WOMEN'S SPORTS FOUNDATION

TEEN SPORT IN AMERICA: WHY PARTICIPATION MATTERS

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A Women's Sports Foundation Report

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Women's Sports Foundation Acknowledgments

This research builds on previous research and policy that view teen sports as an educational tool and public health asset. However, little to no research has scrutinized whether adolescent health and educational achievement vary from sport to sport. First, the Women's Sports Foundation is indebted to the study authors, Nicole Zarrett, Ph.D., Philip Veliz, Ph.D., and Don Sabo, Ph.D. We're proud to be associated with such creative and excellent researchers and writers. We are grateful to Bruce Y. Lee, M.D., M.B.A., the primary author of the policy recommendations, for his thoughtful and thorough development of recommendations that can lead to improvements in how teens experience sport.

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The panel of scholars, health policy experts, and youth sport leaders who reviewed the findings and the policy recommendations provided invaluable feedback that improved the final report immensely.

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About The Women's Sports Foundation

The Women's Sports Foundation — the leading authority on the participation of women and girls in sports — is dedicated to creating leaders by ensuring girls access to sports. Founded by Billie Jean King in 1974, our work shapes public attitude about women's sports and athletes, builds capacities for organizations that get girls active, ensures equal opportunities for girls and women, and supports physically and emotionally healthy lifestyles. The Women's Sports Foundation has relationships with more than 1,000 of the world's elite female athletes and is recognized globally for its leadership, vision, expertise and influence. For more information, visit www.WomensSportsFoundation.org.

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LETTER FROM THE CEO

Founded more than 40 years ago by Billie Jean King, the Women's Sports Foundation is a powerful voice and catalyst for ensuring all girls have equal access to sports and physical activity and the benefits they provide. Sports teach us to be strong and to work together toward a common goal. Sports teach us perseverance in the face of loss and obstacles and they teach us to win gracefully. We know that courageous leaders are made on the playing field and the court, and in the rink, arena or gymnasium.

Research is the centerpiece of the work we do at the Women's Sports Foundation, and is essential to demonstrating that sports lead to healthier, happier, more productive lives.

Since our inception, we have been conducting evidence-based research to measure the impact of physical activity and sport on girls, gaps in access, gender inequality, and need for role models. We recognize that data drives public education, debate, action and policy, which can lead to greater access, opportunity, leadership and gender equity for women's sports.

We are also driven by the knowledge that teen sports are both an educational tool and a public health asset. We embarked on this report, *Teen Sport in America: Why Participation Matters*—which is the first to offer in-depth analysis into how the type of sport and number of sports that teens play impacts their health and well-being—in order to identify opportunities to improve access to high quality sports programming for teen girls.

With this study, we reaffirm that teens who play sports not only do better in school, but also are more likely to have high self-esteem, stronger relationships and improved physical health. The data reveals this is especially true for teen girls who participate in two or more sports. The data shows that, while all sports have benefits, some sports generate more positive impacts than others. The report findings identify the unique benefits and opportunities for improvement that exist within each sport to maximize the health benefits for teens.

Unfortunately, too many teens, primarily teen girls of color, still don't have equal access to sports. And with an increase in teens between eighth and 12th grades dropping out of sports, this means that teen girls—a group that is already 15 percent less likely to participate in sports than their male counterparts—are disproportionately missing out on experiencing the full academic, educational and health benefits of sports.

We encourage policymakers, administrators and coaches to read the report and the detailed policy recommendations, which we believe will strengthen the positive impact of sports, and will ensure more teen girls—particularly girls of color—have access to high quality sports programming, and its benefits.

We also look forward to reaching a wide community of teen-serving organizations, thought leaders and parents so they can understand how sports can unlock the future for teen girls. This report empowers us all to be stronger advocates for the teen girls in our lives—whether they're our daughters, sisters, neighbors or friends.

The Women's Sports Foundation will continue to lead the way for girls and young women with its unique focus on ALL girls and ALL sports. This investment in girls creates a more just and equitable society and pays dividends in the form of personal and public health, self-determination, achievement, leadership and prosperity.

Dr. Deborah Antoine
CEO, Women's Sports Foundation

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EXECUTIVE SUMMARY

The Women's Sports Foundation commissioned the *Teen Sport in America: Why Participation Matters* report to better understand the impact of sports participation on teen health, well-being and academic achievement. We sought to understand how each sport impacts teen well-being, and whether the number of sports in which a teen participates influences their health. We also sought to better understand whether sports opportunities overall, as well as individual sports, are accessible to all teens across genders, race and ethnicities, levels of family income and regions. Finally, we wanted to identify the unique benefits and opportunities for improvement that exist within each sport to maximize the health benefits for teens.

This report builds on previous research and policy showing that athletic participation has a favorable influence on academic achievement,[1-5] psychological well-being,[6,7] and physical health.[8,9] And it digs deeper by looking at the little-studied question of whether adolescent health and educational success vary from sport to sport.[10] This report goes beyond most previous research by looking at a larger number of positive health outcomes; previous research considered only a small number of well-being outcomes, which can limit discovery and understanding of how sports contribute to positive youth development.[5]

The research is based on an analysis of the Monitoring the Future (MTF)* nationwide surveys, a federally funded longitudinal study of American secondary students.[11] We evaluated 20 sports most commonly accessible to American teen girls and boys to identify which sports are doing well in promoting health and preventing risk, and which have room for improvement. This included the 13 most popular sports in the U.S. (baseball/softball, basketball, cheerleading**, cross-country, football, golf, lacrosse, soccer, swimming/diving, tennis, track and field, volleyball, and wrestling) and seven emerging youth sports (crew, equestrian, field hockey, gymnastics, ice hockey, water polo, and weight lifting). All data analyses controlled for key sociodemographic variables like sex, race, and socioeconomic status. In this way, our report answers questions about how each specific sport is related to healthy development for all participating teens, regardless of their sex, race, or socioeconomic background.

* See the Measures index on page 45 for more detailed information on the study design, sample and data analysis. More details on the MTF can be found at http://www.monitoringthefuture.org/.

** Monitoring the Future asks respondents if they "competed in competitive cheerleading." Many sideline cheer squads do have a culminating competitive cheer opportunity, which may have prompted respondents to respond favorably. However, it should be noted that a squad whose main focus is sideline cheer with limited competitive cheer opportunities would be unlikely to qualify as a 'sport' for Title IX purposes as defined by the Office of Civil Rights.

We found that each sport has its own subculture[12] and provides a unique experience that likely influences youth behaviors and development in different ways. Young people's experiences can also differ depending on how many sports they play.

We also identified opportunities to strengthen the impact of sports participation and make it even more beneficial to teens. For example, some studies suggest potential risks of sports participation, including higher rates of substance use,[13,2] consumption of fast food and sweetened beverages,[14,15] lack of sleep,[16] and self-criticism.[17,18] By better understanding the potential risks, we can make policy recommendations to improve or strengthen the impact sports have on youth.

With this study, we hope to provide useful insights for use by Women's Sports Foundation and Laureus Sport for Good Foundation USA leadership and beyond. The findings can be used as a catalyst for evidence-based policy development, provide new and reliable information for sport governing bodies and support the development of sport programming. They also will help educators, coaches, athletic directors, and parents understand and assess the role that different sports can play in youth development.

Key Findings

Sports are transformative in the lives of teens.

Research has shown that sports participation and physical activity support long-term health,[19] achievement,[20] and well-being.[21]

Physical health

Findings linked sports participation to positive physical health. Teens who played sports were more likely to have a healthy diet — eating breakfast, and fruits and vegetables, daily — get ample daily physical activity, and sleep at least seven hours per night. All of these have been identified as important factors in preventing obesity and related diseases.

Academic achievement

Sports participation was directly related to teens having a more positive attitude toward schoolwork, improved academic performance and higher grades, and higher aspirations for earning a college degree and post-college education specialization.

Previous research has shown that these academic factors are important predictors of future educational attainment and occupational success.[1-6]

Psychological well-being

In addition, our study showed that teens who played sports fared better than non-athletes on multiple markers of psychological health, including high self-esteem and stronger social connections, such as higher levels of social support and fewer feelings of loneliness.

The number of sports teens participate in matters.

In almost all the outcomes considered in this report, teens who participated in two or more sports benefitted the most from their involvement. They performed better academically and also reported better psychological and physical health than teens who played just one sport. This may be because the positive development fostered by playing sports has a cumulative effect, with the benefits of one sport reinforcing the other. In addition, playing multiple sports may expose youth to a broader range of growth-related opportunities and skills, such as teamwork, task commitment, or the ability to balance multiple scheduling demands. These opportunities give teens more chances to contribute, build supportive relationships with a variety of adults and peers, and have a buffer against possible negative experiences in one of the sports or in other areas of their lives.[5] Since teens benefitted the most from playing two or more sports, it's particularly alarming that only 37% of teens play more than one sport, and many teens, 39% of girls and 25% of boys, don't even play one sport. Attrition rates also varied by sport. Among the 20 sports, 16 sports lost participants between eighth and 12th grades.

Each sport provides a unique impact on health.

Findings showed several sports to be particularly effective in promoting healthy development across all key areas of well-being. The most supportive sports include track and field, cross-country, tennis, and soccer. Another set of sports provided unique support in some, but not all, areas of well-being. For example, the research linked basketball with average levels of physical health and academic achievement, but the sport also showed the highest ratings for supporting psychological health. Similarly, lacrosse athletes engaged in several healthy behaviors, including healthy eating, and possessed a fairly strong profile of psychological health, but the research showed them to be at high risk for substance use and poor academic achievement. Weightlifting had very positive profiles across all areas of well-being except for substance use, because it was linked with one of the highest risks for alcohol binge drinking.

A few sports showed particularly low total ratings and can benefit from improvements across almost all areas of well-being. For example, the data linked wrestling to poor health because of an increased risk of substance use, lower academic achievement because of poor grades and higher rates of skipping class, and a high risk of poor psychological health due to lower self-esteem and lack of social support. Along with wrestling, crew and ice hockey showed the lowest total ratings across well-being outcomes among all 20 sports studied for this report. The low total rating score was largely driven by the significantly higher risk of poor

psychological health and substance use.[13] High-contact sports, like wrestling, may facilitate a context that places a premium on risky behaviors like fighting or engaging in minor forms of delinquency like substance use.

Room for improvement exists in some areas, especially in certain sports.

Although sports yield mostly positive benefits, research linked participation in sports with a higher risk for binge drinking. Teens who participated in two or more sports faced the greatest risk. Although sports participation can protect against the use of some substances, such as cigarettes, youth participation in multiple sports had no impact on other unhealthy behaviors, such as marijuana use or caffeine intake, and could be a risk factor for alcohol binge drinking. Differences in the culture of particular sports may be partially responsible for sports not consistently preventing risky behaviors. For example, the amount of physical contact in a sport seems to be a factor. Sports that involve continual aggressive contact, such as football, may influence risky behavior off the playing field by promoting the notion that the body is a means to an end. On the other hand, sports that involve minimal to no contact, such as tennis, may promote the idea that the body is an end in itself, motivating youth to sustain long-term health, which minimizes the risk for substance use and other risky behaviors.[13]

Diversity and disparities in sport depend on geographic region and type of sport.

Equitable access and opportunities in sport also remain a challenge. In particular, girls and teens from low-income families are still participating at significantly lower rates than boys and teens from more affluent backgrounds, with certain sports having greater gender and economic divides than others. Although findings suggested that sports are racially and ethnically diverse (with similar participation rates found for white, black, and Hispanic youth), clear differences in the racial and ethnic composition of each type of sport suggests the need to improve equity and diversity within certain sports.

The time for sport-by-sport evaluation has come.

The findings clearly demonstrated the importance of looking at sports individually as well as collectively. Increased access to "big data" and a growing number of databases has made it possible to do program evaluation of specific sports at varying levels of analysis, such as by county, state, region, or nationally. Armed with better information, athletic directors and coaches who work within specific sports settings can assess the strengths and weaknesses of their efforts, just as school administrators and teachers do.

