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Common Running Injuries

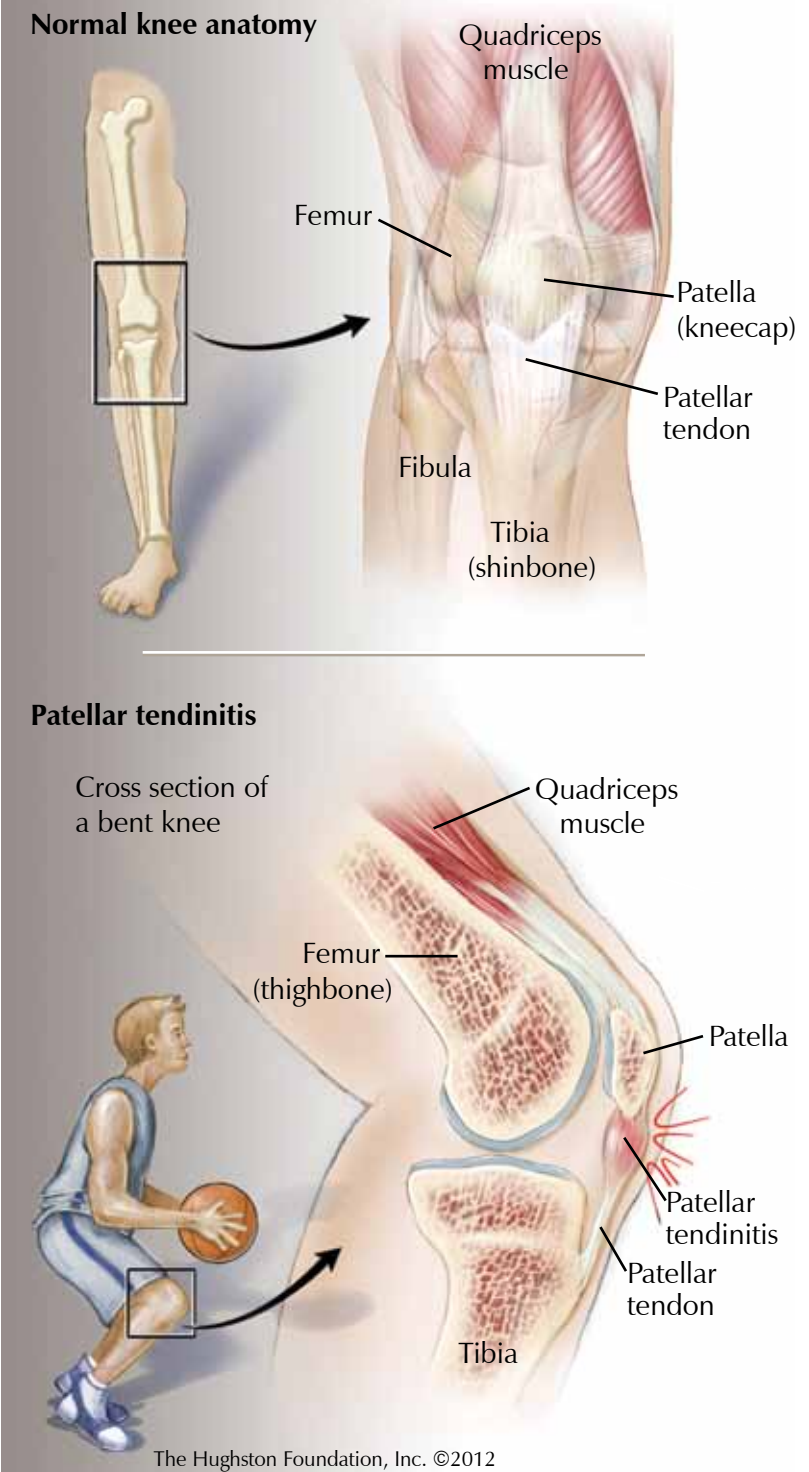
PATELLAR TENDINITIS, SHIN SPLINTS, AND IT BAND SYNDROME

If you are a runner, you can experience minor injuries, such as blisters or bruises; however, overuse injuries are what often put you out of the race. Patellar tendinitis, shin splints, and iliotibial (IT) band syndrome are common injuries you can experience if you run too hard, increase your mileage too quickly, or don't give yourself enough recovery time.

