

Highlights

Chapter IX – Well Fed, Active Teens

Given the decrease in teen smoking, drug use, unintended pregnancy and motor vehicle mortality, the adolescents entering the new millennium might be the healthiest ever, with one big exception: their eating habits and physical activity. The increase in overweight and obesity among U.S. children and adolescents has been called America's newest epidemic. About 13 percent of U.S. children and adolescents are overweight or obese.

COLORADO TRENDS

Surveys indicate that Colorado teens appear to be leaner than their national peers. This mirrors national data on adult obesity. Colorado currently has the lowest adult obesity rate in the nation, between 10 and 14.9 percent.

Teens themselves express a lot of concern over their weight.

- In recent surveys, about half of students report that, in the month preceding the survey, they performed physical activity to lose or maintain weight, and about one-third reported eating less food or fewer calories to lose weight.
- About 10 percent of the students reported fasting and using chemical dieting aids.
- One reason for the increasing girth of today's youth may be portion size. The current sizes of teen fast food favorites – french fries, hamburgers and soda – are two to five times larger than the time before McDonald's and Burger King became widespread.

- Rather than being physically active in their spare time, studies on how teens spend their time indicate that watching television and playing video or computer games is the mainstay of activity. In a recent survey, 29.2 percent of high school respondents reported watching TV for at least three hours or more a day, and 26.4 percent were physically inactive.

2000 OBJECTIVES

Progress Report

- By 2000, increase to 70.0% the proportion of teens that engage in vigorous physical activity three or more days per week for 20 or more minutes per occasion, from the 1995 baseline of 65.0%
Status: Objective met. Physical activity increased to 70.2%
Source: 2001 Colorado Youth Risk Behavior Survey, Colorado Department of Public Health and Environment

BEST PRACTICES

Nutrition

- *Parents* – Family knowledge and habits regarding a healthy diet are the earliest steps to preventing adolescent overweight and obesity. Teens and parents need more consumer awareness about reasonable food and beverage portion sizes. Pregnant and parenting teens need education about the potentially protective effect of breastfeeding against the development of later obesity in their infants.



- *Schools* – Schools can promote healthful dietary patterns by ensuring that school lunches are healthy and attractive to teens and by providing healthier snack options.
- *Communities* – Communities can seek demonstration grants to address the lack of access to and availability of healthy affordable foods in inner cities.

Physical Activity

- *Parents* – Parents and older siblings can model participation in physical activity and/or support their teen’s pursuit of athletic activity.
- *Schools* – Where it has been cut, schools can restore physical education to the daily schedule. Where physical education classes are still available, schools can devote more class time to actual participation and increase the levels of intensity.
- *Communities* – Communities can support youth sports and recreation programs that offer a range of activities that are accessible and attractive to teens. Communities can be creative in zoning and transportation planning to make it convenient, safe and attractive for teens to walk and ride bicycles.

2010 OBJECTIVES

INCREASE PHYSICAL ACTIVITY

- By 2010, increase the proportion high school students who engage in vigorous physical activity three or more days per week for 20 minutes or more per occasion to 85%, from the 2000 baseline of 70.2%
- By 2010, increase the proportion of high school students who watch 2 or fewer hours of television on an average school day to 77.9%, from the 2000 baseline of 70.8%

REDUCE OBESITY

- By 2010, reduce the proportion of high school students who are overweight or obese to 5.0%, from the 2000 baseline of 7.1 %
Source: 2001 Colorado Youth Risk Behavior Survey, Colorado Department of Public Health and Environment

Websites

- American Anorexia/Bulimia Association
(now the National Eating Disorders Association)
www.nationaleatingdisorders.org
- American Dietetic Association
www.eatright.org
- American Medical Association
www.ama-assn.org
- American Psychiatric Association
www.psych.org
- Center for Nutrition Policy and Promotion
US Department of Agriculture
www.usda.gov/cnpp
- Eating Disorders Awareness and Prevention
(now the National Eating Disorders Association)
www.nationaleatingdisorders.org
- Food and Nutrition Information Center
www.nal.usda.gov/fnic
- Food and Nutrition Services
US Department of Agriculture
www.fns.usda.gov
- Institute for Health Care Research and Policy
www.georgetown.edu/research/ihrp
- Kansas State University Cooperative Extension Service
www.oznet.ksu.edu
- National Center for Chronic Disease Prevention and Health Promotion
www.cdc.gov/nccdphp
- National Center for Health Statistics
www.cdc.gov/nchs
- National Dairy Council
www.nationaldairycouncil.org
- National Governors Association
www.nga.org
- National Institute of Child Health and Human Development
www.nichd.nih.gov
- National Institute of Diabetes and Digestive and Kidney Diseases
www.niddk.nih.gov
- RAND
www.rand.org
- US Department of Agriculture
www.usda.gov
- US Surgeon General
www.surgeongeneral.gov
- Youth Risk Behavior Surveillance System (YRBS)
www.cdc.gov/nccdphp/dash/yrbs

