Physical Activity Guidelines for Americans

2nd edition

Chapter 7. Active and Safe

Although physical activity has many health benefits, injuries and other adverse events do sometimes happen. The most common injuries affect the musculoskeletal system. Other adverse events can also occur during activity, such as overheating and dehydration. Rarely, people have heart attacks during activity.

The good news is that scientific evidence strongly shows that physical activity can be safe for almost everyone. Moreover, the health benefits of physical activity far outweigh the risks.

Still, people may hesitate to become physically active because of concern they will get hurt. For these people, there is even more good news: people can take steps that are proven to reduce their risk of injury and adverse events.

The key guidelines in this chapter provide advice to help people do physical activity safely. Most advice applies to people of all ages. Specific guidance for particular age groups and people with certain conditions is also provided.

Key Guidelines for Safe Physical Activity

To do physical activity safely and reduce risk of injuries and other adverse events, people should:

- ✓ Understand the risks, yet be confident that physical activity can be safe for almost everyone.
- ✓ Choose types of physical activity that are appropriate for their current fitness level and health goals, because some activities are safer than others.
- ✓ Increase physical activity gradually over time to meet key guidelines or health goals. Inactive people should "start low and go slow" by starting with lower intensity activities and gradually increasing how often and how long activities are done.
- ✓ Protect themselves by using appropriate gear and sports equipment, choosing safe environments, following rules and policies, and making sensible choices about when, where, and how to be active.
- ✓ Be under the care of a health care provider if they have chronic conditions or symptoms. People with chronic conditions and symptoms can consult a health care professional or physical activity specialist about the types and amounts of activity appropriate for them.

Explaining the Guidelines

Be Confident That Physical Activity Is Safe for Almost Everyone

Most people are not likely to be injured when doing moderate-intensity activities in amounts that meet the key guidelines. However, injuries and other adverse events do sometimes happen. The most common problems are musculoskeletal injuries. Even so, studies show that only one such injury occurs for every 1,000 hours of walking for exercise, and fewer than four injuries occur for every 1,000 hours of running.

Both physical fitness and total amount of physical activity affect risk of musculoskeletal injuries. People who are physically fit have a lower risk of injury than people who are not. People who do more activity generally have a higher risk of injury. So, what should people do if they want to be active and safe? The best strategies are to:

- Be regularly physically active to increase physical fitness; and
- Follow the other guidance in this chapter (especially increasing physical activity gradually over time) to minimize the risk of injury.

Choose Appropriate Types and Amounts of Activity

People can reduce their risk of injury by choosing appropriate types of activity. The safest activities are moderate intensity, low impact, and do not involve purposeful collision or contact.

Walking for exercise, gardening or yard work, bicycling or riding a stationary bike, dancing, swimming, and golf are activities with the lowest injury rates. In the amounts commonly done by adults, walking (a moderate-intensity and low-impact activity) has a third or less of the injury risk of running (a vigorous-intensity and higher impact activity). Sports that involve collision or contact, such as football, hockey, and soccer, have a higher risk of injuries, including concussion.

The risk of injury for a type of physical activity can also differ by the purpose of the activity. For example, recreational bicycling or bicycling for transportation leads to fewer injuries than training for and competing in bicycle races.

People who have had a past injury are at risk of re-injuring that body part. The risk of injury can be reduced by performing appropriate amounts of activity and setting appropriate personal goals. Performing a variety of different physical activities may also reduce the risk of overuse injury.

Increase Physical Activity Gradually Over Time

Scientific studies indicate that the risk of injury to bones, muscles, and joints is directly related to the gap between a person's usual level of activity and a new level of activity. The size of this gap is called the *amount of overload*. Creating a small overload and waiting for the body to adapt and recover reduces the risk of injury. When amounts of physical activity need to be increased to meet the key guidelines or personal goals, physical activity should be increased gradually over time, no matter what the person's current level of physical activity. Here is general guidance for inactive people and those with low levels of physical activity on how to increase physical activity:

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See Chapter 2. Physical Activity and Health for a discussion of overload, progression, and specificity and how they relate to physical fitness.

- Use relative intensity (intensity of the activity relative to a person's fitness) to guide the level of effort for aerobic or muscle-strengthening physical activity.
- Generally, start with relatively moderate-intensity activity. Avoid relatively vigorous-intensity activity, such as shoveling heavy snow or running. Adults with low fitness may need to start with light activity, or a mix of light- to moderate-intensity activity.
- First, increase the number of minutes per session (duration) and the number of days a week (frequency) of moderate-intensity activity. Later, if desired, increase the intensity.
- Pay attention to the relative size of the increase in physical activity each week, as this is related to injury risk. For example, a 20-minute increase each week is safer for a person who already does 200 minutes a week of jogging (a 10% increase) than in a person who does 40 minutes a week (a 50% increase).

The available scientific evidence suggests that adding a small and comfortable amount of light- to moderate-intensity activity, such as walking 5 to 15 minutes per session, 2 to 3 times a week, to one's usual activities results in a low risk of musculoskeletal injury and no known risk of severe cardiac events. Because this range is rather wide, people should consider three factors when individualizing their rate of increase—age, level of fitness, and level of experience.

Age

The amount of time required to adapt to a new level of activity probably depends upon age. Youth and young adults probably can safely increase activity by small amounts every week or two. Older adults appear to require more time to adapt to a new level of activity, in the range of 2 to 4 weeks.

Level of Fitness

Less fit adults are at higher risk of injury when doing a given amount of activity, compared to more fit adults. Slower rates of increase over time may reduce injury risk. This guidance applies particularly to adults with overweight or obesity, as they are commonly less physically fit.