Patellar tendinitis

Patellar tendinitis, or jumper's knee, is an overuse injury that affects the tendon connecting your kneecap (patella) to your shinbone (tibia). The patellar tendon helps your muscles to extend your lower leg to kick a ball, push the pedals on your bike, and jump up in the air. Lengthening muscle contraction, also called eccentric loading, occurs when landing from a jump or decelerating. The eccentric loads are thought to be the primary cause of overload in patellar tendinitis. Patellar tendinitis occurs most often in athletes who play a sport involving frequent jumping, such as basketball, soccer, or volleyball (**Fig. 1**). The condition occurs when repeated overloading of the knee's extensor mechanism (the muscles, ligaments, and tendons that stabilize the knee joint) causes tiny tears in the tissue in and around the patellar tendon. If the activity

Fig. 1. Patellar tendinitis often occurs in athletes who play a sport involving frequent jumping.



causing the tears continues, the body does not have time to heal, resulting in pain and inflammation.

Symptoms

Pain is the first symptom of patellar tendinitis. During physical activity, the pain can be intense, especially when running or jumping. After a workout or practice, the pain can persist as a dull ache.

Causes

A combination of factors can contribute to the development of patellar tendinitis:

- Repetitive jumping or sudden increases in the frequency or intensity of physical activity,
- A change in playing surface, such as grass to asphalt,
- Being overweight or obese increases the stress on the patellar tendon,
- Tight leg muscles that cause decreased flexibility in the quadriceps (thigh muscles) and hamstrings (back of the thighs) can increase strain on the patellar tendon,
- Malalignment of your leg bones, such as valgus knee (knock-knee), can cause strain on your tendon,
- Your kneecap can be positioned higher than normal on your knee joint, causing increased strain on the patellar tendon,
- If some muscles in your legs are stronger than others, the stronger muscles can pull harder on your patellar tendon. The uneven pull can cause tendinitis.

RICE (Rest, Ice, Compression, Elevation)

Essential elements for managing pain and swelling

- **Rest** from your activity to allow the affected area to heal and to avoid further trauma to the injury.
- **Ice** can be applied for 20 minutes, 3 times a day to help eliminate swelling and discomfort.
- **Compression** can be applied using an elastic bandage or another type of compressive stocking to further combat swelling.
- **Elevation** can be accomplished by supporting the leg so it is above the level of the heart. This helps decrease swelling in the affected area.

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Treatment

Implementing the RICE regimen (*Rest, Ice, Compression, Elevation*), and taking nonsteroidal anti-inflammatory medication, such as aspirin or ibuprofen, are the initial recommended treatments. Strengthening the quadriceps helps to balance the forces across the patella and take pressure off the patellar tendon. Equally important as strengthening, hamstring stretching plays a significant role in taking pressure off the front of the knee. Once the inflammation is controlled, a runner with mild to moderate jumper's knee can begin an exercise program focusing on eccentric (lengthening) strengthening exercises. Neoprene sleeves or braces similar to those worn by tennis players with tennis elbow can help decrease or disperse the forces on the patella.

Surgery is reserved for patients who do not improve after nonoperative management and have debilitating pain for 6 to 12 months. Surgical goals include removing damaged tissue from the tendon and stimulating blood flow to promote healing.

Prevention

To prevent patellar tendinitis, warm-up with stretching before exercising, avoid activities that cause you pain, and rest between activities to give your body a chance to recover. If you are starting a new exercise regimen, concentrate on a gradual increase in repetitive eccentric quadriceps contraction so the tendon can begin to withstand repetitive loading.