Chapter IX

Well Fed, Physically Fit Teens



PREVENTION PAYS

Obesity contributes more to higher costs for health care services and medications than either smoking or alcohol abuse.⁴ The cost in 2001 dollars of providing hospital-based health care for obesity-related childhood diseases rose from \$35 million to \$127 million annually from 1979 to 1999.⁵

Given the decrease in teen smoking, drug use, unintended pregnancy and motor vehicle mortality, the adolescents entering the new millennium might be the healthiest ever, with one big exception: their eating habits.

The increase in overweight and obesity among U.S. children and adolescents has been called America's newest epidemic.¹ About 13 percent of children and adolescents are overweight.² (See Figure 1.) Overweight and obese teens face immediate health problems, such as high cholesterol, hypertension, Type 2 diabetes, insulin resistance, polycystic ovary syndrome, as well as emotional issues. Excess weight in adolescence carried into adulthood also predisposes youth for serious adult health risks such as coronary heart disease, stroke, gall bladder disease, some types of cancer and osteoarthritis of the weight-bearing joints.³ The flip side of obesity is anorexia and eating disorders, which have their onset in adolescence.

OBESITY

Recommended weights used to be determined from tables of height and weight, since these measurements are convenient. (See Table 1.) Weight standards are now determined on the basis of Body Mass Index (BMI). Health experts define "at risk of overweight," "overweight" and "obese" as being the 85th, 95th and 97th percentile, respectively, for one's gender and age using the BMI.⁶

This chapter will discuss the following:

- Definitions and national and Colorado trends for adolescent weight concerns
- Data snapshots highlighting weight perceptions and portion size
- Causes and consequences, both physical and mental, of obesity and poor nutrition
- Physical activity trends
- Best practices in prevention that focus on the "two legs" of the issue: nutrition and physical activity, and best practices at home, in school and in the community

TABLE 1: BODY MASS INDEX (BMI) CLASSIFICATIONS

BMI Calculation	Classification
BMI of 18.5 or under (for adult) BMI under 10% on growth chart (for age 2 to 20)	This is considered underweight
BMI of 19 to 25 (for adult) BMI 10% to 85% on growth chart (for age 2 to 20)	This is the normal range, also called ideal body weight
BMI of 25 to 30 (for adult) BMI 85% to 95% on growth chart (for age 2 to 20)	This is considered at risk for overweight
BMI of 30 to 35 (for adult) BMI 95% to 97% on growth chart (for age 2 to 20)	This is considered overweight
BMI over 35 (for adult) BMI 97% and over on growth chart (for age 2 to 20)	This is considered obese

Find It Yourself

BMI is: weight (in pounds)/height (in inches)² x703. The calculation is as follows: [weight (in pounds)/height (in inches)/height (in inches)] x 703. You can find a BMI calculator at www.nhlbisupport.com/bmi. Online training modules in the use of BMI and growth charts are available at www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules.

National Trends

A national survey showed that the percentage of overweight children and adolescents has more than doubled in the last 30 years. (See Figure 1.) Among 12- to 19-year-olds, the percentage of obese teens has tripled and continues to rise: between 1976 and 1980 it was 5 percent; between 1988 and 1994, 11 percent; and between 1999 and 2000, 15 percent.⁷ This increase has affected all adolescents, regardless of gender, race/ethnicity or age group. However, children from minority groups and/or living in families with less education and lower income are much more likely to be overweight or at risk for overweight.⁸

Overweight is a particular concern for adolescents because it affects both physical and emotional well-being during adolescence and into adulthood.

- Many obese children and adolescents are at risk for type 2 diabetes, a condition most often related to obesity, and once seen only in adults. Type 2 diabetes accounts for up to 95 percent

of all diabetes cases, and is the main cause of kidney failure, limb amputations and new-onset blindness in adults and a major cause of heart disease and stroke.⁹

- Eighty-five percent of obese adolescents will be obese adults, and obese teens are more likely than obese younger children to be obese as adults.¹⁰
- Odds for obese youth to attain ideal body weight as adults are grim: if a child is obese at age 12, the odds are 4:1 against attaining ideal body weight; if an adolescent is obese at age 19, the odds are 28:1 against attaining ideal body weight.¹¹