Prior Experience

People may use their experience to learn ways to increase physical activity over time that minimize their risk of overuse injury. Generally, if an overuse injury occurred in the past with a certain rate of progression, a person should increase activity more slowly the next time.

Warming up before and cooling down after exercise are commonly recommended to prevent injuries and adverse cardiac events. A warm-up before moderate- or vigorous-intensity aerobic activity allows a gradual increase in heart rate and breathing at the start of the episode of activity. A warm-up for muscle-strengthening activity commonly involves doing exercises with lighter weight. A cool-down after activity allows a gradual decrease at the end of the episode.

Take Appropriate Precautions

Taking appropriate precautions means using the right gear and equipment, choosing safe environments in which to be active, following rules and policies, and making sensible choices about how, when, and where to be active.

Use Protective Gear and Appropriate Equipment

Using personal protective gear can reduce the frequency of injury. Personal protective gear is something worn by a person to protect a specific body part. Examples include helmets, eyewear and goggles, shin guards, elbow and knee pads, and mouth guards.

Using appropriate sports equipment can also reduce risk of injury. *Sports equipment* refers to sport- or activity-specific tools, such as balls, bats, sticks, and shoes.

For the most benefit, protective equipment and gear should be:

- The right equipment for the activity;
- Appropriately fitted;
- Appropriately maintained; and
- Used consistently and correctly.

Be Active in Safe Environments

People can reduce their injury risks by paying attention to the places where they choose to be active. To help them stay safe, people can look for:

- Physical separation from motor vehicles, such as sidewalks, walking paths, or bike lanes;
- Neighborhoods with traffic-calming measures that slow traffic;
- Places to be active that are well lit, where other people are present, and that are well maintained;
- Shock-absorbing surfaces on playgrounds;
- Well-maintained playing fields and courts without holes or obstacles;
- Breakaway bases at baseball and softball fields; and
- Padded and anchored goals and goal posts at soccer and football fields.

Follow Rules and Policies That Promote Safety

Rules, policies, and laws are potentially the most effective and wide-reaching way to reduce activity-related injuries. To get the benefit, people should look for and follow these rules, policies, and laws. For example, policies that promote the use of bicycle helmets reduce the risk of head injury among bicyclists. Rules against diving into shallow water at swimming pools prevent head and neck injuries.

Make Sensible Choices About When and How to Be Active

A person's choices can obviously influence the risk of adverse events. By making sensible choices, injuries and adverse events can be prevented. For example, wearing reflective clothing and lights when doing outdoor activities (walking, running, or bicycling) in the early morning or evening can help increase visibility. Consider weather conditions such as extremes of heat and cold, and apply sunscreen as appropriate. For example, during very hot and humid weather, people lessen the chances of dehydration and heat stress by:

- Exercising in the cool of early morning as opposed to mid-day heat;
- Switching to indoor activities (playing basketball in the gym rather than on the playground);
- Changing the type of activity (swimming rather than playing soccer);
- Lowering the intensity of activity (walking rather than running); and
- Paying close attention to resting, seeking shade, drinking enough fluids, and finding other ways to minimize effects of heat.

Consider Air Quality When Planning to Be Active

Exposure to air pollution is associated with several adverse health outcomes, including asthma attacks and cardiovascular disease-related events. People who can modify the location or time of exercise may wish to reduce these risks by exercising away from heavy traffic and industrial sites, especially during rush hour or times when pollution is known to be high. The Environmental Protection Agency Air Quality Index (AQI) provides information about when air conditions are unhealthy. The AQI can be found at https://www.airnow.gov/.

Advice From Health Care Providers

No evidence is available to indicate that people who consult with their health care provider receive more benefits and suffer fewer adverse events than people who do not. People without diagnosed chronic conditions (such as diabetes, heart disease, or osteoarthritis) and who do not have symptoms (such as chest pain or pressure, dizziness, or joint pain) most likely do not need to consult with a health care provider about physical activity.

Inactive people who gradually progress over time to relatively moderate-intensity activity have no known risk of sudden cardiac events and very low risk of bone, muscle, or joint injuries. A person who is habitually active with moderate-intensity activity can gradually increase to vigorous intensity without needing to consult a health care provider. People who develop new symptoms when increasing their levels of activity should consult a health care provider.

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See Chapter 4. Active Adults for guidance and examples of how to gradually increase activity levels.

Health care professionals and physical activity specialists can provide useful, personalized advice on how to reduce risk of injuries. For people who wish to seek the advice of a health care professional, it is particularly appropriate to do so when contemplating vigorous-intensity activity, because the risks of this activity are higher than the risks of moderate-intensity activities.

The choice of appropriate types and amounts of physical activity can be affected by chronic conditions. People with symptoms or known chronic conditions should be under the regular care of a health care provider. In consultation with a health care professional or physical activity specialist, they can develop a physical activity plan that is appropriate for them. People with chronic conditions typically find that moderate-intensity activity is safe and beneficial. However, they may need to take special precautions. For example, people with diabetes need to pay special attention to blood glucose control and proper footwear during activity.

Light- and moderate-intensity physical activity are generally safe and are recommended for women with uncomplicated pregnancies, but women should talk with their providers about how to adjust their activity while they are pregnant and after the baby's birth.

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See Chapter 6. Additional Considerations for Some Adults for more details about physical activity during pregnancy and the postpartum period.

During pregnancy, women should avoid:

- Doing activities that involve lying on their back after the first trimester of pregnancy; and
- Doing contact or collision sports and activities with high risk of falling or abdominal trauma, such as soccer, basketball, horseback riding, or downhill skiing.