For thousands of years people have been using substances to improve their physical performance and appearance. Descriptions of athletes ingesting special foods to enhance their performance date back to ancient Greece. Recently, use of creatine and androstenedione in professional sports has been heavily publicized. Substances that are used to improve physical performance are collectively referred to as “ergogenics,” a term derived from a Greek phrase meaning “work production.” In relation to athletic performance, the term refers to any means used to enhance energy production, control, or efficiency.

An alarmingly large number of children and adolescents use ergogenic aids, and their use may pose significant health risks (Table 21). The principal substances misused by children and adolescents are anabolic steroids, amphetamines, sympathomimetic amines, caffeine, and protein and vitamin supplements. Children and adolescents also use narcotics, human growth hormone, and beta-2 agonists for performance enhancement, but the extent to which they do so is not well documented.

**Extent of Use**

**Anabolic Steroids**

Fifty percent of the estimated 1 million anabolic steroid users in the United States are 19 years old or younger. Five to 11 percent of male high school students and 0.5 to 2.5 percent of female high school students have used steroids. More than half of these students began using steroids before their 16th birthday. According to one study, 3.8 percent of the 800 seventh-grade students surveyed were using anabolic steroids. (It should be noted that epidemiological studies of ergogenic aid use, which derive their data from self-reported questionnaires, may underestimate or overestimate the prevalence of use.) These are disturbing statistics, given the possible detrimental effects of anabolic steroids on physical and psychological health. For children and adolescents these effects include the potential for premature closure of growth plates, which limits overall physical development.

Anabolic steroid use among children and adolescents is not confined to athletes. Approximately one-third of high school students using steroids are not active in school sports. Adolescents state that they use steroids not only to improve strength and athletic performance but also to improve sexual performance, increase sexual organ size, and improve appearance.

Public awareness of the detrimental effects of anabolic steroids has increased, and a growing number of educational programs are targeting potential users. Nevertheless, recent reports suggest that, since 1991, steroid use among adolescent males has remained stable. These same reports show an increase in steroid use among adolescent females. It has been suggested that, as females’ participation in sports gains acceptance and support, adolescent females face increased temptation to use ergogenic aids.
<table>
<thead>
<tr>
<th>Ergogenic Aid</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anabolic steroids</td>
<td>Testicular atrophy, clitoral hypertrophy, menstrual irregularities, gynecomastia (males), hirsutism, hepatocellular toxicity, hepatocellular carcinoma, hypertension, acne, alopecia, lipid abnormalities, premature epiphyseal closure, mood swings</td>
</tr>
<tr>
<td>Androstenedione</td>
<td>Decreased testosterone</td>
</tr>
<tr>
<td>Beta-2 agonists</td>
<td>Tremor, palpitations, tachycardia, cardiac arrhythmia, anxiety, insomnia, headache, nausea</td>
</tr>
<tr>
<td>Creatine</td>
<td>Muscle cramping, muscle strains, dehydration</td>
</tr>
<tr>
<td>Human growth hormone</td>
<td>Acromegalic syndrome, Creutzfeldt-Jakob disease (cadaveric HGH), hypothyroidism</td>
</tr>
<tr>
<td>Narcotics</td>
<td>Respiratory depression, sedation, nausea, constipation, urinary retention, flushing, pruritus, urticaria, withdrawal symptoms after habitual use</td>
</tr>
<tr>
<td>Stimulants (amphetamines, caffeine, ephedrine, sympathomimetic amines)</td>
<td>Restlessness, insomnia, anxiety, tremor, palpitations, tachycardia, cardiac arrhythmia, hypertension, disruptions in thermoregulation</td>
</tr>
<tr>
<td>Amino acid and protein supplements</td>
<td>None</td>
</tr>
<tr>
<td>Moderate amounts (i.e., &lt;2 g/kg body mass/day)</td>
<td>None</td>
</tr>
<tr>
<td>Excessive amounts (i.e., &gt;2 g/kg body mass/day)</td>
<td>Dehydration, gout, gastrointestinal upset, hepatotoxicity, renal toxicity, hypercalciuria, impaired essential amino acid absorption</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>None</td>
</tr>
<tr>
<td>Moderate amounts</td>
<td>Fatigue, irritability, increased intracranial pressure, gastrointestinal upset, hepatocellular toxicity, bone and joint pain, hypercalcemia, skin and nail abnormalities</td>
</tr>
<tr>
<td>Excessive amounts (300% of the Recommended Daily Allowance [RDA])</td>
<td>Fatigue, irritability, increased intracranial pressure, gastrointestinal upset, hepatocellular toxicity, bone and joint pain, hypercalcemia, skin and nail abnormalities</td>
</tr>
</tbody>
</table>
### Table 21. Potential Adverse Effects of Ergogenic Aids on Children and Adolescents (cont.)

<table>
<thead>
<tr>
<th>Ergogenic Aid</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niacin</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Flushing, pruritis, gastrointestinal upset, skin abnormalities, glucose intolerance, hyperuricemia, hepatocellular toxicity</td>
</tr>
<tr>
<td>Vitamin B&lt;sub&gt;6&lt;/sub&gt;</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Headache, nausea, sensory neuropathy, hepatocellular toxicity</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Gastrointestinal upset, nephrolithiasis</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Hypercalcemia and its associated effects, including weakness, lethargy, anorexia, nausea, vomiting, constipation, polyuria, cardiac arrhythmia</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>- None</td>
</tr>
<tr>
<td></td>
<td>- Gastrointestinal upset, fatigue, weakness, lipid abnormalities, inhibited absorption or action of vitamin K</td>
</tr>
</tbody>
</table>

### Human Growth Hormone and Stimulants

Most of the research on ergogenic aid use in children and adolescents has focused on anabolic steroids. Much less is known about the use of other anabolic agents, such as human growth hormone and stimulants. Human growth hormones have become more widely available to children and adolescents. While they may cause accelerated linear growth in growing children, significant side effects include increased serum cholesterol and triglycerides, cardiac enlargement, hypogonadism, and changes of acromegaly in facial bones. There appears to be an increasing use of stimulants such as amphetamines, caffeine, and ephedrine by high school students. The use of these stimulants can result in dehydration or cardiac arrhythmia.
Protein, Vitamin, and Mineral Supplements

Children and adolescents are barrage by information that promotes the ergogenic effect of protein, vitamins, and minerals. One of the few studies addressing ergogenic aids other than anabolic steroids found that, among high school athletes, 35 percent had used protein supplements and 33 percent had used vitamin supplements to improve performance.4 Excessive protein intake increases the risk of dehydration as well as renal toxicity. Growing children and adolescents need to be cautious of excessive intake of vitamins and minerals. Many vitamins and minerals compete for the same absorption site, and an excess of one may limit absorption of others. Children and adolescents need to eat a variety of foods that provide adequate calories for growth and activity. (See the Nutrition chapter.)

Prevention

In general, adolescents are open to the possibility of using ergogenic aids that propose to improve appearance and performance but lack knowledge about their potential risks.3 Altering this behavior that is perceived as beneficial is extremely difficult.14 Nevertheless, health professionals need to address ergogenic aid use in children and adolescents. Screening and assessment can occur during health supervision visits or sports preparticipation physical examinations.

Health professionals need basic knowledge of ergogenic aids commonly used by children and adolescents. This information may be found in several recently published reviews.9,12,15–18 Table 21 lists some of the adverse effects associated with ergogenic aid use.5,12,15,19, 20

Although it is important for health professionals to educate children and adolescents about the effects of ergogenic aids, interventions that rely only on providing information about the negative effects of anabolic steroids seem to have little effect in reducing the incidence of steroid use.14,21–23 A team-oriented approach that involves the collaboration of health professionals, coaches, trainers, parents, and peers can be effective in changing children’s and adolescents’ attitudes and behaviors.24 Children and adolescents need to hear the same message from a variety of people.

As long as societal messages suggest that appearance and athletic performance are more important than good health, children and adolescents will be tempted to use ergogenic aids. However, health professionals can play an important role in discouraging children and adolescents from using ergogenic aids. (See Tool F: Physical Activity Resources.) Children and adolescents should be provided with accurate information about ergogenic aids. For those who are convinced that they need these aids to succeed in sports, it may be useful to point out successful athletes who do not use ergogenic aids. Perhaps most important, children and adolescents must be given healthy alternatives to ergogenic aids. Health professionals should emphasize proper training techniques, appropriate nutritional intake, and healthy eating behaviors while explaining to children and adolescents and their parents how much difference these can make in their performance.11,24 It is important for children and adolescents to know that they can enhance their appearance and performance without sacrificing their health.
References


FREQUENTLY ASKED QUESTIONS
ABOUT PHYSICAL ACTIVITY AND ERGONOMIC AIDS

How can I tell if my teenager is using steroids?
Unfortunately, it is often difficult to tell. However, common side effects of anabolic steroid use include (1) an unusually rapid gain in muscle mass; (2) flare-ups of acne; (3) acne on the chest or back; (4) aggressive, violent, combative behavior; and (5) frequent mood swings.

Many ergogenic aids are sold over the counter. Does this mean that they are safe for children and adolescents?
Although some of these over-the-counter products are safe, many can produce adverse health effects. Over-the-counter ergogenic aids, which often are labeled “dietary supplements,” may not have undergone rigorous scientific study or clinical trials to determine their safety and efficacy, and may not be regulated by the Food and Drug Administration. Given such concerns, people should not consider these substances necessarily safe for use by children and adolescents simply because they can be purchased over the counter.

