



THE 2016 UNITED STATES REPORT CARD ON

Physical Activity for Children and Youth



PRESENTED BY





Support for development of the 2016 U.S. Report Card was provided by the following National Physical Activity Plan Alliance Organizational Partners: SHAPE America, American Council on Exercise, and American Academy of Pediatrics. Production and design of the 2016 Report Card was supported by the Pennington Biomedical Research Center and SHAPE America.

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About the National Physical Activity Plan Alliance

The U.S. Report Card Research Advisory Committee responsible for developing this report is a sub-committee of the National Physical Activity Plan Alliance (the Alliance), a 501c3 nonprofit organization. The Alliance is committed to ensuring the long-term success of the National Physical Activity Plan (NPAP). The Alliance is a coalition of national organizations that have come together to ensure that efforts to promote physical activity in the American population will be guided by a comprehensive, evidence-based strategic plan. The Alliance is governed by a Board of Directors composed of representatives of organizational partners and at-large experts on physical activity and public health (see the NPAP's website below for a complete list of partners).

ABOUT THE NPAP

The NPAP is a comprehensive set of policies, programs, and initiatives that aim to increase physical activity in all segments of the American population. It is the product of a private-public sector collaborative. Hundreds of organizations are working together to change our communities in ways that will enable every American to be sufficiently physically active. With the NPAP, the Alliance aims to create a national culture that supports physically active lifestyles. Its ultimate purpose is to improve health, prevent disease and disability, and enhance quality of life.

The NPAP has a vision: **One day, all Americans will be physically active, and they will live, work, and play in environments that encourage and support regular physical activity.**

The first U.S. National Physical Activity Plan was released in 2010 and was recently updated and re-released in 2016 with the addition of faith-based settings and sport as new societal sectors. Societal sectors are areas of opportunity for physical activity promotion that provide the infrastructure for the Plan (www.physicalactivityplan.org).

The 2016 NPAP is comprised of recommendations organized in nine societal sectors:

- **Business and Industry**
- **Community Recreation, Fitness and Parks**
- **Education**
- **Faith-based Settings**
- **Healthcare**
- **Mass Media**
- **Public Health**
- **Sport**
- **Transportation, Land Use and Community Design**

Each sector presents strategies aimed at promoting physical activity. Each strategy outlines specific tactics that communities, organizations, agencies, and individuals can use to implement the strategy. Recognizing that some strategies encompass multiple sectors, the NPAP has several overarching priorities focusing on initiatives that aim to increase physical activity.

For more information on the NPAP or The Alliance, visit: www.physicalactivityplan.org.

2016 U.S. Report Card Research Advisory Committee

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Objective of the 2016 U.S. Report Card on Physical Activity for Children and Youth

The 2016 U.S. Report Card is the second comprehensive assessment of physical activity in U.S. children and youth, updating the first Report Card released in 2014. The primary goal of the 2016 U.S. Report Card is to assess levels of physical activity and sedentary behaviors in American children and youth, facilitators and barriers for physical activity, and health outcomes related to physical activity.

The tracking of physical activity indicators over time is an important surveillance exercise that will allow for an assessment of population-level changes in behavior. The Report Card is a resource for health statistics in children and youth in the U.S. More importantly, the Report Card is an advocacy tool that provides a level of accountability and call-to-action for adult decision makers regarding how we, as parents, teachers, health professionals, community leaders, and policy makers, can implement new initiatives, programs, and policies in support of healthy environments to improve the physical activity levels and health of our children and youth.



Methodology

The Report Card Research Advisory Committee (the Committee), a sub-committee of The Alliance, included experts in diverse areas of physical activity and healthy behaviors from academic institutions and partner organizations across the country. The Committee was charged with the development and dissemination of the U.S. Report Card, which included determining which indicators to include, identifying the best available data sources(s) for each indicator, and assigning a letter grade to each indicator based on the best available evidence.

The Committee selected the same 10 indicators related to physical activity in children and youth as in the 2014 Report Card: (1) overall physical activity levels; (2) sedentary behaviors; (3) active transportation; (4) organized sport participation; (5) active play; (6) health-related fitness; (7) family and peers; (8) schools; (9) community and the built environment; and (10) government strategies and investments.

Data from multiple nationally representative surveys were used to provide a comprehensive evaluation of physical activity for children and youth. Depending on the indicator, the Committee determined which data source was most appropriate and representative for the U.S. population of children and youth. The Committee selected the best available data source as the “primary indicator” to inform the grade. The grades for the Report Card were assigned by the Committee using this primary data source, which was the most recent, nationally representative data available with consideration of recent published scientific literature and reports. Supplemental data sources were included to provide context and clarity to the grade. The supplemental sources were not always nationally representative but provided important information not readily available from the primary data source, such as disparities by age, ethnicity/race, physical or cognitive ability, socioeconomic status, and/or gender.

Each grade reflects how well the U.S. is succeeding at providing children and youth opportunities and/or support for physical activity. Table 1 presents the standard rubric the Committee used to determine a grade for each indicator.

TABLE 1 Report card grading rubric.*

GRADES	DEFINITION	BENCHMARK
A	We are succeeding with a large majority of children and youth.	81-100%
B	We are succeeding with well over half of children and youth.	61-80%
C	We are succeeding with about half of children and youth.	41-60%
D	We are succeeding with less than half, but some, children and youth.	21-40%
F	We are succeeding with very few children and youth.	0-20%
INC	Incomplete. At the present time there is insufficient information available to establish a grade.	—

*Developed by Active Healthy Kids Canada for the Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth

Physical Activity Guidelines for Children and Youth

There is strong consensus among health professionals that physical activity plays a major role in promoting children's health. The World Health Organization¹ and the U.S. Department of Health and Human Services² recommend that **children and youth engage in a minimum of 60 minutes of moderate-to-vigorous physical activity daily, including vigorous-intensity activity on at least 3 days per week.** These 60 minutes should also include muscle- and bone-strengthening activities at least 3 days per week. Moderate-to-vigorous physical activity includes activities that make you sweat or breathe hard, such as running, swimming, and bicycling. Muscle-

strengthening activities include exercises that make your muscles work

harder than during daily life, such as doing push-ups, playing tug-of-war, or climbing monkey bars. Bone-strengthening exercises produce force on the bones to promote bone growth and strength, such as when your feet make contact with the ground when playing sports or jumping rope. Sixty minutes of physical activity is a minimum recommendation, and further health benefits can be achieved with greater amounts of physical activity.



Summary of Report Card Indicators and Grades

INDICATOR	GRADE
Overall Physical Activity Levels	D-
Sedentary Behaviors	D-
Active Transportation	F
Organized Sport Participation	C-
Active Play	INC
Health-related Fitness	D
Family and Peers	INC
School	D+
Community and Built Environment	B-
Government Strategies and Investments	INC





Overall Physical Activity

PRIMARY INDICATOR: The proportion of U.S. children and youth attaining 60 or more minutes of moderate-to-vigorous physical activity on at least 5 days per week.

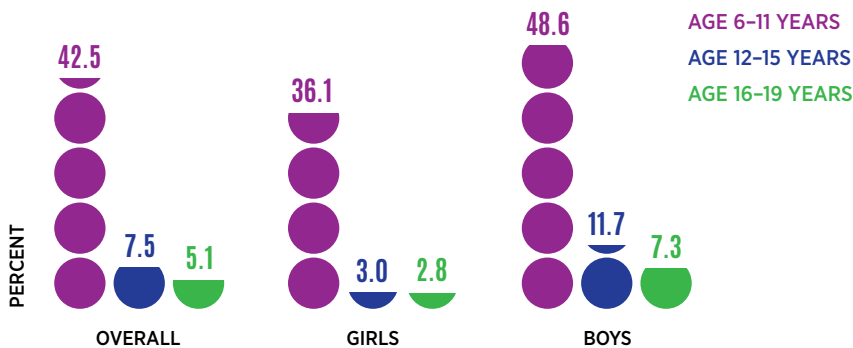
The current physical activity guidelines in the U.S.² and globally¹ call for children and youth to participate in at least 60 minutes of moderate-to-vigorous physical activity daily. The grade of D- indicates that the majority of U.S. children and youth do not meet physical activity recommendations.

Age Group	Prevalence of Activity*
6-11 YEARS	42.5%
12-15 YEARS	7.5%
16-19 YEARS	5.1%

*based on accelerometry data from the 2005-06 National Health and Nutrition Examination Survey (NHANES)

The primary data source for overall physical activity levels was the 2005-06 NHANES which provides an objective assessment of physical activity by having children wear activity monitors (accelerometers) as they go about their daily lives. Although these data are a decade old, they represent the most up-to-date device-based measurement of physical activity levels at the national level. The publically available NHANES dataset was used to estimate the prevalence of children meeting current physical activity guidelines (60 min/day) on at least 5 of 7 days of the week. Overall, 21.6% of 6-19 year old U.S. children met the guidelines. More boys (26.0%) than girls (16.9%) are physically active. There is a marked decline in physical activity levels with age in childhood for both boys and girls (Figure 1).

FIGURE 1 Prevalence of meeting physical activity recommendations in 6-19 year old children and youth in 2005-06.



Source: 2005-06 National Health and Nutrition Examination Survey. Physical activity levels were obtained by objective measurements using accelerometers.

Self-reported data from the 2015 Youth Risk Behavior Surveillance System (YRBSS) indicate that 57.8% and 39.1% of high-school aged boys and girls, respectively, reported achieving 60 min/day of physical activity on at least 5 of the last 7 days (Figure 2).³ These self-reported values are substantially higher than the device-based data from NHANES presented in Figure 1, reflecting the well-known discrepancies between self-reported and device-based assessments of physical activity.

A recently published analysis of data from 2011-2014 NHANES examined physical activity levels among children with long-term mobility limitations, defined as having an impairment or health problem that limits their ability to walk, run, or play, and lasting (or expecting to last) more than 12 months.⁴ The results showed that boys (but not girls) with mobility limitations had a significantly lower odds (odds ratio = 0.42) of meeting physical activity guidelines compared to boys without

Overall Physical Activity *(continued)*

mobility limitations.⁴ Analyses of data collected as part of the 2007 National Survey of Children's Health (NSCH) also provide evidence of disparities in physical activity among children with disabilities compared to those without.

Children ages 0-17 years with a learning disability (LD) were 33% less likely, youth with attention-deficit/hyperactivity disorder (ADHD) were 57% less likely, and youth with comorbid LD/ADHD were 39% less likely than peers to meet recommended levels of physical activity (after controlling for demographic variables).⁵

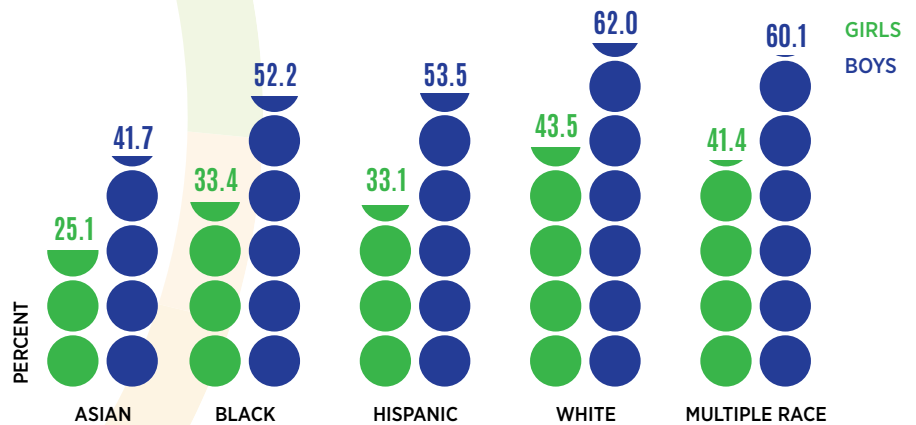
Additionally, about 34% of children with functional limitations (limited ability to do things most other children the same age can do due to the presence of an on-going medical, behavioral or other health condition) did not meet the recommendation for vigorous physical activity (3 days/week) compared to 21% of children with no special health care need.⁶ In a report of the 2011 NSCH, children with autism spectrum disorders ages 10-17 engaged in less physical activity compared to children without disabilities.⁷ These results highlight the importance of promoting physical activity among all children, including those with disabilities.