INTRODUCTION

Teen Sport in America: Why Participation Matters builds on previous research and policy that view teen sports as an educational tool and public health asset. Athletic participation has been shown to influence academic achievement,[1-5] psychological well-being,[6,7] and physical health favorably.[8,9] In contrast, some studies suggest potential risks of sports participation, including higher rates of substance use,[2,13] consumption of fast food and sweetened beverages,[14,15] lack of sleep,[16] and self-derogation.[17] However, little to no research has scrutinized whether adolescent health and educational achievement vary from sport to sport. Each sport has a distinct subculture and provides a distinct experience that likely influences youth behaviors and development in different ways.[12] For example, some sports may be more apt to foster healthy eating or academic achievement than other sports. Each sport likely has particular strengths and challenges in supporting teen well-being. Young people's experiences can also differ depending on how many sports they play. Moreover, most of the previous research has considered only a limited number of well-being outcomes, which can limit discovery and understanding of how sport contributes to positive youth development.[5]

The Teen Sport in America research initiative is based on an analysis of the Monitoring the Future (MTF)* nationwide surveys, a federally funded longitudinal study of American secondary education students.[11] Approximately 50,000 students from the eighth, 10th, and 12th grades have been surveyed annually since 1975 on a wide range of topics concerning their health behaviors, substance use, academic achievement, social/civic engagement, and psychological health. Starting in 2006, the MTF began collecting annual data on the specific types of sports that students participated in during the last 12 months. The list of 20 sports included in the survey were the 13 most popular sports in the United States, according to the National Federation of State High School Association's (NFHS) 2016 participation survey (i.e., baseball/softball, basketball, cheerleading**, cross-country, football, golf, lacrosse, soccer, swimming/diving, tennis, track and field, volleyball, and wrestling) and seven additional emerging youth sports identified by the NFHS survey (i.e., crew,

* See the Measures index on page 45 for more detailed information on the study design, sample and data analysis. More details on the MTF can be found at http://www.monitoringthefuture.org/.

** Monitoring the Future asks respondents if they "competed in competitive cheerleading." Many sideline cheer squads do have a culminating competitive cheer opportunity, which may have prompted respondents to respond favorably. However, it should be noted that a squad whose main focus is sideline cheer with limited competitive cheer opportunities would be unlikely to qualify as a 'sport' for Title IX purposes as defined by the Office of Civil Rights.

equestrian, field hockey, gymnastics, ice hockey, water polo, and weightlifting). An "other" response option also was included for adolescents who participate in less-popular sport opportunities. Therefore, the MTF survey data is optimal for systematically examining critical variations in adolescents' education and health behaviors by a) their overall participation in sports, b) the "breadth," or number of sports in which they participate, and c) the type of sport in which they participate using a very large representative sample of youth. The current report set out to generate detailed demographic profiles on each of the most popular 20 sports and to test hypothesized relations between participation in each specific sport and various measures of healthy development. All data analyses control for key sociodemographic variables like sex, race, and socioeconomic status. In this way, our report answers questions about how each specific sport is related to healthy development for all participating teens, regardless of their sex, race, or socioeconomic background.

Several key research questions guided our analysis.

- Are sports accessible to both boys and girls and diverse across youth from different racial/ethnic, socioeconomic, and regional backgrounds? We were interested in assessing both the diversity of sport participation more broadly and by type of sport across the 20 most popular youth sports in the country.
- Is sports participation related to positive teen well-being, and does the number of sports in which teens participate make a difference in the developmental benefits acquired by sports? We were interested in looking across a number of positive outcomes of well-being to get a more informed profile of the influence of sports participation on teens' health, academic achievement, and psychological well-being.
- What are the strengths and challenges of each of the 20 most popular teen sports in the United States for promoting teen well-being? Examining a wide range of important behaviors and outcomes within health, academic achievement, and psychological well-being, we used a rating system to compile a profile of strengths and risks for each sport for supporting teen well-being. This rating system approach is not intended to compare and contrast the health and risk profiles between sports, but rather, to identify potential areas within each sport in need of attention and improvement.

The approach and results of this report will provide an evidence-based gateway for identifying and assessing strengths and risks within each sport that can help inform the future development of sport programming (e.g., coach training), as well as familiarize the wider public and the Women's Sports Foundation and Laureus Sport for Good Foundation USA leadership with some key research findings. A basic summary of the research design and methods is included below, followed by a detailed review and discussion of our key findings.

DESIGN, SAMPLE, AND DATA ANALYSIS

The present study used cross-sectional data from the 2010 through 2015 Monitoring the Future (MTF) study of 12th-grade students. The MTF has surveyed nationally representative samples of approximately 15,000 U.S. 12th-graders each year since 1975. This study used a partial sample of 12th-graders who were randomly selected to answer questions on participation in 21 different types of competitive sports (2010 was the first year to include an expanded list of competitive sports). The response rate for the 12th-grade sample between 2010 and 2015 ranged between 82% and 87%. More details on the MTF can be found at the following website: http://www.monitoringthefuture.org/. It should also be highlighted that the MTF has also collected samples of eighth- and 10th-graders since 1991. While the inclusion of eighth- and 10th-graders would help complement the findings from the 12th-grade sample, the form assessing participation in different types of sports for eighth- and 10th-graders (Form 1) offered fewer health and psychological outcomes when compared to the form provided to the 12th-graders (Form 5). Accordingly, the majority of the report only discusses the findings from the 12th-grade sample in order to provide the widest number of outcomes for health behaviors, academic achievement, and psychological health. However, the eighth- and 10th-grade data was still useful to examine attrition rates across different sports between the eighth, 10th, and 12th grades.

The sample used for this report consists of 14,049 12th-graders who were surveyed between 2010 and 2015 (roughly 2,500 respondents per year who were randomly selected to fill out one of six possible forms). The sample was 50.2% female (49.8% male), 55.3% white, 12.0% black, 14.8% Hispanic, and 17.9% "other race." A little more than half the sample was 18 at the time of the survey (57.7%) and indicated having at least one parent with a college degree or higher (50.7%). Roughly 36.6% of respondents lived in the Southern region of the United States, while 22.8% lived in the Western region, 22.7% lived in the Midwestern region, and 22.7% lived in the Northeastern region. Roughly half of the respondents lived in suburban areas (49.3%), followed by urban (30.7%) and rural areas (19.9%).

For the analyses, descriptive statistics were provided to examine the association between competitive sport participation and the measures for health behaviors, academic achievement, and psychological health (see the Measures index for more detail on the items used and coding procedures for the analyses). In order to assess if differences across key outcomes were statistically significant, chi-square (Tables 1-3), multiple

logistic regression (Tables 4-10c), and ordinary least squares regression (Tables 12-13c) were used to assess associations between sport participation and each of the key measures for health behaviors, academic achievement, and psychological health. It should be noted that all multiple logistic and ordinary least squares regressions controlled for potentially confounding factors and included the following: age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity. Controlling for these factors helps determine if participation in certain sports has an impact on healthy development for all participants regardless of these important background characteristics. For the analyses, STATA 14.0 software was used to estimate the analyses outlined above (Version 14.0; StataCorp LP, College Station, Texas). All analyses used the weights provided by the MTF (public use files) to account for the probability of selection into the sample.

RESULTS

U.S. Teen Sports Participation Rates

Sport remains the most popular extracurricular activity within the United States, with 68% of the national representative sample of 12th-graders reporting participation in at least one sport (see Figure 1). Among the 68% of youth participating in sports, over half (37.4%) participated in two or more sports (see Figure 2). Given over one-third of youth participated in more than one sport, the researchers looked at whether participation in two or more sports, compared to a single sport, provides more benefit/risk for teens' well-being.

Figure 1. Sports Participation in General

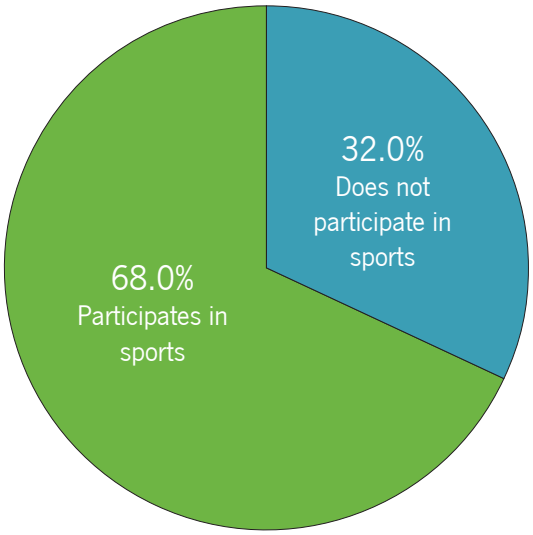
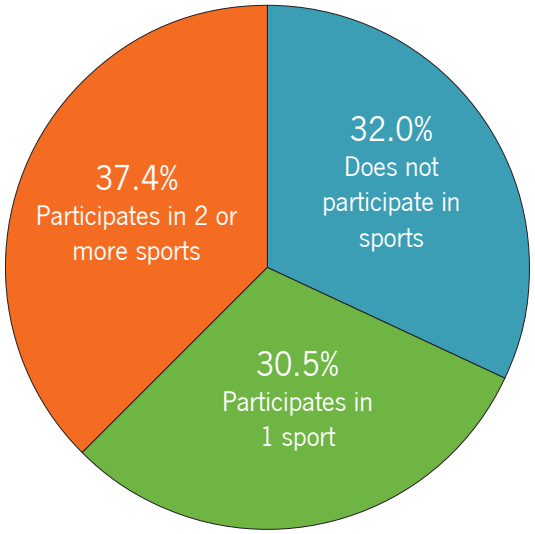


Figure 2. Number of Different Sports



Rates of participation for each of the 20 sport types considered indicated basketball (18.9%), football (14%), baseball/softball (13.6%), soccer (13%), and track and field (11.9%) were the five most popular sports. Among the "emerging sports," weightlifting (10.8%) was substantially more popular than any of the other sports (all remaining emerging sports had around a 1% participation rate). Approximately 15% of athletes reported participating in "other sports" that were not specified in the MTF's list of 20 sport opportunities. See Figures 3 and 4 on the following pages for participation percentages for all 20 sports.