My son wants to use steroids to improve his performance. How can I discourage him from doing this?
First, be aware that scare tactics are ineffective in reducing such behavior. Although it is important to educate your son about the potentially adverse effects of ergogenic aid use, other strategies are necessary to facilitate change in attitudes and behaviors. It may be useful to identify role models whose accomplishments did not result from the use of ergogenic aids. Teach your son healthy alternatives to ergogenic aid use (for example, proper training techniques and eating healthy foods).

My daughter is 13 years old and attends junior high school. Should I be worried about her using performance-enhancing products at such a young age?
Yes. Ergogenic aid use may begin as early as junior high school. Desire to improve performance, strength, and physical appearance may lead your daughter to use ergogenic aids. The use of these substances may be associated with many adverse effects on both physical and psychological health. If you suspect that your child is using performance-enhancing products, you should address the issue as soon as possible to protect her from the adverse effects associated with further use.

Who is the best person to provide guidance to my child about the use of ergogenic aids?
Children need to hear accurate and consistent information about ergogenic aids from a variety of credible sources, including parents, physical education teachers, coaches, and health professionals. A consistent message from many caring adults is the most effective form of guidance.
My 16-year-old son is taking a “natural” product that claims to improve sports performance. Since it is natural, is the product safe?

It is important to look into any product your son is taking. The fact that a product is labeled “natural” does not guarantee that it is safe. Many natural products are as strong as prescription medications and can affect health and interfere with other medications. If you have questions or concerns, check with a health professional.

Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


Girls and female adolescents have become increasingly involved in physical activity. In the early 1970s, approximately 10 percent of high school females participated in sports. By the late 1990s this figure had increased to 40 percent. Moreover, this estimate does not reflect the number of girls and female adolescents who participate in community-based physical activity programs.

Participation in physical activity provides girls and female adolescents with many benefits, including (1) improved cardiovascular fitness, bone health, and musculoskeletal health, (2) decreased risk of obesity, (3) decreased likelihood of dropping out of school, (4) decreased likelihood of becoming pregnant, and (5) improved self-esteem and mental health.

Even though more girls and female adolescents are participating in physical activity, their physical activity levels have declined. In addition, physical activity levels decrease during adolescence in both males and females. However, this decrease is greater in female adolescents, particularly those who are nonwhite. Therefore, it is particularly important to promote physical activity in girls and female adolescents and to address their perceived barriers to participation (e.g., time constraints, access to facilities and programs, skill level).

Issues and Concerns

Although the benefits of participating in physical activity greatly outweigh the risks, there are some health issues and concerns that physically active girls and female adolescents, as well as parents, physical education teachers, coaches, and health professionals, should be aware of. A major concern is the relationship between unhealthy eating behaviors, amenorrhea (absence of menstruation), and osteoporosis, known as the Female Athlete Triad.

Physically active girls and female adolescents whose caloric intake is not sufficient to provide the energy needed to participate in physical activity are at risk for weight loss and energy drain. Energy...
drain can lead to menstrual irregularities, most often amenorrhea, and negative consequences for bone health (i.e., premature bone loss, decreased bone density, increased risk of stress fractures).\(^7\)

Some girls and female adolescents are not aware that they must increase their caloric intake as they increase their physical activity levels. Often there is a perception that weight is directly related to physical activity performance; therefore, girls and female adolescents often believe that their performance will improve if they lose weight. Pressure to excel from parents, physical education teachers, coaches, teammates, and girls and female adolescents themselves can lead to unhealthy eating behaviors. Restricted food intake, bingeing, purging, and a negative body image can occur among children and adolescents of both sexes regardless of the physical activities they participate in, but those at greatest risk are girls and female adolescents who participate in activities that focus on appearance, size, body shape, or weight class (e.g., ballet, gymnastics, figure skating, running, crew). (See the Eating Disorders chapter.)

Girls and female adolescents should be encouraged to focus on their body composition and performance, not their weight. They can obtain peak performance by balancing their intake of healthy foods with their physical activity levels.

It is important to identify and treat girls and female adolescents experiencing the consequences of the Female Athlete Triad early because bone loss is only partially reversible despite estrogen replacement, calcium supplementation, and resumption of menstrual periods. Girls and female adolescents who develop symptoms such as excessive weight loss, irregular menstrual periods, or frequent injuries (including stress fractures) should be evaluated by a health care team.

Other health issues and concerns for physically active girls and female adolescents include

- Increased risk for ligament injuries (e.g., anterior cruciate ligament tears of the knee).
- Biomechanical and body alignment problems (e.g., anterior knee pain, shin splints) that can lead to overuse injuries.
- The need for appropriate safety equipment.
- The need to implement osteoporosis prevention strategies (e.g., by consuming sufficient dietary or supplemental calcium and participating in weight-bearing activities).
- Maintaining a positive body image.

### Physical Activity Supervision

Following are interview questions and counseling strategies for girls and female adolescents. Additional interview questions and counseling strategies, as well as screening and assessment guidelines, are presented in the Infancy, Early Childhood, Middle Childhood, and Adolescence chapters.

### Interview Questions

**For Girls and Female Adolescents**

Do you participate in regular physical activity (for example, 30 minutes or more on most, if not all, days of the week)? If not, why?

Do you enjoy any physical activities? If so, which ones? Why?

Which physical activities are you good at?

Have you ever been injured while participating in physical activity?
Do your parents or other adults participate in physical activity with you?

Do you use appropriate safety equipment (for example, helmet, wrist guards, elbow and knee pads) when you participate in physical activity?

Do you wear a sports bra or top that fits your body and is comfortable?

Have you begun to menstruate? If so, how old were you when you got your first period?

Do you have a period every month?

What did you eat for breakfast, lunch, and dinner yesterday? What did you eat for snacks?

For Parents

Do you encourage your daughter to participate in physical activity?

Are you physically active yourself? If so, what type of activities do you participate in?

Do you participate in physical activity with your daughter?

Do you help organize physical activities for girls and female adolescents in your community?

Are you helping your daughter develop a positive body image? If so, how?

Counseling

Infancy and Early Childhood

Infants (newborn to 1 year) and children in early childhood (1 to 4 years) need opportunities to experience movement and develop fundamental motor skills. Parents can provide these opportunities by encouraging their female infants and children to participate in developmentally appropriate physical activities they enjoy.

Middle Childhood

Children in middle childhood (ages 5 to 11) usually shift from movement activities (e.g., playing games, dancing) to activities that help them develop the motor skills needed for other physical activities (e.g., soccer, baseball). Parents should encourage their female children to participate in a variety of developmentally appropriate activities that they enjoy and that increase their confidence. This can help keep girls interested in physical activity and encourage them to lead active lives.
Parents can be positive role models by participating in physical activity themselves and can encourage their female children to be physically active. Families can plan and participate in physical activity together, which can help children incorporate physical activity into their daily lives.

**Adolescence**

During early adolescence (ages 11 to 14) and puberty, females may be stronger, faster, and larger than their male peers, who enter puberty later. Physical activity continues to be appropriate for females and males to participate in together. To promote participation and enhance enjoyment, physical education teachers and coaches should establish teams based on skill levels rather than sex. However, if weight and strength differences are great enough to pose a safety concern, activities should be limited to noncollision physical activities and sports.

After puberty, female adolescents may not be as strong, fast, or large as their male counterparts and may no longer be able to participate in physical activity with them on an equal basis. However, female adolescents experience changes in height, weight, strength, and endurance on an individual basis; therefore, participation in coeducational physical activity depends on the individual.

Female adolescents’ body weight and percentage of body fat normally increase during adolescence. Female adolescents usually gain weight before their height spurt, often leading them to believe that they are overweight and resulting in a negative body image. Healthy eating and physical activity behaviors can help female adolescents obtain and maintain a healthy weight and develop a positive body image.

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**References**


**Suggested Reading**

Can my daughter participate in physical activity during her menstrual period?

Yes. In fact, there are benefits associated with being physically active during the menstrual period (for example, less cramping and lighter menstrual flow). Girls and female adolescents who experience symptoms such as severe cramping, nausea, vomiting, headache, lightheadedness, and heavy menstrual flow tend to avoid physical activity during their period. If your daughter has any of these symptoms, which usually can be managed, take her to a health professional for evaluation. Encourage your daughter to participate in physical activity regardless of where she is in her menstrual cycle.

My daughter, who is athletic, has not started menstruating. Should I be worried?

Whether your daughter is athletic or not, if she is 14 or older and shows no secondary sexual characteristics (for example, breasts or pubic hair), or is 16 or older and has not started menstruating, she needs to be evaluated by a physician.

Is there any special equipment or clothing that my daughter needs when she participates in physical activity?

Girls and female adolescents need to wear appropriate safety equipment (for example, helmet, shin guards, protective eyewear, and mouth guards) when participating in physical activity. They also need to wear a properly fitting bra or top designed for physical activity. In addition, equipment (for example, balls and basketball hoops) and playing fields should be appropriate for your daughter’s physical size.

If my daughter participates in weight training, will she get too muscular?

Before puberty, girls who participate in weight training gain more coordination, muscle strength, and endurance than muscle mass. After puberty, female adolescents who participate in weight training increase muscle tone, strength, and definition; however, unlike male adolescents, their muscle mass does not significantly increase, because they have lower levels of the hormone testosterone. Girls and female adolescents can safely participate in weight training as long as they are supervised by an adult and are taught proper technique.