While moderate-to-vigorous physical activity is generally found to be most strongly related to positive health outcomes, emerging evidence is showing that total physical activity and light-intensity physical activity also contribute to favorable health outcomes.⁸ Wolff-Hughes and colleagues⁹ recently developed population reference values for youth using total activity counts from a waist worn accelerometer. These sorts of reference values may prove useful, as the use of total activity counts provides the benefit of capturing all physical activity performed during the day and in adults has been shown to be more strongly related to cardio-metabolic biomarkers than specific intensities of physical activity such as moderate-to-vigorous physical activity per se.¹⁰ Additionally, Canada has recently adopted a 24-hour movement guideline for children and youth which recognizes that moderate-to-vigorous physical activity is just one component to overall health and that other behaviors (i.e., sleep and sedentary time) should be taken into account as



While moderate-to-vigorous physical activity is generally found to be most strongly related to positive health outcomes, emerging evidence is showing that total physical activity and light-intensity physical activity also contribute to favorable health outcomes.⁸

Figure 2 Prevalence of meeting daily physical activity recommendations on at least 5 of 7 days/week in high school students by sex and race/ethnicity.

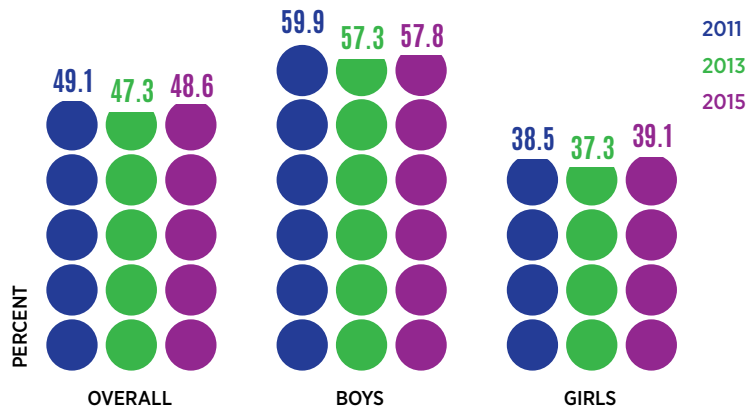


Source: 2015 Youth Risk Behavior Surveillance System. Data were obtained by questionnaires.

Overall Physical Activity *(continued)*

the relationship between moderate-to-vigorous physical activity and health outcomes can be dampened or improved based on the amount of time spent in these other behaviors.¹¹ There is a need for further investigations on how total activity affects health in children and youth independent of the amount of moderate-to-vigorous physical activity. There is also a need for further investigation on the interplay between total activity, sleep, and sedentary behaviors.

FIGURE 3 Prevalence of meeting daily physical activity recommendations on at least 5 of 7 days/week in high school student in 2011, 2013 and 2015.



Source: Youth Risk Behavior Surveillance System. Data were obtained by questionnaires.

Overall, given the low national prevalence of achieving physical activity guidelines by U.S. children and youth using objective monitoring, and evidence of age, gender and disability-based disparities, a grade of D- was assigned to this indicator. The grade on the 2016 Report Card remained the same (D-) as in the 2014 Report Card. The prevalence remains largely unchanged between the 2003-04 (the primary source for the 2014 Report Card) and 2005-06 cycles of NHANES, as well as across the last three cycles of the YRBSS (2011-2015) (Figure 3).

Overall, given the low national prevalence of achieving physical activity guidelines by U.S. children and youth using objective monitoring, and evidence of age, gender and disability-based disparities, a grade of D- was assigned to this indicator.





Sedentary Behaviors

PRIMARY INDICATOR: The proportion of U.S. youth engaging in 2 hours or less of screen time per day.

The National Heart, Lung and Blood Institute and the American Academy of Pediatrics recommend no more than 2 hours of screen time per day for children and youth.^{12,13} The grade of D- reflects the low prevalence of U.S. children and youth meeting these guidelines, and the existence of age and race/ethnic disparities in meeting the guidelines.

Age Group	Prevalence of Meeting Guidelines*
2-5 YEARS	47.1%
6-11 YEARS	39.4%
12-19 YEARS	30.8%

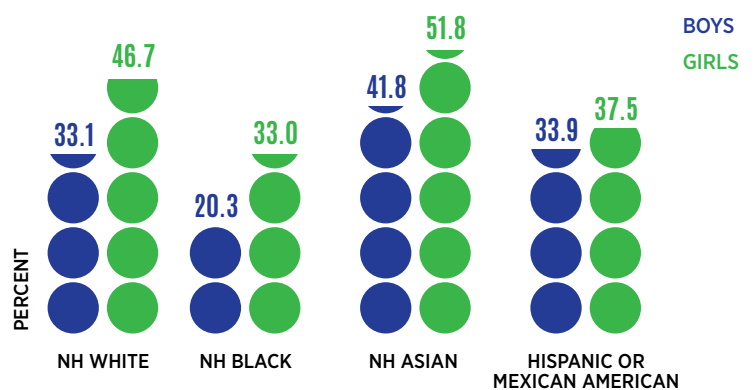
*based on data from the 2013-14 National Health and Nutrition Examination Survey (NHANES)

Sedentary behaviors are those that are characterized by low levels of energy expenditure performed while awake and in a sitting or reclining posture.¹⁴ Essentially, many researchers equate sedentary behavior with sitting. Watching television, playing traditional video games, and using electronic devices (collectively called screen time) are common leisure time sedentary behaviors among children.¹⁵

The U.S. currently does not have guidelines about recommended levels of overall daily sitting; however, the American Academy of Pediatrics and the National Heart, Lung, and Blood Institute has recommended that children should limit their screen time to no more than 2 hours each day.^{12,13} A more recent report from the American Academy of Pediatrics has recommended that physicians should counsel parents to limit total entertainment screen time to “less than 1 to 2 hours per day”.¹⁶ While this recommendation is more flexible with respect to counselling parents, it is difficult to reconcile this guideline with existing national surveillance data. Therefore, the Committee retained the recommendation of “no more than 2 hours per day of screen time” as the primary indicator this year.

The primary data source for screen time was the 2013-2014 NHANES public-use dataset. Based on our analysis, a total of 37.2% of U.S. children and youth 2-19 years of age are meeting the current screen time guidelines. However, the prevalence of meeting guidelines declines with age in childhood: 2-5 y (47.1%); 6-11 y (39.4%), and 12-19 y (30.8%). Race/ethnic disparities are also observed in screen time estimates. Non-Hispanic Asian (46.8%) and non-Hispanic white (39.6%) children and youth have the highest prevalence of meeting screen time guidelines followed by Hispanic/Mexican American (35.7%) and Non-Hispanic black (26.7%) children and youth (see Figure 4). Additionally, the prevalence of meeting

FIGURE 4 Prevalence of meeting screen time recommendations in 5-19 year old children and youth in 2013-14.



NH: Non-Hispanic.

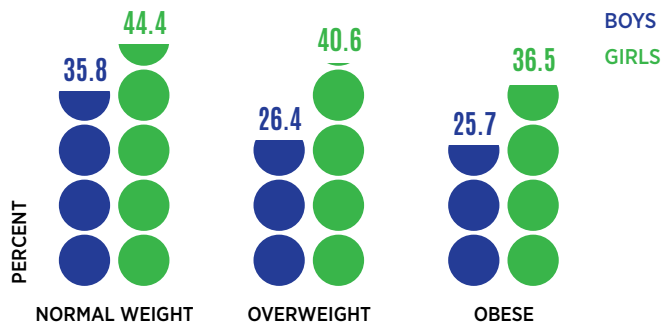
Source: 2013-14 National Health and Nutrition Examination Survey.

Sedentary Behaviors

(continued)

guidelines for screen time is lower among overweight and obese children and youth compared to those who are normal weight (see Figure 5). Overall, girls tend to meet the screen-time recommendations more than boys (Figures 4 and 5).

FIGURE 5 Prevalence of meeting screen time recommendations across categories of body mass index in 5-19 year-old children and youth in 2013-14.



Source: 2013-14 National Health and Nutrition Examination Survey

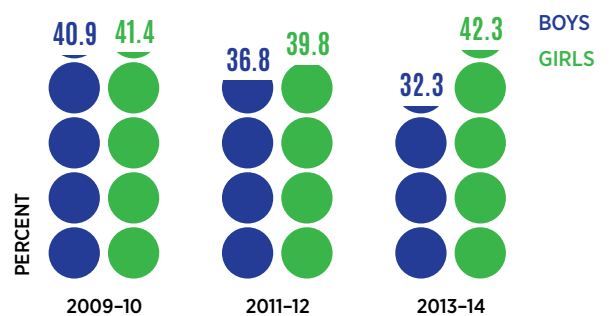
A recent analysis using data from 2011-2014 NHANES showed that among 5-11 year old children, those who received special education services were less likely (odds ratio = 0.74) to meet screen time recommendations than children who do not receive special education services.⁴ Analyses of data from the 2007 and 2011 cycles of the NSCH do not support that children 0-17 years old with autism spectrum disorders,¹⁷ ADHD, comorbid LD/ADHD,⁵ or functional limitations⁶ have increased odds of high screen time (after controlling for confounders); however, children with LD were more likely to exceed recommended levels of sedentary time.

Given the low prevalence of youth meeting screen time guidelines and the presence of age, gender and race/ethnic disparities, a grade of D- was assigned for sedentary behavior.

This grade has been lowered from a D on the 2014 Report Card given the lower prevalence of children meeting the guidelines in the 2013-14 NHANES (37.2%) compared to our previous estimate of 53.5% in the 2014 Report Card.¹⁸ For the 2016 Report Card we included additional information for children 2-5 years of age and 12-19 years of age (compared to data only from 6-11 year olds in 2014), and in addition, the screen time estimates for the 2014 and 2016 Report Cards were based on different metric scoring.¹⁹ The estimates for screen time used in the 2014 and 2016 Report Cards systematically differ, as the authors of the published study used in 2014 Report Card assigned a value of zero for screen time for responses of “<1 hour”,¹⁹ whereas in our 2016 analysis we assigned a value of 0.5 h for this category. Figure 6 shows the prevalence of meeting screen time recommendations among 6-11 year old children over three cycles of NHANES (2009-2014) using the methodology we employed for the 2016 Report Card. The precipitous decline over a relatively short period of time in boys meeting the screen time guidelines is noteworthy.

Further, the inquiry focused only on traditional forms of screen time to assess sedentary behavior among children and youth is becoming problematic. The exponential increase in handheld electronic devices has not kept pace with researchers’ ability to measure their impact on sedentary behavior. In 2015, 73% of U.S. adolescents had a smart phone²⁰, which highlights the need to adapt methods to evaluate time spent using a broader array of electronic devices.

FIGURE 6 Prevalence of meeting screen time recommendations in 6-11 year old children between 2009 and 2014.



Source: 2009-14 National Health and Nutrition Examination Survey.

A recent analysis using data from 2011-2014 NHANES showed that among 5-11 year old children, those who received special education services were less likely (odds ratio = 0.74) to meet screen time recommendations than children who do not receive special education services.⁴



Active Transportation

PRIMARY INDICATOR: The percentage of U.S. children and youth who usually walk or bike to school.

Given the lack of new data on active transportation to school since the 2014 Report Card, the grade of F was maintained based on the very low prevalence of children who walk or ride their bike to school.