Colorado Trends

In Colorado, the only regularly collected source of data on adolescent weight and youth perceptions of their weight, eating and exercise habits has been the Colorado Youth Risk Behavior Survey.¹² Data from the Colorado Youth Risk Behavior Survey indicate that Colorado teens appear to be leaner than their national peers. (See Table 2.)¹³ This mirrors national data on adult obesity. Colorado currently has the lowest adult obesity rate in the nation, between 10 and 14.9 percent.¹⁴

TABLE 2: YOUTH REPORTS AND PERCEPTIONS OF WEIGHT

	CO	US
At-Risk of Overweight	8.6%	13.6%
Overweight	7.1%	10.5%
Self-Perception of Overweight	26.9%	29.2%

Source: National Youth Risk Behavior Survey 2001, Colorado Youth Risk Behavior Survey 2001

Increase in Percentage of Overweight Children and Adolescents

United States, selected years: 1966-1999

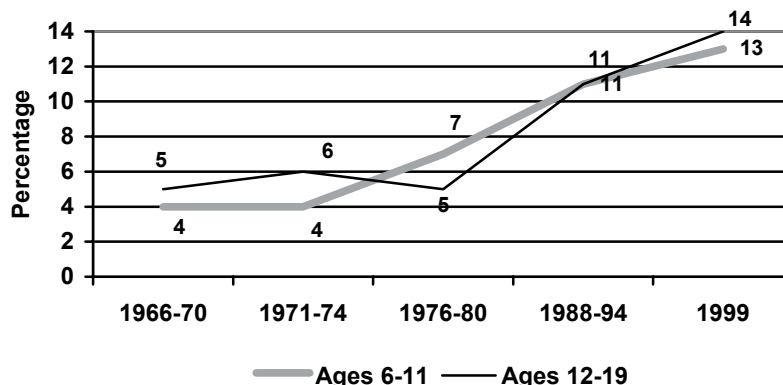


Figure 1. Data for 1966-70 are for adolescents 12-17 years, not 12-19 years. Source: Prevalence of Overweight among Children and Adolescents: United States, 1999, National Center for Health Statistics (2001).

Notwithstanding this general impression of healthy weight for age, about a quarter of all students taking the Colorado Youth Risk Behavior Survey over the decade have described themselves as “slightly” or “very” overweight. (About one in three girls and one in five boys report perceiving themselves as overweight.)

CAUSES AND CONSEQUENCES OF OBESITY AND POOR NUTRITION

Although the “bottom line” for weight gain is consuming more calories than one expends, obesity is a chronic disease with multiple factors contributing to its prevalence. Some factors are intrinsic and not likely to be altered by health policy or community programs, including genetics, familial predisposition, metabolic disturbances, neurobiologic variations in appetite control and endocrine disorders. Other factors, however, are linked to environmental and social conditions and poor nutritional habits. These factors are the main causes of the escalating rates of obesity in America.

- Consumption of a high fat, high calorie diet
- Ever-increasing portion sizes
- Overindulgence or reliance on “fast foods”
- Skipping breakfast and lunch and eating the majority of calories at night
- Eating when anxious or depressed for mood control (“food as a friend”)
- Eating in association with sedentary activities, such as watching television
- Decreased physical activity (“couch potatoes”)

What Adolescents Eat

KidSpeak

“Most girls are obsessed to look like stars.” Boy, age 15, Park County

The typical adolescent requires more calories than an adult of the same size and comparable activity level.¹⁸ Nutrition surveys have found that because of dietary patterns, growing adolescents in the United States are susceptible to deficiencies in calcium, iron and vitamins A and C.¹⁹

Calcium is essential for the formation and maintenance of bones and teeth. Nutrition experts estimate that about half of adolescent males and more than 80 percent of adolescent females do not meet

dietary recommendations for calcium intake. This places them at serious risk for osteoporosis (loss of bone mass) and other bone diseases as adults, because nearly 90 percent of adult bone mass is established by the end of adolescence.²⁰ Over the decade, Colorado Youth Risk Behavior Survey data indicate that Colorado students are not drinking sufficient milk to meet the recommendation for calcium intake.

KidSpeak

“There’s nothing wrong with dieting to look better or be a little skinnier.” Girl, age 17, Weld County.

When They Eat

While adolescents often skip meals; they are most likely to skip breakfast. Skipping breakfast increases the likelihood that teens will not meet nutritional requirements and can lead to poorer performance at school.²¹ Skipping breakfast is also associated with being overweight.