Figure 3. Popular Sports for Boys and Girls

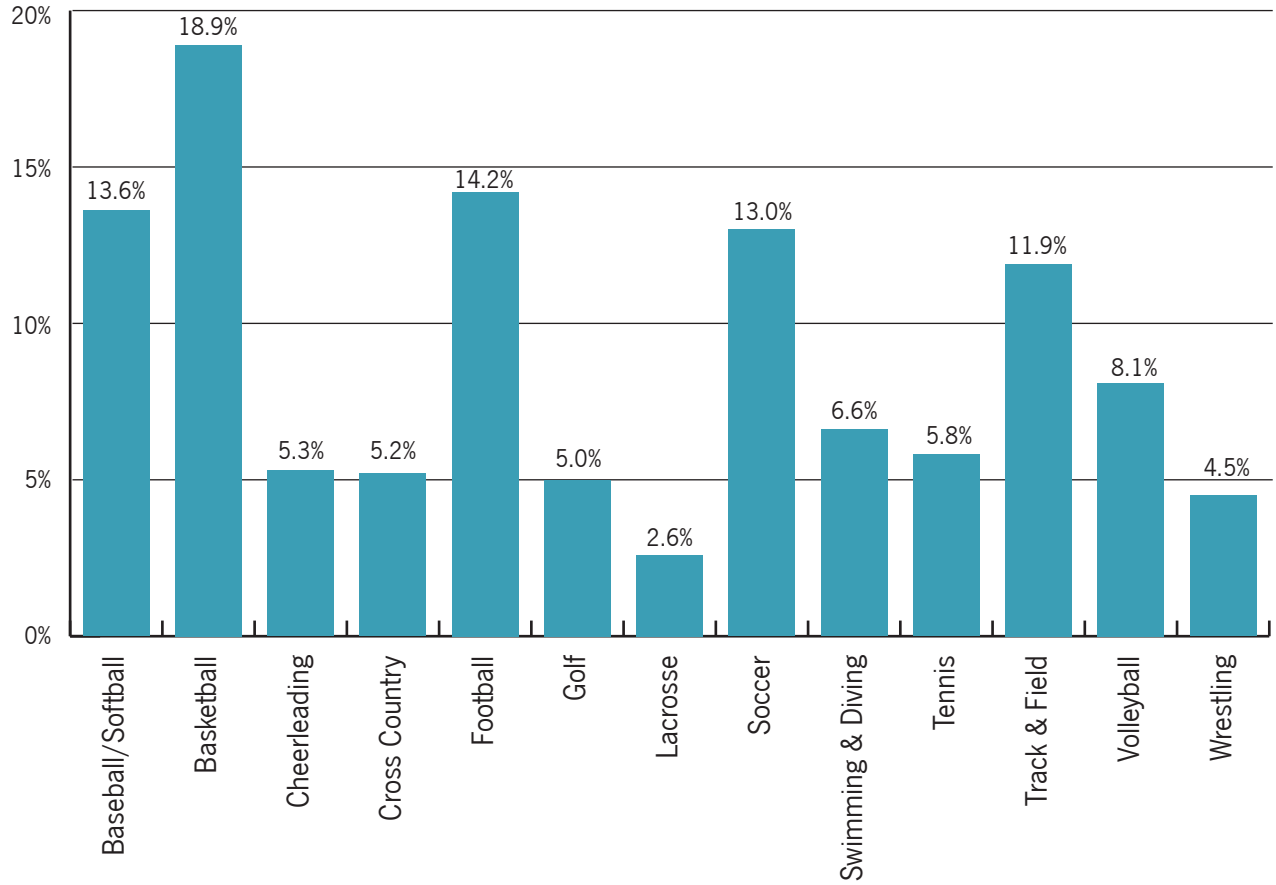
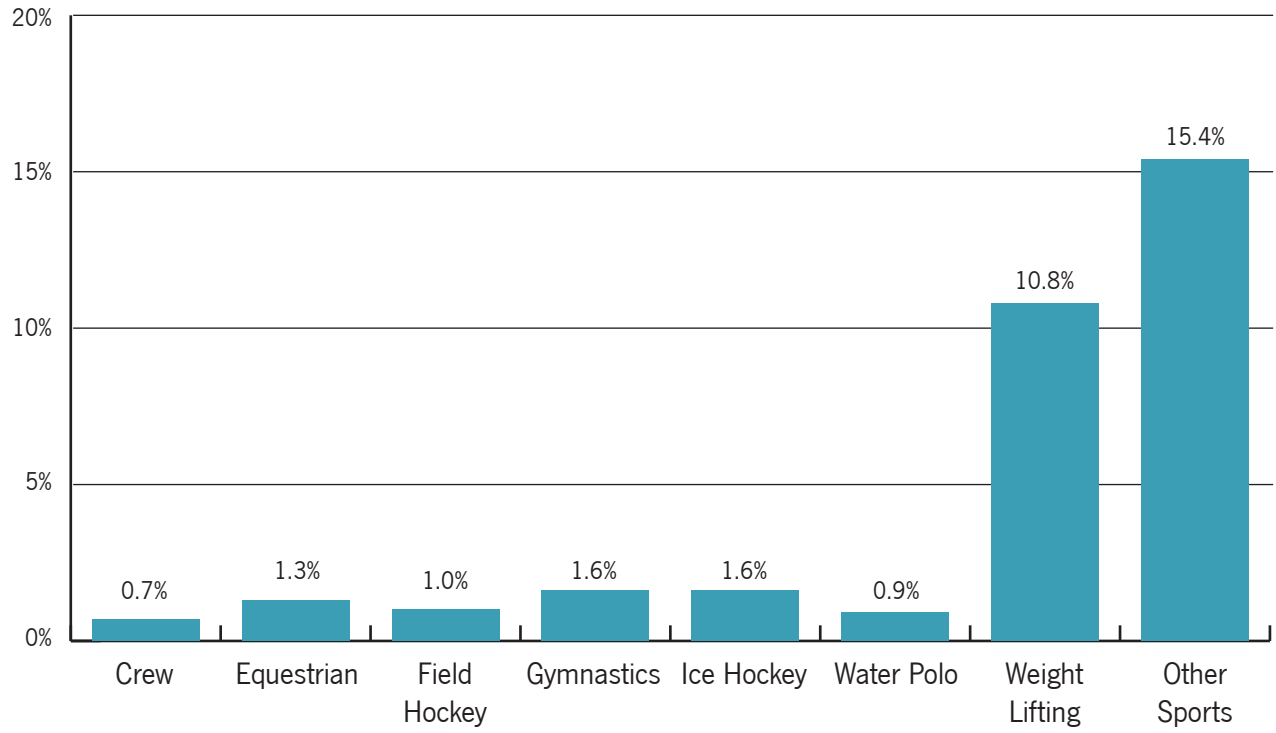


Figure 4. Emerging Sports/Less Popular Sports for Boys and Girls



Demographic Profile of U.S. Youth Sports

Girls, youth of minority status, and young people from lower socioeconomic backgrounds historically have been shortchanged when it comes to the provision of opportunities to explore and participate in sports.[9,22,23] The researchers set out to assess the extent that participants within each of the 20 most popular U.S. sports reflect diversity and inclusion.

Gender and Race/Ethnicity

Approximately 75% of all boys in the national MTF sample of 12th-graders participated in sports, with almost half participating in at least two or more sports (46.6%). Among girls, just over 60% participated in sports, with only about 29% participating in two or more sports. There were several sports that were similarly popular for both girls and boys, including basketball, baseball/softball, soccer, and track and field. Football and weightlifting also were highly popular

sports for boys, while cheerleading and volleyball were uniquely popular sports for girls.

Overall, boys participated at significantly greater rates than girls in all sports except cheerleading, volleyball, equestrian, field hockey, and gymnastics—all of which had significantly greater percentages of girls participating than boys. Tennis was the only sport that had similar percentages of participating boys and girls (see Table 1).

Research showed similar rates of sports participation among white, black, and Hispanic youth (participation ranged between 65-70% for youth from all racial/ethnic backgrounds). However, consideration of the demographic composition of each sport suggested substantial variation in diversity by type of sport. In fact, the MTF data indicated significant differences in participation rates by race/ethnicity in almost all types of sports, with a few popular sports having particularly large differences. Baseball/softball and weightlifting had particularly high participation rates among white youth compared to black or Hispanic youth, while basketball, football, and track and field had significantly higher participation rates among black youth than among white and Hispanic youth. Participation rates for soccer were significantly higher among Hispanic youth than among either black or white youth. Among all sports, only volleyball, crew, and gymnastics showed no significant differences in the race/ethnicity composition of participating youth (see Table 2 on following page).

Table 1: Examining Differences in Sport Participation by Sex

Overall	**Boys**	**Girls**	
Does not Participate in Sport	25.1%	38.9%	***
Participates in at least one sport	74.9%	61.1%	***
Number of Sports			
Does not participate in sport	25.1%	38.9%	***
Participates in one sport	28.3%	32.6%	***
Participates in 2+ sports	46.6%	28.6%	***
Most popular sports			
Baseball/Softball	16.2%	11.0%	***
Basketball	27.0%	11.0%	***
Cheerleading	0.9%	9.8%	***
Cross Country	6.0%	4.3%	***
Football	26.0%	2.2%	***
Golf	8.3%	1.8%	***
Lacrosse	3.7%	1.5%	***
Soccer	15.6%	10.5%	***
Swimming and Diving	7.3%	6.0%	**
Tennis	6.0%	5.5%	
Track and Field	13.8%	10.1%	***
Volleyball	4.7%	11.4%	***
Wrestling	7.9%	1.0%	***
Emerging sports/less popular			
Crew	0.9%	0.6%	*
Equestrian	0.5%	2.0%	***
Field Hockey	0.7%	1.3%	***
Gymnastics	0.9%	2.3%	***
Ice Hockey	2.9%	0.4%	***
Water Polo	1.3%	0.5%	***
Weightlifting	17.7%	3.9%	***
Other Sport	16.3%	14.7%	*

p<.05*; p<.01**; p<.001***

Significance tests were based on Chi-Square tests of independence (see methods section for more details).

Table 2: Examining Differences in Sport Participation by Race					
Overall	**White**	**Black**	**Hispanic**	**Other**	
Does not Participate in Sport	30.7%	34.7%	34.9%	32.5%	***
Participates in at least one sport	69.3%	65.3%	65.1%	67.5%	***
Number of Sports					
Does not participate in sport	30.7%	34.7%	34.9%	32.5%	***
Participates in one sport	30.0%	30.2%	33.4%	30.1%	***
Participates in 2+ sports	39.4%	35.1%	31.7%	37.3%	***
Most popular sports					
Baseball/Softball	15.8%	8.3%	12.7%	10.1%	***
Basketball	17.4%	30.3%	15.8%	18.7%	***
Cheerleading	5.3%	8.2%	3.0%	5.5%	***
Cross Country	5.8%	2.8%	4.9%	4.9%	***
Football	13.8%	17.6%	11.9%	15.3%	***
Golf	6.8%	1.4%	1.6%	4.3%	***
Lacrosse	3.2%	1.1%	1.1%	2.8%	***
Soccer	12.4%	5.8%	22.9%	11.1%	***
Swimming and Diving	6.5%	5.1%	6.3%	8.3%	**
Tennis	6.2%	2.9%	3.5%	8.5%	***
Track and Field	11.5%	17.0%	8.6%	12.7%	***
Volleyball	8.5%	7.4%	6.9%	8.4%	
Wrestling	4.1%	3.4%	5.2%	5.7%	**
Emerging sports/less popular					
Crew	0.7%	0.8%	0.5%	0.9%	
Equestrian	1.8%	0.4%	0.2%	1.1%	***
Field Hockey	1.2%	0.4%	0.6%	1.0%	**
Gymnastics	1.5%	1.3%	1.8%	1.9%	
Ice Hockey	2.3%	0.5%	0.6%	1.0%	***
Water Polo	1.0%	0.2%	1.0%	1.0%	*
Weightlifting	11.4%	9.2%	9.4%	11.2%	*
Other Sport	15.8%	11.9%	14.6%	17.2%	***

p<.05*; p<.01**; p<.001***

Significance tests were based on Chi-Square tests of independence (see methods section for more details).

Socioeconomic Level and Urbanicity

Access to sport opportunities is often influenced by family-level and community-level resources. Youth from economically disadvantaged families, neighborhoods, and schools have fewer economic resources to invest in athletic programs than their more affluent counterparts.[22-26] Research has consistently shown that the higher the concentration of poverty in a school, the fewer the number of sport opportunities offered, and the fewer number of youth who participate.[24,25] Previous research also has indicated that the ratio of students to sport opportunities varies by urbanicity. Urban and suburban schools tend to be larger than rural schools and offer a greater number and variety of sport opportunities, but also tend to have a larger body of students competing for the limited slots on each team.[23,26] In this report, the researchers followed common social scientific practice and used parents' level of education as a proxy for socioeconomic status, and urbanicity as a proxy for community/school-level resources in order to examine how differences in family and school-based resources influence participation in sport.

As expected, youth from families with more economic resources (parents with a college education or higher) demonstrated higher participation rates and were more likely to participate in two or more sports than less-affluent youth. Eight sports showed differentiation by family resources: basketball, cross country, golf, lacrosse, swimming/diving, tennis, track and field, and ice hockey (see Table 3 on the following page).

Although no differences appeared in sport participation rates by urbanicity (youth from urban, rural, and suburban communities were all participating in at least one sport at equal rates), consideration of the number of sports, and the type of sport revealed some important differences. Rural youth in the United States were more likely than their urban and suburban counterparts to participate in two or more sports, and they showed the highest participation rates in the majority of sports considered. The only sports with lower participation rates among rural youth were lacrosse, soccer, and swimming and diving, which showed more popularity among urban youth, and the emerging sports of ice hockey and water polo, which were more popular among suburban youth. Variations in participation rates reflected differences in access to sport. Although rural schools typically offered fewer sports opportunities than urban and suburban schools, they also tended to have fewer students, which resulted in less competition and, at times, greater recruitment of the student body to fill the available slots. Among the sports examined, cross country, football, tennis, and wrestling, as well as the emerging sports of crew, field hockey, and gymnastics, were similarly popular across youth from rural, suburban, and urban regions (see Table 3).

Table 3: Examining Differences in Sport Participation by Socioeconomic Status and Urbanicity

	Socioeconomic Status			Urbanicity			
Overall	**Both parents have less than a college degree**	**At least one parent has a college degree**		**Rural**	**Suburban**	**Urban**	
Does not participate in sport	37.5%	27.0%	***	31.1%	32.2%	32.5%	
Participates in at least one sport	62.5%	73.0%	***	68.9%	67.8%	67.5%	
Number of Sports							
Does not participate in sport	37.5%	27.0%	***	31.1%	32.2%	32.5%	***
Participates in one sport	30.1%	31.0%	***	25.9%	31.5%	32.0%	***
Participates in 2+ sports	32.4%	42.0%	***	43.0%	36.3%	35.4%	***
Most popular sports							
Baseball/Softball	13.1%	14.0%		18.8%	12.2%	12.3%	***
Basketball	17.2%	20.3%	***	23.0%	17.6%	18.2%	***
Cheerleading	5.2%	5.4%		6.9%	5.1%	4.4%	***
Cross Country	3.6%	6.6%	***	6.0%	5.0%	4.9%	
Football	14.3%	14.2%		15.0%	14.2%	13.8%	
Golf	3.0%	7.0%	***	6.4%	4.9%	4.2%	***
Lacrosse	1.7%	3.4%	***	0.9%	2.6%	3.7%	***
Soccer	12.2%	13.7%	*	11.1%	13.2%	13.8%	**
Swimming and Diving	5.6%	7.5%	***	4.7%	6.8%	7.5%	***
Tennis	4.3%	7.1%	***	5.3%	5.9%	5.9%	
Track and Field	9.9%	13.7%	***	14.7%	11.9%	9.9%	***
Volleyball	7.6%	8.6%		10.1%	7.2%	8.2%	***
Wrestling	4.9%	4.0%	*	4.8%	4.7%	3.8%	
Emerging sports/less popular							
Crew	0.5%	0.9%	*	0.8%	0.8%	0.7%	
Equestrian	1.0%	1.5%	*	1.7%	1.4%	0.8%	**
Field Hockey	0.8%	1.2%		1.0%	0.9%	1.2%	
Gymnastics	1.6%	1.6%		1.5%	1.5%	1.8%	
Ice Hockey	1.1%	2.1%	***	0.7%	1.9%	1.8%	***
Water Polo	0.8%	1.1%		0.4%	1.1%	0.9%	**
Weightlifting	10.2%	11.3%		12.5%	10.9%	9.4%	***
Other Sport	14.2%	16.6%	***	14.3%	15.6%	15.9%	

p<.05*; p<.01**; p<.001***

Significance tests were based on Chi-Square tests of independence (see methods section for more details).

