Introduction
Physical Activity and Health: A Report of the Surgeon General is a comprehensive overview of research related to physical activity and health. The report (1) summarizes the benefits of physical activity, (2) reinforces the importance of promoting physical activity, (3) states that many children and adolescents are at risk for health problems because of inactive lifestyles, and (4) states that everyone should participate in a moderate amount of physical activity (e.g., 15 minutes of running, 30 minutes of brisk walking, 45 minutes of playing volleyball) on most, if not all, days of the week. The report offers the following findings on children’s and adolescents’ physical activity behavior:

- About 14 percent of children and adolescents did not participate in light-to-moderate or vigorous physical activity.
- Nearly half of adolescents ages 12 to 21 did not participate regularly in vigorous physical activity.
- Female adolescents were less active than male adolescents, and black females were less active than white females.
- Children’s and adolescents’ participation in physical activity declined considerably as they got older.
- Daily attendance of high school students in physical education classes declined from 42 percent in 1991 to 25 percent in 1995.
- Only 19 percent of high school students were physically active for 20 minutes or more in daily physical education classes.

These findings are disturbing in view of the numerous health benefits that children and adolescents derive by being physically active on a regular basis. The Surgeon General’s report indicates that physical activity can lead to improved body composition (i.e., increased lean muscle mass, reduced total body fat) and can help reduce other coronary heart disease (CHD) risk factors among children and adolescents. For example, increased physical activity levels can favorably alter blood lipid profiles in children and adolescents at high risk for CHD (e.g., children and adolescents who are obese or who have type 1 diabetes mellitus) and can reduce blood
pressure, especially in children and adolescents whose blood pressure is elevated. Physical activity plays a substantial role in the development of bone mass during childhood and adolescence and can help maintain the structure and functional strength of bone throughout life.

Efforts to increase physical activity levels among children and adolescents have been most successful in school settings. For example, as a result of intervention, children attending elementary school were more active in physical education classes. However, little attention has been focused on promoting physical activity among children and adolescents in settings other than schools, including health care settings (e.g., health professionals counseling children and adolescents about physical activity during health supervision visits).

Health professionals, families, peers, and communities can influence children’s and adolescents’ physical activity levels. Parents who participate in physical activity themselves and who support and encourage physical activity in their children and adolescents have a positive influence on children’s and adolescents’ physical activity levels. In addition, older children and adolescents whose friends are physically active tend to be more physically active themselves.

Little is known about which factors motivate children and adolescents to become physically active, remain physically active, and increase their physical activity levels as they become older. In addition, it is not clear why these factors differ for females and males or for different racial and ethnic groups. However, it is clear that females are less likely than males to participate in vigorous physical activity, participate in strengthening or toning activities, or participate on sports teams. Strategies different from those used to promote physical activity in boys and male adolescents may be needed to promote physical activity in girls and female adolescents. Strategies that take into account children’s and adolescents’ race or cultural background could also be beneficial. The Surgeon General’s report recommends the following intervention strategies to promote physical activity in children and adolescents:

- Make physical activity enjoyable.
- Help children and adolescents succeed and increase their confidence in their ability to be physically active.
- Support children’s and adolescents’ efforts to be physically active.
- Help children and adolescents learn about the benefits of physical activity and help them develop positive attitudes toward it.
- Help children and adolescents overcome barriers that keep them from being physically active.

Other guidelines are available for promoting lifelong physical activity among children and adolescents in the home, the community, and health care settings. These guidelines include recommendations for policy and physical and social environmental interventions.

**References**

1. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; President’s Council on Physical Fitness and Sports. 1996. Physical Activity and Health: A Report of the Surgeon General. Washington, DC: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; President’s Council on Physical Fitness and Sports.


Participation in physical activity is beneficial to children and adolescents. Regular physical activity contributes to overall health and well-being and reduces the risk of disease (e.g., coronary heart disease, osteoporosis, colon cancer, diabetes mellitus) in adults. Regular physical activity also helps prevent hypertension and helps reduce blood pressure in persons with elevated levels. Regular physical activity helps children and adolescents develop healthy physical activity behaviors they can sustain throughout their lives.

Participating in regular physical activity also
• Increases muscle and bone strength.
• Increases lean muscle mass and helps decrease body fat.
• Helps maintain weight and is a key part of any weight loss program.
• Enhances psychological well-being.
• May reduce symptoms of depression and anxiety and improve mood.1

Physical Activity and Health: A Report of the Surgeon General concludes that
• People of all ages, both males and females, benefit from regular physical activity.
• Significant health benefits can be obtained by participating in a moderate amount of physical activity (e.g., 15 minutes of running, 30 minutes of brisk walking, 45 minutes of playing volleyball) on most, if not all, days of the week.
• Additional health benefits can be gained by participating in a greater amount of physical activity. People who participate regularly in physical activity of longer duration or of more vigorous intensity are likely to derive greater health benefits.2

To help people better understand physical activity recommendations, the Activity Pyramid was developed. Similar to the federal government’s Food Guide Pyramid, the Activity Pyramid (Figure 1) illustrates a “balanced diet” of weekly physical activity and various forms of traditional exercise.3

Preventing Chronic Disease

Increasing physical activity levels joins other preventive health measures (e.g., eating healthy foods, obtaining and maintaining a healthy weight, avoiding cigarette smoking) in reducing the risk of chronic disease in adults. Examples of benefits of preventing chronic disease follow.