Shin splints

Shin splints cause pain and tenderness in the front of the lower leg. Also referred to as medial tibial stress syndrome, shin splints often develop after physical activity, such as vigorous exercise or running (**Fig. 2**). As with most overuse conditions, the repetitive activity leads to inflammation of the muscles, tendons, and periosteum (thin layer of tissue covering a bone) of the tibia, causing pain.

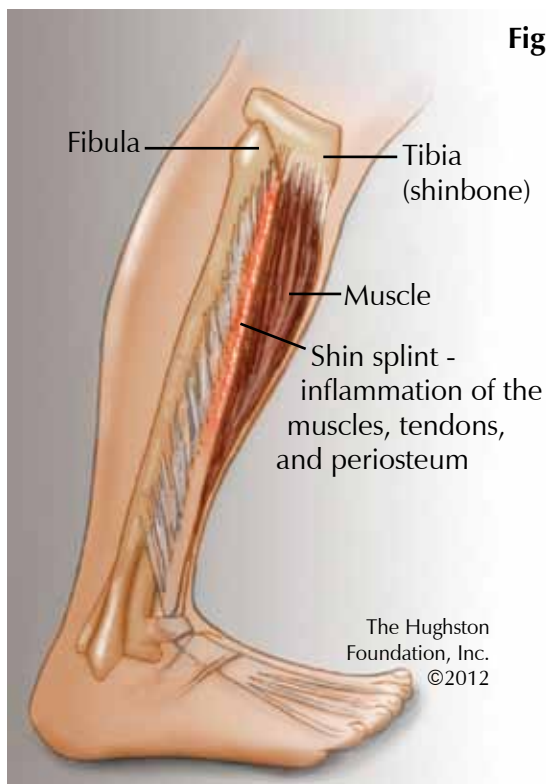
The condition often affects runners, aerobic dancers, and people in the military. It can develop after sudden changes in physical activity, such as running longer distances than usual or on hills, running on cement with improper shoes, or increasing the number of days you exercise each week. Flat feet can also contribute to increased stress on the lower leg muscles during exercise.

Treatment

As with most overuse conditions, initial treatment of shin splints consists of several weeks of rest from the activity that caused it and taking anti-inflammatory medications. The use of cold packs and mild compression and stretching the calf muscles are recommended, as well.

After several weeks of rest, low-level training can begin. Make sure to warm-up and stretch before exercise. Increase your training slowly, and if the same pain is experienced,

Fig. 2. Shin splints



the exercise should be stopped. Use a cold pack and rest for a couple of days. Return to training again at a lower level of intensity and increase your training at a slower rate than before.

Iliotibial (IT) band syndrome

IT band syndrome is a common knee injury caused by inflammation in the lower portion of the IT band (**Fig. 3**). The band originates at the iliac crest and extends to the patella (kneecap), tibia (shinbone), and biceps femoris tendon (hamstring). The IT band is a thick band of fascia (connective tissue) that is formed by the merging of fascia from hip flexors, extensors, and abductor muscles.

IT band syndrome often occurs in runners and cyclists and is caused by a combination of overuse and biomechanical factors. Excessive friction of the lower portion of the IT band can occur as it slides over the lateral femoral epicondyle (outer part of the thighbone) during flexion and extension of the knee.

Symptoms

Over time the achy symptoms can progress to sharp, localized pain over the lateral femoral epicondyle or the lateral tibial tubercle where the IT band inserts onto the shinbone. Often, pain begins after the completion of a run or several minutes into a run; however, as the IT band becomes increasingly irritated, the symptoms begin earlier in an exercise session and can even occur when you are at rest. Pain is often aggravated while running downhill, lengthening your stride, or sitting for long periods of time with your knee in the flexed position.