A recent survey of over 16,000 youth ages 9 to 14 found that adolescents who ate regularly scheduled family dinners were more likely than their peers to consume fruits, vegetables and higher levels of calcium, iron, folate and vitamins, and less likely to drink soda or eat fried, high-fat or sugar-laden foods. Eating together with one’s family has been associated with improved school and psychological performance.²²

Where They Eat

Nationally, 73.9 percent of middle/junior high schools, and 98.2 percent of senior high schools have either vending machines or a school store, canteen or snack bar where students can purchase food or beverages – most commonly soft drinks, sports drinks or fruit juices that are not 100% juice; salty snacks; and baked goods that are high in fat.²³ Colorado has no requirements for food content in after-school programs, during breakfast or lunch periods, at school-run concession stands or in vending machines.²⁴ Colorado does not require schools to offer specific types and selections of food to students.²⁵

Portion Size

One reason for the increasing girth of today’s youth may be portion size. Larger portions mean more calories (and in the case of “super-sized” fast foods, more fat). They also encourage teens to eat

more than they usually would. According to a recent study, restaurant portion sizes have increased greatly over the last 20 years and now exceed federal standards, paralleling the weight gains seen in today's youth. The current sizes of perennial teen fast food favorites – french fries, hamburgers and soda – are two to five times larger than when McDonald's and Burger King became common sights on major streets. In the mid-1950s, McDonald's offered only one size of french fries; that size is now considered "small" and is one-third the weight of the largest size available in 2001. Today's "large" weighs the same as the 1998 "supersize," and the 2001 "supersize" weighs almost an ounce more.

- Since 1999, a McDonald's "supersize" soda is nearly one third larger than the "large" size.
- The 7-Eleven Double Gulp, a 64-oz soda, contains nearly 800 calories – an amount 10 times that contained in a bottle of Coca-Cola when it was first introduced.²⁶

EATING DISORDERS

Eating disorders include anorexia (*anorexia nervosa*: self-starvation and refusal to maintain minimal body weight), bulimia (*bulimia nervosa*: binge eating followed by purging), and binge eating disorder (compulsive overeating without purging).

The exact incidence of eating disorders in adolescents, both nationally and in Colorado, is difficult to determine because most data are from self-reported surveys with very different methods of sampling and assessment. Although anorexia in particular was previously seen mostly in white, middle- and upper-class adolescent and young adult females, the prevalence in the past two decades includes a diversity of ethnic and socioeconomic groups in both genders. Current combined estimates indicate that 5-10 percent of U.S. adolescent females and 2 percent of adolescent males have some form of eating disorder.¹⁵

Specific questions on dieting and weight maintenance, either through exercise, diminished caloric intake, fasting, purging through vomiting or laxatives, or diet pills/other chemical aids were recently added to the Youth Risk Behavior Survey. Colorado teens seem to be conscious about the links between overweight, nutrition and physical activity.

- About half the students reported that, in the month preceding the survey, they performed physical activity to lose or maintain weight, and

about one-third reported eating less food or fewer calories to lose weight.

- In the 2001 Colorado Youth Risk Behavior Survey, about 10 percent of the students reported fasting and using chemical dieting aids.
- Adolescents may take dieting behaviors to extremes, as exhibited in anorexia and bulimia. Anorexics have a distorted self-image, thinking they are too fat, regardless of their actual weight. They will starve themselves in order to lose weight, sometimes to the point of death. They also may combine starvation with intense physical activity and purging, either through abuse of laxatives or self-induced vomiting. While occurring primarily in girls, boys can also be anorexic, often manifested in the desire to lose weight for sports requiring attention to weight, such as wrestling, figure skating, equestrian sports, some track and field sports and gymnastics.¹⁶
- Bulimics combine binge-eating (literally, stuffing oneself) followed by purging. A telltale sign of self-induced vomiting is the wearing away of enamel on the back of the front teeth caused by contact with gastric acids.¹⁷

Binge eating disorder is a new term used to describe individuals who binge eat but do not use inappropriate compensatory measures (purging, fasting, excessive exercise). These teens compulsively overeat, eat large quantities of food very quickly to the point of feeling uncomfortable, sense a lack of control over eating, and often feel embarrassed, disgusted or depressed. This type of eating disorder can lead to significant weight problems and obesity.

KidSpeak

"I am 16 and have been battling anorexia nervosa for four years. Although I have had an ED [eating disorder] for that time, I have had problems with my body since I was eight. When I was eight, I thought that I was disgusting, and in writing my letter to Santa (i.e., the only way to get presents), I asked him for liposuction." *Source: Personal story shared on Nova: Dying to Be Thin. Public Broadcasting System (December 2000), accessed online at: www.pbs.org/wgbh/nova/thin/story_001206.html*

WEIGHT, HEALTH AND EMOTIONAL WELL-BEING

Since a primary task of adolescence is forging one's own identity, perceptions of overweight can be an emotional nightmare for a body-conscious teen.

