

## PHYSICAL INACTIVITY IN U.S. ADOLESCENTS: FAMILY, NEIGHBORHOOD, AND INDIVIDUAL FACTORS

By Mary Terzian, Ph.D., M.S.W., and Kristin Anderson Moore, Ph.D.

May 2009

### OVERVIEW

*Concern about physical inactivity among U.S. youth has been mounting in recent years, in light of studies suggesting that few adolescents (about one out of three) engage in recommended levels of physical activity.<sup>1, 2</sup> Although much attention has been paid to individual factors that may contribute to this problem, such as television viewing and cigarette use,<sup>3</sup> the roles that family and neighborhood influences may play have been largely unexplored. To help fill this research gap, Child Trends analyzed parent report data from the 2003 National Survey of Children's Health (NSCH) to identify family, neighborhood, and individual factors that may have a bearing on adolescent inactivity.*

*One key finding was that, compared with moderately and highly active teens, low-active teens (i.e., those who do not exercise or participate in sports at all) were more likely to have parents who do not exercise. Another finding, not surprisingly, was that low-active teens were more likely than were active teens to be overweight and to spend a lot of time engaged in electronic media such as televisions and computers. Among other findings was that living in a non-supportive neighborhood – one lacking close ties between neighbors as well as overall safety – was associated with whether teens participated in sports but not whether they engaged in exercise. This finding suggests that participation in sports may be more influenced by social or cultural factors than is engaging in exercise.*

### BACKGROUND

Recent data suggest that the transition to adolescence is associated with a dramatic decline in moderate-to-vigorous physical activity and that physical activity continues to decline between the ages of 14 to 18.<sup>4</sup> According to a 2008 study, 90 percent of 9- to 11-year-olds exercise one hour a day, compared with only 30 percent of 15-year-olds.<sup>5</sup> Physical inactivity during adolescence is a concern, because teens are likely to maintain similar levels of physical activity into adulthood<sup>6,7</sup> and because physical inactivity is associated with a host of negative health outcomes, including cardiovascular disease and obesity.<sup>8</sup>

This brief presents findings from a Child Trends study that examines two measures of physical inactivity—sedentary behavior and nonparticipation in sports—using a definition comparable to similar studies of physical inactivity.<sup>9</sup>

- Behavior was characterized as sedentary if parents reported that their teenage children had not exercised vigorously for at least 20 minutes on any day in the past week.
- Nonparticipation in sports was defined as having no involvement at all in team and individual sports or in sports lessons in the past year.

## OVERALL RATES OF PHYSICAL INACTIVITY DURING ADOLESCENCE

Analyses indicate that approximately one out of 20 teens (5 percent) was sedentary, meaning that he or she had not exercised at least 20 minutes on any day in the past week. Consistent with prior research,<sup>10</sup> rates of sedentary behavior are steady between 4 and 5 percent between the ages of six and 15 and then rise to 8 percent by age 17. In addition, a large proportion of teens (42 percent) had not participated in sports or sports lessons during the previous year.<sup>11</sup>

## CHARACTERISTICS OF INACTIVE ADOLESCENTS

The characteristics of teenagers who do not exercise and those of teenagers who do not participate in sports are described separately below. (All of the findings that are discussed are statistically significant, taking into account social and economic characteristics, including poverty level, race/ethnicity, child gender and age, and family structure.) Overall, the following common and unique characteristics were identified:

### ➤ Common Findings:

- *Sedentary teens and teens not involved in sports* are more likely than their active peers to: (a) use technology more than 3 hours per day; (b) be overweight; and (c) have sedentary parents.

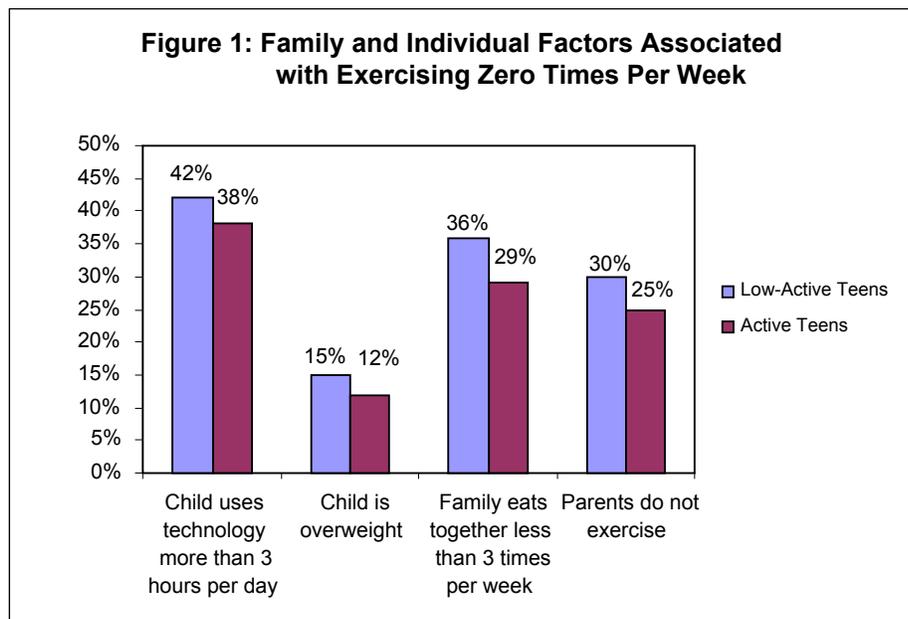
### ➤ Unique Findings:

- *Sedentary teens* are more likely than their exercising peers to eat with their families less than 3 times per week
- *Adolescents not involved in sports* are more likely than their sports-involved peers to: (a) have a household member who smokes; and (b) live in a neighborhood with low to medium levels of support.

### *Adolescents Who Did Not Exercise*

As highlighted below and illustrated by *Figure 1*, compared with more active teens, teens who did not exercise at all (described as exercising “zero times per week”) were somewhat more likely to:

- **Spend three or more hours a day using technology** (i.e., television, video games, and computers) **for recreational purposes** (42 percent among sedentary teens versus 38 percent among more active teens);
- **Be overweight** (15 percent among sedentary teens versus 12 percent among more active teens);
- **Eat less than three times a week with their families** (36 percent among sedentary teens versus 29 percent among more active teens); and
- **Have parents who do not exercise** (30 percent among sedentary teens versus 25 percent among more active teens).



Teens who did not exercise also tended to:

- **Be older** (52 percent are older among sedentary teens versus 25 percent among more active teens; older teens were aged 15 to 17 and younger teens were aged 12 to 14); and
- **Be female** (62 percent among sedentary teens versus 46 percent among more active teens).

#### ***Adolescents Who Did Not Participate in Any Sports***

Child Trends' analyses found that not participating in sports was associated with 12 different social, environmental, economic, and sociocultural factors, whereas sedentary behavior was associated with only six of these factors. In addition, we found that participation in sports appeared to be more sensitive to social and economic factors than was involvement in exercise.

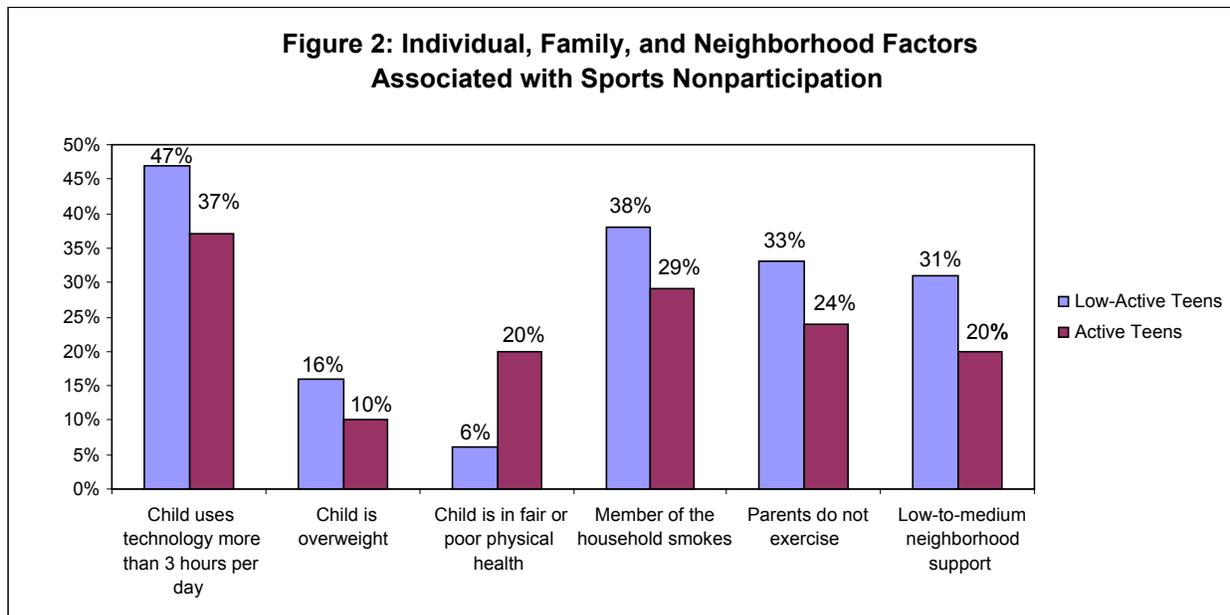
As highlighted below and illustrated in *Figure 2*, compared with teens who were involved with sports, those who were not were more likely to:

- **Spend three or more hours a day using technology** (i.e., television, video games, and computers) **for recreational purposes** (47 percent among nonparticipants versus 37 percent among sports participants);
- **Be overweight** (16 percent among nonparticipants versus 10 percent among sports participants);
- **Have fair or poor physical health** (6 percent among nonparticipants versus 2 percent among sports participants);
- **Live in a household that includes someone who smokes** (38 percent among nonparticipants versus 29 percent among sports participants);
- **Have parents who do not exercise** (33 percent among nonparticipants versus 24 percent among sports participants); and
- **Have low-to-medium levels of neighborhood support**, as defined by an index of six items (31 percent among nonparticipants versus 20 percent among sports participants).<sup>a</sup>

<sup>a</sup> See "About the Data Source for This Brief" on page 5 for information about measures.

Teens who did not participate in sports were also more likely to:

- **Be older** (52 percent of nonparticipants were aged 15 to 17, compared to 44 percent of sports participants); and
- **Be female** (53 percent among nonparticipants versus 46 percent among sports participants).



Teens who did not participate in sports also tended to:

- **Belong to a single-parent household** (32 percent among nonparticipants versus 21 percent among sports participants);
- **Have parents with no more than 12 years of education** (11 percent among nonparticipants versus 4 percent among sports participants);
- **Be black or Hispanic** (42 percent among nonparticipants versus 32 percent among sports participants); and
- **Be poor** – residing in households that are below 200 percent of the poverty line (55 percent among nonparticipants versus 28 percent among sports participants).

In contrast to findings for sedentary behavior, teenagers who ate with their families three or more times a week were no more likely than were teenagers who ate with their families less often to participate in sports or take sports lessons.

## CONCLUSION

Results of our analyses of the NSCH data suggest that sedentary behavior and sports nonparticipation are related but separate behaviors. First, only 1 in 20 adolescents were sedentary, while more than 8 in 20 didn't participate in sports. Common to both of these behaviors, and perhaps the most salient finding of our study, is that low-active teens were more likely to have parents who do not exercise than active teens. This pattern suggests that school- and community-based interventions seeking to increase adolescent physical activity levels should also seek to encourage parents to exercise.

Our research also underscores the value of exploring family and neighborhood factors that may contribute to physical inactivity among youth, such as living in a non-supportive neighborhood, being in a household in which someone smokes, and seldom eating together as a family. Finally, our work suggests a number of strategies that may be useful for increasing exercise and sports participation during adolescence. Among these strategies are increasing the availability of gender-specific programs for teen women, requiring four years of mandatory physical education in high school, and increasing opportunities for youth living in disadvantaged neighborhoods to participate in sports (for instance, by providing free transportation and free equipment, as well as recruiting volunteer staff to coach additional teams).

## ACKNOWLEDGEMENTS

The authors would like to thank Elizabeth C. Hair, Ph.D. for her helpful comments on this *Research Brief*. This research was funded by the Annie E. Casey Foundation. We thank them for their support, but acknowledge that the findings and conclusions presented in this report are those of the authors alone, and do not necessarily reflect the opinions of the Foundation.

Editor: Harriet J. Scarupa

### ABOUT THE DATA SOURCE FOR THIS BRIEF

The National Survey of Children's Health (NSCH) was conducted in 2003 in all 50 states and the District of Columbia by the National Center for Health Statistics, with funding from the Maternal and Child Health Bureau. Telephone numbers from a random sampling process were used to contact households, and one child in each household with children was randomly selected to be the focus of the study. An adult in the household knowledgeable about the health of that child answered interview questions. The survey is representative of children under age 18 nationwide and also representative of children in each state. This brief focuses on adolescents between the ages of 12 and 17 (N= 39,417). All differences noted in this brief are statistically significant at the  $p < .05$  level and hold after controlling for poverty level, race/ethnicity, child gender and age, and family structure. Although teens who do not exercise at all in a week (described here as exercising "zero days a week") account for only 5 percent of all teens, these teens constitute an important subgroup. Because of the large sample available in the NSCH, we were able to examine this group in greater depth than is usually possible.