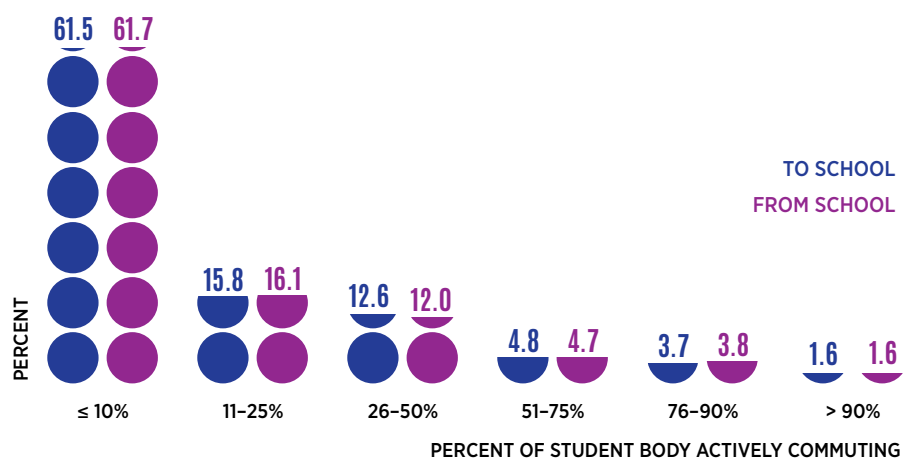
Age Group	Prevalence of Active Transportation*
5-14 YEARS	12.7 %

*based on data from the 2009 National Household Travel Survey (NHTS)²¹

Active school transportation provides an opportunity to put physical activity back into the everyday lives of U.S. children and youth. In a recent international study of children 9 to 11 years of age, 7 of 12 countries showed positive associations between active school transportation and minutes of moderate-to-vigorous physical activity.²² On average, actively commuting to school was associated with 6.0 minutes more of weekday moderate-to-vigorous physical activity. Those who actively commuted to school achieved 10% more daily moderate-to-vigorous physical activity compared to those who travelled by more passive means, such as by car or bus. Additionally, children who walked/biked to school were 80% more likely to meet the daily physical activity guidelines. A related study also found that active school transportation was associated with lower odds of children being obese (odds ratio = 0.72) compared to passive commuters to school.²³

Active transportation was given a grade of F again this year due to the lack of new data to inform an updated grade as the NHTS has not been repeated since 2009. The low prevalence of active school transportation among children based on household-based travel data is corroborated by recent evidence at the school-level. According to the 2014 School Health Policies and Practices Study (SHPPS), approximately 62% of U.S. elementary, middle and high schools have 10% of the student body or less that walk or bike to and from school (see Figure 7). Only 10% of schools have a majority of students who actively commute to and from school. While distance from home to school is an important predictor of active transportation behaviors, evidence suggests that active transportation to school is promoted by increasing route safety and accessibility, including stop signs, crosswalks, sidewalk improvement and crossing guards.²⁴⁻²⁷

FIGURE 7 Percentage of schools with students who actively commute to and/or from school.



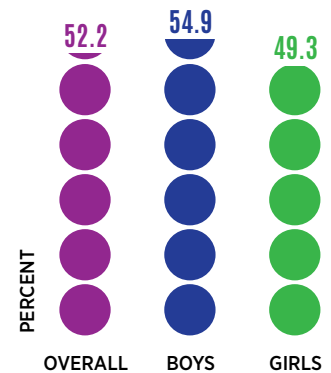
Source: 2014 School Health Policies and Practices Study.

Active Transportation

(continued)

While the prevalence of active transportation to school is low, school represents only one location in the community to which children actively commute. According to the 2012 NHANES National Youth Fitness Survey (NNYFS), approximately half (52.2%) of U.S. adolescents usually walk or ride their bike to get to and from various places, such as to school, for shopping, and to recreation sites (see Figure 8). A notable study²⁸ examined relationships between walking/biking to recreation sites (i.e., swimming pool, public playground, parks, etc.) and use of these sites for physical activity. Parents reported that their 5 to 11 year old children walked or biked to 3.2 recreation sites on average, and adolescents 11 to 18 years of age reported walking or biking to 4.5 recreation sites on average. Regardless of distance from the home to the recreation site, walking/biking to sites was associated with more frequent active use of various indoor and outdoor recreation sites among children and adolescents. Thus, active transportation represents two opportunities for physical activity, both during the commute and while at the recreation site.²⁸

FIGURE 8 Percentage of 12 to 15 year-old children and youth who usually walk or ride their bike to locations.



Source: 2012 NHANES National Youth Fitness Survey.

Children who actively commuted to school achieved 10% more daily moderate-to-vigorous physical activity compared to those who travelled by more passive means, such as by car or bus.²²





Organized Sport Participation

PRIMARY INDICATOR: The proportion of U.S. high school students participating on at least 1 school or community sports team.

A grade of C- for organized sport participation reflects the data that more than half of U.S. youth participate on at least 1 organized sports team. However, the prevalence of sports participation among girls is significantly lower than that among boys.

Gender	Proportion on One or More Teams*
BOYS	62.2%
GIRLS	53.0%

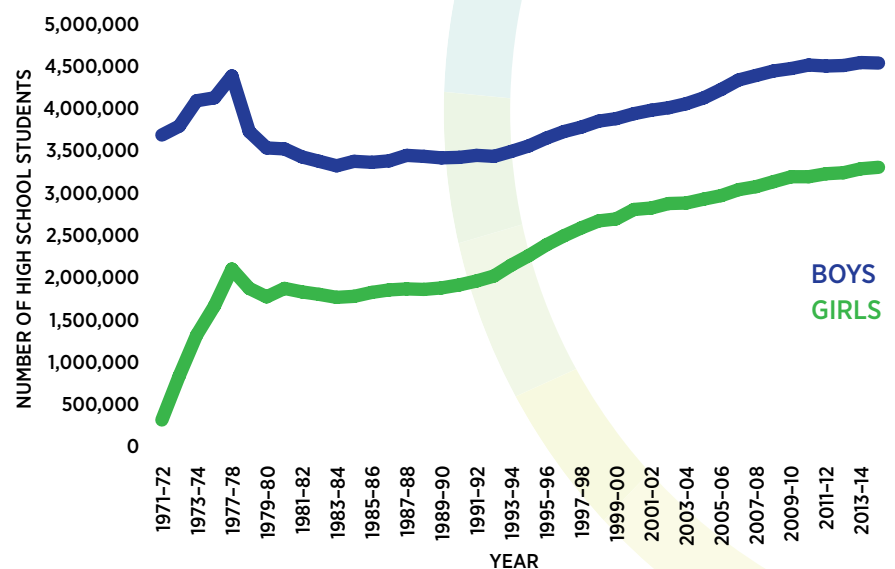
*based on data from the 2015 Youth Risk Behavior Surveillance System

Organized youth sports have a long, rich history in the United States. Figure 9 shows the long-term increasing trends in high school sport participation since the early 1970s. Participation in organized youth sports represents a significant outlet for youth to be active.^{29,30} In a study among youth participating in soccer and softball/baseball, children obtained an average of 45.1 minutes of moderate-to-vigorous physical activity during practice, highlighting the potential for youth sports to provide significant opportunities for physical activity.³¹ However, in the same study, only 24% of participants met the daily physical activity guideline of 60 minutes of moderate-to-vigorous physical activity solely through youth sports practices which suggests that physical activity must also be encouraged in other domains in order to meet the guidelines.³¹

The grade for the 2016 Report Card is C-, reflecting the fact that more than half of youth are participating on at least one sports team; however, a significant gender disparity exists where sports participation remains higher in boys than girls. This disparity is evident in the data in Figure 9 where an increase is observed in both boys and girls since the early 1970's, but a significant gender gap still exists. Further, data from the YRBSS also demonstrates a gender gap in participation rates which has remained fairly constant between 2011 and 2015.

In 2010, the U.S. Government Accountability Office (GAO) published a Report to Congressional Requesters on the opportunities for students with disabilities in physical education and extracurricular athletics.³² To determine what is known about these opportunities, the GAO examined data from four national surveys: the 2006 SHPPS, the

FIGURE 9 High school sport participation in boys and girls in the U.S. between 1971 and 2015.



Source: National Federation of State High School Associations 2014-15 High School Athletics Participation Survey.

Organized Sport Participation

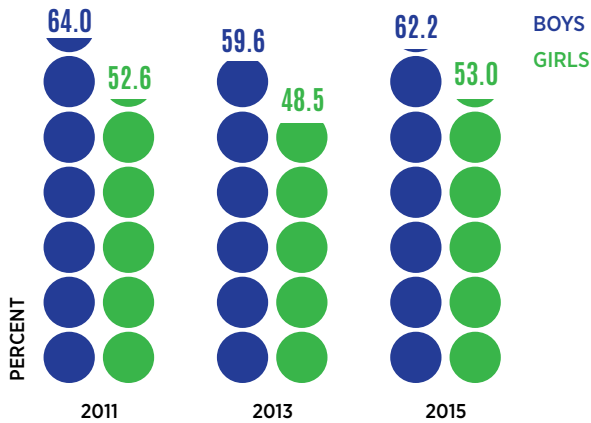
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2005 YRBSS, 2001 data from the National Longitudinal Transition Study-2 (NLTS2), and 2000 data from the Special Education Elementary Longitudinal Study. According to the GAO analysis of NLTS2 2001 data (Wave 1), 33% of students with disabilities in grades 7-12 reported participating on a sports team.³² When examined by gender, significantly fewer girls with disabilities (23%)

participated on a sports team compared to boys (37%). Differences in participation rates across disability type also existed; with 47% of students with a hearing impairment participating on a sports team (highest) while only 16% of students with autism participated (lowest).³² Such disparities contributed to a lower assigned grade for sports participation.

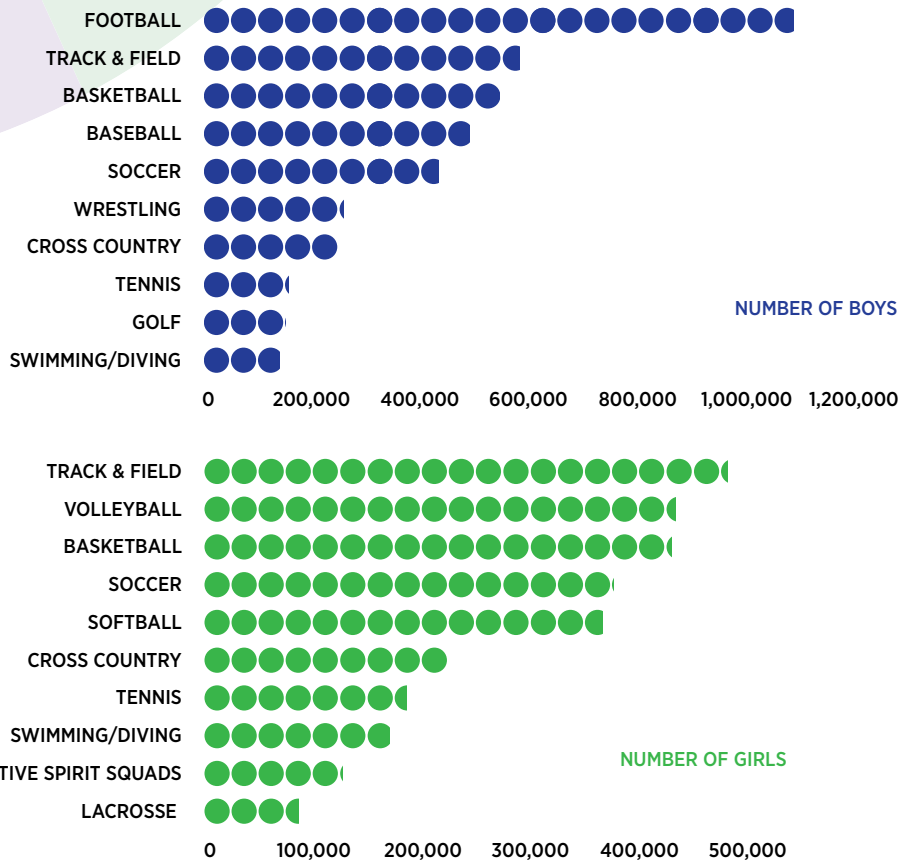
The most popular sports among high school students in 2014-15 are presented in Figure 11. In boys, the most popular sport is football, followed by track and field, basketball and baseball, whereas in girls the most popular sport is track and field, followed by volleyball, basketball and soccer.

FIGURE 10 Trends in youth sports participation in high school students between 2011 and 2015.



Source: Youth Risk Behavior Surveillance System.

FIGURE 11 Most popular sports in high school boys and girls in 2014-15.



Source: National Federation of State High School Associations 2014-15 High School Athletics Participation Survey.





Active Play

PRIMARY INDICATOR: The proportion of U.S. children and youth participating in daily, unstructured unorganized play.