- Being picked on or bullied because of one's weight can cause emotional torment to some youth and may, in fact, discourage them from pursuing sports and other lifestyle changes necessary to reach and maintain a healthy weight.²⁷
- The perception of being fat and being dissatisfied with their physical appearance may lead adolescent girls and boys to unhealthy weight control behaviors, such as unsupervised dieting, diet aids (e.g., anabolic steroids, untested dietary supplements), fasting, self-induced vomiting and use of tobacco as an appetite suppressant.²⁸
- Boys may be stigmatized because of small stature or thinness.²⁹

MYTHS & FACTS

Myth: Only girls diet.

Fact: Boys diet too, though not as much as girls. On the latest national Youth Risk Behavior Survey, about one-fourth of high school boys reported that they were trying to lose weight. Most of them reported dieting by eating less food or low-fat foods, but a small percentage reported fasting, using diet pills or purging. Boys can also be dissatisfied with their own bodies, engage in disordered eating and use anabolic steroids and untested dietary supplements to control their weight and to gain muscle.

Source: See references cited in notes 27 and 28.

The Other Side of the Coin: Hunger and School Achievement

The other side of the coin is that teens who do not get enough to eat do worse in school and have greater difficulty getting along with others than their well-fed peers, according to researchers. One study found that younger children (ages 6 to 11) who did not get sufficient food had significantly lower arithmetic scores and were more likely to have repeated a grade, to have seen a psychologist and to

have had difficulty getting along with other children. Teenagers who did not get sufficient food were more likely to have seen a psychologist, to have been suspended from school and to have had difficulty getting along with other children. Teens with inadequate food were almost three times more likely to have been suspended from school.³⁰

BEST PRACTICES IN PREVENTION - NUTRITION

Everyone has a part to play in getting youth to establish healthy eating habits and to get them up and on the move. This means that changes must become lifelong habits.

KidSpeak

What would encourage teens to eat healthier?

Universal answer: Vending machines in schools with fruit and healthy food.

Eat Breakfast and Drink Your Milk

In most cases, the best way to assure a healthy weight is the basic equation of proper nutrition (the right food eaten at the right time) and physical activity. However, when left to their own devices, adolescent eating patterns are characterized by snacking, fast foods, sodas instead of milk, missed meals and eating on the run. This may result in diets that are higher in calories, saturated fats, cholesterol and salt, and lower in fiber, vitamins and minerals than is recommended for good health.³⁶ These patterns are of concern to health experts because eating patterns formed in adolescence persist into adulthood.³⁷ Good nutrition is key.

Parents

Family knowledge and habits regarding a healthy diet are the earliest step to preventing adolescent overweight and obesity and ensuring healthful eating habits. Teens as consumers need to be aware of the health effects of being overweight, not just the cosmetic effects. Both teens and their parents need more consumer awareness about reasonable food and beverage portion sizes. In addition to traditional prenatal nutrition education, pregnant and parenting teens (and their mothers) need education about the potentially protective effect of breastfeeding against the development of later obesity in their infants.³⁸

Schools

Schools can promote healthful dietary patterns by ensuring that school lunches are healthy and attractive to teens and providing healthier snack options.³⁹ Vending machines in schools may seem a financial windfall to schools, but schools can explore stocking them with healthful alternatives to soda and candy. Colorado requires that sale of junk foods is limited at school-run stores, but the state has no such requirements (or recommendations) for sale of “junk foods” at student parties, in after-school or extended day programs, in vending machines or at concession stands.⁴⁰

KidSpeak

What might encourage teens to be more physically active?
“More programs that would appeal to all teens, not just sports, for example, dancing, yoga, rock climbing. It’s something kids need to want to do on their own.” Girl, age 17, Weld County

Communities

Communities can seek demonstration grants to address the lack of access to and availability of healthy affordable foods in inner

cities.⁴¹

BEST PRACTICES IN PREVENTION - PHYSICAL ACTIVITY

Move Your Body

We all know the prescription: regular physical activity helps build and maintain healthy bones and lean muscles, controls weight, improves cardiovascular health, reduces feelings of depression and anxiety, and promotes psychological well-being. But what are adolescents doing about it?

Turn Off the TV

Studies on how teens spend their time indicate that watching television and playing video or computer games is the mainstay of activity. Colorado’s 2000 health goal was to reduce to 20 percent the proportion of students reporting watching TV or playing video or computer games for three or more hours on an average school day. (The 1990 goal was 30 percent.) On the 2001 Colorado Youth Risk Behavior Survey, 29.2 percent of the respondents reported watching TV for at least three hours or more a day.³¹

Increase Physical Activity

Colorado’s goal for 2000 was to increase to 60 percent the proportion of adolescents who engage in vigorous physical activity three or more days per week for 20 or more minutes per occasion.