Attrition

Pronounced attrition among teen athletes across elementary and secondary education occurs in the United States and tends to be more noticeable among girls, racial and ethnic minorities, and adolescents from low socioeconomic backgrounds.[22,23] According to a national study of U.S. children and adolescents, roughly 8% of third- through fifth-grade students indicated completely dropping out of sport. However, this dropout rate nearly doubled to 16% among ninth- through 12th-grade students. A goal of this report was to examine attrition rates from eighth to 12th grade for each of the 20 most popular and emerging sports in the United States.

Table 4 (on the following page) provides the participation and attrition rates across the survey years for the 20 sports examined. The sports with the highest participation rates at the 12th grade—basketball, soccer, and football—maintained high popularity in the eighth grade. Similarly, sports with the lowest participation rates in eighth grade continued to exhibit low participation rates in 12th grade (water polo, crew, and equestrian). Among the 20 sports, 16 sports lost participants between eighth and 12th grades. The average attrition across the 20 sports between the eighth and 12th grades was roughly 15.8%, with gymnastics (64.4%), volleyball (54.2%), basketball (49.1%), soccer (45.4%), and track and field (36.4%) having the highest attrition rates compared to all other sports. In contrast, golf, tennis, water polo, and weightlifting gained participants between eighth and 12th grades.

Table 4: Examining Attrition in Sport Participation between Eighth and 12th Grade

Overall	Eighth Grade	10th Grade	12th Grade		Attrition Rate(2) (eighth to 12th)
Does not participate in sport	19.2%	24.9%	32.0%	***	na
Participates in at least one sport	80.8%	75.1%	68.0%	***	15.8%
Number of sports					
Does not participate in sport	19.2%	24.9%	32.0%	***	na
Participates in one sport	26.3%	33.4%	30.5%	***	-16.0%
Participates in 2+ sports	54.5%	41.7%	37.4%	***	31.4%
Most popular sports					
Baseball/Softball	19.4%	13.0%	13.6%	***	29.9%
Basketball	37.1%	20.2%	18.9%	***	49.1%
Cheerleading	7.2%	5.2%	5.3%	***	26.4%
Cross Country	5.9%	5.3%	5.2%		11.9%
Football	22.3%	15.2%	14.2%	***	36.3%
Golf	4.4%	4.6%	5.0%		-13.6%
Lacrosse	3.8%	3.8%	2.6%		31.6%
Soccer	23.8%	14.5%	13.0%	***	45.4%
Swimming and Diving	8.7%	5.9%	6.6%	***	24.1%
Tennis	5.3%	5.4%	5.8%		-9.4%
Track and Field	18.7%	14.0%	11.9%	***	36.4%
Volleyball	17.7%	10.5%	8.1%	***	54.2%
Wrestling	4.7%	3.7%	4.5%	*	4.3%
Emerging sports/less popular					
Crew	1.0%	.8%	0.7%		30.0%
Equestrian	1.4%	1.5%	1.3%		7.1%
Field Hockey	1.5%	1.4%	1.0%		33.3%
Gymnastics	4.5%	2.0%	1.6%	***	64.4%
Ice Hockey	1.7%	2.1%	1.6%		5.9%
Water Polo	0.8%	0.8%	0.9%		-12.5%
Weightlifting	10.7%	12.1%	10.8%	*	-0.9%
Other Sport	15.7%	17.0%	15.4%		1.9%

p<.05*; p<.01**; p<.001***

Significance tests were based on Chi-Square tests of independence (see methods section for more details).

(1) Eighth- and 10th-grade samples include respondents sampled between 2010 and 2015.

(2) Attrition rates were created with the following procedure:

Step 1: (12th-grade participation rate)/(eighth-grade participation rate) = Retention rate

Step 2: (1-retention rate)*100=(Attrition rate as a percentage)

SPORTS AND YOUTH DEVELOPMENT

The goal of this report was to look across a number of positive outcomes of well-being to get a more informed profile of the influence of sports participation on teens' health, academic achievement, and psychological well-being. Three research questions guided this goal. First, is there evidence that sport participation is related to health and well-being and/or risk behaviors? Second, does the number of sports in which youth participate make a difference in promoting health or risk? Third, are there variations in the way each of the top 20 sports in the United States promote health and risk behaviors? To answer this third research question, we compiled a sport rating system that represents a profile of each sport's strengths and limitations across the number of outcomes measured for physical health, academic achievement, and psychological well-being.

Sports and Teen Health Behaviors

Some research shows participation in sport linked to health-promotive behaviors such as healthy eating, physical activity, and adequate sleep,[8,9,27,28] while other research suggests participation is linked to health-risk behaviors, such as caffeine consumption and alcohol and marijuana use.[13-16] However, to date, no research has examined whether these relations are accurate across all sports, or whether certain sports are more or less promotive of healthy behaviors. The researchers examined three critical aspects of health: diet and nutrition, active lifestyle, and substance use.

Researchers examined six different eating behaviors to determine the influence of sport on diet and nutrition. These behaviors included whether youth reported that, on a daily basis, they: 1) ate breakfast, 2) ate vegetables, 3) ate fruit, 4) consumed at least one soft drink (regular or diet), 5) consumed at least one energy drink, and 6) consumed at least one energy shot. Analysis of the large, nationally representative MTF sample provided support for the benefits of sports participation in promoting adolescents' healthy diet. Sports participants were significantly more likely to eat breakfast and fruits and vegetables daily than non-participants. Moreover, the influence of sport on healthy behaviors increased with the number of sports youth participate in, so that youth who participated in two or more sports more often engaged in these healthy eating behaviors than youth who participated in one sport. For the consumption of soft drinks, sport participation was only linked with lower consumption among youth who participated in at least two sports. Youth who participated in one sport showed similar soft drink consumption to non-athletes. Similarly, sport participation was not a protective factor against the use of energy drinks or shots – research indicated similar rates of consumption for both athletes and

non-athletes (see Tables 5a-5c below and on following page for percentages).

Table 5a: Examining the Influence of Sport Participation on Diet and Nutrition (Any Participation)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Diet and Nutrition	Eats Breakfast Everyday	Eats Green Vegetables Everyday	Eats Fruit Everyday	Has at least one soft drink per day	Has at least one energy drink per day	Has at least one energy shot per day
Does not participate in sport	33.0%	34.3%	40.2%	72.7%	25.7%	7.5%
Participates in at least one sport	41.2%***	43.0%***	52.9%***	70.1%***	28.6%	9.4%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details). Controlling for these factors helps determine if participation in certain sports have an impact on healthy development for all participants regardless of these important background characteristics.

Table 5b: Examining the Influence of Sport Participation on Diet and Nutrition (Participation in Multiple Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Diet and Nutrition	Eats Breakfast Everyday	Eats Green Vegetables Everyday	Eats Fruit Everyday	Has at least one soft drink per day	Has at least one energy drink per day	Has at least one energy shot per day
Does not participate in sport	33.0%	34.3%	40.2%	72.7%	25.7%	7.5%
Participates in one sport	38.0%**	40.0%***	47.5%***	70.7%	27.2%	8.3%
Participates in 2+ sports	43.8%***	45.4%***	57.3%***	69.6%***	29.8%	10.3%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 5c: Examining the Influence of Sport Participation on Diet and Nutrition (Participation in Specific Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Diet and Nutrition	Eats Breakfast Everyday	Eats Green Vegetables Everyday	Eats Fruit Everyday	Has at least one soft drink per day	Has at least one energy drink per day	Has at least one energy shot per day
Overall						
All Respondents	38.0%	39.3%	47.7%	71.2%	27.8%	8.9%
Does not Participate in Sports	33.0%	34.3%	40.2%	72.7%	25.7%	7.5%
Most popular sports						
Baseball/Softball	39.5%	40.1%	53.2%	76.0%**	34.2%**	11.5%
Basketball	41.8%	39.7%	51.6%	72.5%	29.5%	11.1%
Cheerleading	42.2%*	41.9%	55.4%*	72.5%*	22.0%	5.3%
Cross Country	56.8%***	51.2%*	63.9%***	62.9%*	24.3%	6.4%*
Football	40.9%	41.1%	53.4%*	71.0%	36.5%*	15.1%*
Golf	44.8%	45.4%	53.8%	73.4%	35.1%	10.0%
Lacrosse	49.2%	50.3%	62.0%*	62.9%	31.9%	13.3%
Soccer	41.7%	46.5%***	57.4%***	70.1%	28.1%	9.1%
Swimming and Diving	42.8%	48.7%	59.2%	65.1%	29.8%	9.5%
Tennis	47.7%***	51.1%*	62.0%***	63.3%***	27.0%	8.2%
Track and Field	48.6%***	46.9%*	58.9%***	64.5%***	25.9%	8.9%
Volleyball	40.3%	46.8%	60.3%**	68.8%	25.0%	8.8%
Wrestling	40.1%	43.9%	56.0%	73.0%	40.7%**	17.5%**
Emerging sports/less popular						
Crew	39.2%	54.2%	63.9%	47.9%**	29.8%	12.5%
Equestrian	42.7%	55.6%	66.2%*	69.0%	28.4%	9.8%
Field Hockey	45.0%	48.9%	61.4%	62.9%	26.7%	9.8%
Gymnastics	34.0%*	47.4%	57.4%	61.3%	22.7%	11.7%*
Ice Hockey	39.7%	45.0%	55.8%	72.0%	38.9%	21.6%***
Water Polo	45.6%	53.2%	68.4%	56.8%	31.8%	10.9%
Weightlifting	47.2%***	49.4%***	58.6%***	68.9%*	35.1%	14.0%
Other Sport	37.8%	44.9%*	53.2%*	70.5%	29.3%	8.3%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

To measure possible differences in active lifestyles, the researchers examined youth reports of whether they exercised seven days a week, and whether this exercise included vigorous physical activity (activity that makes you feel "out of breath" for at least 30 minutes) nearly every day. Youth were also asked to report whether they got seven hours of sleep nearly every day. Compared to non-athletes, sport participants were significantly more likely to engage in daily exercise, vigorous daily exercise, and acquire at least seven hours of sleep every night. Across all active lifestyle measures, the influence of sport increased with the number of sports in which youth participated, so that participation in one sport provided more benefits than no sport participation, and participation in two or more sports was healthier than participation in one sport (see Tables 6a-6c on this and following page for percentages).