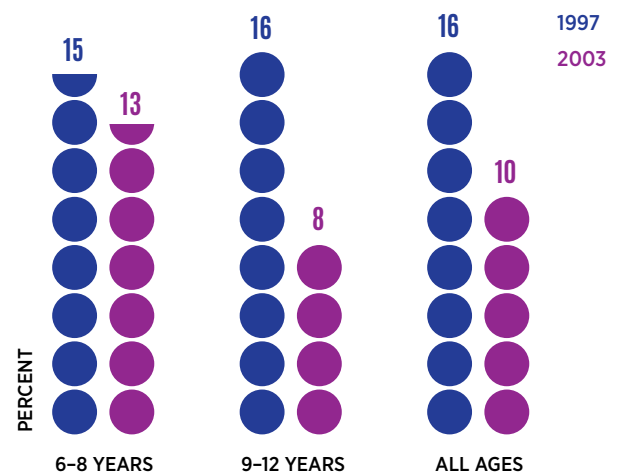
Unstructured, active play is an important outlet for physical activity for children and youth. However, there is currently a lack of nationally representative data on active play time which led to the assignment of an incomplete grade to this indicator.

There is some evidence that children may be more active during free play when adults (parent, coach, etc.) are not directly leading activities when compared to organized events.³³ A recent study conducted in Australia found that children of parents who allowed them to play outside independently (without adult supervision) had higher levels of light and total physical activity.³⁴ The Committee acknowledges that active play is an important outlet for children to be active in fun, safe environments. However, the incomplete grades on the 2016 Report Card as well as the 2014 Report Card¹⁸ represent a lack of nationally-representative data assessing how much time children and youth in the U.S. spend engaging in active play. This is an important area for future national surveillance efforts.

A recent systematic review has demonstrated the overall positive effect of outdoor time on physical activity, sedentary behavior and cardiorespiratory fitness in children.³⁵ Although outdoor time may be one proxy for active play, time spent outdoors can also be consumed by organized sports participation and other activities that may not represent “active play” per se. Although the authors could not determine whether the association was causal due to a lack of randomized trials, the results suggest that children are more active when outdoors compared to indoors. An analysis of time-use data in 6-12 year old U.S. children showed that the percentage of children who spent time outdoors decreased by approximately 37% between 1997 and 2003 (see Figure 12).³⁶

Although outdoor time may be one proxy for active play, time spent outdoors can also be consumed by organized sports participation and other activities that may not represent “active play” per se.

FIGURE 12 Percentage of children who spent time spent outdoors among 6-12 year old U.S. children and youth in 1997 and 2003.



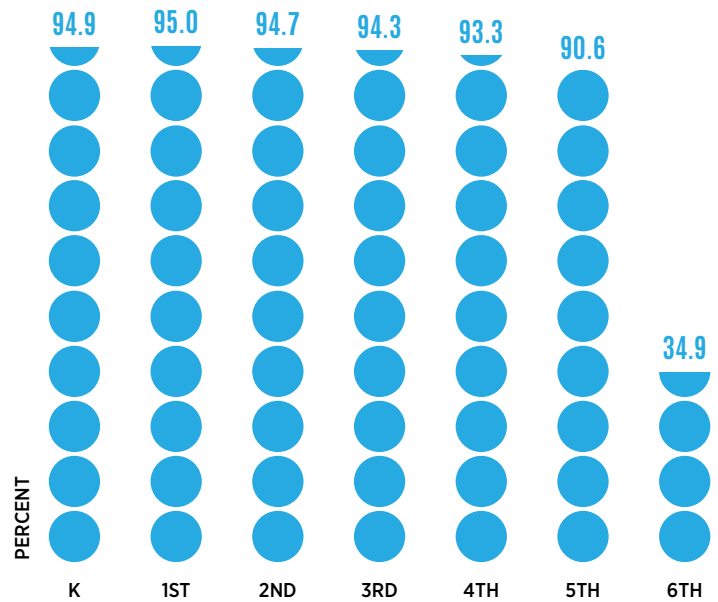
Source: 1997 and 2003 Child Development Supplement to the Panel Study of Income Dynamics.³⁶

Active Play *(continued)*

Outdoor recess offered during the school day is one opportunity for children and youth to engage in active play. According to the 2014 SHPPS, more than 90% of elementary schools offer recess to children from kindergarten through the fifth grade; however, this figure drops dramatically to 34% in the 6th grade (see Figure 13).³⁷ In 93.1% of elementary schools, the format of recess allows for children to engage in unstructured free play.³⁷

Outdoor recess offered during the school day is one opportunity for children and youth to engage in active play.

FIGURE 13 Percentage of elementary schools in which students participate in regularly scheduled recess during the school day, by grade level.



Source: 2014 School Health Policies and Practices Study;³⁷ K: Kindergarten.





Health-Related Fitness

PRIMARY INDICATOR: The proportion of U.S. youth meeting cardiorespiratory physical fitness standards.

Data from the NHANES National Youth Fitness Survey indicate that less than half of adolescents 12-15 years of age are meeting the FITNESSGRAM® cardiorespiratory fitness standards, and there are significant gender disparities evident in several components of health related fitness, resulting in a grade of D.

Gender	Prevalence Meeting Cardiorespiratory Fitness Standards*
BOYS	50.4%
GIRLS	33.9%

*based on data from the 2012 NHANES National Youth Fitness Survey (NNYFS)

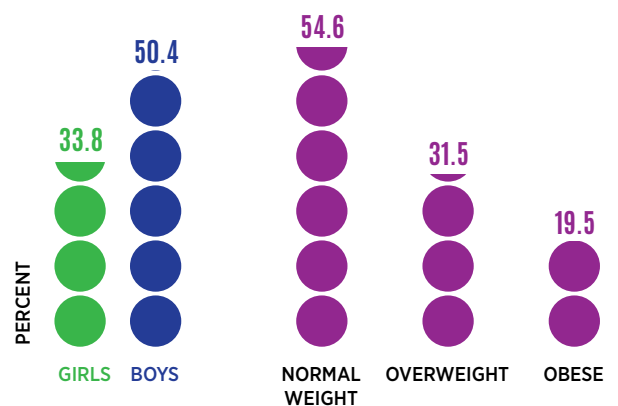
Health-related fitness refers to those components of physical fitness that are affected by physical activity and relate to health status.³⁸ The main components of health-related fitness are cardiorespiratory (aerobic capacity); muscular (strength and endurance); morphological (body composition); motor (speed, agility and coordination); and metabolic (blood pressure, glucose and lipid metabolism, etc.). All of the health-related fitness components are responsive to regular physical activity, and interact to influence the health status of children and youth.

The primary data source for health-related fitness was the 2012 NNYFS, and the benchmark was the proportion of youth who were in the Healthy Fitness Zone (HFZ) for cardiorespiratory fitness using the FITNESSGRAM® criteria, based on age and gender.³⁹ Cardiorespiratory fitness (maximal aerobic capacity) was estimated using a sub-maximal treadmill test in adolescents 12-15 years of age.

Among 12-15 year olds participating in the 2012 NNYFS, only 42.3% were in the HFZ for cardiorespiratory fitness. Further, there were disparities by gender and race/ethnicity. Significantly fewer girls (33.8%) than boys (50.4%) were in the HFZ (Figure 14), and there were differences across race/ethnicity, with 37.6% of non-Hispanic black, 42.7% of Hispanic/Mexican American, and 44.2% of non-Hispanic white youth meeting the HFZ criterion. Cardiorespiratory fitness levels also varied across body weight categories (See Figure 14). Only 19.5% of youth with obesity were in the HFZ compared to 31.5% of overweight and 54.6% of normal weight youth.

Given the low prevalence of U.S. adolescents meeting the HFZ criteria and the presence of significant disparities, a grade of “D” was assigned to this indicator. Data on physical fitness were not available for the 2014 Report Card, so the grade in this year’s report card represents the baseline for assessing future trends.

FIGURE 14 Percentage of 12-15 year old adolescents meeting cardiorespiratory fitness standards for the FITNESSGRAM®.



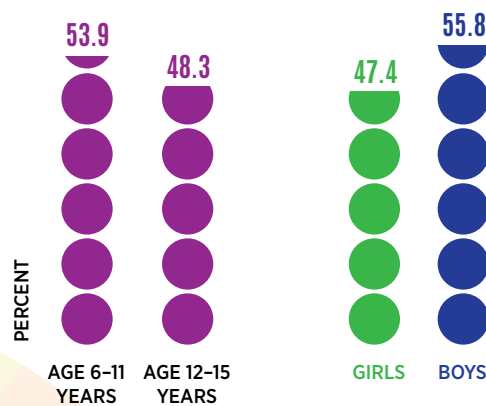
Source: 2012 NHANES National Youth Fitness Survey.

SECONDARY INDICATORS

In addition to the primary indicator of cardiorespiratory fitness, several secondary indicators of health-related fitness were evaluated using nationally representative data.

Muscular fitness was evaluated in the 2012 NNYFS. Modified pull-ups were performed by children and youth between ages 6 and 15 years, and this metric was used to classify them with respect to muscular fitness. Overall, 51.7% were in the HFZ of the FITNESSGRAM® for pull-ups; however, there were significant differences in performance across body weight categories. Only 21.2% of youth with obesity were in the HFZ compared to 48.3% of overweight and 63.5% of normal

FIGURE 15 Percentage of 6-15 year-old U.S. children meeting the muscular fitness standards for the FITNESSGRAM® based on the number of modified pull-ups performed.



Source: 2012 NHANES National Youth Fitness Survey.

weight youth. The prevalence of meeting the FITNESSGRAM® HFZ for modified pull-ups declined with age and was higher in boys compared to girls (Figure 15).

A common metric for morphological fitness is body mass index (BMI), which is often used to diagnose childhood obesity (BMI $\geq 95^{\text{th}}$ age- and sex-specific percentile of reference data). According to a recent report from NHANES (2011-2014), 17.0% of 2-19 year old children are obese and 5.8% suffer from extreme obesity ($\geq 120\%$ of the 95th BMI percentile).⁴⁰ The prevalence of childhood obesity has increased significantly in recent decades, as the prevalence was 10% in the 1988-94 NHANES.⁴⁰

Published analyses of the 2007 and 2011 cycles of the NSCH data indicate that

obesity prevalence among children with autism spectral disorders 6-17 years of age (16.4%)¹⁷ and intellectual disabilities 10-17 years of age (28.9%)⁴¹ were significantly higher compared to children without disabilities (9.9% and 15.5%, respectively). These data are supported by a survey of 662 parents of children with disabilities throughout 49 states in the U.S. that found obesity prevalence among adolescents with physical or cognitive disabilities to be significantly higher (17.5%) than adolescents without disabilities (13%).⁴²

Metabolic fitness encompasses biological markers of metabolic health such as glucose tolerance, insulin resistance, lipid metabolism, and substrate oxidation characteristics.³⁸ One marker of metabolic fitness is the metabolic syndrome, which is a constellation of metabolic risk factors encompassing high blood pressure, central obesity, and poor glucose and lipid metabolism. Children who have three or more risk factors (i.e. high blood pressure, high waist circumference or BMI, high blood glucose, low HDL cholesterol, high triglycerides) are considered to have the metabolic syndrome.

A common metric for morphological fitness is body mass index (BMI), which is often used to diagnose childhood obesity. According to a recent report from NHANES (2011-2014), 17.0% of 2-19 year old children are obese and 5.8% suffer from extreme obesity.⁴⁰

Health-Related Fitness *(continued)*

Based on an original analysis of data from the 2011-2014 NHANES for the 2016 Report Card, the overall prevalence of metabolic syndrome was 7.9% in 12-19 year olds, and the prevalence was higher in boys (9.9%) than girls (5.9%). Table 2 presents a breakdown of the prevalence of metabolic syndrome and its components in boys and girls. Overall, having a high BMI and high blood glucose were the most common components, followed closely by low HDL-cholesterol and high blood triglycerides. Less than 5% had high blood pressure, making it the least prevalent of the risk factors in this adolescent population.