About 70 percent of students responding to the 2001 Colorado Youth Risk Behavior Survey indicate that they are in fact exercising to that degree. This reported level of exercise has been slightly higher than reported on the National Youth Risk Behavior Survey. In addition, the Colorado Youth Risk Behavior Survey seems to indicate that more Colorado students may play on one or more athletic teams than their national counterparts.

In the latest Colorado Youth Risk Behavior Survey, 26.4 percent of respondents were physically inactive (did not participate in at least 20 minutes of vigorous physical activity on three or more of the past seven days and did not do at least 20 minutes of moderate physical activity on five or more of the past seven days).

But what about the students who do not exercise on their own? Participation in a daily physical education class – a good way to “catch” adolescents – has dropped from 42 percent in 1991 to 25 percent in 1995, with high school physical education classes taking the biggest hit. A recent federal study on school health policies and programs determined that just 47 percent of middle/junior high schools and 26 percent of high schools require at least three years of physical education.³²

MYTHS & FACTS

Myth: PE is a waste of time.

Fact: Daily physical education, recess and extracurricular athletic activities increase adolescent participation in moderate to vigorous physical activity. They can help teens acquire interest and skills in various physical activities they can pursue as adults. Colorado is just one of two states that does not mandate physical education in public schools.

Source: “Increasing physical activity: A report on recommendations of the Task Force on Community Preventive Services,” *MMWR* 50 (RR-18): -16 (2001).

Over the last decade, public high school students responding to the Colorado Youth Risk Behavior Survey reported similar drops in

participation in daily physical education classes. The Colorado Department of Education requires public schools to adopt and follow physical education goals, objectives or expected outcomes, and recommends that schools have either written tests, skill-performance tests or fitness-level tests. However, the state does not require physical education classes in elementary, middle/junior or high schools.³³

To get teens (and adults) off the couch, the Surgeon General's Task Force on Community Preventive Services' recommendations for increasing physical activity encouraged:³⁴

- Behavioral and social approaches, such as school-based physical education, social support interventions in community settings³⁵ and individually adapted health behavior change programs;
- Informational approaches, such as community-wide campaigns and prompts to encourage use of stairs; and
- Environmental and policy approaches, such as creation of or enhanced access to places for physical activity, combined with informational outreach activities.

Parents

Parents⁴² and older siblings can model participation in physical activity and/or support their teen's pursuit of athletic activity.

Schools

School districts can improve participation in physical activity in a number of ways. Where physical education has been cut from the daily schedule, it can be restored. Where physical education classes are still available, schools can explore ways to devote more class time to actual participation, and increase the levels of intensity, such as adding more time to the class or adding more levels of difficulty. They can make sure that after-school programming includes physical activity opportunities.

Communities

Communities can support youth sports and recreation programs that offer a range of developmentally appropriate activities that are accessible and attractive to teens. Communities can be creative in zoning and transportation planning to make it convenient, safe and attractive for teens to

walk, ride bicycles and use close-to-home physical activity facilities.⁴³ Multiple stakeholders in the community, such as public health officials, health promotion managers, transportation officials, parks and recreation staff, city and state planners, economic development officials, medical professionals, environmental officials, voluntary organizations, health plans and insurers, elected officials, developers and business leaders all have something to offer.⁴⁴

KidSpeak

"I think in order to improve health behaviors we need to educate each other and encourage each other."
Girl, age 16, Broomfield County