#### Description of Survey Measures

##### Measures of Physical Inactivity

- 1) Child exercises or participates in physical activity for at least 20 minutes that makes [him/her] sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities (Number of days)
- 2) During the past 12 months, child was on a sports team and/or took sports lessons after work or on weekends [include school and community sports]. (No, Yes)

##### Measures of Individual Factors

- 1) Body Mass Index is in the 95th percentile or greater for child's age and gender (No, Yes)
- 2) Child has excellent, very good, good, or fair physical health.
- 3) Number of hours spent on an average school day, using a computer for purposes other than school work, plus the number of hours spent watching TV, watching videos, or playing video games.

##### Measures of Family Factors

- 1) During the past month, child's caregiver(s) regularly exercised or played sports hard enough to make [him/her/them] breathe hard, make [his/her/their] heart beat fast, or make [him/her/them] sweat for 20 minutes or more. (No, Yes)
- 2) Number of days in the past week all family members who live in the household ate together.

##### Measures of Neighborhood Support

This measure (originally scored as the mean of the following 0/1 items) was dichotomized into a single "No, Yes" item.

- 1) My child is safe in our neighborhood;
- 2) People in the neighborhood watch out for each other's children;
- 3) People in the neighborhood help each other out;
- 4) There are people I can count on in this neighborhood;
- 5) There are adults nearby whom I trust to help my child if he/she got hurt playing outside; and
- 6) There are people in the neighborhood who might be a bad influence on my children.

Source: 2003 National Survey of Children's Health

## REFERENCES

- <sup>1</sup> Gordon-Larsen, P., Nelson, M. C., & Popkin, B. M. (2004). Longitudinal physical activity and sedentary behavior trends: Adolescence to adulthood. *American Journal of Preventive Medicine*, 27, 277-283.
- <sup>2</sup> Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Ross, J., Hawkins, J., et al. (2008). Youth Risk Behavior Surveillance – United States, 2007. *Morbidity and Mortality Weekly Report, Surveillance Summaries* (June 6, 2008), 57(SS04), 1-131. Atlanta: Centers for Disease Control and Prevention. Retrieved February 1, 2009, from [http://www.cdc.gov/HealthyYouth/yrbs/pdf/yrbss07\\_mmwr.pdf](http://www.cdc.gov/HealthyYouth/yrbs/pdf/yrbss07_mmwr.pdf)
- <sup>3</sup> Pate, R. R., Heath, G. W., Doda, M., & Trost, S. G. (1996). Associations between physical activity and other health behaviors in a representative sample of U.S. adolescents. *American Journal of Public Health*, 86, 1577-1581.
- <sup>4</sup> Allison, K. R., Adlaf, E. M., Dwyer, J. J., & Irving, H. M. (2007). The decline in physical activity among adolescent students. *Canadian Journal of Public Health*, 98, 97-100.
- <sup>5</sup> Nader, P. R., Bradley, R. H., Houts, R. M., McRitchie, S. L., & O'Brien, M. (2008). Moderate-to-vigorous physical activity from ages 9 to 15 years. *JAMA*, 300, 295-305.
- <sup>6</sup> Pate, R. R., Heath, G. W., Doda, M., & Trost, S. G. (1996).
- <sup>7</sup> Gordon-Larsen et al. (2004).
- <sup>8</sup> [Ibid.](#)
- <sup>9</sup> Barnekow-Bergkvist, M., Hedberg, G., Janlert, U., & Jansson, E. (1998). Prediction of physical fitness and physical activity level in adulthood by physical performance and physical activity in adolescence--an 18-year follow-up study. *Scandinavian Journal of Medicine and Science in Sports*, 8, 299-308.
- <sup>10</sup> Nader et al. (2008).
- <sup>11</sup> This percentage is consistent with estimates obtained from an online analysis of the National Survey of America's Families (NSAF) 2002 public use data (N=21,646), which found that almost one out of two teens had not been on a sports team, either in or out of school, in the last year. The reference for this source is as follows: Urban Institute and Child Trends. National Survey of America's Families (NSAF), 2002 [Computer file]. ICPSR04582-v1. Washington, DC: Westat [producer], 2002. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-10-03. doi:10.3886/ICPSR04582; Retrieved February 1, 2009 from <http://dx.doi.org/10.3886/ICPSR04582>.

Child Trends is a nonprofit, nonpartisan research center that studies children at all stages of development. Our mission is to improve outcomes for children by providing research, data, and analysis to the people and institutions whose decisions and actions affect children. For additional information on Child Trends, including publications available to download, visit our Web site at [www.childtrends.org](http://www.childtrends.org). For the latest information on more than 100 key indicators of child and youth well-being, visit the Child Trends DataBank at [www.childtrendsdatabank.org](http://www.childtrendsdatabank.org). For summaries of over 350 experimental evaluations of social interventions for children, visit [www.childtrends.org/LINKS](http://www.childtrends.org/LINKS).

© 2009 Child Trends. *May be reprinted with citation.*