Should I encourage my 12-year-old daughter, who is overweight, to lose weight and be more physically active?

Female adolescents gain fat during puberty as a part of normal development; therefore, don’t encourage your daughter to lose weight. However, encourage her to participate in physical activity, which will help her become physically fit, stay healthy, and develop a positive body image. In addition, be a positive role model by being physically active yourself. Participate in physical activity with your daughter (for example, hiking, biking, walking, swimming, and skating). Provide healthy foods for meals and snacks and help her make healthy food choices when she eats away from home.
My daughter is not interested in sports; she just wants to talk on the phone and be with her friends. How can I encourage her to be more physically active?

Your daughter does not have to participate in sports to be physically active. Encourage her to participate in physical activities she enjoys and that can include her friends (for example, skating, dancing, hiking, and biking).

Will my daughter be considered a tomboy or seen as less feminine if she becomes more physically active or athletic?

Physical activity has become acceptable for both sexes as a way to improve fitness, self-esteem, body shape, and body image. There are a growing number of healthy and strong female role models who are enjoying the benefits of an active lifestyle.

Is my daughter more likely than a boy to suffer knee injuries during competitive sports?

Girls and female adolescents who participate in competitive sports appear to suffer from knee ligament injuries more frequently than boys and male adolescents. This difference could be related to females’ increased ligament laxity or muscle strength imbalance in the lower extremities. Sport-specific conditioning, development of proper technique, and use of appropriate safety equipment can minimize the risk of injury.

My daughter, who plays soccer, complains of knee pain and shin splints. What can we do?

Knee pain and shin splints are symptoms of common overuse injuries. Overuse injuries usually have a gradual onset of pain and are caused by repetitive musculoskeletal stress. They are frequently a result of a rapid increase in the intensity, frequency, or duration of physical activity. These injuries can often be treated by decreasing the intensity, frequency, and duration of the activity; changing footwear; and participating in strengthening and stretching programs. If your daughter’s pain is persistent or increases in intensity take her to a physician for evaluation. Overuse injuries are most successfully treated when diagnosed early.

Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


Heat-related illness occurs when the body gets overheated. Heat and humidity affect the body’s ability to dissipate heat. When temperature and humidity levels are high, less sweat evaporates from the skin, making it more difficult for the body to cool itself. Children and adolescents who are physically active in extreme heat and humidity are at risk for heat-related illness.

**Significance**

Children and prepubertal adolescents develop heat-related illness more easily than older adolescents and adults because they
- Have a lower sweating rate (absolute and per sweat gland), which can decrease the body’s capacity to dissipate heat.
- Produce more heat when they are physically active, and are less able to transfer heat from the muscles to the skin.
- Have a larger body surface area relative to their weight, which can result in excessive heat gain in extreme heat.
- Have lower cardiac output, which reduces their capacity to transfer heat from the body core to the skin during vigorous physical activity.
- Take longer to acclimatize to physical activity in hot weather. A child or prepubertal adolescent may need to participate in five or six sessions of an activity to achieve the same degree of acclimatization acquired by an adult during two or three sessions of the same activity in the same environment.

Heat-Related Illness and Chronic Conditions and Disease

Children and adolescents with a chronic condition or disease, as well as those taking certain prescription or over-the-counter medications, are at higher risk for heat-related illness. Those with bulimia nervosa, congenital heart disease, diabetes mellitus, gastroenteritis, obesity, or a fever may experience excessive fluid loss. Those with anorexia nervosa, kidney disease, cystic fibrosis, or mental disability may not consume enough fluids because they refuse or are unable to drink enough and/or because their bodies need additional fluids as a result of their condition.

Children and adolescents who have a chronic condition or disease, and who are thus at higher risk for developing heat-related illness, should be watched closely when they are physically active. However, under most circumstances, they can safely participate in physical activity. In addition, physical activity can help these children and adolescents improve their general health status.

**Prevention**

To prevent heat-related illness, children and adolescents must maintain hydration by replacing fluid that is lost during physical activity. In addition, parents, physical education teachers, coaches, and health professionals need to be aware of the signs, symptoms, and treatment of heat-related illness (Table 22).
**Table 22. Heat-Related Illness: Signs, Symptoms, and Treatment**

<table>
<thead>
<tr>
<th></th>
<th>Signs and Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heat cramps</strong></td>
<td>■ Disabling muscular cramps</td>
<td>■ Give child/adolescent 4–8 oz of cold water every 10–15 minutes</td>
</tr>
<tr>
<td></td>
<td>■ Thirst</td>
<td>■ Make sure child/adolescent avoids beverages that contain caffeine</td>
</tr>
<tr>
<td></td>
<td>■ Chills</td>
<td>■ Move child/adolescent to shade</td>
</tr>
<tr>
<td></td>
<td>■ Rapid heart rate</td>
<td>■ Remove as much clothing and equipment as possible</td>
</tr>
<tr>
<td></td>
<td>■ Normal body temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Alertness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Normal blood pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Nausea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Body temperature of 100.4–104°F</td>
<td></td>
</tr>
<tr>
<td><strong>Heat exhaustion</strong></td>
<td>■ Sweating</td>
<td>■ Give child/adolescent 16 oz of cold water for each pound of weight lost</td>
</tr>
<tr>
<td></td>
<td>■ Dizziness</td>
<td>■ Move child/adolescent to a cool place</td>
</tr>
<tr>
<td></td>
<td>■ Headache</td>
<td>■ Remove as much clothing and equipment as possible</td>
</tr>
<tr>
<td></td>
<td>■ Confusion</td>
<td>■ Cool child/adolescent (e.g., with ice baths, ice bags)</td>
</tr>
<tr>
<td></td>
<td>■ Lightheadedness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Clammy skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Flushed face</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Shallow breathing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Nausea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Body temperature of 100.4–104°F</td>
<td></td>
</tr>
<tr>
<td><strong>Heat stroke</strong></td>
<td>■ Shock</td>
<td>■ Call for emergency medical treatment</td>
</tr>
<tr>
<td></td>
<td>■ Collapse</td>
<td>■ Cool child/adolescent (e.g., with ice packs, ice bags, immersion in ice</td>
</tr>
<tr>
<td></td>
<td>■ Body temperature &gt; 104°F</td>
<td>water)</td>
</tr>
<tr>
<td></td>
<td>■ Delirium</td>
<td>■ Give intravenous fluids</td>
</tr>
<tr>
<td></td>
<td>■ Hallucinations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Loss of consciousness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Seizures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ Inability to walk</td>
<td></td>
</tr>
</tbody>
</table>

Source: The information for this table was drawn from Maughan RJ, Shirreffs SM.

One way to prevent heat-related illness is by determining whether it is safe for children and adolescents to participate in physical activity outdoors (Figure 3). Even though the table was developed specifically for football, it can also be used to determine the safety of participating in other physical activities outdoors. Parents, physical education teachers, and coaches can plot the temperature on the horizontal axis and the humidity on the vertical axis. The intersection of the two axes indicates
whether it is safe to be physically active outdoors. Zone 1 (safe) indicates that it is safe; zone 2 (use caution) indicates that children and adolescents at high risk for heat-related illness should be watched carefully for symptoms of heat-related illness; and zone 3 (use extreme caution) indicates that it is dangerous to be physically active outdoors.

**Counseling**

Health professionals can use the following information to provide anticipatory guidance to children, adolescents, and their parents and, when possible, physical education teachers and coaches:

- Encourage children and adolescents to avoid outdoor physical activity during extremely hot weather.
- Encourage physical education teachers and coaches to cancel or delay activities during extremely hot weather.
- Encourage children and adolescents to gradually increase the intensity of physical activity during extremely hot weather.
- During extremely hot weather, encourage children and adolescents to participate in outdoor physical activity during the coolest times of the day (i.e., before 10:00 a.m. and after 6:00 p.m.).
- Recommend that children and adolescents (1) drink before they feel thirsty, because mild dehydration (2 to 3 percent) occurs before thirst sets in; (2) drink cool water (40–50°F) before, during, and after physical activity; (3) drink 4 to 8 oz of water 1 to 2 hours before physical activity; (4) drink 4 to 8 oz of water every 15 to 20 minutes during physical activity lasting longer than 1 hour; and (5) drink at least 16 oz of water for every pound of weight lost during physical activity.
- Water can be more palatable for some children and adolescents if flavoring (e.g., lemon slices) is added.
- Sports drinks, which are usually 6 to 8 percent carbohydrates (sugar), are generally beneficial for physical activities lasting longer than 60 minutes.

![Figure 3. Football Weather Guide for Prevention of Heat-Related Illness](image)

Source: Fox EL, Mathews DK.
• Encourage children and adolescents to avoid drinking undiluted fruit juice or carbonated beverages before and during physical activity. These beverages usually have a high carbohydrate content, may cause stomach cramps, and can delay fluid absorption.

• Recommend that children and adolescents avoid drinking beverages containing caffeine (e.g., soft drinks, coffee, tea) because they increase fluid loss.

• Encourage children and adolescents to eat healthy foods and avoid skipping meals.

• Recommend that children and adolescents avoid wearing excessive or heavy clothing or nonsafety equipment when participating in outdoor physical activity in extreme heat and humidity. Mesh jerseys, lightweight shorts, and low-cut socks allow more sweat to evaporate than sweatsuits and heavy gear.

• Emphasize that even mild dehydration impairs performance and leads to fatigue.