Osteoporosis

Osteoporosis, which causes serious and disabling bone fractures in older adults, may result if too little bone building occurs during childhood and adolescence. Physical activity helps build greater bone density in childhood and adolescence and maintain peak bone density in adulthood. To increase bone mineralization and develop strong bones, children and adolescents need to participate in weight-bearing physical activities (e.g., jumping rope, walking, playing soccer or basketball).4-6 They
also need to consume optimal calcium and maintain appropriate levels of hormones, particularly estrogen.

**Obesity**

Physical activity is crucial for obtaining and maintaining a healthy weight. In combination with family intervention and a moderate reduction in caloric intake, physical activity has produced significant reductions in the prevalence of childhood and adolescent obesity. Reducing sedentary behaviors (e.g., watching television and videotapes, playing computer games) may be an important activity-related intervention for obesity intervention. (See the Obesity chapter.)

The incidence of children and adolescents with type 2 diabetes mellitus, which is closely associated with obesity, has increased significantly over the past decade. In addition, obesity during childhood and adolescence is a risk factor for type 2 diabetes mellitus in adulthood, even after accounting for adult obesity.
Hypertension

Hypertension (i.e., abnormally high blood pressure) causes strokes, renal failure, coronary artery disease, congestive heart failure, and peripheral vascular disease in adults. Most of these conditions are related to essential hypertension, which is usually hereditary and often develops during childhood. Regular physical activity can substantially lower both systolic and diastolic blood pressure in adults with hypertension. And it appears that regular physical activity can also lower blood pressure in children and adolescents.9

Hyperlipidemia

In adults, regular aerobic physical activity has been found to improve blood lipid levels, particularly by increasing high-density lipoprotein cholesterol (HDL-C) levels. High HDL-C levels are associated with a reduced risk of atherosclerosis. Therefore, hyperlipidemia prevention strategies have included aerobic physical activity.10

The impact of physical activity on blood lipid levels in children and adolescents is unclear. HDL-C levels in young athletes are higher than those of children and adolescents who do not participate in regular physical activity.11
Mental Health

Although the evidence is mixed (not all studies find significant changes), regular physical activity has the potential to promote psychological health in children and adolescents (e.g., improve their self-esteem, reduce their level of anxiety and stress).\cite{12,13} Participating in regular physical activity appears to enhance self-esteem and reduce symptoms of depression and anxiety in children and adolescents with emotional disorders or developmental disabilities.

Opportunities for Improving Health Outcomes

It is important to offer children and adolescents opportunities to make physical activity a regular part of their lives. Participating in any type or amount of physical activity during childhood and adolescence can provide important health benefits. Physical activity helps improve children’s and adolescents’ health outcomes.

Caloric Expenditure

Participating in physical activity helps children and adolescents expend energy (calories), which helps them obtain and maintain a healthy weight. Physical activity appears to favorably affect body fat distribution. Aerobic activities (e.g., distance running, swimming, biking) are best for expending calories.

Skeletal Development

Weight-bearing activities promote the growth of strong bones during childhood and adolescence and help prevent osteoporosis in adulthood. These activities (e.g., jumping rope, walking, playing soccer or basketball) require children and adolescents to move their own weight.

Cardiorespiratory Fitness

Cardiorespiratory fitness, also referred to as cardiorespiratory capacity, aerobic power, or endurance fitness, is largely influenced by regular physical activity. Activities such as running, biking, and swimming for 30 minutes three times a week promote cardiorespiratory fitness and help decrease resting blood pressure in children and adolescents with hypertension.

Muscle Fitness

Participating in physical activity to improve muscle fitness can reduce children’s and adolescents’ risk of injury. Common measures of muscle fitness are muscle strength, endurance, and flexibility.

Summary

Children and adolescents can substantially improve their health and quality of life by making physical activity a part of their daily lives. Being physically active early in life has many physical, social, and emotional benefits and can lead to a reduced incidence of chronic diseases in adulthood. Health professionals, families, and communities need to make a concerted effort to increase the physical activity levels of children and adolescents.
References


2. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; President’s Council on Physical Fitness and Sports. 1996. Physical Activity and Health: A Report of the Surgeon General. Washington, DC: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; President’s Council on Physical Fitness and Sports.


