



Physical Activity Guidelines for Americans

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3 Chapter 3: Active Children and Adolescents

Regular physical activity in children and adolescents promotes health and fitness. Compared to those who are inactive, physically active youth have higher levels of cardiorespiratory fitness and stronger muscles. They also typically have lower body fatness. Their bones are stronger, and they may have reduced symptoms of anxiety and depression.

Youth who are regularly active also have a better chance of a healthy adulthood. Children and adolescents don't usually develop chronic diseases, such as heart disease, hypertension, type 2 diabetes, or osteoporosis. However, risk factors for these diseases can begin to develop early in life. Regular physical activity makes it less likely that these risk factors will develop and more likely that children will remain healthy as adults.

Youth can achieve substantial health benefits by doing moderate- and vigorous-intensity physical activity for periods of time that add up to 60 minutes (1 hour) or more each day. This activity should include aerobic activity as well as age-appropriate muscle- and bone-strengthening activities. Although current science is not complete, it appears that, as with adults, the total amount of physical activity is more important for achieving health benefits than is any one component (frequency, intensity, or duration) or specific mix of activities (aerobic, muscle-strengthening, bone strengthening). Even so, bone-strengthening activities remain especially important for children and young adolescents because the greatest gains in bone mass occur during the years just before and during puberty. In addition, the majority of peak bone mass is obtained by the end of adolescence.

This chapter provides physical activity guidance for children and adolescents aged 6 to 17, and focuses on physical activity beyond baseline activity.

Parents and other adults who work with or care for youth should be familiar with the Guidelines in this chapter. These adults should be aware that, as children become adolescents, they typically reduce their physical activity. Adults play an important role in providing age-appropriate opportunities for physical activity. In doing so, they help lay an important foundation for life-long, health-promoting physical activity. Adults need to encourage active play in children and encourage sustained and structured activity as children grow older.

Key Guidelines for Children and Adolescents

- Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.
 - **Aerobic:** Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.
 - **Muscle-strengthening:** As part of their 60 or more

minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.

- **Bone-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.
- It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.

Explaining the Guidelines

Types of Activity

The Guidelines for children and adolescents focus on three types of activity: aerobic, muscle-strengthening, and bone-strengthening. Each type has important health benefits.

- **Aerobic activities** are those in which young people rhythmically move their large muscles. Running, hopping, skipping, jumping rope, swimming, dancing, and bicycling are all examples of aerobic activities. Aerobic activities increase cardiorespiratory fitness. Children often do activities in short bursts, which may not technically be aerobic activities. However, this document will also use the term aerobic to refer to these brief activities.
- **Muscle-strengthening activities** make muscles do more work than usual during activities of daily life. This is called “overload,” and it strengthens the muscles. Muscle-strengthening activities can be unstructured and part of play, such as playing on playground equipment, climbing trees, and playing tug-of-war. Or these activities can be structured, such as lifting weights or working with resistance bands.
- **Bone-strengthening activities** produce a force on the bones that promotes bone growth and strength. This force is commonly produced by impact with the ground. Running, jumping rope, basketball, tennis, and hopscotch are all examples of bone strengthening activities. As these examples illustrate, bone-strengthening activities can also be aerobic and muscle-strengthening.

For More Information

See [Chapter 2—Physical Activity Has Many Health Benefits](#), for more on overload and progression.

How Age Influences Physical Activity in Children and Adolescents

Children and adolescents should meet the Guidelines by doing activity that is appropriate for their age. Their natural patterns of movement differ from those of adults. For example, children are naturally active in an intermittent way, particularly when they do unstructured active play. During recess and in their free play and games, children use basic aerobic and bone-strengthening activities, such as running, hopping, skipping, and jumping, to develop movement patterns and skills. They alternate brief periods of moderate- and vigorous-intensity physical activity with brief periods of rest. Any episode of moderate- or vigorous-intensity physical activity, however brief, counts toward the Guidelines.

Children also commonly increase muscle strength through unstructured activities that involve lifting or moving their body weight or working against resistance. Children don't usually do or need formal muscle-strengthening programs, such as lifting weights.

Regular physical activity in children and adolescents promotes a healthy body weight and body composition.

As children grow into adolescents, their patterns of physical activity change. They are able to play organized games and sports and are able to sustain longer periods of activity. But they still commonly do intermittent activity, and no period of moderate- or vigorous-intensity activity is too short to count toward the Guidelines.

Adolescents may meet the Guidelines by doing free play, structured programs, or both. Structured exercise programs can include aerobic activities, such as playing a sport, and muscle-strengthening activities, such as lifting weights, working with resistance bands, or using body weight for resistance (such as push-ups, pull-ups, and sit-ups). Muscle-strengthening activities count if they involve a moderate to high level of effort and work the major muscle groups of the body: legs, hips, back, abdomen, chest, shoulders, and arms.