References


Suggested Reading


The Importance of Drinking Sufficient Water During Physical Activity

David Walker is a 10-year-old boy who plays baseball in a community league coached by parents. He lives in an area where the summer weather is hot and humid, and practice is scheduled in the afternoon, when the temperature is extremely high. David often complains of being thirsty during practice, and his father is concerned because the coach does not schedule water breaks.

During a routine sports physical, Mr. Walker discusses his concerns with David’s physician, Dr. Sturdevant. She explains that children are at higher risk than adolescents or adults for dehydration and heat stroke because their bodies generate more heat. “Children need to drink additional fluids in hot weather to prevent dehydration and other serious problems,” advises Dr. Sturdevant. “Thirst is not always an adequate indication of the body’s need for fluids because physical activity can sometimes mask children’s sense of thirst, making them even more vulnerable to dehydration.”

Dr. Sturdevant gives Mr. Walker a pamphlet that discusses the importance of replacing fluids during physical activity and asks him to share the information with David’s coach. She points out that children need to drink 4 to 8 oz of water every 15 to 20 minutes during physical activity lasting longer than 1 hour, and that they should be allowed to take water breaks as needed. She emphasizes that parents and coaches need to monitor children’s weight before and after physical activity. She explains that any weight that is lost during physical activity is probably due to loss of body water and should be replaced after activities by having children drink 16 oz of water for each pound lost.

Mr. Walker shares the pamphlet with the coach; as a result, the children are allowed both scheduled and unscheduled water breaks. In addition, the coach has started to monitor the children’s water intake to ensure that they are drinking sufficient amounts.
FREQUENTLY ASKED QUESTIONS
ABOUT PHYSICAL ACTIVITY AND HEAT-RELATED ILLNESS

- **I know that my 9-year-old son needs to drink water, particularly when he plays soccer, but he does not like water. What should I do?**

  Water is the best fluid to drink to avoid dehydration and heat-related illness. However, some children and adolescents do not like water. Your son may be more likely to drink sufficient fluids if the fluids are flavored. Make sure that the fluids he drinks contain no more than 8 percent carbohydrates (sugar), because too much sugar may cause stomach cramps and delay fluid absorption.

- **My daughter has softball practice in August, when it is extremely hot and humid. I’m concerned that it is not safe for her to practice in these conditions, but the coach insists. What can I do?**

  Talk to the coach about moving practice inside when possible. You can also encourage the coach to hold practices early in the morning or early in the evening, but keep in mind that if the humidity level is still high during those times of the day, the risk for heat-related illness is still significant. For practices lasting longer than 1 hour, make sure your daughter’s coach gives water breaks every 15 to 20 minutes, and make sure your daughter drinks 4 to 8 oz of water. If weight loss is a concern, the coach can weigh team members before and after practice and make sure that they drink enough water to regain their lost weight before the next practice.

- **Someone suggested to my son that he take salt tablets during practice. Is this safe?**

  No. Salt tablets can be dangerous and should never be used. Salt tablets increase fluid loss, putting your son at greater risk for heat-related illness. Although small amounts of salt are lost through perspiration, the major component of perspiration is water. Small amounts of salt added to food at meals should adequately replenish your son’s salt losses.

- **My teenage daughter is in the school marching band. Yesterday, when the temperature was extremely high, one of her classmates passed out after practicing for several hours outside. Is this related to the heat?**

  Adolescents who have band practice outside during extremely hot weather are at as high a risk for heat-related illness as those who participate in other types of physical activities. Make sure the band director gives fluid breaks every 15 to 20 minutes for practices lasting longer than 1 hour. Cool water should be available at all times. Also, encourage the band director to schedule band practice during the coolest times of the day (for example, before 10:00 a.m. and after 6:00 p.m.), and to limit practices in full uniform.
My daughter seems to drink enough fluids during soccer practice, but she doesn’t get the opportunity during games, which usually last 2 hours. Do you have any suggestions?

Talk to the coach about your concerns. You could also talk to school or league officials about implementing a policy calling for official time-outs every 15 to 20 minutes for fluid breaks.

Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


Prevention of injury to infants, children, and adolescents during physical activity is a responsibility shared by parents, physical education teachers, coaches, recreation program staff and, as they get older, children and adolescents themselves. Health professionals need to screen and assess the risk for injury and counsel families on how to reduce this risk. Appropriate safety equipment is essential for safety and injury prevention. Batting helmets in baseball, bicycle helmets in biking, shin guards in soccer, wrist guards and elbow and knee pads in in-line skating, and goggles in handball and raquetball are common. Following are tips for families for preventing the most common injuries that occur in infants, children, and adolescents.

Counseling

Infancy and Early Childhood

Choking

- Do not give toys that are small enough to be placed in the mouth.
- Make sure that toys do not have parts that can become detached.
- Keep toys with small parts or sharp edges out of reach.
- Make sure that infants and children sit while eating; eating while walking or running may cause choking.

Strangulation

- Keep dangling telephone, electrical, blind, and drapery cords out of reach.
- If a mesh playpen or crib is used, make sure that the openings in the weave are less than 1/4 inch. Never leave an infant or child in a mesh playpen or crib with the drop-side down.
- Make sure children do not wear bicycle helmets or clothing with drawstrings while on playground equipment.

Bruises, Cuts, Strains, Sprains, and Fractures

- Lock doors or use safety gates at the top and bottom of stairs, and use safety locks and guards on windows above the ground floor.
Teach children how to safely use stairs and climb on and off furniture.

Supervise infants and children when they use stairs and climb on and off furniture.

Make sure that playgrounds are safe and carefully maintained and that equipment is in good condition. All playground equipment should be surrounded by a soft surface (e.g., fine, loose sand; wood chips; wood mulch) or by rubber mats manufactured for this use.

Supervise children when they use playground equipment. Make sure they play only on developmentally appropriate equipment.

Make sure that infants and children play with balls that are soft (i.e., not made from leather or hard materials).

**Heat-Related Illness**

Recommend that children (1) drink before they feel thirsty, because mild dehydration occurs before thirst sets in; (2) drink cool water before, during, and after physical activity; (3) drink 4 to 8 oz of water 1 to 2 hours before participating in physical activity; and (4) drink 4 to 8 oz of water every 15 to 20 minutes during physical activity lasting longer than 1 hour.

Encourage children to participate in outdoor physical activity during the coolest times of the day (i.e., before 10:00 a.m. and after 6:00 p.m.) during extremely hot weather.

Encourage children to avoid outdoor physical activity if weather conditions are extreme.

Encourage physical education teachers, coaches, and recreation program staff to cancel or delay activities during extremely hot weather. (See Heat-Related Illness chapter.)

**Drowning**

Closely supervise infants and children when they are in or around water. Do not read, play cards, talk on the phone, mow the lawn, or engage in any other distracting activity while supervising infants and children who are in or around water. Never drink alcohol while supervising infants and children who are in or around water.

Teach children to swim. After their fourth birthday, children may be enrolled in swimming classes.

To prevent choking, never permit children to chew gum or eat while diving, swimming, or playing in water.

Make sure that apartment, house, and community swimming pools are surrounded by a fence with a self-closing and self-latching gate. The fence should be at least 4 feet high. Do not allow infants and children to have direct access to swimming pools. Closely supervise infants and children using a pool, and insist that others do too.

When boating with infants and children, make sure that they use personal flotation devices (e.g., life jackets) approved by the U.S. Coast Guard, regardless of the distance traveled, size of the boat, and swimming ability of children.

Do not use air-filled swimming aids (e.g., water wings) in place of personal flotation devices for infants and children. Air-filled swimming aids are toys and are not designed to be personal flotation devices. These aids can deflate when they be-
come punctured or unplugged. They can give parents a false sense of security, which may increase the risk of drowning.

**Middle Childhood and Adolescence**

**Bruises, Cuts, Strains, Sprains, and Fractures**

- Make sure that playgrounds are safe and carefully maintained and that equipment is in good condition. All playground equipment should be surrounded by a soft surface (e.g., fine, loose sand; wood chips; wood mulch) or by rubber mats manufactured for this use.

**Overuse Injuries**

- Impose appropriate limitations on duration of specific, repetitive physical activities that require the use of the same muscles repeatedly (e.g., pitching, running). Encourage children and adolescents to participate in a variety of activities and to develop a wide range of skills. Children and adolescents who specialize in just one physical activity may be denied the benefits of varied activity and may experience intense physical, physiological, and psychological demands from training and competition.

**Re-Injury**

- Make sure that children and adolescents and their parents are aware of early symptoms of potential injury (i.e., increase in muscle soreness, bone or joint pain, excessive fatigue, decrease in performance). Coaches should be alert to these symptoms as well.

- Make sure that children and adolescents who experience any of these early symptoms of potential injury decrease their participation in physical activity (i.e., by reducing frequency, duration, or intensity of physical activity) until symptoms diminish, or, if the injury is severe, that they cease participation in physical activity temporarily.

- Make sure that children and adolescents who have sustained an injury take precautions to prevent re-injury (i.e., make sure that recovery and rehabilitation time is appropriate).

**Heat-Related Illness**

- Recommend that children and adolescents (1) drink before they feel thirsty, because mild dehydration occurs before thirst sets in; (2) drink cool water before, during, and after physical activity; (3) drink 4 to 8 oz of water 1 to 2 hours before physical activity; and (4) drink 4 to 8 oz of water every 15 to 20 minutes during physical activity lasting longer than 1 hour.

