



22

Physical Activity and Fitness

Overview

The 1990s brought a historic new perspective to exercise, fitness, and physical activity by shifting the focus from intensive vigorous exercise to a broader range of health-enhancing physical activities. Research has demonstrated that virtually all individuals will benefit from regular physical activity.[\[1\]](#) A Surgeon General's report on physical activity and health concluded that moderate physical activity can reduce substantially the risk of developing or dying from heart disease, diabetes, colon cancer, and high blood pressure.¹ Physical activity also may protect against lower back pain and some forms of cancer (for example, breast cancer), but the evidence is not yet conclusive.[\[2\]](#), [\[3\]](#)

Issues and Trends

On average, physically active people outlive those who are inactive.[\[4\]](#), [\[5\]](#), [\[6\]](#), [\[7\]](#), [\[8\]](#) Regular physical activity also helps to maintain the functional independence of older adults and enhances the quality of life for people of all ages.[\[9\]](#), [\[10\]](#), [\[11\]](#)

The role of physical activity in preventing coronary heart disease (CHD) is of particular importance, given that CHD is the leading cause of death and disability in the United States. Physically inactive people are almost twice as likely to develop CHD as persons who engage in regular physical activity. The risk posed by physical inactivity is almost as high as several well-known CHD risk factors, such as cigarette smoking, high blood pressure, and high blood cholesterol. Physical inactivity, though, is more prevalent than any one of these other risk factors. People with other risk factors for CHD, such as obesity and high blood pressure, may particularly benefit from physical activity.

Regular physical activity is especially important for people who have joint or bone problems and has been shown to improve muscle function, cardiovascular function, and

physical performance.[12] However, people with arthritis (20 percent of the adult population) are less active than those without arthritis.[13] People with osteoporosis, a chronic condition affecting more than 25 million people in the United States, may respond positively to regular physical activity, particularly weight-bearing activities, such as walking,[14] and especially when combined with appropriate drug therapy and calcium intake. Increased bone mineral density has been positively associated with aerobic fitness, body composition, and muscular strength.[15]

Although vigorous physical activity is recommended for improved cardiorespiratory fitness, increasing evidence suggests that moderate physical activity also can have significant health benefits, including a decreased risk of CHD. For people who are inactive, even small increases in physical activity are associated with measurable health benefits. In addition, moderate physical activity is more readily adopted and maintained than vigorous physical activity.[16] As research continues to illustrate the links between physical activity and selected health outcomes, people will be able to choose physical activity patterns optimally suited to individual preferences, health risks, and physiologic benefits.

For individuals who do not engage in any physical activity during their leisure time, taking the first step toward developing a pattern of regular physical activity is important. Unfortunately, few individuals engage in regular physical activity despite its documented benefits. Only about 23 percent of adults in the United States report regular, vigorous physical activity that involves large muscle groups in dynamic movement for 20 minutes or longer 3 or more days per week. Only 15 percent of adults report physical activity for 5 or more days per week for 30 minutes or longer, and another 40 percent do not participate in any regular physical activity.

Public education efforts need to address the specific barriers that inhibit the adoption and maintenance of physical activity by different population groups. Older adults, for example, need information about safe walking routes. Persons with foot problems need to learn about proper foot care and footwear in order to reach appropriate activity levels. People with CHD and other chronic conditions must understand the importance of regular physical activity to maintain physical function. Each person should recognize that starting out slowly with an activity that is enjoyable and gradually increasing the frequency and duration of the activity are central to the adoption and maintenance of physical activity behavior. Along with the public education efforts, public programs in a variety of settings (recreation centers, worksites, health care settings, and schools) need to be developed, evaluated, and shared as potential models. The availability of group activities in the community is important for many.

Physical Activity in Children and Adolescents

22-6

Increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days.

Target: 35 percent.