Table 6a: Examining the Influence of Sport Participation on Physical Activity (Any Participation)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Physical Activity and Rest	Exercises Vigorously Every Day	Exercises 7 Days a Week	Gets 7 Hours of Sleep Every Day
Does not participate in sport	15.0%	7.0%	26.4%
Participates in at least one sport	51.8%***	21.6%***	34.2%***

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 6b: Examining the Influence of Sport Participation on Physical Activity (Participation in Multiple Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Physical Activity and Rest	Exercises Vigorously Every Day	Exercises 7 Days a Week	Gets 7 Hours of Sleep Every Day
Does not participate in sport	15.0%	7.0%	26.4%
Participates in one sport	39.4%***	16.0%***	31.5%***
Participates in 2+ sports	61.9%***	26.2%***	36.5%***

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 6c: Examining the Influence of Sport Participation on Physical Activity (Participation in Specific Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Physical Activity and Rest	Exercises Vigorously Every Day	Exercises 7 Days a Week	Gets 7 Hours of Sleep Every Day
Overall			
All Respondents	39.0%	16.8%	31.5%
Does not participate in sport	15.0%	7.0%	26.4%
Most popular sports			
Baseball/Softball	62.8%***	32.8%***	38.4%***
Basketball	59.0%***	27.6%**	34.6%
Cheerleading	41.7%***	14.0%	32.9%
Cross Country	67.5%***	26.1%	41.6%**
Football	65.9%***	32.9%**	35.8%
Golf	56.2%	30.0%	40.3%
Lacrosse	72.3%***	34.7%**	37.1%
Soccer	59.3%***	25.8%***	37.6%***
Swimming and Diving	53.4%	23.5%	32.7%
Tennis	48.3%	22.0%	32.1%
Track and Field	70.8%***	26.5%***	36.3%
Volleyball	48.9%	20.7%	33.9%
Wrestling	67.0%***	29.5%	32.6%
Emerging sports/less popular			
Crew	56.9%	34.7%	38.6%
Equestrian	41.1%	27.4%**	45.5%**
Field Hockey	48.4%	22.3%	31.8%
Gymnastics	55.2%	22.1%	30.8%
Ice Hockey	55.9%	37.2%	39.0%
Water Polo	70.2%*	32.4%	38.5%
Weightlifting	72.1%***	34.0%***	39.4%**
Other Sport	43.5%*	18.5%	28.6%***

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

As another critical component of physical health, the researchers also looked at the link between sports participation and the three most prevalent risky substance-use behaviors among youth (i.e., cigarette use, alcohol binge drinking, and marijuana use). Similar to previous studies, findings of the influence of sport participation on substance use in this report were mixed.*** For cigarette smoking, sport participation provided protective benefits, but only for youth who participated in multiple sports. Youth who participated in at least two sports were less likely to smoke cigarettes than youth who participated in one sport or no sports. However, youth who participated in one sport displayed similar rates of cigarette use as non-athletes. For alcohol, overall sports participation was a risk factor, with rates of binge drinking within the past two weeks highest for youth who participated in multiple sports. For marijuana use, sports participation was neither protective nor a risk factor. The researchers found no differences between athletes and non-athletes in the likelihood to use marijuana,

*** For a broader assessment of the impact of sports on substance use that includes substances beyond those reviewed in this report (e.g., prescription drugs, pain killers, etc.) please refer to the following articles:

Veliz P, Boyd CJ, McCabe SE. Playing through pain: Sports participation and nonmedical use of opioid medications among adolescents. *Am J Public Health.* 2013;103:e28-e30.

Veliz P, Boyd CJ, McCabe, SE. Nonmedical Prescription Opioid and Heroin Use Among Adolescents Who Engage in Sports and Exercise. *Pediatrics.* 2016;138(2).

Veliz P, Boyd CJ, McCabe, SE. Nonmedical Use of Prescription Opioids and Heroin Use Among Adolescents Involved in Competitive Sports. *J Adolesc Health. 2017;60*(3):346-349.

even among athletes who participated in two or more sports (see Tables 7a-7c for percentages).

Table 7a: Examining the Influence of Sport Participation on Substance Use (Any Participation)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Substance Use	Past 30-day Cigarette Use	Past 2-week Binge Drinking	Past 30-day Marijuana Use
Does not participate in sport	16.2%	16.5%	21.5%
Participates in at least one sport	14.1%***	23.1%***	22.0%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 7b: Examining the Influence of Sport Participation on Substance Use (Participation in Multiple Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Substance Use	Past 30-day Cigarette Use	Past 2-week Binge Drinking	Past 30-day Marijuana Use
Does not participate in sport	16.2%	16.5%	21.5%
Participates in one sport	15.0%	20.9%***	21.0%
Participates in 2+ sports	13.4%***	24.9%***	22.8%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 7c: Examining the Influence of Sport Participation on Substance Use (Participation in Specific Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Substance Use	Past 30-day Cigarette Use	Past 2-week Binge Drinking	Past 30-day Marijuana Use
Overall			
All Respondents	15.2%	21.2%	22.3%
Does not participate in sport	16.2%	16.5%	21.5%
Most popular sports			
Baseball/Softball	15.5%	25.6%	21.4%
Basketball	13.6%	24.1%	24.8%
Cheerleading	14.6%	20.5%	19.2%
Cross Country	10.1%	18.5%	15.8%*
Football	18.7%	31.4%***	30.8%***
Golf	15.5%	31.6%	23.2%
Lacrosse	21.5%**	45.9%***	38.7%***
Soccer	11.7%**	25.4%	21.6%
Swimming and Diving	13.7%	23.3%	24.0%
Tennis	11.8%	21.8%	19.6%*
Track and Field	9.5%***	19.5%**	18.8%***
Volleyball	12.5%	21.6%	18.1%
Wrestling	22.1%*	33.8%***	31.0%
Emerging sports/less popular			
Crew	15.5%	27.9%	36.0%*
Equestrian	11.3%	10.1%***	16.2%
Field Hockey	10.8%	30.5%	33.3%
Gymnastics	12.6%	22.4%	22.2%
Ice Hockey	26.7%**	42.5%*	38.7%**
Water Polo	18.6%	23.3%	32.8%
Weightlifting	18.5%	31.2%**	28.5%
Other Sport	13.8%	19.7%*	20.3%*

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

What Sports Are Making the Cut? Each Sport's Health Behavior Ratings

Overall, the MTF data indicated that sports participation was "promotive" of multiple healthy behaviors, including healthy eating, physical activity, and ample sleep. Findings also showed that while sport participation can be protective against the use of some substances when youth participate in multiple sports (e.g., cigarettes), it had no impact on other risky/unhealthy behaviors (e.g., marijuana use, caffeine intake) and can even be a clear risk factor for the use of other substances (e.g., alcohol binge drinking). As an important next step, the researchers set out to identify which sports were doing well in promoting healthy behaviors and preventing risk, and which critically needed improvement.

For diet/nutrition, several sports displayed a similar profile of positive health behaviors. Youth who participated in cross country, tennis, track and field, or weightlifting all reported daily consumption of breakfast, fruits and vegetables, and lower consumption of soft drinks at higher percentages than youth in all other sports and non-athletes. Data analyses also linked cross country to significantly lower rates of consuming energy drinks daily. In contrast, wrestling, baseball/softball, football, gymnastics, and ice hockey were linked to a less healthy diet, with youth in these sports being more likely to consume energy drinks/shots and soft drinks than those in all other sports and non-athletes. In addition to overconsumption of energy drinks/caffeine, youth in gymnastics also were less likely to eat breakfast daily than all other youth (see Table 8 on the following page).

For active lifestyle and sleep, all sport types fared similarly to or better than "other sports" and non-athletes. Baseball/softball, soccer, and weightlifting stood out as particularly healthy, linked with significantly higher percentages of youth reporting daily physical activity and sleep than all other youth in the sample. There were no sports that stood out as needing improvement (see Table 9 on page 27).

Research found track and field to be a particularly protective sport against substance use, with participating youth significantly less likely than the rest of the sample to binge drink, smoke cigarettes, or use marijuana. Cross country, soccer, tennis, and equestrian were also protective, with each having significantly lower percentages of participants reporting use of at least one of the three substances. In contrast, ice hockey, lacrosse, football, and wrestling showed particularly high risk, with youth participating in these sports having a greater likelihood to have used at least two of the three substances in the past two weeks than the rest of the national sample. Weightlifting and crew also could benefit from improvement/intervention, with each reporting higher risk for use of at least one of the three substances when compared to other sports or non-athletes (see Table 10 on page 27).

Table 8: Report Card: Diet and Nutrition(a)

	Eats Breakfast Every Day	Eats Green Vegetables Every Day	Eats Fruit Every Day	Has At Least One Soft Drink Per Day	Has At Least One Energy Drink Per Day	Has At Least One Energy Shot Per Day	Total Score
Participate in Sports	+	+	+	+	avg.	avg.	10
Cross Country	+	+	+	+	avg.	+	11
Tennis	+	+	+	+	avg.	avg.	10
Track and Field	+	+	+	+	avg.	avg.	10
Weightlifting	+	+	+	+	avg.	avg.	10
Soccer	avg.	+	+	avg.	avg.	avg.	8
Other Sport	avg.	+	+	avg.	avg.	avg.	8
Cheerleading	+	avg.	+	-	avg.	avg.	7
Lacrosse	avg.	avg.	+	avg.	avg.	avg.	7
Volleyball	avg.	avg.	+	avg.	avg.	avg.	7
Crew	avg.	avg.	avg.	+	avg.	avg.	7
Equestrian	avg.	avg.	+	avg.	avg.	avg.	7
Basketball	avg.	avg.	avg.	avg.	avg.	avg.	6
Golf	avg.	avg.	avg.	avg.	avg.	avg.	6
Swimming and Diving	avg.	avg.	avg.	avg.	avg.	avg.	6
Field Hockey	avg.	avg.	avg.	avg.	avg.	avg.	6
Water Polo	avg.	avg.	avg.	avg.	avg.	avg.	6
Football	avg.	avg.	+	avg.	-	-	5
Ice Hockey	avg.	avg.	avg.	avg.	avg.	-	5
Baseball/Softball	avg.	avg.	avg.	-	-	avg.	4
Wrestling	avg.	avg.	avg.	avg.	-	-	4
Gymnastics	-	avg.	avg.	avg.	avg.	-	4

Key: '-' = Below average [score = 0]; 'avg.' = Average [score = 1]; '+' = Above average [score = 2]

Significance tests control for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity.

Table 9: Report Card: Physical Activity and Rest(b)

	Exercises Vigorously Every Day	Exercises 7 Days a Week	Gets 7 Hours of Sleep Every Day	Total Score
Participate in Sports	+	+	+	6
Baseball/Softball	+	+	+	6
Soccer	+	+	+	6
Weightlifting	+	+	+	6
Basketball	+	+	avg.	5
Cross Country	+	avg.	+	5
Football	+	+	avg.	5
Lacrosse	+	+	avg.	5
Track and Field	+	+	avg.	5
Equestrian	avg.	+	+	5
Cheerleading	+	avg.	avg.	4
Wrestling	+	avg.	avg.	4
Water Polo	+	avg.	avg.	4
Golf	avg.	avg.	avg.	3
Swimming and Diving	avg.	avg.	avg.	3
Tennis	avg.	avg.	avg.	3
Volleyball	avg.	avg.	avg.	3
Crew	avg.	avg.	avg.	3
Field Hockey	avg.	avg.	avg.	3
Gymnastics	avg.	avg.	avg.	3
Ice Hockey	avg.	avg.	avg.	3
Other Sport	+	avg.	-	3

Key: '-' = Below average [score = 0]; 'avg.' = Average [score = 1]; '+' = Above average [score = 2]

Significance tests control for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity.

Table 10: Report Card: Substance Use(c)

	Past 30-day Cigarette Use	Past 2-week Binge Drinking	Past 30-day Marijuana Use	Total Score
Participate in Sports	+	+	avg.	5
Track and Field	+	+	+	6
Other Sport	avg.	+	+	5
Cross Country	avg.	avg.	+	4
Soccer	+	avg.	avg.	4
Tennis	avg.	avg.	+	4
Equestrian	avg.	+	avg.	4
Baseball/Softball	avg.	avg.	avg.	3
Basketball	avg.	avg.	avg.	3
Cheerleading	avg.	avg.	avg.	3
Golf	avg.	avg.	avg.	3
Swimming and Diving	avg.	avg.	avg.	3
Volleyball	avg.	avg.	avg.	3
Field Hockey	avg.	avg.	avg.	3
Gymnastics	avg.	avg.	avg.	3
Water Polo	avg.	avg.	avg.	3
Crew	avg.	avg.	-	2
Weightlifting	avg.	-	avg.	2
Football	avg.	-	-	1
Wrestling	-	-	avg.	1
Lacrosse	-	-	-	0
Ice Hockey	-	-	-	0

Key: '-' = Below average [score = 0]; 'avg.' = Average [score = 1]; '+' = Above average [score = 2]

Significance tests control for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity.

Sports and Academic Achievement

Substantial evidence from previous research has shown that participation in sports to be associated with more positive academic self-concepts, greater expectations and aspirations, and higher academic achievement and educational attainment.[1-6] The researchers found similar associations in the current report. Compared to non-athletes, a larger percentage of sport participants reported earning an average grade of "A" in school and rated themselves as "above average" on school ability and intelligence. Sport participants also were more likely than non-athletes to endorse high educational and occupational aspirations and expectations, with significantly higher percentages reporting that they aspired to and "definitely will" graduate from a four-year college, and aspired to and "definitely will" attend professional or graduate school after college. For all indicators of academic achievement and attainment, the likelihood of benefitting from sports participation increased with the number of sports in which youth participated. For measures of truancy, skipping class, and absence due to illness, researchers identified no differences between athletes and non-athletes (see Tables 11a-11c, below and on the following pages, for percentages).