- Encourage children and adolescents to participate in outdoor physical activity during the coolest times of the day (i.e., before 10:00 a.m. and after 6:00 p.m.) during extremely hot weather.

- Encourage children and adolescents to avoid outdoor physical activity if weather conditions are extreme.

- Encourage physical education teachers, coaches, and recreation program staff to cancel or delay activities during extremely hot weather. (See Heat-Related Illness chapter.)
Psychological Injury

- Make sure that children and adolescents participate in physical activities they enjoy and are not being compelled to participate by an adult or their peers.

- Make sure that children and adolescents participate in physical activities that emphasize having fun, not just activities that emphasize performance and winning.

- Encourage a healthy environment for physical activity, without negative feedback or criticism, to increase children’s and adolescent’s confidence and enjoyment and reduce their emotional stress. Stress can be alleviated by refraining from evaluating performance and reducing the importance placed on winning (e.g., asking the child or adolescent, “How did you play?” rather than “Did you win?”).

Drowning

- Closely supervise children when they are in or around water. Do not read, play cards, talk on the phone, mow the lawn, or engage in any other distracting activities while supervising children who are in or around water.

- Teach children and adolescents to swim. Enroll them in swimming classes.

- Make sure that adolescents do not swim alone. Teach adolescents to always swim with a buddy.

- To prevent choking, never permit children and adolescents to chew gum or eat while diving, swimming, or playing in water.

- Make sure that apartment, house, and community swimming pools are surrounded by a fence with a self-closing and self-latching gate. The fence should be at least 4 feet high. Do not allow children to have direct access to swimming pools. Closely supervise children using a pool, and insist that others do too.

- Never drink alcohol while supervising children around water. Teach adolescents about the dangers of drinking alcohol and swimming, boating, or waterskiing.

- When boating with children and adolescents, make sure that they use personal flotation devices (e.g., life jackets) approved by the U.S. Coast Guard, regardless of the distance traveled, size of the boat, or swimming ability of children and adolescents.

For Parents

- Learn first aid and cardiopulmonary resuscitation (CPR).

- Learn and observe safety rules.
- Make sure that physical education teachers, coaches, and recreation program staff enforce rules and encourage safe play.

- Make sure that children and adolescents use appropriate safety equipment (e.g., helmet, wrist guards, elbow and knee pads) when participating in physical activity.

- Make sure that children and adolescents receive proper training for physical activity.

**Suggested Reading**


FREQUENTLY ASKED QUESTIONS ABOUT PHYSICAL ACTIVITY AND INJURY

Should my daughter stretch and warm up before physical activity? If so, what is the best way for her to do this?

Your daughter needs to stretch and warm up before physical activity to help prevent injury. Your daughter needs to stretch the major muscle groups at a slow and steady pace. Each stretch should be held for 15 to 20 seconds and repeated several times without jerking or bouncing movements.

My child participates in a lot of physical activities. Which activities are the safest?

Most physical activities are safe for children because children are not big enough to generate the force that causes more serious injuries in adolescents. Most injuries experienced by children are minor (for example, bruises, cuts, strains, and sprains). As children get older, they participate in sports such as field hockey and basketball, which involve more collision and physical contact. To avoid or minimize the severity of injury, help your child practice the following strategies:

- Know and abide by the rules.
- Wear appropriate safety equipment (for example, shin guards for soccer, a batting helmet when hitting a baseball, and a helmet and body padding for ice hockey).
- Know how to use safety equipment (for example, know how to adjust a bike helmet).
- Allow enough time for sufficient healing and rehabilitation after injury.

How can I tell if my son is developing an overuse injury?

Overuse injuries are repetitive injuries caused by musculoskeletal stress resulting from intense physical activity or from a rapid increase in activity intensity or duration. Your son may be developing an overuse injury if his symptoms are occurring more frequently and lasting longer. Your son likely has an overuse injury if he experiences (1) soreness or pain lasting up to several hours after physical activity; (2) soreness or pain during and after physical activity, and the next morning; and (3) soreness or pain during routine activities as well as physical activities. If your son has these symptoms, he needs to be evaluated by a physician.

My daughter has been told that she has shin splints. What are shin splints? How can they be treated?

Shin splints are a type of overuse injury that occurs in the lower leg. Children and adolescents who have flat feet or who overpronate their feet (motion that lowers the arch or inside edge of the foot) during physical activity are at risk for shin splints. Appropriate footwear with good arch support and shock absorption can prevent shin splints. If your daughter’s pain persists, take her to a physician for evaluation.
Which physical activities present the greatest risk of injury for children and adolescents?

Children and adolescents who participate in football, wrestling, ice hockey, and gymnastics are at greater risk for injury. During the growth spurt, adolescents are more susceptible to certain injuries (for example, fractures). But these injuries are usually not serious and do not mean that children and adolescents need to avoid these activities.

What should I do if my son gets injured?

Musculoskeletal injuries should be treated with rest, ice, compression, and elevation (RICE): (1) rest from any activity causing pain; (2) ice the injured part of the body for 20 minutes at a time, protecting the skin with a towel; (3) compress the swelling with a support wrap applied firmly but not too tightly; and (4) elevate the injured part above the level of the heart. Your son needs to see a physician if any swelling or distortion of a body limb (for example, fingers, arms, legs) does not go away quickly, or if he continues to have difficulty performing activities.

Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


Healthy eating is essential at all stages of life. It is especially important for the growth and development of infants, children, and adolescents. Optimal nutrition can prevent health problems such as iron-deficiency anemia, obesity, eating disorders, undernutrition, and dental caries. Over the long term, it can help lower the risk of developing chronic disease (e.g., heart disease, certain cancers, diabetes mellitus, stroke, osteoporosis) and risk factors for disease (e.g., obesity, high blood pressure, high blood cholesterol levels). Eating healthy foods also helps children and adolescents feel good and do well in school.

Unfortunately, there are many barriers to healthy eating. High-fat, high-sugar, and low-nutrient foods are plentiful, inexpensive, and widely available. Viewed as quick and cheap, such foods are attractive to families facing time and money pressures. And with so many media messages encouraging unhealthy eating, children and adolescents may have more negative than positive influences on their eating behavior. Too often, “healthy eating” carries images of expensive and tasteless food that is time-consuming to prepare.

Improving the well-being of infants, children, and adolescents requires that health professionals, families, and communities work together to create opportunities for healthy eating and physical activity. Multifaceted, communitywide efforts are needed to combat negative images and to demonstrate that healthy eating can be quick and delicious and that physical activity can be fun. Using creative settings—such as recreation centers, athletic facilities, libraries, restaurants, and supermarkets—to deliver innovative nutrition education programs should be explored.

Healthy Eating

The food choices people make depend not only on their nutrition needs but also on their culture, access to food, environment, and enjoyment of certain foods. Eating is one of life’s greatest pleasures, and a variety of factors play a role in how people select foods and plan meals.
To help children, adolescents, and families practice healthy eating behaviors and become more knowledgeable about the types and amounts of foods needed for optimal nutrition, the federal government created the Dietary Guidelines for Americans and the Food Guide Pyramid. The Dietary Guidelines provide general nutrition principles, and the Food Guide Pyramid shows how to select different types of foods for optimal nutrition. These tools can be used for children ages 2 and older and for adolescents.

**Dietary Guidelines for Americans**

The Dietary Guidelines are designed to help people choose foods that meet nutrition requirements, promote health, and support active lifestyles.

### DIETARY GUIDELINES FOR AMERICANS

**Aim for fitness**
- Aim for a healthy weight.
- Be physically active each day.

**Build a healthy base**
- Let the Pyramid guide your food choices.
- Choose a variety of grains daily, especially whole grains.
- Choose a variety of fruits and vegetables daily.
- Keep food safe to eat.

**Choose sensibly**
- Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.
- Choose beverages and foods to moderate your intake of sugars.
- Choose and prepare foods with less salt.

Note: A range of servings is given for each food group. The smaller number indicates the recommended servings for people who consume about 1,600 calories a day; the larger number indicates servings for people who consume about 2,800 calories a day.

Source: U.S. Department of Agriculture and U.S. Department of Health and Human Services.1

**Food Guide Pyramid**

The Food Guide Pyramid translates the Dietary Guidelines into food groups, listing the number of recommended daily servings from each group.

**Figure 4. Food Guide Pyramid**

- **Fats, Oils, and Sweets**
  - USE SPARINGLY

- **Milk, Yogurt, and Cheese Group**
  - 2-3 SERVINGS

- **Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group**
  - 2-3 SERVINGS

- **Vegetable Group**
  - 3-5 SERVINGS

- **Fruit Group**
  - 2-4 SERVINGS

- **Bread, Cereal, Rice, and Pasta Group**
  - 6-11 SERVINGS

Many children and adolescents from diverse cultures learn about nutrition in school by studying the Food Guide Pyramid. It is important to encourage children, adolescents, and families to maintain the healthy eating behaviors inherent in their cultures. Health professionals can make the Food Guide Pyramid relevant to different cultural groups by helping people place their traditional foods in the appropriate place in the pyramid. If traditional foods are at the top of the pyramid (and thus should be eaten sparingly), the frequency or amount of consumption may need to be changed, but few foods need to be eliminated completely.3
**Food Guide Pyramid for Young Children**

The Food Guide Pyramid for Young Children was developed to help improve the diets of children ages 2 to 6. This adaptation of the original Food Guide Pyramid was needed because young children have unique eating behaviors and needs; however, the basic nutrition advice was not changed. As with the original pyramid, most of the daily servings of food should be selected from the food groups closest to the base of the pyramid. However, the Food Guide Pyramid for Young Children uses shorter

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### SERVING SIZES FOR CHILDREN AND ADOLESCENTS

**Bread, Cereal, Rice, and Pasta Group**
- 1 slice of bread
- 1 oz of ready-to-eat cereal
- 1/2 cup of cooked cereal
- 1/2 cup of rice or pasta

**Vegetable Group**
- 1 cup of raw, leafy vegetables
- 1/2 cup of raw or cooked vegetables
- 3/4 cup of vegetable juice

**Fruit Group**
- 1 medium apple, banana, or orange
- 1/2 cup of chopped, cooked, or canned fruit
- 3/4 cup of fruit juice
- 1/4 cup of dried fruit

**Milk, Yogurt, and Cheese Group**
- 1 cup of milk or yogurt
- 1 1/2 oz of natural cheese
- 2 oz of processed cheese

**Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group**
- 2 to 3 oz of cooked lean meat, poultry, or fish
- 1/2 cup of cooked dry beans or 1 egg counts as 1 oz of lean meat. Two tablespoons of peanut butter or 1/3 cup of nuts counts as 1 oz of meat.