Baseline: 27 percent of students in grades 9 through 12 engaged in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days in 1999.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP.

| Students in Grades 9 Through 12, 1999 (unless noted) | Moderate Physical Activity | | |
|--|----------------------------|-----------|-----------|
| | 22-6. Both Genders | Females* | Males* |
| | Percent | | |
| TOTAL | 27 | 24 | 29 |
| Race and ethnicity | | | |
| American Indian or Alaska Native | DSU | DSU | DSU |
| Asian or Pacific Islander | DSU | DSU | DSU |
| Asian | DSU | DSU | DSU |
| Native Hawaiian and other Pacific Islander | DSU | DSU | DSU |
| Black or African American | 17 | 17 | 24 |
| White | 27 | 27 | 31 |
| | | | |
| Hispanic or Latino | 21 | 17 | 26 |
| Not Hispanic or Latino | 27 | 25 | 30 |
| Black or African American | 21 | 18 | 24 |
| White | 29 | 26 | 32 |
| Parents' education level | | | |
| Less than high school | 25 (1997) | 25 (1997) | 24 (1997) |
| High school graduate | 21 (1997) | 20 (1997) | 21 (1997) |
| At least some college | 20 (1997) | 19 (1997) | 20 (1997) |
| Select populations | | | |
| Grade levels | | | |
| 9th grade | 28 | 26 | 31 |
| 10th grade | 26 | 25 | 27 |
| 11th grade | 25 | 21 | 29 |
| 12th grade | 27 | 24 | 29 |

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-7. Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

Target: 85 percent.

Baseline: 65 percent of students in grades 9 through 12 engaged in vigorous physical activity 3 or more days per week for 20 or more minutes per occasion in 1999.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP.

| Students in Grades 9 Through 12, 1999 (unless noted) | Vigorous Physical Activity | | |
|--|----------------------------|-----------|-----------|
| | 22-7. Both Genders | Females* | Males* |
| | Percent | | |
| TOTAL | 65 | 57 | 72 |
| Race and ethnicity | | | |
| American Indian or Alaska Native | DSU | DSU | DSU |
| Asian or Pacific Islander | DSU | DSU | DSU |
| Asian | DSU | DSU | DSU |
| Native Hawaiian and other Pacific Islander | DSU | DSU | DSU |
| Black or African American | 56 | 49 | 64 |
| White | 68 | 60 | 75 |
| | | | |
| Hispanic or Latino | 61 | 50 | 72 |
| Not Hispanic or Latino | 65 | 58 | 73 |
| Black or African American | 56 | 47 | 65 |
| White | 67 | 60 | 75 |
| Parents' education level | | | |
| Less than high school | 50 (1997) | 43 (1997) | 60 (1997) |
| High school graduate | 54 (1997) | 45 (1997) | 62 (1997) |
| At least some college | 68 (1997) | 57 (1997) | 75 (1997) |
| Select populations | | | |
| Grade Levels | | | |
| 9th grade | 73 | 68 | 77 |
| 10th grade | 65 | 56 | 73 |
| 11th grade | 58 | 49 | 67 |
| 12th grade | 61 | 52 | 71 |

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-8 Increase the proportion of the Nation's public and private schools that require daily physical education for all students.

Target and baseline:

| Objective | Increase in Schools Requiring Daily Physical Activity for All Students | 1994 Baseline | 2010 Target |
|---------------|--|------------------|----------------|
| | | <i>Percent</i> | |
| 22-8a. | Middle and junior high schools | 17 | 25 |
| 22-8b. | Senior high schools | 2 | 5 |

Target setting method: 47 percent improvement for middle and junior high schools; 150 percent improvement for senior high schools.

Data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

22-9 Increase the proportion of adolescents who participate in daily school physical education.

Target: 50 percent.

Baseline: 29 percent of students in grades 9 through 12 participated in daily school physical education in 1999.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP.

| Students in Grades 9 Through 12, 1999 (unless noted) | Daily School Physical Education | | |
|--|---------------------------------|----------|--------|
| | 22-9. Both Genders | Females* | Males* |
| | Percent | | |
| TOTAL | 29 | 26 | 32 |
| Race and ethnicity | | | |
| American Indian or Alaska Native | DSU | DSU | DSU |
| Asian or Pacific Islander | DSU | DSU | DSU |
| Asian | DSU | DSU | DSU |
| Native Hawaiian and other Pacific Islander | DSU | DSU | DSU |
| Black or African American | 28 | 25 | 33 |
| White | 28 | 26 | 31 |
| Hispanic or Latino | 40 | 36 | 45 |
| Not Hispanic or Latino | 28 | 25 | 30 |