Table 11a: Examining the Influence of Sport Participation on Academic Achievement (Any Participation)
Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Academic Achievement	Self-Rated School Ability Above Average	Self-Rated Intelligence Above Average	Past Month Cut Class (full-day)	Past Month Missed Class Due to Illness	Past Month Skipped Class (partial)	Average Grade in School A or A-	Will Graduate from a Four-year College	Will Attend Graduate or Professional School
Does not participate in sport	27.9%	31.9%	29.8%	43.3%	27.1%	32.7%	52.3%	21.3%
Participates in at least one sport	37.0%***	38.6%**	28.9%	39.3%	27.9%	38.2%***	64.8%***	26.0%***

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details). Controlling for these factors helps determine if participation in certain sports have an impact on healthy development for all participants regardless of these important background characteristics.

Please note that the percentages for "would want to graduate from a four-year college" and "would want to attend graduate or professional school" were omitted due to redundancy.

Table 11b: Examining the Influence of Sport Participation on Academic Achievement (Participation in Multiple Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Academic Achievement	Self-Rated School Ability Above Average	Self-Rated Intelligence Above Average	Past Month Cut Class (full-day)	Past Month Missed Class Due to Illness	Past Month Skipped Class (partial)	Average Grade in School A or A-	Will Graduate from a Four-year College	Will Attend Graduate or Professional School
Does not participate in sport	27.9%	31.9%	29.8%	43.3%	27.1%	32.7%	52.3%	21.3%
Participates in one sport	33.5%***	36.0%	29.6%	40.2%	27.5%	36.7%**	64.0%**	25.8%***
Participates in 2+ sports	39.8%***	40.8%***	28.3%	38.5%	28.2%	39.4%***	65.4%***	26.1%***

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details). Controlling for these factors helps determine if participation in certain sports have an impact on healthy development for all participants regardless of these important background characteristics.

Please note that the percentages for "would want to graduate from a four-year college" and "would want to attend graduate or professional school" were omitted due to redundancy.

Table 11c: Examining the Influence of Sport Participation on Academic Achievement (Participation in Specific Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Academic Achievement	Self-Rated School Ability Above Average	Self-Rated Intelligence Above Average	Past Month Cut Class (full-day)	Past Month Missed Class Due to Illness	Past Month Skipped Class (partial)	Average Grade in School A or A-	Will Graduate from a Four-year College	Will Attend Graduate or Professional School
Overall								
All Respondents	33.2%	35.9%	29.4%	40.6%	27.9%	35.5%	59.9%	24.2%
Does not participate in sport	27.9%	31.9%	29.8%	43.3%	27.1%	32.7%	52.3%	21.3%
Most popular sports								
Baseball/Softball	36.7%	36.7%	28.1%	38.6%	26.7%	39.6%	64.2%**	23.9%
Basketball	38.1%	40.7%	28.7%	37.5%	29.6%	37.1%	60.9%	23.8%
Cheerleading	32.0%	30.8%	28.8%	50.3%*	28.4%	42.9%	73.5%***	36.8%***
Cross Country	47.3%**	49.4%***	23.1%	32.8%	24.7%	50.6%***	70.0%*	27.0%
Football	34.8%***	39.8%*	33.1%**	38.1%	32.6%	28.5%***	55.2%	19.6%
Golf	42.0%	43.5%	27.6%	36.4%	26.8%	43.4%	68.4%*	26.4%
Lacrosse	41.6%	47.1%	36.0%*	40.9%	37.2%***	35.2%	68.6%	23.6%
Soccer	38.1%	38.3%	28.2%	37.3%	31.3%	39.9%*	67.1%***	26.4%
Swimming and Diving	40.1%	42.3%	28.0%	42.1%	32.2%	40.6%	63.9%	29.1%
Tennis	50.0%***	49.1%***	25.5%	41.9%	24.9%	52.0%***	78.4%***	33.1%***
Track and Field	41.9%***	40.0%	24.2%***	35.0%**	25.4%**	41.1%*	67.1%***	27.6%*
Volleyball	39.4%	38.4%	27.3%	43.5%	26.4%	45.7%	70.2%	31.4%
Wrestling	32.7%	39.3%	35.4%	40.0%	40.8%**	25.4%**	50.7%	20.5%
Emerging sports/less popular								
Crew	39.0%	40.2%	24.4%	51.8%	38.0%	42.2%	71.4%	40.5%
Equestrian	38.8%	41.0%	23.0%	44.1%	19.6%*	49.6%	66.6%	27.6%
Field Hockey	35.8%	29.1%	30.9%	50.7%	33.5%	45.6%	69.4%	28.9%
Gymnastics	39.2%	39.6%	27.8%	46.0%	29.9%	37.7%	64.4%	35.2%
Ice Hockey	38.4%	49.3%	33.1%	40.6%	36.4%	33.8%	59.0%	23.6%
Water Polo	47.8%	47.2%	36.7%	46.9%	46.7%**	42.2%	61.8%	32.8%
Weightlifting	41.0%**	43.9%*	31.0%	37.8%	35.0%***	34.7%	58.2%	24.7%*
Other Sport	37.1%	41.6%**	27.5%	42.5%	25.6%*	37.3%	62.0%	26.8%

p<.05*; p<.01**; p<.001***

Significance tests were based on logistic regression analyses controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details). Controlling for these factors helps determine if participation in certain sports have an impact on healthy development for all participants regardless of these important background characteristics.

Please note that the percentages for "would want to graduate from a four-year college" and "would want to attend graduate or professional school" were omitted due to redundancy.

What Sports Are Making the Cut? Each Sport's Academic Achievement Ratings

Among all 20 sports, track and field stood out as having the highest percentages of youth who excelled academically. Track and field youth more often reported high academic achievement, positive academic self-concepts (believe they were above average in school ability), high aspirations and expectations of graduating from a four-year college and attaining additional education post-graduation than all other youth. Lower percentages of track and field youth skipped class, skipped school, or experienced absences due to illness. A greater percentage of youth participants from tennis, cross country, and soccer also excelled academically; they were more likely to report having an average grade of an "A" in school and expectations to graduate from a four-year college.

In contrast, football, wrestling, lacrosse, and water polo showed the lowest percentages of youth who were excelling across the multiple indicators of academic achievement. Football and wrestling had significantly lower percentages of youth who excelled in academic performance (had an average grade of "A" in school) and, along with lacrosse, water polo, and weightlifting, displayed the highest percentages of youth who either skipped classes (wrestling, water polo, weightlifting), engaged in truancy (football), or both (lacrosse). Compared to non-athletes and other sports, football youth were less likely to have positive academic self-concepts, and water polo and equestrian youth indicated significantly lower aspirations to graduate from a four-year college. Although gymnasts fared well academically, with significantly higher percentages having positive educational expectations and aspirations, it is important to note that a greater percentage of youth in this sport reported missing school due to illness (see Table 12 on the following page).

Table 12: Report Card: Academic Achievement(d)											
	Self-Rated School Ability Above Average	Self-Rated Intelligence Above Average	Past Month Cut Class (full-day)	Past Month Missed Class Due to Illness	Past Month Skipped Class (partial)	Average Grade in School A or A-	Will Graduate from a Four-year College	Will Attend Graduate or Professional School	Would Want to Graduate from a Four-year College	Would Want to Attend Graduate or Professional School	Total Score
Participate in Sports	+	+	avg.	avg.	avg.	+	+	+	+	+	17
Track and Field	+	avg.	+	+	+	+	+	+	+	+	19
Tennis	+	avg.	avg.	avg.	avg.	+	+	+	+	+	16
Cross Country	+	+	avg.	avg.	avg.	+	+	avg.	avg.	+	15
Soccer	avg.	avg.	avg.	avg.	avg.	+	+	avg.	+	avg.	13
Other Sport	avg.	+	avg.	avg.	+	avg.	avg.	avg.	avg.	+	13
Baseball/ Softball	avg.	avg.	avg.	avg.	avg.	avg.	+	avg.	+	avg.	12
Cheerleading	avg.	avg.	avg.	-	avg.	avg.	+	+	+	avg.	12
Weightlifting	+	+	avg.	avg.	-	avg.	avg.	+	avg.	avg.	12
Golf	avg.	avg.	avg.	avg.	avg.	avg.	+	avg.	avg.	avg.	11
Volleyball	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	+	avg.	11
Basketball	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Swim/Diving	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Crew	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Equestrian	avg.	avg.	avg.	avg.	+	avg.	avg.	avg.	-	avg.	10
Field Hockey	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Gymnastics	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Ice Hockey	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	avg.	10
Lacrosse	avg.	avg.	-	avg.	-	avg.	avg.	avg.	avg.	avg.	8
Wrestling	avg.	avg.	avg.	avg.	-	-	avg.	avg.	avg.	avg.	8
Water Polo	avg.	avg.	avg.	avg.	-	avg.	avg.	avg.	-	avg.	8
Football	-	-	-	avg.	avg.	-	avg.	avg.	avg.	avg.	6

Key: '-' = Below average [score = 0]; 'avg.' = Average [score = 1]; '+' = Above average [score = 2]

Significance tests control for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity.

Sports and Psychological Health

The majority of previous studies have shown a highly positive influence of sport on various facets of psychological health, including improved self-esteem, self-efficacy, social support, and peer acceptance.[7,29] However, another set of studies suggested that for some athletes the high pressure of many high school sports, including an overemphasis on winning and impractical performance expectations, as well as other adolescent challenges—such as time management across academics, sports, and social life—leads to heightened stress and anxiety, and reduced confidence and self-esteem.[17,18] In the nationally representative MTF study, sports participation showed positive links to multiple areas of psychological health, including participants being more likely to report high self-esteem, self-efficacy, and social support and less likely to report fatalistic attitudes, self-derogation, and loneliness. Similar to physical health and academic achievement, the likelihood of psychologically benefitting from sports participation increased with the number of sports in which youth participated (see Tables 13a-13c for percentages below and on the following pages).

Table 13a: Examining the Influence of Sport Participation on Psychological Health (Any Participation)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Psychological Health	Self-Esteem (high score = high self-esteem)	Fatalism (high score = high fatalism)	Self-Efficacy (high score = high self-efficacy)	Loneliness (high score = high Loneliness)	Self-Derogation (high score = high self-derogation)	Social Support (high score = high social support)
Does not participate in sport	3.92	2.36	3.65	2.91	2.28	4.02
Participates in at least one sport	4.15***	2.22***	3.77***	2.65***	2.03***	4.17***

p<.05*; p<.01**; p<.001***

Significance tests were based on ordinary least squares regression (see methods section for more details) controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity. Controlling for these factors helps determine if participation in certain sports have an impact on healthy development for all participants regardless of these important background characteristics.

Table 13b: Examining the Influence of Sport Participation on Psychological Health (Participation in Multiple Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Psychological Health	Self-Esteem (high score = high self-esteem)	Fatalism (high score = high fatalism)	Self-Efficacy (high score = high self-efficacy)	Loneliness (high score = high Loneliness)	Self-Derogation (high score = high self-derogation)	Social Support (high score = high social support)
Does not participate in sport	3.92	2.36	3.65	2.91	2.28	4.02
Participates in one sport	4.08***	2.26***	3.73***	2.73***	2.10***	4.13***
Participates in 2+ sports	4.21***	2.18***	3.80***	2.58***	1.97***	4.21***

p<.05*; p<.01**; p<.001***

Significance tests were based on ordinary least squares regression controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

Table 13c: Examining the Influence of Sport Participation on Psychological Health (Participation in Specific Sports)

Green indicates a significant positive impact on the outcome; Red refers to a significant negative impact on the outcome.

Psychological Health	Self-Esteem (high score = high self-esteem)	Fatalism (high score = high fatalism)	Self-Efficacy (high score = high self-efficacy)	Loneliness (high score = high Loneliness)	Self-Derogation (high score = high self-derogation)	Social Support (high score = high social support)
Overall						
All Respondents	4.07	2.27	3.72	2.73	2.12	4.12
Does not participate in sport	3.92	2.36	3.65	2.91	2.28	4.02
Most popular sports						
Baseball/Softball	4.20***	2.22	3.77	2.50***	1.95***	4.22**
Basketball	4.24***	2.21**	3.80***	2.50***	1.95***	4.19*
Cheerleading	4.17**	2.27	3.83	2.82	2.05	4.20
Cross Country	4.16	2.11*	3.85**	2.70	2.01	4.18
Football	4.24***	2.27	3.73	2.47**	1.97**	4.12
Golf	4.18	2.26	3.73	2.50	1.91	4.18
Lacrosse	4.23	2.23	3.71	2.47*	1.96	4.14
Soccer	4.18***	2.22	3.76	2.57**	2.00*	4.23***
Swimming and Diving	4.18	2.27	3.83	2.69	2.07	4.21
Tennis	4.18**	2.11*	3.83*	2.62	1.99	4.19
Track and Field	4.18*	2.18	3.79	2.60**	1.99*	4.17
Volleyball	4.19*	2.16	3.85*	2.69	2.01	4.23
Wrestling	4.06*	2.38	3.68	2.65	2.21**	3.99*
Emerging sports/less popular						
Crew	4.18	2.78***	3.55*	2.93*	2.51***	3.95
Equestrian	4.18*	2.27	3.80	2.68	2.01	4.27
Field Hockey	4.06	2.20	3.70	2.50	2.10	4.10
Gymnastics	4.16	2.30	3.79	2.84	2.17	4.07
Ice Hockey	4.21	2.45*	3.58*	2.55	2.12	4.02
Water Polo	3.99	2.27	3.74	2.54	2.15	3.95
Weightlifting	4.23*	2.24	3.80*	2.55	2.01	4.16
Other Sport	4.13	2.29	3.76	2.75	2.12	4.15

p<.05*; p<.01**; p<.001***

Significance tests were based on ordinary least squares regression controlling for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity (see methods section for more details).