Levels of Intensity for Aerobic Activity

Children and adolescents can meet the Guidelines by doing a combination of moderate- and vigorous intensity aerobic physical activities or by doing only vigorous-intensity aerobic physical activities.

Youth should not do only moderate-intensity activity. It's important to include vigorous-intensity activities because they cause more improvement in cardiorespiratory fitness.

The intensity of aerobic physical activity can be defined on either an absolute or a relative scale. Either scale can be used to monitor the intensity of aerobic physical activity:

For More Information

See [Appendix 1](#) for more information on using absolute or relative intensity.

- **Absolute intensity** is based on the rate of energy expenditure during the activity, without taking into account a person's cardiorespiratory fitness.
- **Relative intensity** uses a person's level of cardiorespiratory fitness to assess level of effort.

Relative intensity describes a person's level of effort relative to his or her fitness. As a rule of thumb, on a scale of 0 to 10, where sitting is 0 and the highest level of effort possible is 10, moderate-intensity activity is a 5 or 6. Young people doing moderate-intensity activity will notice that their hearts are beating faster than normal and they are breathing harder than normal. Vigorous-intensity activity is at a level of 7 or 8. Youth doing vigorous-intensity activity will feel their heart beating much faster than normal and they will breathe much harder than normal.

When adults supervise children, they generally can't ascertain a child's heart or breathing rate. But they can observe whether a child is doing an activity which, based on absolute energy expenditure, is considered to be either moderate or vigorous. For example, a child walking briskly to school is doing moderate-intensity activity. A child running on the playground is doing vigorous-intensity activity. The table on page 18 includes examples of activities classified by absolute intensity. It shows that the same activity can be moderate or vigorous intensity, depending on factors such as speed (for example bicycling slowly or fast).

Examples of Moderate- and Vigorous-Intensity Aerobic Physical Activities and Muscle- and Bone-Strengthening Activities for Children and Adolescents

Type of	Age Group	Age Group
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Physical Activity	Children	Adults
Moderate–intensity aerobic	<ul style="list-style-type: none"> • Active recreation, such as hiking, skateboarding, rollerblading • Bicycle riding • Brisk walking 	<ul style="list-style-type: none"> • Active recreation, such as canoeing, hiking, skateboarding, rollerblading • Brisk walking • Bicycle riding (stationary or road bike) • Housework and yard work, such as sweeping or pushing a lawn mower • Games that require catching and throwing, such as baseball and softball
Vigorous–intensity aerobic	<ul style="list-style-type: none"> • Active games involving running and chasing, such as tag • Bicycle riding • Jumping rope • Martial arts, such as karate • Running • Sports such as soccer, ice or field hockey, basketball, swimming, tennis • Cross-country skiing 	<ul style="list-style-type: none"> • Active games involving running and chasing, such as flag football • Bicycle riding • Jumping rope • Martial arts, such as karate • Running • Sports such as soccer, ice or field hockey, basketball, swimming, tennis • Vigorous dancing • Cross-country skiing
Muscle-strengthening	<ul style="list-style-type: none"> • Games such as tug-of-war • Modified push-ups (with knees on the floor) • Resistance exercises using body weight or resistance bands • Rope or tree climbing • Sit-ups (curl-ups or crunches) • Swinging on playground equipment/bars 	<ul style="list-style-type: none"> • Games such as tug-of-war • Push-ups and pull-ups • Resistance exercises with exercise bands, weight machines, hand-held weights • Climbing wall • Sit-ups (curl-ups or crunches)
Bone-strengthening	<ul style="list-style-type: none"> • Games such as hopscotch • Hopping, skipping, jumping • Jumping rope • Running • Sports such as gymnastics, basketball, volleyball, tennis 	<ul style="list-style-type: none"> • Hopping, skipping, jumping • Jumping rope • Running • Sports such as gymnastics, basketball, volleyball, tennis

Note: Some activities, such as bicycling, can be moderate or vigorous intensity, depending upon level of effort

Physical Activity and Healthy Weight

Regular physical activity in children and adolescents promotes a healthy body weight and body composition.

Exercise training in overweight or obese youth can improve body composition by reducing overall levels of fatness as well as abdominal fatness. Research studies report that fatness can be reduced by regular physical activity of moderate to vigorous intensity 3 to 5 times a week, for 30 to 60 minutes.

Meeting the Guidelines

American youth vary in their physical activity participation. Some don't participate at all, others participate in enough activity to meet the Guidelines, and some exceed the Guidelines.

Children and adolescents can meet the Physical Activity Guidelines and become regularly physically active in many ways.

One practical strategy to promote activity in youth is to replace inactivity with activity whenever possible. For example, where appropriate and safe, young people should walk or bicycle to school instead of riding in a car. Rather than just watching sporting events on television, young people should participate in age-appropriate sports or games.