| Students in Grades 9 Through 12, 1999 (unless noted) | Daily School Physical Education | | |
|--|---------------------------------|-----------|-----------|
| | 22-9. Both Genders | Females* | Males* |
| | Percent | | |
| Black or African American | 29 | 26 | 33 |
| White | 28 | 26 | 31 |
| Parents' education level | | | |
| Less than high school | 29 (1997) | 28 (1997) | 30 (1997) |
| High school graduate | 24 (1997) | 22 (1997) | 27 (1997) |
| At least some college | 28 (1997) | 25 (1997) | 30 (1997) |
| Select populations | | | |
| Grade levels | | | |
| 9th grade | 42 | 40 | 44 |
| 10th grade | 30 | 28 | 33 |
| 11th grade | 20 | 17 | 24 |
| 12th grade | 20 | 17 | 24 |

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-10. Increase the proportion of adolescents who spend at least 50 percent of school physical education class time being physically active.

Target: 50 percent.

Baseline: 38 percent of students in grades 9 through 12 were physically active in physical education class more than 20 minutes 3 to 5 days per week in 1999.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP.

| Students in Grades 9 Through 12, 1999 (unless noted) | Physically Active in Physical Education Classes | | |
|--|---|-----------|-----------|
| | 22-10. Both Genders | Females* | Males* |
| | Percent | | |
| TOTAL | 38 | 32 | 45 |
| Race and ethnicity | | | |
| American Indian or Alaska Native | DSU | DSU | DSU |
| Asian or Pacific Islander | DSU | DSU | DSU |
| Asian | DSU | DSU | DSU |
| Native Hawaiian and other Pacific Islander | DSU | DSU | DSU |
| Black or African American | 32 | 24 | 41 |
| White | 40 | 33 | 46 |
| | | | |
| Hispanic or Latino | 41 | 35 | 47 |
| Not Hispanic or Latino | 38 | 31 | 45 |
| Black or African American | 32 | 25 | 37 |
| White | 40 | 33 | 45 |
| Parents' education level | | | |
| Less than high school | 28 (1997) | 25 (1997) | 32 (1997) |
| High school graduate | 29 (1997) | 24 (1997) | 35 (1997) |
| At least some college | 33 (1997) | 27 (1997) | 37 (1997) |
| Select populations | | | |
| Grade levels | | | |
| 9th grade | 55 | 48 | 62 |
| 10th grade | 41 | 35 | 47 |
| 11th grade | 29 | 24 | 35 |
| 12th grade | 24 | 16 | 32 |

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

*Data for females and males are displayed to further characterize the issue.

22-11. Increase the proportion of adolescents who view television 2 or fewer hours on a school day.

Target: 75 percent.

Baseline: 57 percent of students in grades 9 through 12 viewed television 2 or fewer hours per school day in 1999.

Target setting method: Better than the best.

Data source: Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP.

| Students in Grades 9 through 12, 1999 | Television 2 or Fewer Hours per School Day |
|--|--|
| | Percent |
| TOTAL | 57 |
| Race and ethnicity | |
| American Indian or Alaska Native | DSU |
| Asian or Pacific Islander | DSU |
| Asian | DSU |
| Native Hawaiian and other Pacific Islander | DSU |
| Black or African American | 28 |
| White | 66 |
| Hispanic or Latino | 48 |
| Not Hispanic or Latino | DNA |
| Black or African American | 26 |
| White | 66 |
| Gender | |
| Female | 59 |
| Male | 56 |
| Parents' education level | |
| Less than high school | DNC |
| High school graduate | DNC |
| At least some college | DNC |
| Select populations | |
| Grade levels | |
| 9th grade | 49 |
| 10th grade | 54 |
| 11th grade | 62 |
| 12th grade | 67 |

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

The health benefits of moderate and vigorous physical activity are not limited to adults. Physical activity among children and adolescents is important because of the related health benefits (cardiorespiratory function, blood pressure control, and weight management) and because a physically active lifestyle adopted early in life may continue into adulthood. Even among children aged 3 to 4 years, those who were less active tended to remain less active after age 3 years than most of their peers.[\[24\]](#) These findings highlight the need for parents, educators, and health care providers to become positive role models and to be involved actively in the promotion of physical activity and fitness in children and adolescents.