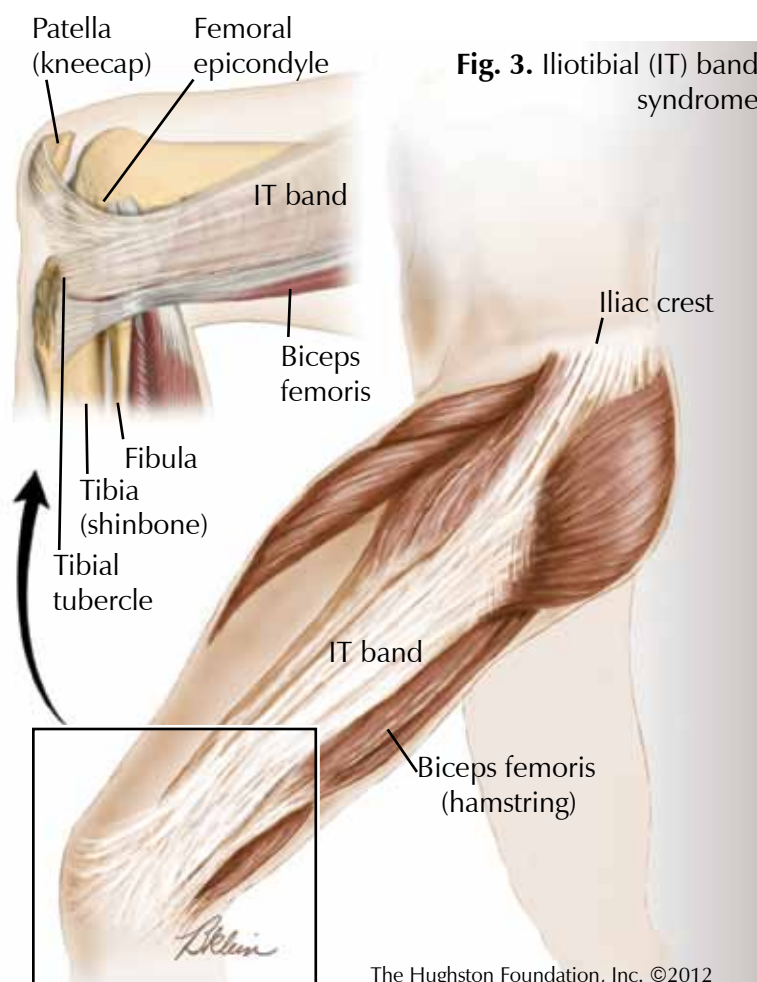
Treatment

Initial treatment includes the RICE regimen and taking anti-inflammatory medications. Any activity that requires repeated knee flexion and extension should be stopped. The goal is to decrease the friction of the IT band as it slides over the femoral condyle. Massage and stretching can also help. Once you can stretch without pain, strengthening can begin. Emphasis should be placed on the hip abductor muscles, specifically the gluteus medius muscle and overall core muscles. Once strengthening exercises can be done without pain, a gradual return to running can begin at an easy pace on a level surface. A corticosteroid injection over the tender area often reduces pain and inflammation. If nonoperative treatment fails and symptoms persist, surgery can be performed which involves releasing a portion of the IT band where it passes over the lateral epicondyle of the femur.

For most overuse injuries, the RICE treatment can help to reduce the pain and symptoms. To avoid an overuse injury, warm-up before running, cool down and stretch after you run, and increase your mileage and intensity slowly. Allow your body to adjust to any increase by slowly progressing to a harder or longer run.

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Fig. 3. Iliotibial (IT) band syndrome



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Corticosteroid Injections

Corticosteroids are drugs that closely resemble the naturally occurring hormone cortisol produced in your adrenal gland. Synthetic, or man-made, corticosteroids are useful in treating a number of medical conditions. Orthopaedists often use corticosteroid injections, commonly known as steroid injections, to decrease inflammation that causes pain in joints and soft tissue.

How are the injections used?