- **Children and adolescents who do not meet the Guidelines** should slowly increase their activity in small steps and in ways that they enjoy. A gradual increase in the number of days and the time spent being active will help reduce the risk of injury.
- **Children and adolescents who meet the Guidelines** should continue being active on a daily basis and, if appropriate, become even more active. Evidence suggests that even more than 60 minutes of activity every day may provide additional health benefits.
- **Children and adolescents who exceed the Guidelines** should maintain their activity level and vary the kinds of activities they do to reduce the risk of overtraining or injury.

Children and adolescents with disabilities are more likely to be inactive than those without disabilities. Youth with disabilities should work with their health-care provider to understand the types and amounts of physical activity appropriate for them. When possible, children and adolescents with disabilities should meet the Guidelines. When young people are not able to participate in appropriate physical activities to meet the Guidelines, they should be as active as possible and avoid being inactive.

Getting and Staying Active: Real-Life Examples

Children and adolescents can meet the Physical Activity Guidelines and become regularly physically active in many ways. Here are just two examples showing how a child and an adolescent can be physically active for at least 60 minutes each day over the course of a week.

These examples illustrate that even though the activity patterns are different, each young person is meeting the Guidelines by getting the equivalent of at least 60 minutes or more of aerobic activity each day that is at least moderate intensity. Both are also doing vigorous-intensity, muscle-strengthening, and bone strengthening activities on at least 3 days a week.

Harold: A 7-Year-Old Child

Harold participates in many types of physical activities in many places. For example, during physical education class, he jumps rope and does gymnastics and sit-ups. During recess, he plays on the playground—often by doing activities that require running and climbing. He also likes to play soccer with his friends and family. When Harold gets home from school, he likes to engage in active play (playing tag) and ride his bicycle with his friends and family.

Harold gets 60 minutes of physical activity each day that is at least moderate intensity. He participates in the following activities each day:

Monday: Walks to and from school (20 minutes), plays actively with family (20 minutes), jumps rope (10 minutes), does gymnastics (10 minutes).

Tuesday: Walks to and from school (20 minutes), plays on playground (25 minutes), climbs on playground equipment (15 minutes).

Wednesday: Walks to and from school (20 minutes), plays actively with friends (25 minutes), jumps rope (10 minutes), runs (5 minutes), does sit-ups (2 minutes).

Thursday: Plays actively with family (30 minutes), plays soccer (30 minutes).

Friday: Walks to and from school (20 minutes), plays actively with friends (25 minutes), bicycles (15 minutes).

Saturday: Plays on playground (30 minutes), climbs on playground equipment (15 minutes), bicycles (15 minutes).

Sunday: Plays on playground (10 minutes), plays soccer (40 minutes), plays tag with family (10 minutes).

Harold meets the Guidelines by doing vigorous–intensity aerobic activities, bone-strengthening activities, and muscle-strengthening activities on at least 3 days of the week:

- **Vigorous-intensity** aerobic activities 6 times during the week: jumping rope (Monday and Wednesday), running (Wednesday), soccer (Thursday and Sunday), playing tag (Sunday);
- **Bone-strengthening** activities 6 times during the week: jumping rope (Monday and Wednesday), running (Wednesday), soccer (Thursday and Sunday), playing tag (Sunday); and
- **Muscle-strengthening** activities 4 times during the week: gymnastics (Monday), climbing on playground equipment (Tuesday and Saturday), sit-ups (Wednesday).

Maria: A 16-Year-Old Adolescent

Maria participates in many types of physical activities in many places. For example, during physical education class, she plays tennis and does sit-ups and push-ups. She also likes to play basketball at the YMCA, do yoga, and go dancing with friends. Maria likes to take her dog on walks and hikes.

Maria gets 60 or more minutes of daily physical activity that is at least moderate intensity. She participates in the following activities each day:

Monday: Walks dog (10 minutes), plays basketball at YMCA (50 minutes).

Tuesday: Walks dog (10 minutes), plays tennis (30 minutes), does sit-ups and push-ups (5 minutes), walks briskly with friends (15 minutes).

Wednesday: Walks dog (10 minutes), plays basketball at YMCA (50 minutes).

Thursday: Walks dog (10 minutes), plays tennis (30 minutes), does sit-ups and push-ups (5

minutes), plays with children at the park while babysitting (15 minutes).

Friday: Plays Frisbee® in park (45 minutes), mows lawn (30 minutes).

Saturday: Goes dancing with friends (60 minutes), does yoga (30 minutes).

Sunday: Hikes (60 minutes).

Maria meets the Guidelines by doing vigorous-intensity aerobic activities, bone-strengthening activities, and muscle-strengthening activities on at least 3 days of the week:

- **Vigorous-intensity** aerobic activities 4 times during the week: basketball (Monday and Wednesday), dancing (Saturday), hiking (Sunday);
- **Bone-strengthening** activities 4 times during the week: basketball (Monday and Wednesday), dancing (Saturday), hiking (Sunday); and
- **Muscle-strengthening** activities 3 times during the week: sit-ups and push-ups (Tuesday and Thursday), yoga (Saturday).

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