Many children are less physically active than recommended, and physical activity declines during adolescence.^{[25], [26]} One study found that one-quarter of U.S. children spend 4 hours or more watching television daily.^[27] Schools are an efficient vehicle for providing physical activity and fitness instruction because they reach most children and adolescents. Participation in school physical education ensures a minimum amount of physical activity and provides a forum to teach physical activity strategies and activities that can be continued into adulthood. Findings suggest that the quantity and, in particular, the quality of school physical education programs have a significant positive effect on the health-related fitness of children and adolescents by increasing their participation in moderate to vigorous activities.^{[28], [29]}

Studies have shown that spending 50 percent of physical education class time on physical activity is an ambitious but feasible target. Being active for at least half of physical education class time on at least half of the school days would provide a substantial portion of the physical activity time recommended for adolescents.^[30] To achieve the benefits of school-based physical education equitably for all children, daily adaptive physical education programs should be available for children with special needs. School physical education requirements also are recommended for students in preschool and postsecondary programs.^[31]

Physical education is the primary source of physical activity and fitness instruction. Health education and other courses, however, can highlight the importance of physical activity as a component of a healthy lifestyle. A well-designed health education curriculum can help students develop the knowledge, attitudes, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles.³¹ To maximize classroom time, instruction on physical activity also can be integrated into the lesson plans of other school subjects, such as mathematics, biology, and language arts. Programs that have included classroom instruction in physical activity have been effective in enhancing students' physical activity-related knowledge,^[32] attitudes,^[33] behavior,^[34] and physical fitness.^[35] (See Focus Area 7. Educational and Community-Based Programs.)

Access

- 22-12. (Developmental) Increase the proportion of the Nation's public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations).

Potential data source: School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP.

- 22-13. Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs.

Target: 75 percent.

Baseline: 46 percent of worksites with 50 or more employees offered physical activity and/or fitness programs at the worksite or through their health plans in 1998–1999.

| Worksite Size | Worksite or Health Plan | Health Plan | Worksite |
|------------------------------|-------------------------|----------------|----------|
| | | <i>Percent</i> | |
| Total (50 or more employees) | 46 | 22 | 36 |
| 50 to 99 employees | 38 | 21 | 24 |
| 100 to 249 employees | 42 | 20 | 31 |
| 250 to 749 employees | 56 | 25 | 44 |
| 750 or more employees | 68 | 27 | 61 |
| Less than 50 employees | | Developmental | |

Target setting method: Better than the best.

Data source: National Worksite Health Promotion Survey, Association for Worksite Health Promotion (AWHP).

Participation in regular physical activity depends, in part, on the availability and proximity of community facilities and on environments conducive to physical activity. Studies of adult participation in physical activity have found that use generally decreases as facility distance from a person’s residence increases.[\[36\]](#) People are unlikely to use community resources located more than a few miles away by car or more than a few minutes away by biking or walking.

One of the major barriers to youth participation in sports is lack of enough sports facilities.[\[37\]](#) Increased access to community physical activity facilities would, therefore, help increase youth physical activity. The availability of school facilities for physical activity programs also may be beneficial for crime and violence prevention and other social programs,³⁷ because most juvenile crime is committed between 3 and 8 p.m.

Schools need to work with community coalitions and community-based physical activity programs to take maximum advantage of school facilities for the benefit of children and adolescents and the community as a whole. The needs of all community members, including senior citizens and people with disabilities, need to be considered.

Worksite physical activity and fitness programs provide a mechanism for reaching large numbers of adults and have at least short-term effectiveness in increasing the physical activity and fitness of program participants.[\[38\]](#) Such programs should be provided in a culturally and linguistically competent manner. Evidence that worksite programs are cost-effective is growing. Such programs may even reduce employer costs for insurance premiums, disability benefits, and medical expenses.[\[39\]](#) Additional benefits for employers include increased productivity, reduced absenteeism, reduced employee turnover, improved morale, enhanced company image, and enhanced recruitment.

Including family members and retirees in worksite programs can further increase benefits to employers and the community.³⁹

As purchasers of group health and life insurance plans, employers can design employee benefit packages that include coverage for fitness club membership fees and community-based fitness classes. Employers also can offer reduced insurance premiums and rebates for employees who participate regularly in worksite fitness programs or who can document participation in regular physical activity.