Offer children 2 to 3 years old about 2/3 of a serving, except for milk. Children 4 years and older and adolescents can eat a full serving (shown above). Children 2 to 6 years need 2 servings from the milk group per day.

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*Sources: U.S. Department of Agriculture and U.S. Department of Health and Human Services,1 and U.S. Department of Agriculture, Center for Nutrition Policy and Promotion.2*
food-group names and single numbers rather than ranges to indicate the recommended daily servings. The pyramid was designed to be more understandable and appealing to young children. In addition, illustrations of young children playing around the pyramid send the message that physical activity is important.

**Nutrients**

Eating foods that provide adequate nutrients plays a significant role in the performance of highly active children and adolescents. The nutrient needs of these children and adolescents are similar to those of their peers who are not highly active, except that highly active children and adolescents need more energy, water, and, in some cases, protein.4–6

Physical activity increases the body’s need for energy. The type of activity and its frequency, intensity, and duration determine how much extra energy is needed. Most highly active children and adolescents need approximately 500 to 1,500 more calories per day than other children or adolescents; growth, body weight, and appetite indicate whether energy intake is sufficient. Energy intake is probably insufficient if the child or adolescent is losing weight or not growing according to the expected growth pattern on a pediatric growth chart. In this case, the child or adolescent should be evaluated by a physician.

Carbohydrates are the preferred source of energy for exercising the muscles. Inadequate carbohydrate intake may be associated with fatigue and decreased physical activity performance. It is recommended that highly active children and adolescents consume extra carbohydrates (especially complex carbohydrates such as bread, cereal, pasta, rice, and potatoes), and fruits, vegetables, low-fat dairy products, and (in moderation) sugars.6 A carbohydrate intake equaling 50 to 55 percent of the total number of calories consumed is appropriate for highly active children and adolescents.

The protein requirements of most highly active children and adolescents will be met if they consume approximately 1 g of protein per kg of body weight per day. Children and adolescents participating in intense endurance sports or strength training may require 1½ to 2 g of protein per kg of body weight per day.6 However, most children and adolescents consume one and a half to three times the recommended daily allowance for protein, so it is likely that their protein needs can be met if they eat a variety of healthy foods (unless the child or adolescent is restricting his or her food intake or consuming a strict vegetarian diet).

Consuming more than the required amount of protein and using protein or amino acid supplements (misleadingly promoted as “safe” alternatives to steroids) is not beneficial and may cause dehydration, renal stress, increased urinary excretion of calcium, and excessive caloric intake and fat storage. Children and adolescents who eat too much protein or take amino acid supplements may view these as substitutes for other foods and thus may neglect to consume foods that contain important nutrients. (See the Ergogenic Aids chapter.)

A variety of foods that meet the body’s energy needs also meet vitamin and mineral requirements. Adequate amounts of iron should be consumed to prevent iron-deficiency anemia, especially in menstruating females. Because of the tremendous amount of bone growth during puberty, children or adolescents who do not consume sufficient quantities of dairy products should take a calcium supplement.7 Children and adolescents who participate in
vigorous physical activity may have a slightly increased need for zinc, but adequate zinc intake can usually be achieved by eating meats and whole grains.

**Pregame and Postgame Meals**

It is recommended that children and adolescents consume a light meal high in complex carbohydrates, ample in caffeine-free beverages (e.g., fruit juice, water, sports drinks), and moderate in protein 3 to 4 hours before participating in physical activity to prevent hunger, provide energy, ensure gastric emptying, and prevent respiratory and cardiac stress. During physical activities involving several events, children and adolescents can obtain energy by consuming sports drinks or unsweetened fruit juice diluted with water to one-half strength up to 1 hour before the physical activity begins. If events are 1 to 3 hours apart, carbohydrate snacks (e.g., cereal bars, sports bars, crackers, fruit) or liquid meals are recommended. After physical activity, it is important for children and adolescents to replace muscle and liver glycogen stores by consuming carbohydrates within 2 hours. Drinking beverages containing carbohydrates should be encouraged if foods are not well tolerated or not available within 2 hours after physical activity.

**Anemia**

Vigorous physical activity may be associated with iron-deficiency anemia. Contributing factors include iron absorption, marginal iron intake, hemodilution, increased destruction of erythrocytes in circulation, and foot strike hemolysis. Iron-deficiency anemia is not a contraindication to continued participation in physical activity; however, the child’s or adolescent’s iron status should be evaluated by a physician.

**Weight Status**

Weight maintenance and increased physical activity, rather than weight loss, are appropriate goals for growing children and adolescents. However, children and adolescents with a BMI greater than or equal to the 85th percentile on CDC growth charts, with complications of obesity, or with a BMI greater than or equal to the 95th percentile, with or without complications, should...
undergo an in-depth medical assessment and possible treatment. Losing excess body fat is a long-term process involving making healthy food choices as well as participating in regular physical activity. Rapid weight-loss techniques (e.g., severe food restriction, dehydration, purging) are ineffective and dangerous. In addition to resulting in decreased muscle strength and endurance, side effects of such weight-loss attempts may include hypoglycemia, depletion of electrolytes and glycogen stores, nutrient deficiencies, risk of developing eating disorders, and compromised growth and development. Severe restriction can result in circulatory collapse and heat stroke.

Eating Disorders

Restricted food intake, bingeing, purging, and an unhealthy body image can occur among children and adolescents who take part in all types of physical activity, but it is more common among those involved in activities that emphasize weight (e.g., wrestling, running) and appearance (e.g., gymnastics, ballet, figure skating). Eating disorders may be associated with electrolyte imbalances, nutrient deficiencies, amenorrhea, and impaired growth and development. (See the Eating Disorders chapter.)

Physical Activity Supervision

Following are interview questions, screening and assessment guidelines, and counseling guidelines that health professionals may find helpful when they are providing families with anticipatory guidance on nutrition for children and adolescents who participate in physical activity.

Interview Questions

Which meals do you usually eat each day? How many snacks?

How often does your family eat meals together?

Are there any foods you do not eat? If so, which ones?

Are there any changes you would like to make in the way you eat? If so, what are they?

How do you feel about the way you look?

Are you trying to change your weight? If so, why? What are you doing to try to change your weight?

Screening and Assessment

The nutrition adequacy of typical eating practices as well as specialized training diets can be evaluated with the Food Guide Pyramid. To screen and assess children and adolescents for adequate nutrition, it is important to determine the following:

- Intake of calcium, iron, and zinc (from foods)
- Pregame and postgame eating practices
- Fluid intake before, during, and after competition
- Use of vitamin and mineral supplements
- Weight-control practices, including restrictive eating, bingeing, and purging
- Use of ergogenic aids (e.g., caffeine, steroids, amphetamines, creatine, chromium picolinate, ephedrine)
- Measurement of height, weight, and BMI annually to evaluate growth and height-weight status
• Measurement of body fat percentage (e.g., triceps skinfold) annually to distinguish excess body fat from increased lean body mass or large frame size
• Menstrual history
• Evaluation of type, frequency, intensity, and duration of physical activity to help determine energy needs

Counseling

Infancy

■ Explain that infants have special dietary needs because of their rapid growth and development.

■ Emphasize that breastmilk is the ideal food for infants. Even if the infant is breastfed for only a few weeks or months, the benefits are immeasurable.

■ Until the infant is 12 months of age, breastmilk or iron-fortified formula is recommended. Low-iron milk (e.g., cow’s, goat’s, soy) should not be used, even in infant cereal. Whole milk is acceptable at 1 year of age. Reduced-fat, low-fat, and fat-free milk are not recommended during the first 2 years of life.

■ Instruct parents to introduce supplemental foods to the infant at about 4 to 6 months of age, when the infant is developmentally ready (i.e., the infant is able to sit with support and has good control of the head and neck). Supplemental foods can be introduced one at a time, at intervals of 7 days or more.

Early Childhood

■ Emphasize that children need healthy meals and snacks at scheduled times throughout the day to help them achieve nutritional balance.

■ Inform parents that after 2 years of age, children’s fat intake should gradually be reduced to no more than 30 percent of their daily calories by age 5.8

■ As children begin to consume foods with fewer calories from fat, they need to eat more grain products, fruits, vegetables, low-fat dairy products and other calcium-rich foods, and beans, lean meat, poultry, fish, and other protein-rich foods.