**Suggested Reading**


BUILDING PARTNERSHIPS TO PROMOTE PHYSICAL ACTIVITY

To embrace physical activity and establish healthy physical activity behaviors early in life, children and adolescents need opportunities for developmentally appropriate physical activity, safe places in which to be physically active, and encouragement and support. Partnerships among health professionals, families, and communities are essential for establishing opportunities for physical activity. These activities should meet the needs of children and adolescents with diverse interests and abilities, and from all income levels and racial and ethnic backgrounds. Health professionals, families, and communities can also communicate positive, consistent messages that physical activity is fun.

Health Professionals

Health professionals play a key role in promoting physical activity. As part of health supervision visits, they need to assess children’s and adolescents’ physical activity levels. Health professionals can reinforce the importance of physical activity among physically active children and adolescents, counsel children and adolescents who are not physically active, refer families to appropriate physical activity programs, and identify barriers that keep children and adolescents from participating in physical activity. Health professionals can also establish partnerships with communities (e.g., child care facilities, schools, recreation centers) to raise awareness about the benefits of physical activity for children and adolescents, be positive role models, and serve as advocates for high-quality physical activity programs.

Families

Physical activity begins at home. Children and adolescents who are physically active usually have parents or other family members who encourage them to participate in physical activity, participate in physical activity with them, watch them play or compete, and provide transportation to physical activity and sports events.1,2 Families can be positive role models by participating in physical activity themselves and communicating positive and consistent messages that physical activity is valuable and enjoyable, and that daily physical activity is a priority. For example, parents can walk instead of drive a car to the store and use the stairs instead of taking the elevator. Parents can also limit children’s and adolescents’ sedentary behaviors, such as watching television and videotapes and playing computer games. Finally, children and adolescents can organize physical activities themselves with friends and family members.

Communities

Communities can provide children and adolescents with physical activity opportunities through schools, recreation facilities, parks, organizations that serve children and adolescents (e.g., the YMCA, YWCA, Boy Scouts, Girl Scouts, Boys and Girls Clubs of America, 4-H), and churches and other places of
worship. Communities need to offer enjoyable, developmentally appropriate physical activities that focus on participation, not competition.

Physical activity should be an important component of early childhood education programs such as Head Start and other preschool programs. Students from kindergarten to 12th grade need to participate in daily physical education classes that help them develop motor skills. In elementary schools, recess should provide an opportunity for physical activity. Extracurricular physical activity programs for children and adolescents who are not competitive or sports-oriented should be available through schools.³

Because most physical activity among children and adolescents occurs outside school, it is essential that they have other opportunities to be physically active. Communities can help ensure that children and adolescents have places in which to be physically active. Communities need to consider the following:

- Are there safe playgrounds, parks, and recreation facilities?
- Are school facilities open for use after school hours?
- Are there clearly marked walking and biking trails?
- Are there recreation facilities open to everyone free of charge?
- Are there physical activity opportunities for both sexes, at all skill levels?

Communities need adequate resources, including finances, facilities, equipment, transportation, safe places, and trained staff, to provide opportunities for physical activity. Partnerships among businesses and other organizations can support programs that are accessible to all children and adolescents in the community. In addition, these partnerships can provide needed clothing, equipment, footwear, and transportation for children and adolescents from families with low incomes to enable them to participate.
To be successful, community physical activity programs for children and adolescents must be appealing and fun. Activities can include running in relay races, playing tag, dancing, bowling, walking, and hiking. Programs need to de-emphasize winning and focus on enjoyment and participation. Children and adolescents need challenges that are appropriate for their skill levels.

The following examples highlight community partnerships to promote physical activity in children and adolescents.

**Heart Links**

Heart Links is funded by the New York State Department of Health. The program's goal is to reduce the risk of heart disease among residents of eastern Long Island by promoting healthy physical activity and eating behaviors. The target group consists of elementary school children and their families, teachers, and administrators. Participation of a wide range of community organizations is coordinated by the University Hospital and Health Sciences Center of the State University of New York at Stony Brook. Children and their families can participate in dance clinics, walking clubs, 5K runs, and other activities.

**Fitness Fever**

Fitness Fever is the result of a partnership among the Minnesota Department of Health, Minnesota Department of Education, Blue Cross and Blue Shield of Minnesota, and other organizations interested in children's and adolescents' health. Fitness Fever strives to change physical activity and eating attitudes and behaviors of first- through sixth-grade students throughout the state.

**Summary**

Society has the responsibility and the challenge of ensuring the health and well-being of the current generation and of generations to come. Health professionals, families, and communities can accomplish this goal by working together to help children and adolescents establish healthy physical activity behaviors early in life.

**References**


**Suggested Reading**