A recent study investigated changes in metabolic syndrome prevalence in youth, and the results indicated that despite increases in the prevalence of obesity and average BMI levels between 1999 and 2012, the prevalence of metabolic syndrome has gone down significantly. The authors attributed the decrease in metabolic syndrome prevalence to improvements in HDL-cholesterol and blood triglyceride levels.⁴³

The grade of “D” for health-related fitness largely reflects the poor cardiorespiratory fitness of U.S. youth. Similarly, data on the other components of health-related fitness confirm that children and youth are far below recommended fitness levels across the board.



Data on the other components of health-related fitness confirm that children and youth are far below recommended fitness levels across the board.

TABLE 2 Percentage of 12-19 year old adolescents with the metabolic syndrome and its sub-components.

RISK FACTORS	OVERALL	GIRLS	BOYS
Metabolic Syndrome	7.9 (5.5-10.4)	5.9 (3.2-8.7)	9.9 (6.0-14.0)
High BMI	21.1 (17.3-25.0)	22.5 (17.5-27.5)	19.8 (14.9-24.7)
High Blood Pressure	4.8 (2.8-6.8)	3.5 (2.1-5.0)	6.1 (2.5-9.7)
Elevated Blood Glucose	19.5 (16.6-22.5)	11.4 (7.9-14.9)	27.5 (22.7-32.3)
High Triglycerides	16.4 (13.0-19.8)	12.8 (8.2-17.5)	19.9 (15.1-24.8)
Low HDL	17.1 (13.9-20.4)	12.6 (9.3-15.8)	21.7 (17.2-26.2)



Family and Peers

PRIMARY INDICATOR: The proportion of U.S. parents/guardians and peers who provide social and instrumental support for children’s physical activity.

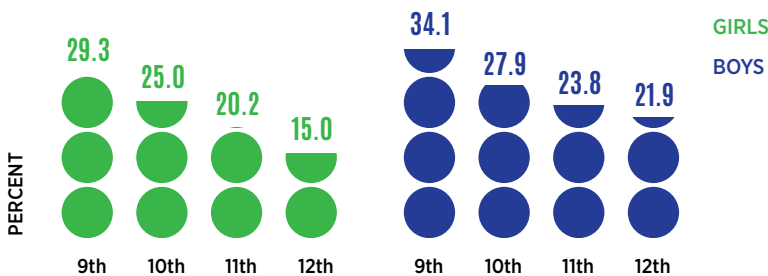
Family and peer support for physical activity is an important aspect of children’s motivation and ability to be physically active. Although this is an important aspect to track, the lack of nationally representative data on social and instrumental support for physical activity led to an assignment of an incomplete grade for this indicator.

Physical activity is a behavior that has a strong social and cultural component – children and youth do not participate in physical activity in a “vacuum.” Parents and friends have an important role to play in promoting physical activity. Unfortunately, there are currently no nationally representative data available to inform the assignment of a grade for family and peers. Thus, assessing family and peer support for physical activity is highlighted as a priority for future surveillance efforts.

A recent synthesis of published studies examining the role of peers and social support for physical activity has highlighted the important role of friendship and peer group influences on physical activity.⁴⁴ There is strong evidence for the clustering of physical activity behaviors among friends and within peer groups, suggesting that future intervention might include targeting the physical activity of entire peer groups.

Parents and peers can provide both instrumental and social support to encourage physical activity in children and youth. Instrumental support includes enrolling children in youth sports, paying their physical activity registration fees, and driving them to participate in dance and sport. Social support more broadly impacts physical activity through encouragement to be active and role-modelling healthy physical activity behaviors.

FIGURE 16 Prevalence of adults in the household who encourage children to be physically active on a daily basis, by grade level.



Source: 2010 National Youth Physical Activity and Nutrition Study.

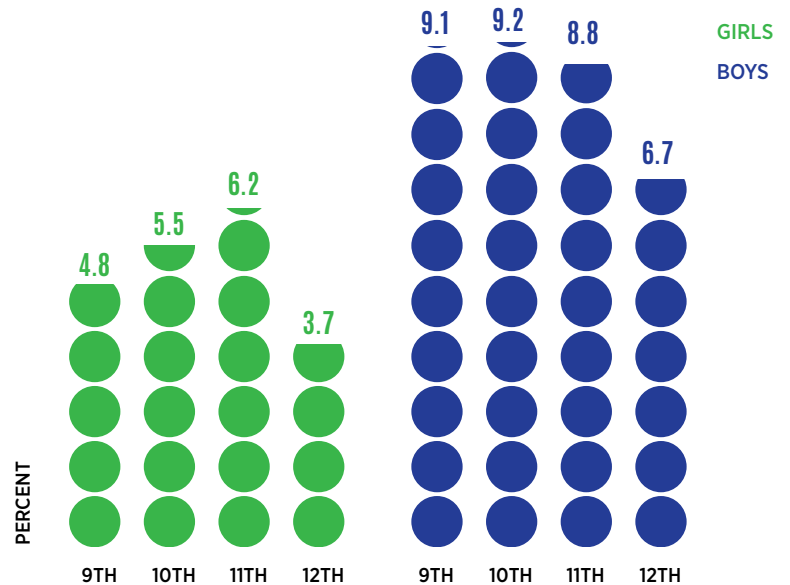
According to results from the 2014 School Health Profiles Survey, between 22.1% and 57.8% (median of 41.9%) of secondary schools in the U.S. provide parents and families with health information about physical activity.⁴⁵ However, our analysis of data from the 2010 National Youth Physical Activity and Nutrition Study (NYPANS) indicate that the prevalence of adults who encourage children in their household daily to be physically active is low and decreases across grade levels in high school (Figure 16). Further, the prevalence of adults who

Family and Peers *(continued)*

actually participate in physical activity or play sports with children in their household on a daily basis is less than 10% and tends to be higher for boys than for girls (Figure 17).

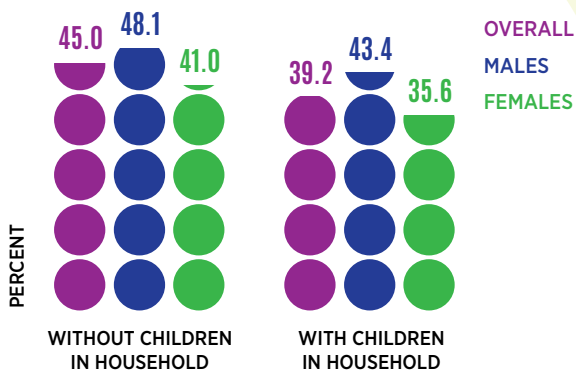
In an effort to ascertain some indirect evidence of parents/guardians as role models for physical activity, a subset of adults (20-50 years of age) from the 2013-2014 NHANES dataset with children 17 years of age or younger living in their household was identified. The adults' self-reported weekly levels of moderate-to-vigorous physical activity were computed as: ((weekly minutes of vigorous activity x 2) + (weekly minutes of moderate activity)) in order to estimate the prevalence of meeting the adult physical activity guidelines of 150 minutes/week of moderate-to-vigorous physical activity.² The results showed that 45.0% of adults without children living in the household met the physical activity guidelines compared to 39.2% of adults with children living in the household (Figure 18). These results suggest that fewer adults with children at home are meeting physical activity guidelines compared with adults without children at home. While having children in the home may be suppressing adults' own physical activity levels, this indirect evidence suggests that parents/adults may not be modelling active lifestyles to any significant degree.

FIGURE 17 Prevalence of adults in the household who do activity or play sports with children on a daily basis, by grade level.



Source: 2010 National Youth Physical Activity and Nutrition Study.

FIGURE 18 Prevalence of meeting physical activity recommendations among 20-50 year old adults with children living at home versus those without children living at home.



Source: 2013-2014 National Health and Nutrition Examination Survey.
HH: Household





School

PRIMARY INDICATOR: The proportion of U.S. high school students attending at least one physical education (PE) class in an average week.

Approximately half of U.S. adolescents attend at least one physical education class per week. There are disparities by age and gender as girls attend less often than boys, and attendance in physical education drops significantly from the elementary through high school years. The grade of D+ for this indicator is lower than that for the 2014 Report Card.

Gender	Proportion Attending at Least One PE Class per Week*
BOYS	55.3%
GIRLS	47.8%

*based on data from the 2015 Youth Risk Behavior Surveillance System (YRBSS)³

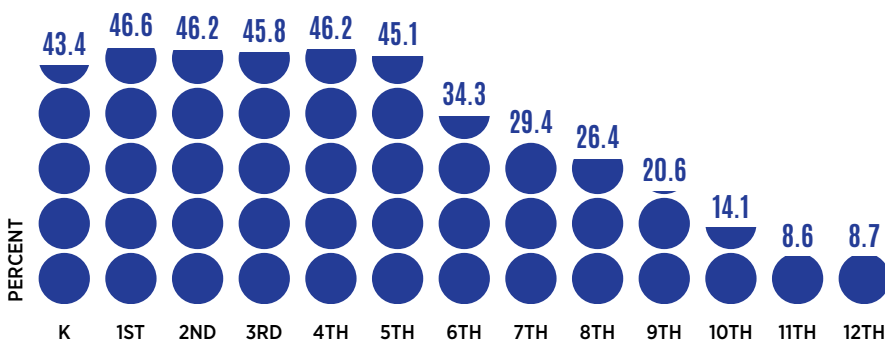
Schools are a particularly salient setting for providing and promoting physical activity. They reach nearly all children, most of whom spend approximately half their waking day at school for about 12 years. The Institute of Medicine suggests that schools provide at least 50% of children's daily recommended 60 minutes of moderate-to-vigorous physical activity, with half of it coming from physical education.⁴⁶ Most schools do provide physical education, and it is the only physical activity program that individuals will likely be legally required to participate in over their entire lifespan.

The grade for this indicator was based on the prevalence of high school students who attended at least one physical education class per week. The Committee acknowledges that this benchmark sets a low bar, especially when compared to the current physical activity recommendations for children and youth of achieving 60 minutes per day of physical activity.² Data from the 2015 YRBSS indicate that 51.6% of high school students attended at least one physical education class in the previous week.³ Participation in physical education is higher in boys (55.3%) compared

to girls (47.8%), and it decreases across the high school years. Further, only 29.8% of high school students reported participating in physical education on 5 days of the week.³

Data from the 2014 SHPPS indicate that the percentage of schools requiring physical education ranges from 43% to 47% from kindergarten to the fifth grade, then decreases in a graded fashion to the eleventh and twelfth grades where the percentage is below 9% (see Figure 19).³⁷

FIGURE 19 Percentage of schools that require physical education across grades.