■ Encourage parents to make healthy food choices that are based on the Dietary Guidelines for Americans and the Food Guide Pyramid for Young Children.

■ Tell parents that children 2 to 3 years of age need the same number of servings as children 4 to 6 years of age but may need smaller portions (about two-thirds of a serving) for all food groups, except the milk group.

■ Instruct parents to offer two servings of milk per day to children 2 to 6 years of age. Excessive milk intake can reduce the child’s appetite for other foods.

■ Because young children often eat small amounts of food at one time, encourage parents to offer healthy foods (e.g., milk, fruit juices, fruits, vegetables, cooked meat or poultry, whole-grain crackers) as snacks.
Physical activity places additional demands on the body. The number of servings of food may need to be modified for children participating in vigorous physical activity.

**Middle Childhood**

- Caloric requirements vary during middle childhood. Children should be encouraged to eat at least the minimum number of recommended daily servings from each of the five major food groups every day.

- Discuss the importance of healthy eating behaviors. Provide guidance to children on increasing the variety of foods they eat and guidance to parents on incorporating new foods into their children’s diet.

- Encourage children to make healthy food choices that are based on the Dietary Guidelines for Americans and the Food Guide Pyramid.

- Physical activity places additional demands on the body. The number of serving sizes may need to be modified for children participating in vigorous physical activity.

- Encourage children to eat a snack or meal—consisting mostly of carbohydrates, a moderate amount of protein, and a small amount of fat—2 to 3 hours before vigorous physical activity and again within 2 hours after physical activity.

- Suggest healthy snacks that can be eaten when a child is traveling (e.g., low-fat yogurt and milk, frozen yogurt, cheese, bananas, grilled chicken or fish sandwiches, thick-crust cheese or vegetable pizza, muffins, bagels).

- Encourage children to drink plenty of fluids when they are physically active. Discuss the risks of dehydration and recommend adequate fluid intake before, during, and after physical activity.

- Discuss healthy and safe ways for children to obtain and maintain a healthy weight (e.g., by practicing healthy eating behaviors and participating in regular physical activity). Emphasize that weight reduction through restricting food intake or other means is not advisable for growing children.

- Demonstrate how to monitor pulse rate, and encourage children to participate in aerobic physical activity at 60 to 80 percent of maximum heart rate.

- Discuss the risk of using performance-enhancing products (e.g., protein supplements, anabolic steroids). Explain that consuming a diet high in protein or using protein supplements can be harmful and will not make muscles larger.
Adolescence

- Explain that adolescent males and physically active adolescent females need to eat the maximum number of recommended daily servings from each of the five major food groups every day. Most adolescent females need the middle ranges of servings, especially when they are active or growing.

- Discuss the importance of healthy eating behaviors. Provide guidance to adolescents on increasing the variety of foods they eat.

- Encourage children to make healthy food choices that are based on the Dietary Guidelines for Americans and the Food Guide Pyramid.

- Encourage adolescents to consume three servings or more per day from the milk, yogurt, and cheese group to meet their calcium needs, because bone density increases well into young adulthood (the 20s). Eating foods that provide enough calcium to obtain maximum bone density helps prevent osteoporosis and bone fractures later in life.

- Because physical activity places additional demands on the body, the Dietary Guidelines may need to be modified for adolescents participating in vigorous physical activity.

- Encourage adolescents to eat a snack or meal—consisting mostly of carbohydrates, a moderate amount of protein, and a small amount of fat—2 to 3 hours before vigorous physical activity and again within 2 hours after physical activity.

- Suggest healthy snacks that can be eaten when an adolescent is traveling (e.g., low-fat yogurt and milk, frozen yogurt, cheese, bananas, grilled chicken or fish sandwiches, thick-crust cheese or vegetable pizza, muffins, bagels).

- Encourage adolescents to drink plenty of fluids when they are physically active. Discuss the risks of dehydration and recommend adequate fluid intake before, during, and after physical activity.

- Discuss healthy and safe ways for adolescents to obtain and maintain a healthy weight (e.g., by practicing healthy eating behaviors and participating in regular physical activity). Emphasize that weight reduction through dieting or other means is not advisable for adolescents who are still growing.

- Caution against rapid weight-loss techniques (e.g., severe food restriction, dehydration, purging) and explain their adverse effects on health and performance.

- Demonstrate how to monitor pulse rate, and encourage adolescents to participate in aerobic physical activity at 60 to 80 percent of maximum heart rate.

- Discuss the risk of using performance-enhancing products (e.g., protein supplements, anabolic steroids). Explain that consuming a diet high in protein or using protein supplements can be harmful and will not make muscles larger.

Referral

Referral to a physician and a dietitian is recommended for children and adolescents who have eating disorders or anemia, who consume unhealthy foods or who are on strict vegetarian diets, or who are overweight or underweight.
References


FREQUENTLY ASKED QUESTIONS ABOUT PHYSICAL ACTIVITY AND NUTRITION

■ How can I encourage healthy eating in my teenager?

Because teenagers like to experiment and try new things, try serving new foods and regional and ethnic foods.

■ My 12-year-old son’s coach recommends taking protein powder to build muscle. Does this really work?

No. Protein does provide the building blocks for muscle growth. Such growth comes from eating healthy foods and participating in regular physical activity, not from taking a protein powder. Your son will not be able to build muscle mass until he goes through his growth spurt.

■ My daughter has reduced her fat intake almost completely. Is this OK?

No. Fats are a source of essential fatty acids that are necessary for growth. When children and adolescents reduce their fat intake, they often do not replace the calories with other foods, which may compromise growth and development. Children and adolescents need to obtain an average of 30 percent of their calories from fat.

■ Does my child need to eat after a long training session?

Yes. Consumption of healthy foods and beverages after participating in physical activity is critical for all children and adolescents, particularly those who take part in long training sessions or competitions in which they participate in two or three events a day. The body is most receptive to replacing muscle carbohydrate (glycogen) during the first 2 hours after vigorous physical activity.

■ Should I give my child a vitamin and mineral supplement if he will not eat vegetables?

Children and adolescents can meet their nutrition needs in a variety of ways. Taking a vitamin and mineral supplement is OK, but it does not substitute for eating healthy foods. Most fruits and vegetables provide the same nutrients, so children and adolescents who do not eat vegetables can still get the necessary nutrients from eating a variety of fruits. Encourage your child to find a few fruits or vegetables that he likes. He may be willing to eat raw vegetables and dip, even if he will not eat cooked vegetables. Wash and cut up fruits and vegetables and keep them in a clear container (so they can be seen easily) in the refrigerator, along with low-fat dip or salsa. Put a bowl of fruit on the kitchen table or counter.
Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


Obesity is defined as the presence of excess adipose (fatty) tissue in the body. The term “overweight” may connote a milder degree of excess fat than “obesity,” but there are no clearly defined criteria to distinguish between the two terms. Thus, the two terms are used interchangeably.1

Although its underlying causes are not fully understood, obesity is a complex chronic disease involving genetics, metabolism, and physiology, as well as environmental and psychosocial factors. Unhealthy eating behaviors and low levels of physical activity are contributing to the continuing increase in the prevalence of obesity among children and adolescents.2

Significance

Obesity is a major public health problem. Studies have shown a dramatic increase in the prevalence of obesity among children (including those younger than 5 years of age) and adolescents.3,4 Data from the National Center for Health Statistics (NCHS) indicate that more than 1 in 5 children and adolescents in the United States are overweight.3

Few studies have examined the long-term effect of childhood or adolescent obesity on adult morbidity and mortality. Longitudinal studies of children followed into young adulthood suggest that overweight children may become overweight adults, particularly if obesity is present during adolescence.5–7 Overweight during adolescence affects blood pressure and blood lipid, lipoprotein, and insulin levels in adolescents.8 Perhaps the most widespread consequences of childhood and adolescent obesity are psychosocial, including discrimination.8,9

Health professionals need to be aware of the demographic and personal risk factors for childhood and adolescent obesity and be diligent in their prevention efforts and screening.2 Children and adolescents are considered at high risk for overweight if

- One or both parents are overweight.
- They are from families with low incomes.
- They have a chronic disease or disability that limits mobility.

In addition, members of certain racial/ethnic groups such as African-American female children and adolescents and Hispanic and American Indian/Alaska Native children and adolescents are considered at high risk for overweight.2–4

Prevention

Enough is known to guide efforts to reverse the trend of increasing obesity.2 Because obesity is difficult to treat, efforts need to focus on prevention. Although genetic influences largely determine whether a child or adolescent will become overweight, environmental influences may determine the manifestation and extent of obesity.

The primary strategies for preventing obesity are healthy eating behaviors (see the Nutrition chapter), regular physical activity, and reduced sedentary behaviors (e.g., watching television and videotapes, playing computer games). These strategies are part of a healthy lifestyle that should be developed during early childhood. The goal is to
promote and model positive attitudes toward eating and physical activity without emphasizing body weight. Behavioral techniques are needed to encourage healthy eating and physical activity behaviors.

Nutrition

Parents need information on how to encourage their children and adolescents to practice healthy eating behaviors, beginning in childhood. Suggestions include

- Gradually weaning infants from the bottle at about 9 to 10 months of age.
- Switching children from whole milk to reduced-fat, low-fat, or fat-free milk after 2 years of age.
- Limiting the consumption of high-sugar foods, including juices.
- Being aware of portion sizes, especially of high-fat and high-sugar foods.
- Limiting the consumption of convenience and fast foods.
- Encouraging family members to drink water.
- Encouraging children and adolescents to make healthy food choices based on the Dietary Guidelines for Americans and the Food Guide Pyramid. (See the Nutrition chapter.)