END NOTES

1. US Surgeon General, The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity (2001); National Center for Health Statistics, Prevalence of Overweight among Children and Adolescents: United States, 1999-2000 (2001); K Kiefer, Childhood Obesity: A Lifelong Threat to Health (Data Profile No. 2), Institute for Health Care Research and Policy, Georgetown University (2002); AH Mokdad et al., "The continuing epidemics of obesity and diabetes in the United States," *Journal of the American Medical Association* 286(10):1195-1200 (2001).
2. Health experts define "overweight" or "obese" as being over the 85th and 95th percentile, respectively, for one's sex and age of the Body Mass Index (BMI). Body Mass Index (BMI) is found by dividing a person's weight in kilograms by height in meters squared (m²). To determine BMI using pounds and inches, multiply your weight in pounds by 704.5, then divide the result by your height in inches, and divide that result by your height in inches a second time. (Or you can use the BMI calculator at <http://www.nhlbisupport.com/bmi>.) To avoid stigmatizing youth, the term "obese" is no longer used for children and adolescents; the terms "at risk of overweight" and "overweight" are used to refer to adolescent "overweight" and "obesity," respectively. M Fierro, *The Obesity Epidemic: How States Can Trim the "Fat."* National Governors Association, Center for Best Practices (2002).
3. See notes 1 and 2.
4. R Sturm, "Datawatch: The effects of obesity, smoking, and drinking on medical costs and programs," *Health Affairs* 21(2):245-53 (2002); RAND, *Research Highlights: The Health Risks of Obesity* (Pub. No. RB-4549) (2002).
5. G Wang and WH Dietz, "Economic burden of obesity in youths aged 6 to 17 years: 1979-1999," *Pediatrics* 109(5):e81 (2002).
6. See note 2.
7. C L Ogden et al., "Prevalence and trends in overweight among US children and teens, 1999-2000," *Journal of the American Medical Association* 288(4) (2002).
8. See references cited in notes 1 and 2 above, especially the National Health and Nutrition Examination Surveys reported in National Center for Health Statistics, *Prevalence of Overweight*.