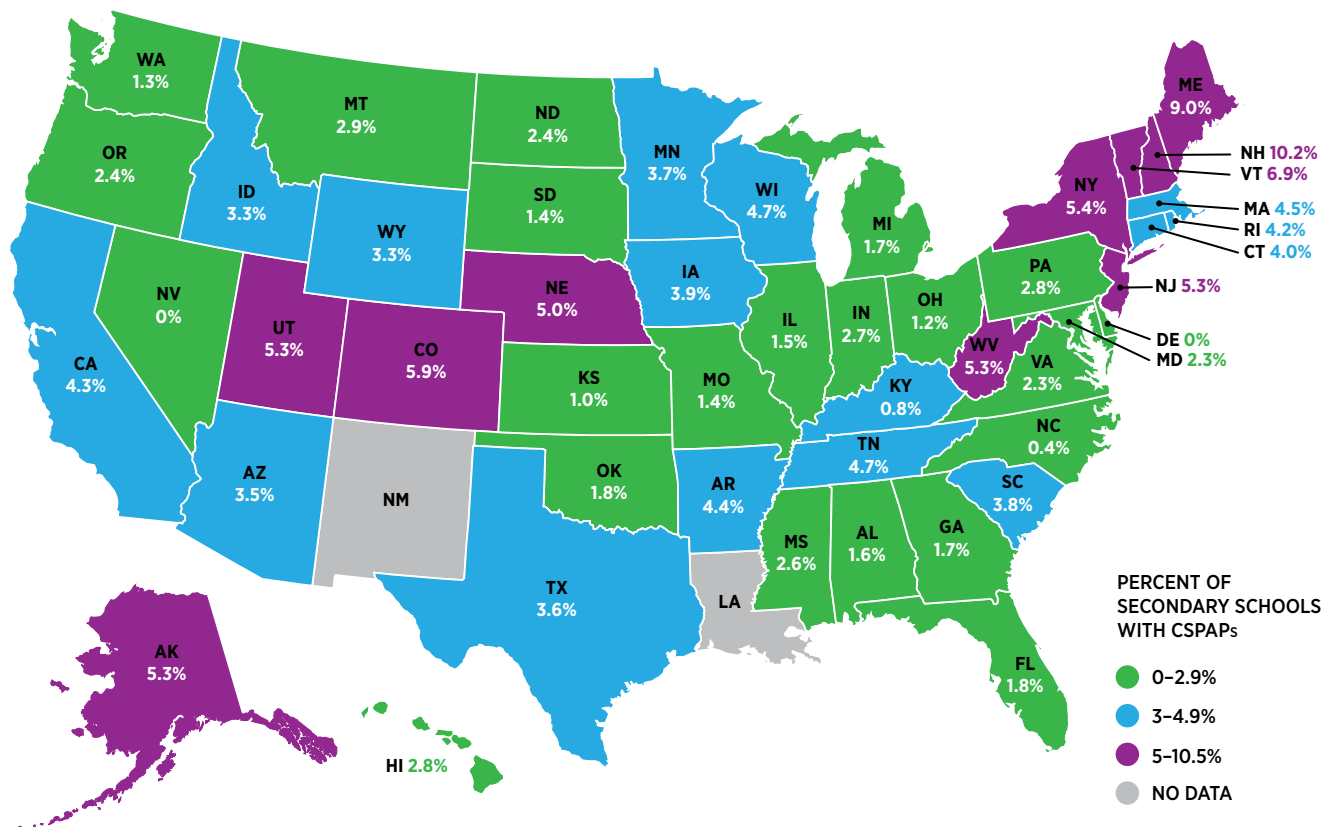


Source: 2014 School Health Policies and Practices Study.³⁷ K: Kindergarten.

School *(continued)*

Physical education, however, is only one possibility for physical activity at schools, and the adoption of a whole-of-school approach (i.e., Comprehensive School Physical Activity Programs; CSPAPs) to increase school day physical activity has been recommended.^{46,47} Within CSPAPs many individuals work together in different structured and unstructured contexts (e.g., physical education; recess; and before-, during-, and after-school sport, dance, exercise, and play opportunities) to provide and promote physical activity. The widespread adoption of CSPAPs, however, is limited and its overall effectiveness is yet unknown. According to the 2014 School Health Profiles Survey, the percentage of secondary schools that have established and implemented a CSPAP, however, ranges from 0 to 10.2% across the surveyed states, with a median of 3.1% (see Figure 20).⁴⁵

FIGURE 20 Establishment and implementation of comprehensive school physical activity programs by state.



Source: 2014 School Health Profiles Survey.⁴⁵

Schools follow state mandates, and the 2016 Shape of the Nation report provides a current overview of physical education in each state across the country.⁴⁸ A majority of states have adopted legislation, requirements or guidance for physical education programs, but most do not require a specific amount of instructional time, and more than half allow exemptions, waivers, or substitutions for physical education programs. The proportion of states (including the District of Columbia) requiring a certain number of physical education minutes is small across all grade levels - elementary (37%), middle (29%), and high (12%) school levels.⁴⁸ Only 8 states require daily recess for elementary school students and 31 states allow substitutions for physical education classes or credit. These weak mandates are unfortunate because the effects of state policies on physical activity extend downward to impact district- and school-level policies and practices.⁴⁹

Numerous national physical education and health organizations recommend that elementary and secondary school students receive 150 minutes and 225 minutes of physical education per week, respectively, with moderate-to-vigorous physical activity levels during lessons reaching at least 50% of the time.^{46,47,50} These recommendations are rarely met. Physical education has many goals (e.g., fitness, motor skill, cognitive, social, and emotional development), not all of which require physical activity engagement. Guidelines for the conduct and content of physical education differ by state, and their actual implementation varies by school district as well as by individual school and teachers. Physical activity space, indoor and outdoor facilities, equipment and personnel resources (e.g., the number and training of physical education teachers, coaches, and other physical activity providers) at schools vary tremendously, and they are often based on socioeconomic conditions and the presence of a physical activity advocate or champion.

Physical education, however, is only one possibility for physical activity at schools, and the adoption of a whole-of-school approach (i.e., Comprehensive School Physical Activity Programs; CSPAPs) to increase school day physical activity has been recommended.^{46,47}

According to a GAO analysis of four national surveys, students with and without disabilities were provided comparable opportunities to participate in physical education.³² The 2005 YRBSS data indicate that 52% of students with physical disabilities or long term health problems attend at least one physical education class per week; yet gender disparities existed with 46% of girls with physical disabilities or long term health problems attending at least weekly physical education compared to 61% of boys.³² The percentage of students with and without disabilities who engaged in exercise or sports during a typical physical education class was not significantly different.

The grade assigned for the school indicator was a D+ and it reflects the low prevalence of youth attending physical education, gender and age disparities in physical education, and the current low prevalence of comprehensive school physical activity programs.

Most of what is known about physical activity programs in schools comes from self-reports, often provided by individuals far removed from school campuses (i.e. administrators, superintendents, etc.). Increased surveillance of physical education and other CSPAPs is needed, and on-site visits are recommended in order to verify and enhance self-reported information on school policies and practices.





Community and Built Environment

PRIMARY INDICATOR: The proportion of children and youth living in neighborhoods with at least 1 park or playground area.

% Federal Poverty Level	Proportion of Children with at Least 1 Park or Playground
0-99%	80.7%
100-199%	83.4%
200-399%	84.5%
≥ 400%	88.7%

*based on data from the 2011/2012 National Survey of Children's Health (NSCH)

A majority of children and youth in the U.S. are living in neighborhoods with at least 1 park or playground. However, there are significant socio-economic differences in access to parks and playgrounds, leading to a grade of B-. This grade has been maintained from the 2014 Report Card given the lack of new data for this indicator.

The community and built environment provides the context in which children engage (or fail to engage) in active play, active transportation, or other physical activity behaviors. There are many aspects of the community and built environment which could impact children's and youth's physical activity, such as the proximity to home and accessibility (e.g., free versus fee-based) of safe indoor and outdoor recreation spaces, the pedestrian infrastructure between home, school, and other destinations, and the street network design and safety that enables or prevents playing in streets and other public spaces near where children live and go to school. Although not likely sufficient to encourage all children and youth to be active, a safe community and built environment that promotes various types of physical activity is necessary for the achievement of population physical activity objectives.

The grade of B- assigned for the built environment reflects the objective data suggesting that a high proportion of children and youth who live within a reasonable proximity to a park or playground. However, there are very little data available regarding the quality of parks and playgrounds as well as programming opportunities. This is an important area for future surveillance.

Most of the evidence around built environment and children's physical activity is cross-sectional, investigating physical activity differences between children living in communities or neighborhoods that differ by built environment characteristics. Associations between built environment and physical activity are less consistent for children compared to adults (particularly for adults' active transportation), but the availability of nearby public recreation opportunities appears related to children and youth physical activity.⁵¹ Given their higher level of independent mobility and choices, adolescents may be more highly impacted by the built environment compared to younger children.⁵²

There is limited surveillance on the quality of the built environment for promoting children and youth physical activity. Caregiver reports from the



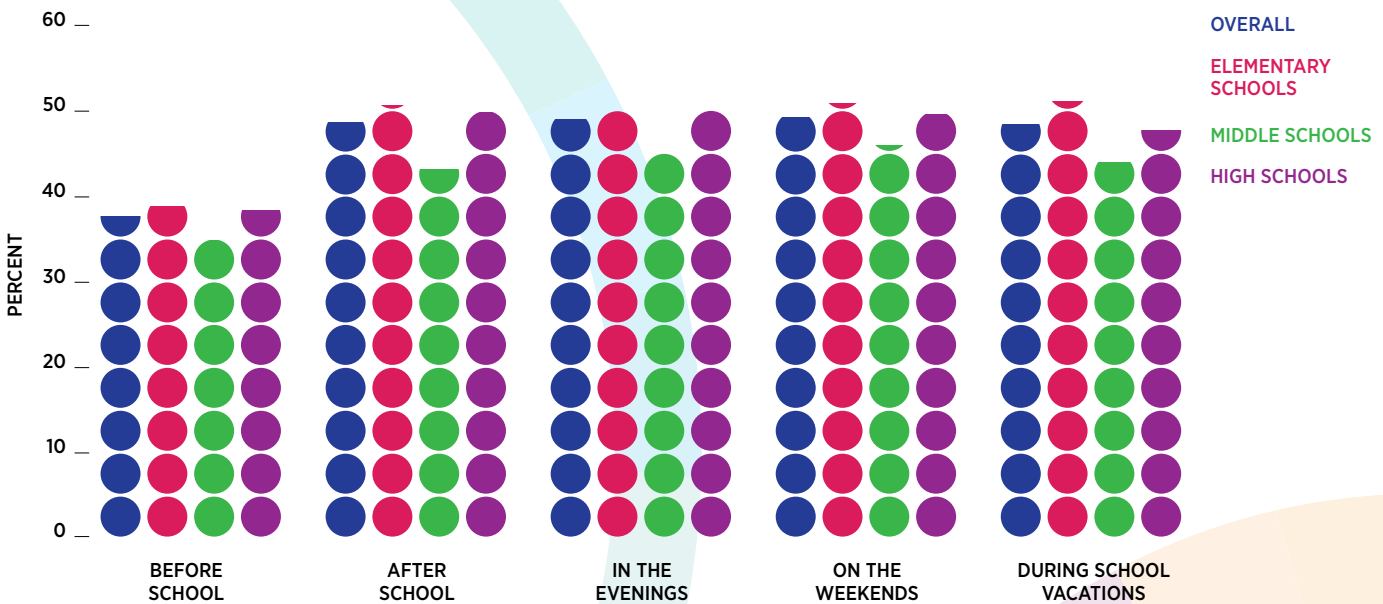
Community & Built Environment

(continued)

NSCH indicate that a relatively high percentage of children and youth have at least one park or playground in their neighborhood. The disparities in park/playground access by socioeconomic status attenuate the 2016 grade for community and built environment. Indeed, disparities likely exist in the availability of other recreation infrastructure. Although not available in national surveillance systems there is also some evidence that quality and safety of active recreation opportunities are inferior in more ethnically/racially diverse and lower income communities.⁵³

The 2014 SHPPS examined the proportion of schools that make available their outdoor physical activity and athletic facilities during different times of the day and school year (Figure 21), a proxy for community access to physical activity opportunities. The proportions are lower than the availability of neighborhood parks and playgrounds and suggest the potential for schools to play a larger community role in encouraging more physical activity for children, youth, their families, and other community residents.

FIGURE 21 Percentage of schools that allow the use of their facilities by children and adults in the community during out-of-school time.



Source: 2014 School Health Policies and Practices Study.³⁷

The proportions of schools that make available their outdoor physical activity and athletic facilities during different times of the day and school year are lower than the availability of neighborhood parks and playgrounds and suggest the potential for schools to play a larger community role in encouraging more physical activity for children, youth, their families, and other community residents.