What Sports Are Making the Cut? Each Sport's Psychological Health Ratings

Youth who participated in the most popular sports (basketball, baseball/softball, soccer, football, tennis, and track and field) appeared to fare best in psychological health compared to all other youth in the sample. Basketball youth were particularly noteworthy for being more likely than the rest of the sample to perform well on all the measures of psychological well-being in the study. Baseball/softball, soccer, football, and track and field youth displayed a similar profile of high self-esteem and low rates of loneliness and self-derogation, with baseball/softball and soccer youth also reporting high social support. Tennis participants more often reported high self-esteem and self-efficacy, but did not differentiate from the rest of youth in the sample on social components of well-being, such as loneliness and support.

In contrast, crew, wrestling, and ice hockey fared worse overall in psychological well-being compared to the national sample. Wrestlers were more likely to struggle with self-esteem and had high rates of self-derogation and loneliness, while ice hockey athletes more often struggled with self-efficacy and fatalistic attitudes (e.g., people like me don't have much chance to be successful in life). Crew athletes performed particularly poorly across psychological outcomes, with significantly greater percentages of youth in crew struggling with low self-efficacy, fatalistic attitudes, self-derogation, and loneliness (see Table 14 on the following page).

Table 14 Report Card: Psychological Health(e)							
Psychological Health	**Self-Esteem (high score = high self-esteem)**	**Fatalism (high score = high fatalism)**	**Self-Efficacy (high score = high self-efficacy)**	**Loneliness (high score = high Loneliness)**	**Self-Derogation (high score = high self-derogation)**	**Social Support (high score = high social support)**	**Total Score**
Participate in Sports	+	+	+	+	+	+	12
Basketball	+	+	+	+	+	+	12
Baseball/Softball	+	avg.	avg.	+	+	+	10
Soccer	+	avg.	avg.	+	+	+	10
Football	+	avg.	avg.	+	+	avg.	9
Tennis	+	+	+	avg.	avg.	avg.	9
Track and Field	+	avg.	avg.	+	+	avg.	9
Cross Country	avg.	+	+	avg.	avg.	avg.	8
Volleyball	+	avg.	+	avg.	avg.	avg.	8
Weightlifting	+	avg.	+	avg.	avg.	avg.	8
Cheerleading	+	avg.	avg.	avg.	avg.	avg.	7
Lacrosse	avg.	avg.	avg.	+	avg.	avg.	7
Equestrian	+	avg.	avg.	avg.	avg.	avg.	7
Golf	avg.	avg.	avg.	avg.	avg.	avg.	6
Swimming and Diving	avg.	avg.	avg.	avg.	avg.	avg.	6
Field Hockey	avg.	avg.	avg.	avg.	avg.	avg.	6
Gymnastics	avg.	avg.	avg.	avg.	avg.	avg.	6
Water Polo	avg.	avg.	avg.	avg.	avg.	avg.	6
Other Sport	avg.	avg.	avg.	avg.	avg.	avg.	6
Ice Hockey	avg.	-	-	avg.	avg.	avg.	4
Wrestling	-	avg.	avg.	avg.	-	-	3
Crew	avg.	-	-	-	-	avg.	2

Key: '-' = Below average [score = 0]; 'avg.' = Average [score = 1]; '+' = Above average [score = 2]

Significance tests control for age, sex, race, parental education (i.e., socioeconomic status), U.S. region, and urbanicity.

CONCLUSION

The findings indicated that sport is a widely accessible activity for teens and that participants reap important benefits in health and education. Although sports remain the most popular extracurricular activity within the United States, with 68% of the national representative sample of 12th-graders reporting participation in at least one sport, equitable access and opportunities in sport remains a challenge. In particular, girls and teens from low-income families are still participating at significantly lower rates than boys and teens from more affluent backgrounds, with certain sports having greater gender and economic divides than others. Although findings suggested sports are racially and ethnically diverse (with similar participation rates found for white, black, and Hispanic youth), clear differences in the racial/ethnic composition of each sport type suggest the need for further attention towards improving equity and diversity within certain sports.

Findings pointed to sports as being a critical asset to American teens, having a highly positive influence on their academic achievement, physical health, and psychological well-being. Specifically, sports participation is linked to the increased likelihood of having a healthy diet, ample daily physical activity, and sufficient sleep, all of which have been identified as important factors in preventing obesity and related diseases and supporting long-term health,[19] achievement,[20] and well-being.[21] Sport participation is also directly related to teens having more positive academic self-concepts, higher academic performance (higher grades), and higher aspirations and expectations for acquiring a college degree and continued education specialization post-college. Previous research showed that these academic factors are important predictors of future educational attainment and occupational success.[1-6] Findings also indicated that sport participants fare better than non-athletes on multiple markers of psychological health, including having more positive views of self (e.g., high self-esteem, positive self-concept) and stronger social connections (e.g., higher levels of social support and fewer feelings of loneliness).

In considering the benefits of sports participation, it is also important to highlight that the number of sports in which youth participate matters. In almost all the outcomes considered here, teens who participated in two or more sports benefitted the most by their participation. In two cases, cigarette smoking and the consumption of soft drinks, sport participation was linked with lower consumption only among youth who participate in at least two sports. One potential reason for the greater benefits of participation in multiple sports is the cumulative effect of being exposed to multiple developmental contexts, whereby development that occurs in one context (sport 1) both reinforces and is reinforced by development in another

context (sport 2). In terms of sport types, where each can be considered its own developmental context, participation in multiple sports is believed to expose youth to a fuller range of growth-related opportunities and to help reinforce important skills for positive development (e.g., teamwork, task commitment, or balancing multiple demands on one's time). These opportunities give youth more chances to contribute, build supportive relationships with a variety of adults and peers, and have a buffer against possible negative experiences in one of the sports and/or in other important contexts of their lives.[8]

The one exception to our findings of the benefits of sports participation involved teen substance use. Although findings demonstrated that sport participation can be protective against the use of some substances when youth participate in multiple sports (e.g., cigarettes), it was surprising that it had no impact on other risky/unhealthy behaviors, such as marijuana use or caffeine intake, and can be a risk factor for alcohol binge drinking. Clear differences in the cultures of particular sports have been identified as responsible, at least in part, for sports not consistently acting as a protective factor for these risky behaviors. Recent studies have shown that categorizing sport by the amount of physical contact endured by participants may help to understand how cultural differences in sport types may lead to either being protective or promotive of health risk behaviors. In particular, sports that involve continual aggressive contact (e.g., football) may create a mentality and social norm among players that influences risky behavior off the playing field (i.e., the body is a means to an end). Conversely, sports that involve minimal (e.g., cross country) to no contact (e.g., tennis) may cultivate a normative orientation that values moderation and self-control in order to sustain long-term health (i.e., the body is an end in itself), minimizing the risk for substance use and other risky behaviors among players.[13]

As a primary goal of this report we evaluated the 20 sports most commonly accessible to American teens in their communities and schools to identify which sports were doing well in promoting health and preventing risk, and which were in critical need of improvement. Although sports have been acknowledged as the most popular extracurricular for youth and celebrated for the developmental benefits they facilitate in youth, this study is the first to provide a sport-by-sport analysis and assessment that determines how different sports support youth well-being. Using a sports rating system, this report provides a profile of each sport's strengths and limitations across a number of important factors of health and academic achievement. Findings showed that several sports are particularly effective in promoting healthy development across all three areas of well-being. These particularly supportive sports include track and field, cross country, tennis, and soccer. Another set of sports provide unique support in some but not all areas of well-being and are linked with little to no risks. For example, basketball is linked with average levels of physical health and academic

achievement, but stands out as having the highest ratings for supporting psychological health.

Findings also identified a set of sports that contribute positively to at least one facet of well-being, but can benefit from improvement in some areas. For example, football has one of the highest ratings for psychological health, but particularly low ratings for academic achievement, and substance use (alcohol, marijuana, and caffeine). Similarly, lacrosse athletes engage in several healthy behaviors (physical activity, healthy eating) and have a fairly strong profile of psychological health, but are at particularly high risk for substance use (cigarettes, alcohol, and marijuana) and poor academic achievement. Weightlifting has very positive profiles across all areas of well-being, except for substance use, where it is linked with one of the highest risks for alcohol binge drinking.

Lastly, findings identified a few sports that have particularly low total ratings and can benefit from improvements/intervention across almost all areas of well-being. For example, wrestling rates poorly on physical health because of higher risks for substance use (including excessive caffeine), has lower academic achievement because of poor grades and higher rates of skipping class, and has the highest risk of poor psychological health with risk for lower self-esteem, higher self-derogation, and lack of social support. Along with wrestling, crew and ice hockey also are among the lowest in total ratings across well-being outcomes. For these sports, the low total rating score is largely driven by the significantly higher risk of poor psychological health and substance use (marijuana use for crew; cigarette, alcohol, marijuana, and caffeine use for ice hockey) linked with participation.

EVIDENCE-BASED POLICY RECOMMENDATIONS

The goal of this study was to produce useful insights into the diversity, health, and education, of the 20 major teen sports in the United States. The findings and interpretations can be used as a catalyst for evidence-based policy development within the sports assessed here, as well as other school and community sports. The findings and assessments provide new and reliable information for sport governing bodies.

The findings and interpretations of this study provide new and reliable information for sport governing bodies, coaches, schools, and parents, among others. They can also be a catalyst for evidence-based policy development, including these recommendations.

Increase Youth Participation in Sports

Rationale: Sports remain the primary way youth can get the recommended physical activity of 60 minutes per day and has other potential benefits. But the data from this study showed that almost one-third of teens do not participate in sports at all.

Recommendation 1: Prioritize increasing youth participation in sports and physical activity, with significant input from youth about developing and implementing solutions. Ways to do this include:

- Establish national, state, and local government efforts to monitor and promote sports participation.
- Fund, support, and implement research to identify the barriers to sports participation and physical activity across different communities and populations and how to overcome them.
- Once barriers and solutions are identified, establish programs to execute strategic solutions. This should include research that looks at multiple factors impacting sports participation and uses advanced research methods and data to better understand the systems involved.

Improve Girls' Participation in Sports

Rationale: Girls are less likely than boys to participate in sports. According to the data, 38.6% percent of girls do not participate in sports, compared to 25.1% of boys.

Recommendation 2: Involve girls as a priority population in all aspects of Recommendation 1, including having girls

participate in the research and decision-making process. It will be important to determine which barriers are specific to girls and which ones are more common in particular socioeconomic groups or exist across all youth in order to create strategies needed to overcome them.

Recommendation 3: Ensure gender equity in opportunities to participate in sports. This may be done in a number of ways.

- Offer the same sports, programs, and facilities to both genders.
- Create a comparable culture for sports participation for girls, which includes changing social norms so it's more accepted and encouraged for girls to play sports.
- Provide mentorship, peer support, and awareness programs; establish female coaches and role models; educate parents and school officials; and increase the presence and images of women playing sports in various types of media.
- Identify ways to adjust the culture, composition, and operations of sports to make them more accepting of girls. Examples include making the leadership and coaching of different sports more diverse; removing rituals and behaviors that consciously or unconsciously exclude girls, such as hazing; adjusting schedules, equipment, uniforms, and rules that may be barriers; and editing promotional and instructional materials to reflect diversity.

Encourage Participation in Multiple Sports

Rationale: Participating in more than one sport increases protective health benefits, but only 37.4% of teens participate in more than one sport. Involvement in multiple, diverse sports can help broaden skill sets and, as a result, improve achievement in sports and other areas of life.