9. R Sinha et al., "Prevalence of impaired glucose tolerance among children and adolescents with marked obesity," *New England Journal of Medicine* 346(11):802-810 (2002).
10. Kiefer, *Childhood Obesity*, see note 1; Mokdad, "Continuing epidemics," see note 1.
11. See references cited in note 10.
12. See introduction for a discussion of the uses and limitations of the Colorado Youth Risk Behavior Survey.
13. Colorado Department of Public Health and Environment, Colorado Youth Risk Behavior Survey (YRBS), 1999 and 2001; Colorado Department of Education, Colorado YRBS, 1995; National Center for Chronic Disease Prevention and Health Promotion, *Youth Risk Behavior Surveillance System (YRBSS) Results: Dietary Behaviors*.
14. That figure is very likely to change given the national trends. In 1991, only four of 45 states participating in a Centers for Disease Control survey on obesity had obesity rates of 15 to 19 percent and none had rates greater than 20 percent. By the year 2000, all of the 50 states except Colorado had rates of 15 percent or greater, with 22 of the 50 states having obesity rates as high as 20 percent or greater. National Center for Chronic Disease Prevention and Health Promotion, *Obesity Trends: Prevalence of Obesity among U.S. Adults, Region and State: Behavioral Risk Factor Surveillance System (1991-2000): Self-Reported Data (2001)* and *Obesity Trends: US Obesity Trends 1985-2000 (2001)*.
15. See references cited in note 14. See also American Psychiatric Association, *Let's Talk Facts About: Eating Disorders (1999)*.
16. Eating Disorders Awareness and Prevention and The American Anorexia/Bulimia Association, *Athletics as a Risk Factor in the Development of Eating Disorders (1994)*.
17. *Ibid.*, see also D Neumark-Sztainer et al., "Weight-related concerns and behaviors among overweight and nonoverweight adolescents," *Archives of Pediatrics and Adolescent Medicine* 156(2):171-178 (2002).
18. National Institute of Diabetes and Digestive and Kidney Diseases, *Take Charge of Your Health: A Teenager's Guide to Better Health (2000)*; Kansas State University Cooperative Extension Service, "Growing nutrition needs: The adolescent years," *Nutrition SPOTlight (July-Aug 2000)*; American Dietetic Association, "Nutrition and athletic performance: Position of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine," *Journal of the American Dietetic Association* 100:1543-1556 (2000).
19. P Gleason and C Suito, *Changes in Children's Diets: 1989-1991 to 1994-1996*, US Department of Agriculture (2001).
20. American Academy of Pediatrics, "Calcium requirements of infants, children and adolescents," *Pediatrics* 104(5):1152-1157 (1999); National Institute of Child Health and Human Development, "Calcium Crisis" Affects American Youth (2001); G Wyshak, "Teenaged girls, carbonated beverage consumption, and bone fractures," *Archives of Pediatrics and Adolescent Medicine* 154(6):610-613 (2000); NH Golden, "Osteoporosis prevention: A pediatric challenge (Editorial)," *Archives of Pediatrics and Adolescent Medicine* 154(6):542-543 (2000).
21. See, e.g., Center for Nutrition Policy and Promotion, US Department of Agriculture, *Breakfast and Learning in Children: Symposium Proceedings (1999)*.
22. MW Gillman et al., "Family dinner and diet quality among older children and adolescents," *Archives of Family Medicine* 9(3):235-240 (2000).
23. National Center for Chronic Disease Prevention and Health Promotion, *School Health Policies and Programs Study (SHPPS) 2000: Fact Sheet Nutrition Services (2000)*. SHPPS is a national survey periodically conducted to assess school health policies and programs at the state, district, school and classroom levels. Results from SHPPS 2000 are published in the *Journal of School Health* 71(7) (September 2001).
24. *Ibid.*, SHPPS State Summary Table 5.5.
25. *Ibid.*, SHPPS State Summary Table 5.3.
26. LR Young and M Nestle, "The contribution of expanding portion sizes to the US obesity epidemic," *American Journal of Public Health* 92:246-249 (2002).
27. WH Dietz, "Health consequences of obesity in youth: Childhood predictors of adult disease," *Pediatrics* 101(3): 518-525 (1998). (A supplement to this issue of *Pediatrics* is devoted to the causes and health consequences of obesity in children and adolescents; abstracts of the articles are available online at <http://www.pediatrics.org/content/vol101/issue3/index.shtml#SUPPL1>.)
28. *Ibid.*; see also American Psychiatric Association, *Let's Talk Facts*, see note 15.
29. Girls tend to diet excessively to reduce weight, and boys may diet to increase muscle bulk and weight, for general appearance and sports. American Medical Association, *Special Diets and Special Concerns: 13 to 18 Years (2000)*; M Peixoto Labre, "Adolescent boys and the muscular male body ideal," *Journal of Adolescent Health* 30(4):233-242 (2002); H Markel, "Anorexia can strike boys, too." *New York Times*, July 25, 2000.
30. K Alaimo, CM Olson and EA Frongillo, Jr., "Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development," *Pediatrics* 108(1): 44-53 (2001); Food and Nutrition Information Center, National Agricultural Library, *Nutrition and Learning Resource List for Professionals (2001)*. This is an annotated bibliography on the individual studies that have shown that nutrition affects learning.
31. There is some controversy as to whether increased television viewing influences obesity or vice versa. TN Robinson, "Does television cause childhood obesity?," *Journal of the American Medical Association* 279(12):959-960 (1998).
32. SHPPS, State Summaries: Physical Education, see note 23.
33. *Ibid.*, see also Colorado Department of Education, Colorado Model Content Standards for Physical Education (1997) and Colorado Model Content Standards for Physical Education: Suggested Grade Level Expectations (2000).
34. Centers for Disease Control and Prevention, "Increasing physical activity: A report on recommendations of the Task Force on Community Preventive Services," *MMWR* 50(RR18): 1-16 (2001). For some types of approaches, the Task Force found inadequate evidence upon which to base recommendations: classroom-based health education focused on information provision, behavioral skills, and social support interventions in family settings because of inconsistent findings; mass media campaigns, college-age physical education, and health education because of an insufficient number of studies; and classroom-based health education focusing on reducing television viewing and video game playing because of the lack of a demonstrated link between reduced time spent watching television or playing video games and increased physical activity.
35. For example, setting up a buddy system or contracting with another person to complete specified levels of physical activity.
36. P Gleason and C Suito, *Children's Diets in the Mid-1990s: Dietary Intake and Its Relationship with School Meals Participation*, Food and Nutrition Services, US Department of Agriculture (2001).
37. National Dairy Council, *Improving the Nutritional Status of Adolescents: Current Trends and Strategies for Success* (no date); D Neumark-Sztainer, M Story and PJ Hannan, "Overweight status and eating patterns among adolescents: Where do youths stand in comparison with the Healthy People 2010 objectives?," *American Journal of Public Health* 92(5): 844-851 (2002).

38. US Surgeon General, *Surgeon General's Call*, see note 1; see, e.g., C Hobbie, S Baker and C Bayerl, "Parental understanding of basic infant nutrition: Misinformed feeding choices," *Journal of Pediatric Health Care* 14(1): 26-31(2000).
39. US Surgeon General, *Surgeon General's Call*, see note 1.
40. SHHPS, Table 5.4 and 5.5, see note 23. Junk foods are those that provide calories primarily through fats or added sugars and have minimal amounts of vitamins and minerals.
41. US Surgeon General, *Surgeon General's Call*, see note 1.
42. MT McGuire et al., "Parental correlates of physical activity in a racially/ethnically diverse adolescent sample," *Journal of Adolescent Health* 30(4): 253-261 (2002).
43. National Center for Chronic Disease Prevention and Health Promotion, "Adolescents and young adults," in *Physical Activity and Health: A Report of the Surgeon General* (1999).
44. T Farley and D Cohen, "Fixing a fat nation: Why diets and gyms won't save us from the obesity epidemic," *The Washington Monthly* 33(12):1-10 (2001).