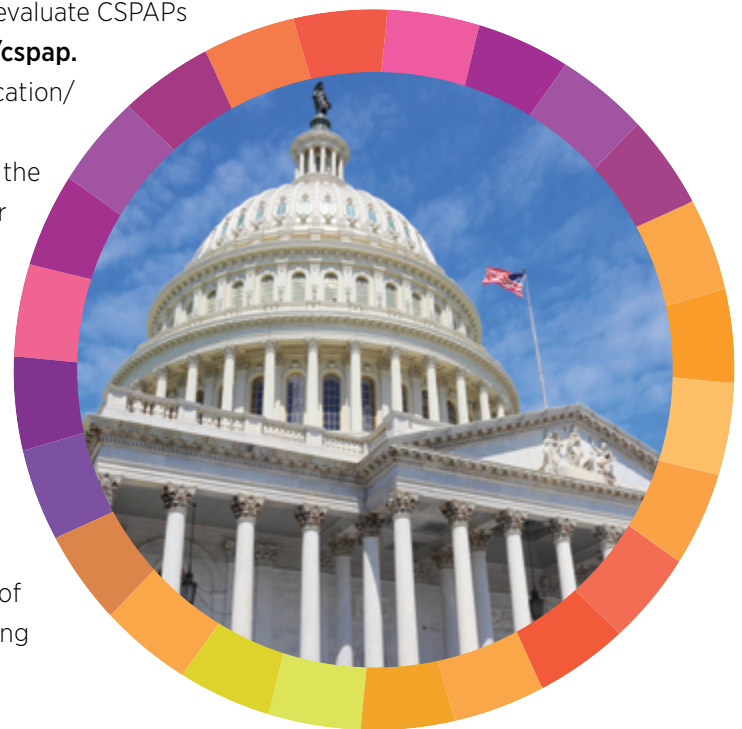
Government Strategies and Investments

PRIMARY INDICATOR: Strategies, policies and investments made by the U.S. federal government toward increasing physical activity levels and developing guidelines recommending healthful amounts of physical activity among children and youth.

The U.S. government has an important role to play in the promotion of physical activity among children and youth. However, currently there are insufficient nationally representative data to inform the selection of a grade for this indicator. This year we highlight some federal efforts to support Comprehensive School Physical Activity Programs, including CDC's State Public Health Actions Program, Let's Move! Active Schools, and the Presidential Youth Fitness Program as well as the I Can Do It, You Can Do It (ICDI) initiative.

CDC's State Public Health Actions Program (<http://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm>). The CDC supports all 50 states and the District of Columbia through federal grants targeting the reduction in risk factors associated with obesity, diabetes, heart disease, and stroke. The main focus is on promoting healthy environments across all domains of daily living, including workplaces, schools, early childhood education facilities, and in the community. The focus for schools is on chronic health conditions, nutrition, and physical education/physical activity. In addition, 32 states received additional funds to develop, implement, and evaluate Comprehensive School Physical Activity Programs (CSPAPs), which are designed to enhance physical education and increase physical activity in the school environment. The CDC, in collaboration with SHAPE America, has developed a guide for school districts and schools to develop, implement, and evaluate CSPAPs available at www.cdc.gov/healthyschools/physicalactivity/cspap.htm. Specifically, the school-related efforts for physical education/physical activity have reached about 2,500 school districts impacting nearly 12 million students in the first 2 years, with the goal of reaching about 6,000 school districts impacting over 23 million students by the program's end.

Let's Move! Active Schools is the national initiative that equips K-12 schools with the resources, tools, professional development, funding opportunities, and technical assistance to create an active school environment where physical activity is integrated before, during and after school for at least 60 minutes every day. This national initiative uses the CSPAP approach, and additional information can be found at www.letsmoveschools.org. As of July 2016, a total of 19,880 schools have been enrolled, serving over 11 million students.



Government Strategies and Investments

(continued)

The Presidential Youth Fitness Program addresses the achievement of excellence in physical education, which is a foundational component of CSPAPs. The Presidential Youth Fitness Program provides tools to schools to help provide quality fitness education and assessment practices to empower students to be physically active and fit for life. Free training and resources for physical educators are available at: www.pyfp.org

I Can Do It, You Can Do It (ICDI) is an effort on the part of the federal government to promote physical activity participation among children with disabilities, a group that appears to be at disproportionate risk for inactivity. ICDI is a mentoring program that uses an individualized approach to encourage regular physical activity and good nutrition for children and adults with disabilities. Sites pair mentors and mentees, and implement an eight-week health promotion program. ICDI was initiated by the U.S. Department of Health and Human Services (USDHHS) Office on Disability in 2004 and supported by the National Institutes of Health (NIH) Division of Nutrition Research Coordination. The program was implemented in nine sites across the U.S., and the President's Council on Fitness, Sports & Nutrition recently announced the next phase of ICDI with a goal of expanding and implementing the program in at least 100 sites nationwide over the next five years. More information is available at:

www.fitness.gov/participate-in-programs/i-can-do-it-you-can-do-it/

The focus for CDC federal grants to schools is on chronic health conditions, nutrition, and physical education/physical activity. In addition, 32 states received additional funds to develop, implement, and evaluate Comprehensive School Physical Activity Programs (CSPAPs), which are designed to enhance physical education and increase physical activity in the school environment.

2016 Report Card Development and Data Sources

An interdisciplinary team of scientists and professionals compiled the available resources to determine this year's grades. Several sources of data were available to inform the grades:

HIGH SCHOOL ATHLETICS PARTICIPATION SURVEY

The High School Athletics Participation Survey is a national survey administered annually since 1971 by the National Federation of State High School Associations (NFHS). The High School Athletics Participation Survey includes data on the number and types of sports programs offered to male and female students in U.S. high schools. It also collects data on the number of students who participate in high school sports programs overall and by sport. Additionally, participation data are collected on adapted sports programs for students with disabilities. The 2014-15 High School Athletics Participation Survey includes data from state high school athletic associations in all 50 states and the District of Columbia. The data included in this report are published on the NFHS website in a document entitled, 2014-15 High School Athletics Participation Survey. More information on the High School Athletics Participation Survey can be accessed at: http://www.nfhs.org/ParticipationStatics/PDF/2014-15_Participation_Survey_Results.pdf



NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES)

NHANES involves a series of surveys designed to assess the health and nutritional status of adults and children in the U.S. conducted by the National Center for Health Statistics. A nationally representative sample of approximately 5,000 persons living in the U.S. is examined each year. The survey combines interviews and physical examinations. The interview includes information on demographics, socioeconomic, dietary, and health-related questions. The NHANES examination consists of medical, dental, and physiological measurements, as well as laboratory tests performed by trained medical personnel. The most recent data available from NHANES are from the 2013-14 cycle. More information on NHANES can be found at: http://www.cdc.gov/nchs/nhanes/about_nhanes.htm.

NATIONAL HOUSEHOLD TRAVEL SURVEY (NHTS)

The NHTS is the only nationally representative survey that collects information on Americans' transportation patterns to inform national and state transportation programs and policies. The U.S. Department of Transportation Federal Highway Administration has conducted the NHTS or its

2016 Report Card Development and Data Sources

(continued)

The NNYFS combines interviews and a battery of fitness tests designed to collect data on the fitness and physical activity levels and nutritional behaviors of U.S. children and youth between the ages of 3-15 years.

predecessor, the Nationwide Personal Transportation Surveys, since 1969. The most recent NHTS was conducted during 2008-09 and collected data from 150,147 households using a list-assisted random digit dialing computer-assisted telephone interviewing survey design. Data are collected on all trips taken on a randomly assigned day, including the purpose and duration of each trip, mode of transportation, time and day of the trip, vehicle occupancy, demographics of driver, vehicle characteristics, public perceptions of the transportation system, and many additional factors that may relate to transportation patterns. The 1969 and 2009 survey administrations included special sections dedicated to obtaining information on students' travel to and from school. The data included in this report are published in *U.S. School Travel, 2009: An Assessment of Trends*.²¹ For more information on the NHTS, please visit: <http://nhts.ornl.gov/introduction.shtml>.

NHANES NATIONAL YOUTH FITNESS SURVEY (NNYFS)

The CDC's National Center for Health Statistics conducted the inaugural NNYFS in response to the lack of nationally representative fitness testing data of American children and youth. The NNYFS combines interviews and a battery of fitness tests designed to collect data on the fitness and physical activity levels and nutritional behaviors of U.S. children and youth between the ages of 3-15 years. The 2012 NNYFS includes a nationally representative random sample of approximately 1,500 children and youth living in the U.S. Interviews include both a family and participant questionnaire. The family questionnaire collects demographics and socioeconomic status information while the participant questionnaire includes information on dietary and other health-related behaviors and activities. Fitness measurements include anthropometric measurements, accelerometry and performance on age-specific physical activities to assess the different components of physical fitness, including body composition, cardiorespiratory endurance, musculoskeletal strength and endurance, and flexibility. Background information is derived from the NNYFS website: http://www.cdc.gov/nchs/nyyfs/about_nnyfs.htm.

NATIONAL SURVEY OF CHILDREN'S HEALTH (NSCH)

The NSCH is a national survey that is conducted every four years by the Maternal and Child Health Bureau within the U.S. Department of Health and Human Services, with the last survey cycle conducted in 2011-12. Telephone numbers are called at random to identify households with one or more child less than 18 years of age. The NSCH is administered to the parent or guardian concerning one child randomly selected to be the subject of the interview. Thus, children's health measures are collected by proxy report. The NSCH collects data on over 100 indicators of children's health, including: BMI, physical activity, screen time, and the environment. Survey responses are weighted to be representative of each state and the national population. The NSCH data used in this report can be accessed at: <http://childhealthdata.org/learn/NSCH>.

NATIONAL YOUTH PHYSICAL ACTIVITY AND NUTRITION SURVEY (NYPANS)

NYPANS was conducted among U.S. high school students in grades 9-12 by the CDC in 2010. NYPANS was a cross-sectional survey designed to collect nationally representative physical activity and dietary data, to provide data to supplement and improve the YRBSS, and to understand the relationship between physical activity and dietary determinants with BMI and weight status. The study included an in-person questionnaire capturing information related to demographics, physical activity routines, standardized height and weight measurements, dietary

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habits, and 24-hour dietary recall telephone interviews. The 2010 NYPANS collected data from 11,429 students in public and private high schools in all 50 states and the District of Columbia. For more information, please visit: <http://www.cdc.gov/healthyyouth/yrbs/nypans.htm>.

SCHOOL HEALTH POLICIES AND PRACTICES STUDY (SHPPS)

The CDC conducts the SHPPS, a national survey to assess school health policies and practices. In previous administrations, data were collected at the state, district, school, and classroom levels. The most recent survey cycle of SHPPS was conducted in 2014 at the school and classroom levels only using online questionnaires to obtain a nationally representative sample. In 2012, SHPPS was administered at the state and district levels. The data included in this report are published in *Results from the School Health Policies and Practices Study 2014*³⁷ which can be assessed at the following website: http://www.cdc.gov/healthyyouth/data/shpps/pdf/shpps-508-final_101315.pdf.

SCHOOL HEALTH PROFILES (PROFILES)

Profiles evaluates school health guidelines by surveying principals and health education teachers from middle and high schools across the United States. The surveys are conducted every other year with support from the CDC's Division of Adolescent and School Health, with the most recent data available being from 2014. Among other policies, Profiles monitors school health and physical education, physical activity, and family and community involvement. Survey results are weighted to represent the state, district or territory from which they were sampled when at least 70% of those sampled completed the survey; unweighted data are only representative of the school-level. Information about Profiles, including results, data and participation by state can be found at: <http://www.cdc.gov/healthyyouth/data/profiles/index.htm>.

YOUTH RISK BEHAVIOR SURVEILLANCE SYSTEM (YRBSS)

The YRBSS is a school-based survey conducted by state, territorial and local education and health agencies and tribal governments. National data are collected by the CDC under the Division of Adolescent and School Health. The YRBSS is administered every other year and is designed to assess health-risk behaviors and the prevalence of obesity and asthma among middle and high school students. The sampling frame for the 2015 YRBSS consisted of all public and private schools with students in at least one of grades 9-12 in the 50 states and District of Columbia. Survey results are weighted to be representative of 9th through 12th grade students in public and private schools throughout the U.S. The YRBSS data used in this report card can be accessed at: <http://www.cdc.gov/healthyyouth/data/yrbs/index.htm>.



Methods of Data Analysis

For the 2016 Report Card, original data analyses were performed on data collected by the NHANES, NNYFS and NYPANS using SAS (version 9.4; SAS Institute Inc., Cary, NC). NHANES data were analyzed to inform the grades for Overall Activity Levels, Sedentary Behaviors, Health-related Fitness, and Family & Peers. NYPANS data were also used to evaluate the Family & Peers indicator. NNYFS data were used to inform the Health-related Fitness and Active Transportation indicators. Data were excluded on an individual basis if they were missing data for those variables used in each distinct analysis. Cases with non-positive sample weights were also excluded. Categories of BMI were established using age- and sex-specific percentiles calculated using the CDC growth charts.

