.8)	338	(59.1)[+]	213	(36.6)
Bicycling	348	(30.2)	208	(36.4)[+]	140	(24.1)
Football	338	(29.3)	276	(48.3)[+]	62	(10.7)
Volleyball	318	(27.6)	50	(8.7)[+]	268	(46.1)
Baseball/softball	308	(26.7)	199	(34.8)[+]	109	(18.7)
Dancing	280	(24.3)	60	(10.5)[+]	220	(37.8)

[*] $p<0.001$ for Pearson chi-square tests comparing low, medium, and high levels of PA participation by gender

[+] $p<0.001$ for Pearson chi-square tests comparing participation in specific activities by gender

Table 3

Adjusted Odds Ratios (ORs) for participation in high levels of physical activity in school and home/community settings in Mexican-origin adolescent boys (n=479)*

	MVPA ≥ 60 min, 4 or more days per week				Vigorous PA ≥ 20 min, 3 or more days per week				Participation in community team sports	
	School		Community		School		Community			
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sociodemographic										
Country of birth										
Mexico	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
United States	0.83	(0.52, 1.30)	1.04	(0.66, 1.65)	0.79	(0.51, 1.24)	0.99	(0.63, 1.54)	1.08	(0.69, 1.70)
Acculturation score	0.78	(0.58, 1.04)	0.78	(0.58, 1.04)	0.83	(0.62, 1.11)	0.77	(0.58, 1.03)	**0.65**[b]	**(0.49, 0.87)**
Parent country of birth										
Mexico	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
United States	0.68	(0.35, 1.32)	0.77	(0.39, 1.50)	0.88	(0.46, 1.68)	0.7	(0.37, 1.32)	1.22	(0.64, 2.34)
Parent acculturation score	**1.39**[a]	**(1.03, 1.89)**	1.27	(0.93, 1.72)	1.18	(0.87, 1.59)	1.28	(0.95, 1.72)	0.96	(0.71, 1.29)
Parent education										
Less than high school	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
High school graduate	1.21	(0.70, 2.11)	0.92	(0.53, 1.60)	0.76	(0.44, 1.32)	1.07	(0.63, 1.84)	1.17	(0.68, 2.02)
More than high school	**1.73**[a]	**(1.01, 2.97)**	**1.85**[a]	**(1.08, 3.15)**	**1.93**[a]	**(1.12, 3.31)**	1.23	(0.73, 2.09)	1.01	(0.59, 1.73)
Adolescent BMI										
Normal and underweight (BMI<85th percentile)	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
Overweight (85th≤BMI<95th percentile)	0.62	(0.36, 1.06)	0.86	(0.51, 1.46)	1.19	(0.71, 2.00)	0.96	(0.57, 1.61)	0.62	(0.36, 1.05)
Obese (BMI≥95th percentile)	0.86	(0.56, 1.31)	**0.58**[a]	**(0.38, 0.90)**	1.16	(0.76, 1.77)	1.07	(0.70, 1.62)	0.86	(0.57, 1.32)
School PE										
0 days	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
1–4 days/week	1.57	(0.87, 2.81)	1.56	(0.86, 2.82)	**2.35**[b]	**(1.31, 4.22)**	**2.48**[b]	**(1.40, 4.39)**	**2.53**[b]	**(1.41, 4.56)**
5 days/week	**3.33**[c]	**(1.78, 6.22)**	**2.45**[b]	**(1.30, 4.60)**	**3.50**[c]	**(1.87, 6.55)**	**3.03**[c]	**(1.64, 5.61)**	**3.51**[c]	**(1.87, 6.60)**
Weekday TV viewing >2hrs	0.71	(0.47, 1.08)	**0.57**[b]	**(0.38, 0.86)**	1.23	(0.82, 1.86)	0.77	(0.51, 1.16)	0.83	(0.55, 1.25)

*Adjusted for all variables in the table a well as age and interview season

[a] $p<0.05$;

[b] $p<0.01$;

[c] $p<0.001$

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Table 4

Adjusted Odds Ratios (ORs) for participation in high levels of physical activity in school and community settings in Mexican-origin adolescent girls (n=503)*

	MVPA ≥ 60 min, 4 or more days per week				Vigorous PA ≥ 20 min, 3 or more days per week				Participation in community team sports	
	School		Community		School		Community			
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sociodemographic										
Country of birth										
Mexico	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
United States	1.02	(0.62, 1.72)	0.61	(0.35, 1.07)	1.25	(0.78, 2.00)	1.01	(0.63, 1.63)	0.70	(0.43, 1.12)
Acculturation score	1.29	(0.91, 1.83)	1.17	(0.79, 1.73)	1.21	(0.88, 1.67)	1.13	(0.81, 1.56)	0.92	(0.66, 1.28)
Parent country of birth										
Mexico	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
United States	0.87	(0.41, 1.85)	1.41	(0.61, 3.27)	1.11	(0.55, 2.25)	0.68	(0.33, 1.39)	1.01	(0.48, 2.10)
Parent acculturation score	1.17	(0.85, 1.60)	1.02	(0.71, 1.46)	0.96	(0.71, 1.29)	1.15	(0.85, 1.55)	1.19	(0.87, 1.61)
Parent education										
Less than high school	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
High school graduate	0.67	(0.37, 1.21)	1.33	(0.71, 2.46)	0.81	(0.47, 1.37)	0.81	(0.47, 1.40)	0.80	(0.46, 1.40)
More than high school	0.81	(0.43, 1.50)	0.76	(0.37, 1.58)	0.88	(0.50, 1.57)	0.95	(0.53, 1.69)	0.71	(0.39, 1.29)
Adolescent BMI										
Normal and underweight (BMI<85th percentile)	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
Overweight (85th≤BMI<95th percentile)	1.00	(0.58, 1.72)	1.13	(0.63, 2.04)	1.13	(0.69, 1.84)	1.52	(0.93, 2.48)	**1.81**[a]	**(1.10, 2.96)**
Obese (BMI≥95th percentile)	1.40	(0.87, 2.26)	0.92	(0.52, 1.61)	1.37	(0.88, 2.13)	1.42	(0.90, 2.23)	1.25	(0.78, 2.00)
School PE										
0 days	1.00	--	1.00	--	1.00	--	1.00	--	1.00	--
1–4 days/week	1.37	(0.72, 2.64)	1.06	(0.52, 2.15)	1.75	(0.96, 3.18)	1.13	(0.63, 2.02)	1.70	(0.89, 3.25)
5 days/week	**3.64**[c]	**(1.83, 7.21)**	**2.53**[a]	**(1.21, 5.29)**	**3.47**[c]	**(1.82, 6.63)**	1.83	(0.97, 3.44)	**2.55**[b]	**(1.28, 5.09)**
Weekday TV viewing >2 hrs	**0.49**[b]	**(0.31, 0.78)**	0.70	(0.42, 1.19)	**0.62**[a]	**(0.40, 0.96)**	**0.53**[b]	**(0.35, 0.81)**	0.68	(0.44, 1.07)

*Adjusted for all variables in the table a well as age and interview season

[a]p<0.05;

^{b}p<0.01;

^{c}p<0.001