Recommendation 4: Educate youth, parents, schools, and coaches on the benefits of playing multiple sports as well as the hazards of focusing on one sport too early, which includes higher risk of injury. There are a number of ways to do this:

- Fund, support, and implement research to determine the barriers to multi-sport participation in different communities, school types and sizes, and populations, and design and develop strategies to overcome these barriers.
- Increase availability of equipment, facilities, and coaches for a wider variety of sports.
- Place limits on the lengths of seasons and practice times for a given sport. Longer and overlapping seasons and practice sessions make it more difficult for youth to participate in multiple sports.
- Limit early scouting and programs that track youth into a single sport at an early age.

Decrease Attrition from Sports

Rationale: The study found an attrition rate of 15.8% in sports participation from eighth grade to 12th grade.

Recommendation 5: Fund, support, and implement research to determine the causes of athletic attrition in different communities and populations. This should include evaluating multiple contributing factors, such as cost of sports involvement, injuries, lack of family or social support, lack of mentorship or opportunities, and sports becoming less fun or enjoyable as they become more competitive. Special attention should be paid to injury prevention.

Recommendation 6: Make it easier for youth to play sports and stick with it. Strategies for doing this include:

- Increase the number and size of varsity teams.
- Enhance opportunities for youth to play sports at the non-varsity level, such as junior varsity, club, and recreational sports.
- Improve the quality of physical education (PE) classes so they not only serve as feeders to competitive sports teams but provide opportunities, training, and education for those who remain recreational athletes.
- Require schools to provide PE classes, ensure that schools adhere to mandated PE requirements, and advocate for mandating more hours of PE.
- Conduct more multi-faceted research to further establish the link between PE, academic performance, and other current and future success.
- Coordinate sports schedules with other competing demands so teens don't have to choose between playing sports and other activities such as academics, music, drama, or work, and don't experience burnout. Also establish recommendations or regulations for practice and training time for sports.
- Make fields, courts, and other locations available to recreational sports, in addition to formal team activities.
- Expand the number of available sports to include those not traditionally offered, including emerging sports and non-competitive activities such as yoga and hiking. This will give teens more options to engage in physical activity.

Prevent Unhealthy Behaviors Associated with Certain Sports

Rationale: While sports participation is associated with a number of healthy behaviors, certain unhealthy behaviors, such as alcohol use and binge drinking, are also linked to sports participation, especially with certain sports.

Recommendation 7: Fund, support, and implement research to determine the causes of links between participation in different types of sports and unhealthy behaviors, academic performance issues, and psychological

issues, and develop potential sport-specific strategies to reduce those risks. The research should address not only sports, but also other issues that may contribute to unhealthy behaviors, such as surrounding community structure and influence, economic hardship, bullying, stress, and discrimination. Related steps include:

- Establish education, surveillance, and early intervention programs to identify and help youth who may be at risk for these unhealthy behaviors.
- Make fundamental changes in the structure and culture of particular sports to reduce the risk of unhealthy behaviors. For example, a critical point of intervention would target youth in high-contact sports — such as football, wrestling, ice hockey, and lacrosse — given their higher likelihood of engaging in substance use, along with some of the other academic and psychological challenges associated with participation.

Develop More Tailored Approaches to Increasing Sports Participation

Rationale: The study found significant variation in results for different sports and various populations. Although the study looked at different demographic groups, it did not closely examine groups such as Asian Americans and Native Americans.

Recommendation 8: Consider all of the recommendations in this report on a sport-by-sport basis. Some general principles may apply across all sports, but different sports have their unique strengths and challenges, so treating all sports as a single entity may overlook these variations.

Recommendation 9: For all of the above recommendations, explore, evaluate, and address populations and demographics that have been overlooked, including races and ethnicities that have not been well-studied and other emerging demographics. Fund, support, and implement research to do this work.

MEASURES INDEX

Measures for Sport Participation

Question: In which competitive sports (if any) did you participate during the LAST 12 MONTHS? Include school, community, and other organized sports. (Mark all that apply.)

(1) Baseball/Softball
(2) Basketball
(3) Cheerleading
(4) Cross Country
(5) Football
(6) Golf
(7) Lacrosse
(8) Soccer
(9) Swimming and Diving
(10) Tennis
(11) Track and Field
(12) Volleyball
(13) Wrestling
(14) Crew
(15) Equestrian
(16) Field Hockey
(17) Gymnastics
(18) Ice Hockey
(19) Water Polo
(20) Weightlifting
(21) Other Sport

Participates in at least one sport: if a respondent marked at least 1 of the 2 sports listed.

Number of sports: if a respondent only marked one of the sports (participates in only one sport); if a respondent marked two or more of the sports (participates in two or more sports).

Measures for Diet and Nutrition

Question: How often do you ...
(1) Eat breakfast?
(2) Eat at least some green vegetables?
(3) Eat at least some fruit?

Response options: Never, Seldom, Most Days, Nearly Every Day, Every Day – RECODED [Never, Seldom, Most Days = 0; Nearly Every Day, Every Day = 1]

Question: Regular (non-diet) soft drinks include Coke, Pepsi, Mountain Dew, Dr. Pepper, etc. How many (if any) 12-ounce cans or bottles (or the equivalent) of regular (non-diet) soft drinks do you drink PER DAY, on average?

Response options: 0="None" 1="Less than 1" 2="One" 3="Two" 4="Three" 5="Four" 6="Five or six" 7="7 or more" – RECODED [None = 0; Less than 1, One, Two, Three, Four, Five or six, 7 or more = 1]

Question: "Energy drinks" are non-alcoholic beverages that usually contain high amounts of caffeine, including such drinks as Red Bull, Full Throttle, Monster, and Rockstar. They are usually sold in 8- or 16-ounce cans or bottles. About how many (if any) energy drinks do you drink PER DAY, on average?

Response options: 0="None" 1="Less than 1" 2="One" 3="Two" 4="Three" 5="Four" 6="Five or six" 7="7 or more" – RECODED [None = 0; Less than 1, One, Two, Three, Four, Five or six, 7 or more = 1]

Question: Energy drinks are also sold as small "shots", that usually contain just 2 or 3 ounces. How many (if any) energy drink shots do you drink PER DAY, on average?

Response options: 0="None" 1="Less than 1" 2="One" 3="Two" 4="Three" 5="Four" 6="Five or six" 7="7 or more" – RECODED [None = 0; Less than 1, One, Two, Three, Four, Five or six, 7 or more = 1]

Measures for Physical Activity and Rest

Question: How often do you...
(1) Exercise vigorously (jogging, swimming, calisthenics, or any other active sports)?
(2) Get at least seven hours of sleep?

Response options: Never, Seldom, Most Days, Nearly Every Day, Every Day – RECODED [Never, Seldom, Most Days = 0; Nearly Every Day, Every Day = 1]

Question: During the LAST 7 DAYS, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you get out of breath some of the time.)

Response options: 0="0 days" 1="1 day" 2="2 days" 3="3 days" 4="4 days" 5="5 days" 6="6 days" 7="7 days" - RECODED [0 days = 0; 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, 7 days = 1]

Measures for Substance Use

Question: How frequently have you smoked cigarettes during the past 30 days?

Response options: 1="Not at all" 2="Less than one cigarette per day" 3="One to five cigarettes per day" 4="About one-half pack per day" 5="About one pack per day" 6="About one and one-half packs per day" 7="Two packs or more per day" – RECODED [Not at all = 0; Less than one cigarette per day, One to five cigarettes per day, About one-half pack per day, About one pack per day, About one and one-half packs per day, Two packs or more per day = 1]

Question: Think back over the LAST TWO WEEKS. How many times have you had five or more drinks in a row? (A "drink" is a glass of wine, a bottle of beer, a shot glass of liquor, a mixed drink, etc.)

Response options: 1="None" 2="Once" 3="Twice" 4="3 to 5 times" 5="6 to 9 times" 6="10 or more times" – RECODED [None = 0; Once, Twice, 3 to 5 times, 6 to 9 times, 10 or more times = 1]

Question: On how many occasions (if any) have you used marijuana (weed, pot) or hashish (hash, hash oil)...

Response options: 1="0 Occasions" 2="1-2 Occasions" 3="3-5 Occasions" 4="6-9 Occasions" 5="10-19 Occasions" 6="20-39 Occasions" 7="40 or More" – RECODED [0 Occasions = 0; 1-2 Occasions, 3-5 Occasions, 6-9 Occasions, 10-19 Occasions, 20-39 Occasions, 40 or More = 1]

Measures for Academic Achievement

Question: Compared with others your age throughout the country, how do you rate yourself on school ability?

Response options: 1="Far Below Average" 2="Below Average" 3="Slightly Below Average" 4="Average" 5="Slightly Above Average" 6="Above Average" 7="Far Above Average" – RECODED [Far Below Average, Below Average, Slightly Below Average, Average, Slightly Above Average = 0; Above Average, Far Above Average = 1]

Question: How intelligent do you think you are compared with others your age?

Response options: 1="Far Below Average" 2="Below Average" 3="Slightly Below Average" 4="Average" 5="Slightly Above Average" 6="Above Average" 7="Far Above Average" – RECODED [Far Below Average, Below Average, Slightly Below Average, Average, Slightly Above Average = 0; Above Average, Far Above Average = 1]

Question: During the LAST FOUR WEEKS, how many whole days of school have you missed...
(1) . . . Because you skipped or "cut"?
(2) . . . Because of illness?

Response options: 1="None" 2="1 Day" 3="2 Days" 4="3 Days" 5="4-5 Days" 6="6-10 Days" 7="11 or More" – RECODED [None = 0; 1 Day, 2 Days, 3 Days, 4-5 Days, 6-10 Days, 11 or More = 1]

Question: During the LAST FOUR WEEKS, how often have you gone to school, but skipped a class when you weren't supposed to?

Response options: 1="Not at all" 2="1 or 2 times" 3="3-5 times" 4="6-10 times" 5="11-20 times" 6="More than 20 times" – RECODED [Not at all = 0; 1 or 2 times, 3-5 times, 6-10 times, 11-20 times, More than 20 times = 1]

Question: Which of the following best describes your average grade so far in high school?

Response options: 9="A (93-100)" 8="A- (90-92)" 7="B+ (87-89)" 6="B (83-86)" 5="B- (80-82)" 4="C+ (77-79)" 3="C (73-76)" 2="C- (70-72)" 1="D (69 or below)" – RECODED [Not at all, B+ (87-89), B (83-86), B- (80-82), C+ (77-79) , C (73-76), C- (70-72), D (69 or below) = 0; A (93-100), A- (90-92) = 1]

Question: How likely is it that you will do each of the following things after high school?
(1) Graduate from college (four-year program)
(2) Attend graduate or professional school after college

Response options: 1="Definitely Won't" 2="Probably Won't" 3="Probably Will" 4="Definitely Will" – RECODED [Definitely Won't, Probably Won't, Probably Will = 0; Definitely Will = 1]

Question: Suppose you could do just what you'd like and nothing stood in your way. How many of the following things would you WANT to do? (Mark all that apply.)
(1) Graduate from college (four-year program)
(2) Attend graduate or professional school after college

Response options: 0="Unmarked" 1="Marked" – RECODED [Unmarked = 0; Marked = 1]

Measures for Psychological Health

SELF-ESTEEM Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the four items for has an alpha of .831]
(1) On the whole, I'm satisfied with myself
(2) I take a positive attitude toward myself
(3) I feel I am a person of worth, on an equal plane with others
(4) I am able to do things as well as most other people

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

FATALISM Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the two items has an alpha of .571]
(1) Every time I try to get ahead, something or somebody stops me
(2) People like me don't have much of a chance to be successful in life

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

SELF-EFFICACY Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the three items has an alpha of .566]

(1) Planning only makes a person unhappy since plans hardly ever work out anyway
(2) When I make plans, I am almost certain that I can make them work
(3) Planning ahead makes things turn out better

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

LONELINESS Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the three items has an alpha of .748]
(1) A lot of times I feel lonely
(2) I often feel left out of things
(3) I often wish I had more good friends

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

SELF-DEROGATION Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the four items has an alpha of .871]
(1) Sometimes I think that I am no good at all
(2) I feel I do not have much to be proud of
(3) I feel that I can't do anything right
(4) I feel that my life is not very useful

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

SOCIAL SUPPORT Question: Do you agree or disagree with each of the following? [NOTE: the combined construct of the three items has an alpha of .759]
(1) There is always someone I can turn to if I need help
(2) There is usually someone I can talk to if I need to
(3) I usually have a few friends around that I can get together with

Response options: 1="Disagree" 2="Mostly Disagree" 3="Neither" 4="Mostly Agree" 5="Agree" – RECODED [Disagree, Mostly Disagree, Neither = 0; Mostly Agree, Agree = 1]

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