NHANES physical activity monitor data analyses were conducted by adapting publicly available programs from the National Cancer Institute website (http://epi.grants.cancer.gov/nhanes_pam/). SAS survey procedures were utilized to account for the stratification, clustering and unequal weighting that is a product of the complex, multistage probability design of NHANES and NNYFS surveys. The same SAS survey procedures were used in the analysis of NYPANS data whose sample design included weighting by sex, race and grade level to adjust for nonresponse and oversampling, as well as stratification by school.



Abbreviations and Definitions

ABBREVIATION	DEFINITION
ADHD	Attention-Deficit/Hyperactivity Disorder
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CDS	Child Development Supplement
CSPAP	Comprehensive School Physical Activity Program
DHHS	Department of Health & Human Services
GAO	Governmental Accountability Office
HDL	High-Density Lipoprotein
HFZ	Healthy Fitness Zone
ICDI	I Can Do It, You Can Do It
INC	Incomplete
K	Kindergarten
LD	Learning Disability
NFHS	National Federation of State High School Associations
NIH	National Institutes of Health
NHANES	National Health and Nutrition Examination Survey
NHTS	National Household Travel Survey
NLTS2	National Longitudinal Transition Study-2
NNYFS	NHANES National Youth Fitness Survey
NPAP	National Physical Activity Plan
NSCH	National Survey of Children's Health
NYPANS	National Youth Physical Activity and Nutrition Survey
OR	Odds Ratio
PE	Physical Education
SHPPS	School Health Policies and Practices Study
The Alliance	National Physical Activity Plan Alliance
The Committee	Report Card Research Advisory Committee
The Report Card	The 2016 U.S. Report Card on Physical Activity for Children and Youth
U.S.	United States
YRBSS	Youth Risk Behavior Surveillance System

References

1. World Health Organization. *Global Recommendations on Physical Activity for Health*. Geneva, Switzerland: World Health Organization; 2010.
2. US Department of Health and Human Services. *2008 Physical Activity Guidelines for Americans*. US Department of Health and Human Services, Centers for Disease Control and Prevention; 2008.
3. Centers for Disease Control and Prevention (CDC). 1991-2015 High School Youth Risk Behavior Survey Data. Available at <http://nccd.cdc.gov/youthonline/>. Accessed on July 1, 2016.
4. Wilson PB, Haegele JA, Zhu X. Mobility status as a predictor of obesity, physical activity, and screen time use among children aged 5-11 years in the United States. *J Pediatr*. Sep 2016;176:23-29.e1.
5. Cook BG, Li D, Heinrich KM. Obesity, physical activity, and sedentary behavior of youth with learning disabilities and ADHD. *J Learn Disabil*. 2015;48(6):563-576.
6. Kim J, Greaney ML. Prevalence of physical activity, screen time, and obesity among US children by the service type of special health care needs. *Disabil Health J*. 2014;7(3):318-324.
7. Dreyer GML, Borner KB, Nadler CB, et al. Prevalence and health correlates of overweight and obesity in children with autism spectrum disorder. *J Dev Behav Pediatr*. 2015;36(7):489-496.
8. Poitras VJ, Gray CE, Borghese MM, et al. Systematic review of the relationships between objectively measured physical activity and health indicators in school-aged children and youth. *Appl Physiol Nutr Metab*. 2016;41(6 Suppl 3):S197-239.
9. Wolff-Hughes DL, Bassett DR, Fitzhugh EC. Population-referenced percentiles for waist-worn accelerometer-derived total activity counts in U.S. youth: 2003 - 2006 NHANES. *PLoS One*. 2014;9(12):e115915.
10. Wolff-Hughes DL, Fitzhugh EC, Bassett DR, Churilla JR. Total activity counts and bouts of moderate-to-vigorous physical activity: Relationships with cardiometabolic biomarkers using 2003-2006 NHANES. *J Phys Act Health*. 2015;12(5):694-700.
11. Tremblay MS, Carson V, Chaput JP, et al. Canadian 24-Hour Movement Guidelines for Children and Youth: An integration of physical activity, sedentary behaviour, and sleep. *Appl Physiol Nutr Metab*. 2016;41(6 Suppl 3):S311-327.
12. American Academy of Pediatrics Council on Communications and Media. Policy statement - Children, adolescents, obesity and the media. *Pediatrics*. 2011;128:201-208.
13. The Expert Panel. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: Summary report. *Pediatrics*. 2011;128 (Suppl. 5)(S213-S256).
14. Sedentary Behaviour Research Network. Letter to the Editor: Standardized use of the terms "sedentary" and "sedentary behaviours". *Appl Physiol Nutr Metab*. 2012;37:540-542.
15. Rideout VJ, Foehr UG, Roberts DF. *Generation M2: Media in the Lives of 8- to 18-year Olds*. Menlo Park, CA: Henry J. Kaiser Family Foundation; 2010.
16. American Academy of Pediatrics Council on Communications and Media. Children, adolescents and the media. *Pediatrics*. 2013;132:958-961.
17. Corvey K, Menear KS, Preskitt J, Goldfarb S, Menachemi N. Obesity, physical activity and sedentary behaviors in children with an autism spectrum disorder. *Matern Child Health J*. 2016;20(2):466-476.
18. Dentre KN, Beals K, Crouter S, et al. Results from the United States' 2014 Report Card on Physical Activity for Children and Youth. *J Phys Act Health*. 2014;11 (Suppl. 1):S105-S125.
19. Fakhouri TH, Hughes JP, Brody DJ, Kit BK, Ogden CL. Physical activity and screen-time viewing among elementary school-aged children in the United States from 2009 to 2010. *JAMA Pediatr*. Mar 1 2013;167(3):223-229.
20. Lenhart A. *Teens, Social Media and Technology Overview 2015*. (<http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>) Access July 1, 2016. 2015.
21. McDonald NC. Active transportation to school: Trends among U.S. schoolchildren, 1969-2001. *Am J Prev Med*. June 2007;32(6):509-516.
22. Denstel K.D., Broyles ST, Larouche R, et al. Active school transport and weekday physical activity in 9-11 year old children from 12 countries. *Int J Obes Suppl*. 2015;5(2):S100-S106.
23. Sarmiento O.L., Lemoine P, Gonzalez SA, et al. Relationships between active school transport and adiposity indicators in school age children from low-, middle- and high-income countries. *Int J Obes Suppl*. 2015;5(2):S107-S114.
24. Boarnet MG, Anderson CL, Day K, McMillan T, Alfonso M. Evaluation of the California Safe Routes to School legislation: urban form changes and children's active transportation to school. *Am J Prev Med*. Feb 2005;28(2 Suppl 2):134-140.
25. Boarnet MG, Day K, Anderson CB, McMillan T, Alfonso M. California's Safe Routes to School Program: Impacts on Walking, Bicycling, and Pedestrian Safety. *J Am Plann Assoc*. 2005;71.

26. Chillon P, Evenson KR, Vaughn A, Ward DS. A systematic review of interventions for promoting active transportation to school. *Int J Behav Nutr Phys Act.* 2011;8:10.
27. Timperio A, Ball K, Salmon J, et al. Personal, family, social, and environmental correlates of active commuting to school. *Am J Prev Med.* Jan 2006;30(1):45-51.
28. Grow HM, Saelens BE, Kerr J, Durant NH, Norman GJ, Sallis JF. Where are youth active? Roles of proximity, active transport, and built environment. *Med Sci Sports Exerc.* Dec 2008;40(12):2071-2079.
29. Katzmarzyk PT, Malina RM. Contribution of organized sports participation to estimated daily energy expenditure in youth. *Pediatr Exerc Sci.* 1998;10:378-386.
30. Wickel EE, Eisenmann JC. Contribution of youth sport to total daily physical activity among 6- to 12-yr-old boys. *Med Sci Sports Exerc.* Sep 2007;39(9):1493-1500.
31. Leek D, Carlson JA, Cain KL, et al. Physical activity during youth sports practices. *Arch Pediatr Adolesc Med.* Apr 2011;165(4):294-299.
32. Government Accountability Office (GAO). *Students with Disabilities: More Information and Guidance Could Improve Opportunities in Physical Education and Athletics (GAO-10-519)*. Washington, DC: GAO; 2010.
33. Trost SG, Rosenkranz RR, Dziewaltowski D. Physical activity levels among children attending after-school programs. *Med Sci Sports Exerc.* 2008;40:622-629.
34. Schoeppe S, Duncan MJ, Badland HM, Oliver M, Browne M. Associations between children's independent mobility and physical activity. *BMC Public Health.* 2014;14:91.
35. Gray C, Gibbons R, Larouche R, et al. What is the relationship between outdoor time and physical activity, sedentary behaviour, and physical fitness in children? A systematic review. *Int J Environ Res Public Health.* Jun 2015;12(6):6455-6474.
36. Hofferth SL. Changes in American children's time - 1997 to 2003. *Electron Int J Use Res.* 2009;6:26-47.
37. US Department of Health and Human Services, Centers for Disease Control and Prevention. *Results from the School Health Policies and Practices Study 2014*. US Department of Health and Human Services, Centers for Disease Control and Prevention; 2015.
38. Bouchard C, Shephard RJ. Physical activity, fitness and health: The model and key concepts. In: Bouchard C, Shephard RJ, Stephens T, eds. *Physical Activity, Fitness and Health*. Champaign, IL: Human Kinetics; 1994:77-88.
39. Plowman SA, Meredith MD, eds. *FitnessGram/ActivityGram Reference Guide*. Dallas, TX: The Cooper Institute; 2013.
40. Ogden CL, Carroll MD, Lawman HG, et al. Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *JAMA.* Jun 7 2016;315(21):2292-2299.
41. Segal M, Eliasziw M, Phillips S, et al. Intellectual disability is associated with increased risk for obesity in a nationally representative sample of U.S. children. *Disabil Health J.* 2016;9(3):392-398.
42. Rimmer JH, Yamaki K, Davis BM, Wang E, Vogel LC. Obesity and overweight prevalence among adolescents with disabilities. *Prev Chronic Dis.* 2011;8(2):A41.
43. Lee AM, Gurka MJ, DeBoer MD. Trends in metabolic syndrome severity and lifestyle factors among adolescents. *Pediatrics.* Mar 2016;137(3):1-9.
44. Macdonald-Wallis K, Jago R, Sterne JA. Social network analysis of childhood and youth physical activity: a systematic review. *Am J Prev Med.* Dec 2012;43(6):636-642.
45. Demissie Z, Brener ND, McManus T, Shanklin SL, Hawkins J, Kann L. *School Health Profiles 2014: Characteristics of Health Programs among Secondary Schools*. US Department of Health and Human Services, Centers for Disease Control and Prevention; 2015.
46. Institute of Medicine. *Educating The Student Body: Taking Physical Activity and Physical Education to School*. Washington, DC: The National Academies Press; 2013.
47. Centers for Disease Control and Prevention. *Comprehensive School Physical Activity Programs: A Guide for Schools*. Atlanta, GA: U.S. Department of Health and Human Services; 2013.
48. SHAPE America, American Heart Association, Voices for Healthy Kids. *2016 Shape of the Nation Report: Status of Physical Education in the USA*. Reston, VA: Author; 2016.
49. Lounsbery MA, McKenzie TL, Morrow JR, Jr., Monnat SM, Holt KA. District and school physical education policies: implications for physical education and recess time. *Ann Behav Med.* 2013;45 Suppl 1:S131-141.
50. SHAPE America. *The essential components of physical education*. Reston, VA: Author; 2015.
51. Ding D, Sallis JF, Kerr J, Lee S, Rosenberg DE. Neighborhood environment and physical activity among youth: A review. *Am J Prev Med.* 2011;41(4):442-455.
52. McGrath LJ, Hopkins WG, Hinckson EA. Associations of objectively measured built-environment attributes with youth moderate-vigorous physical activity: A systematic review and meta-analysis. *Sports Med.* 2015;45(6):841-865.
53. Arroyo-Johnson C, Woodward K, Milam L, et al. Still separate, still unequal: Social determinants of playground safety and proximity disparities in St. Louis. *J Urban Health.* Aug 2016;93(4):627-38.



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