Physical Activity

Moderate amounts of physical activity are recommended on all, if not most, days of the week. Children and adolescents can achieve this level of activity through intense activities (e.g., hiking for 30 minutes) or through shorter, more intense activities (e.g., jogging or playing basketball for 15 to 20 minutes). Parents, recreation program staff, and health professionals need to promote physical activity in children and adolescents and help them increase their physical activity levels and decrease sedentary activities. For example, parents can playfully chase their children around the yard or playground, or encourage their children and adolescents to dance to music before dinner or ride a stationary bike while watching television. Parents can also get their children and adolescents involved in physical activity programs or organized sports, which can help increase skill levels and self-confidence, foster teamwork, and increase energy expenditures.
**Screening**

Body mass index (BMI) can be used to screen children and adolescents for obesity (Figure 6). BMI is calculated by dividing weight by the square of height (kg/m²) and can be plotted on a standard growth chart (see Tool H: CDC Growth Charts). BMI reflects body mass rather than body fat but correlates with measures of subcutaneous and total body fat in children and adolescents. Some children and adolescents have a high BMI because of a large, lean body mass resulting from physical activity, high muscularity, or frame size. An elevated triceps skinfold (i.e., above the 95th percentile on the CDC growth chart) can confirm excess body fat in children and adolescents.¹

Health professionals can use the following screening guidelines to determine whether a child older than 2 years or an adolescent is overweight:¹

- Children and adolescents with a BMI at or above the 95th percentile for age and sex are considered overweight and should receive an in-depth assessment.
- Children and adolescents with a BMI between the 85th and 95th percentiles for age and sex are considered at risk for becoming overweight and should be screened and evaluated, with attention focused on family history and secondary complications of obesity, including hypertension and dyslipidemia.
- Children and adolescents with an annual increase of 3 to 4 BMI units should be evaluated.

**Assessment**

In-depth assessments are required to identify children and adolescents with positive screens who are truly overweight, to diagnose any underlying causes and to provide a basis for treatment.

**Medical History**

A thorough medical history must be conducted to identify any underlying syndromes or secondary complications.

**Family History**

A family history is needed to identify risks for obesity. These risks include the presence of obesity, eating disorders, type 2 diabetes mellitus, cardiovascular disease, hypertension, dyslipidemia, and gallbladder disease in parents, siblings, aunts, uncles, and grandparents.⁷

**Dietary History**

A dietary history identifies eating practices, including the quantity, quality, and timing of foods consumed, and eating behaviors that may lead to excessive caloric intake and obesity.

**Physical Activity History**

A physical activity history is needed to determine children’s and adolescents’ physical activity levels as well as how much time they spend participating in sedentary behaviors. Contraindications to physical activity (e.g., uncontrolled asthma, joint disease) should be noted.
Physical Examination

A physical examination identifies children’s and adolescents’ degree of overweight and any potential syndromes and complications of obesity.

Laboratory Tests

Degree of overweight, family history, and the physical examination will guide the choice of laboratory tests.

Psychological Evaluation

Readiness to Change

A weight-management program for children, adolescents, or their families who are not ready to change may be both ineffective and harmful because it can affect the child’s or adolescent’s self-esteem and impair future weight-loss efforts. A practical way to address readiness is to ask members of the family how concerned they are about a family member’s weight, whether they believe weight loss
Depression

Overweight children and adolescents who are depressed may exhibit sleep disturbances, hopelessness and sadness, and appetite changes. As with eating disorders, depression in children and adolescents requires medical and psychological assessment and treatment.

Treatment

The primary goals of a program to treat uncomplicated obesity are for children and adolescents to achieve healthy eating behaviors, participate in regular physical activity, and achieve psychological well-being, instead of ideal body weight. The first step toward weight control for children older than 2 years of age and adolescents who are overweight is weight maintenance, which can be achieved by making modest changes in food intake and by participating in physical activity.

If weight loss is recommended by a health professional for medical reasons, the child or adolescent...
should lose only about 1 pound per month. An appropriate goal for children and adolescents who are overweight is a BMI at or below the 85th percentile, although such a goal should be secondary to the primary goal of practicing healthy eating behaviors and participating in regular physical activity.

Counseling

Health professionals can use the following guidelines for counseling children and adolescents who are overweight, and their families, to help children and adolescents obtain and maintain a healthy weight:

- Begin intervention early. Health professionals should initiate treatment suggestions described when children 3 years of age or older become overweight.
- Tell parents that children or adolescents should never be placed on a restricted diet to lose weight, except when a health professional recommends one for medical reasons and supervises it.
- Recommend that parents focus on gradually changing the entire family’s eating and physical activity behaviors instead of singling out the child or adolescent who is overweight.
- Help children and adolescents who are overweight deal with teasing.
- Encourage parents to monitor their child’s or adolescent’s eating and physical activity behaviors.
- Start slowly. Ask parents to suggest one or two eating or physical activity behaviors to change, and help them monitor the changes.
- Encourage parents to promote physical activity in their children and adolescents, and make it fun.
- Encourage children and adolescents to participate in physical activities they enjoy.
- Recommend that parents plan activities each week to encourage all family members to participate in physical activity.
- Encourage parents to be sensitive to the needs of their children and adolescents who are overweight. For example, some children and adolescents who are overweight may have difficulty with certain physical activities or may feel embarrassed when participating in them.
- Encourage children and adolescents to incorporate physical activity into their daily lives (e.g., by using the stairs instead of taking an elevator or escalator, by walking or riding a bike instead of riding in a car).
- Encourage parents to be positive role models by practicing healthy eating behaviors and participating in regular physical activity themselves.
- Encourage parents to participate in physical activity with their children and adolescents.
- Encourage children and adolescents to reduce sedentary behaviors (e.g., watching television and videotapes, playing computer games). Encourage parents to limit these activities to 1 to 2 hours per day.
- Encourage parents to praise their children and adolescents who have obtained or maintained a healthy weight.
- Inform parents, children, and adolescents about the health consequences of obesity.
- Recommend that parents focus on permanent behavior changes to help their children and adolescents obtain and maintain a healthy weight.

Children and adolescents should avoid short-
term diets and physical activity programs aimed at rapid weight loss.

• Norms for a healthy appearance vary across cultures. Counsel parents, children, and adolescents within the context of their culture.

**Referral**

Children and adolescents with serious complications of obesity need to be referred to a physician or pediatric obesity treatment program. Complications that indicate referral include pseudotumor cerebri, sleep apnea, obesity hypoventilation syndrome, Blount’s disease (tibia vara), slipped capital femoral epiphysis, severe overweight (above the 99th percentile), and severe overweight in children younger than 2 years of age.¹

**References**


11. 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.

FREQUENTLY ASKED QUESTIONS ABOUT PHYSICAL ACTIVITY AND OBESITY

- How can I encourage my daughter to be more physically active?

  Encourage active, spur-of-the-moment physical activity and play.

  Enroll your daughter in planned physical activities (for example, swimming, martial arts, gymnastics, or dancing).

  Participate in physical activity together (for example, play ball or bike, dance, or skate).

  Plan at least one special physical activity (for example, taking a hike or riding a bike) each week.

  Incorporate physical activity with your daughter into your daily life (for example, by using the stairs instead of taking an elevator or escalator, and by walking or riding a bike instead of driving a car).

  Involve your daughter in family chores (for example, raking leaves or walking the dog).

  For every hour your daughter reads, watches television and videotapes, or plays computer games, encourage her to take a 10-minute physical activity break.

- What should I do if my son seems overweight?

  If your son is growing, eats healthy foods, and is physically active, you do not need to worry about whether he is overweight. If he appears overweight, take him to a health professional for evaluation, and focus on gradually changing the entire family's eating and physical activity behaviors instead of singling out your son. The following tips will also be helpful, regardless of how much your son weighs:

  - Be a positive role model by practicing healthy eating behaviors and participating in regular physical activity yourself.
  - Plan family physical activities that everyone enjoys (for example, hiking, biking, or swimming).
  - Limit to 1 to 2 hours per day the amount of time your son watches television and videotapes and plays computer games.

- My daughter is overweight. How can I get her school to help?

  Discuss with school staff your concerns about your daughter’s weight and state that you would like their assistance in developing a coordinated effort involving both nutrition and physical activity. Explain that you want to help her develop healthy eating and physical activity behaviors. Often the child nutrition program director can help with choosing foods acceptable to both parent or child.

- How much physical activity is appropriate for my son, who is overweight?

  Children and adolescents who are overweight but have no medical complications usually benefit from moderate amounts of physical activity on all, if not most, days of the week. Your son can achieve this level of activity through intense activities (for example, hiking for 30 minutes) or through shorter, more intense activities (for example, jogging or playing basketball for 15 to 20 minutes).
How can I help my daughter, who is overweight, become more physically active?

Be sensitive to your daughter’s needs. Children and adolescents who are overweight may feel uncomfortable or embarrassed about participating in physical activity. Help your daughter find physical activities she enjoys and is comfortable with, and plan fun physical activities for the family.

Resources for Families

See Tool F: Physical Activity Resources for contact information on national organizations that can provide information on physical activity. State and local departments of public health and education and local libraries are additional sources of information.