Corticosteroids are often injected directly into a joint to relieve pain associated with osteoarthritis, rheumatoid arthritis, juvenile rheumatoid arthritis, gout, systemic lupus erythematosus (an autoimmune disorder), or ankylosing spondylitis (a disease that causes inflammation of the joints of the spine). Injections into soft tissues can be done to treat symptoms associated with athletic injuries, overuse syndromes, and nerve compression.

Studies have shown that when patients with osteoarthritic joints are treated with intra-articular corticosteroid injections to relieve pain and to control the inflammation of the synovium (tissue lining the joint), they have increased joint motion, decreased night pain, and decreased overall stiffness. Decreased pain allows patients to participate in physical therapy and exercise programs that can increase strength and flexibility and improve joint health.

Before an injection, the skin is cleaned to prevent infection. A topical spray can also be used to numb the skin before the injection. The corticosteroid medication may be combined with a local anesthetic to numb the area. The numbing usually lasts a short time but depends on the type of local anesthetic used.

It is difficult to predict the exact level or duration of pain relief you can expect to experience after an injection. Corticosteroid injections are thought to be safe to administer once every 3 months for up to 2 years. If the relief gained from the injection is minimal, or if it wears off too quickly, repeating the injection may be useless.

What are the side effects?

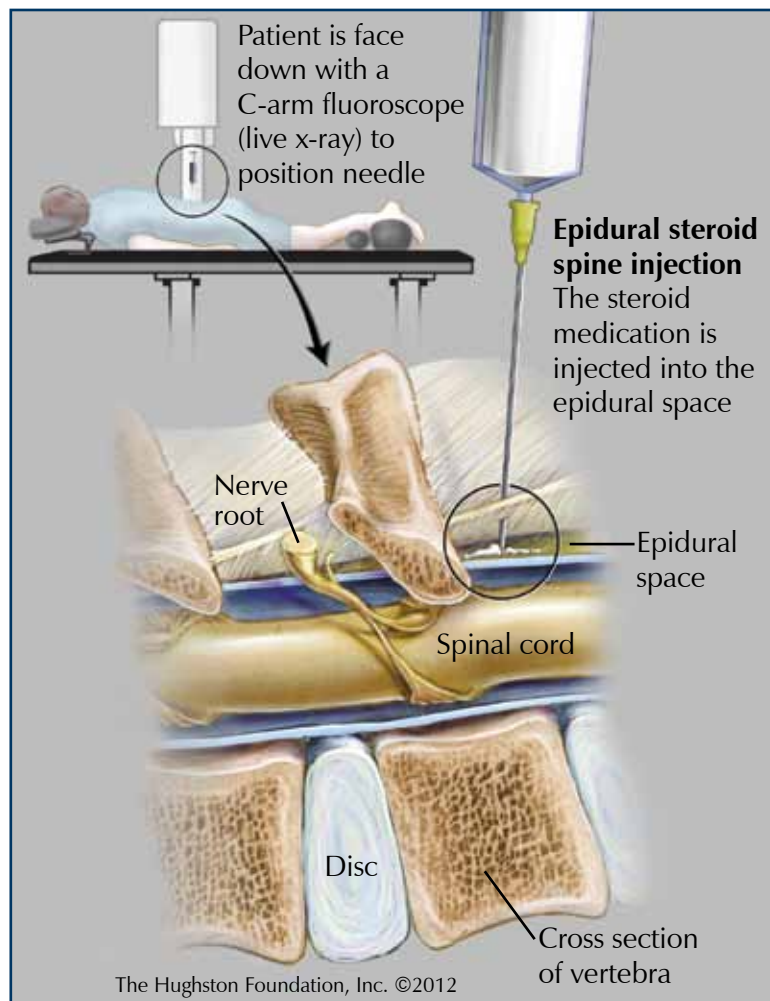
The side effects of steroid injections are often mild. On the day of the injection, 1% to 10% of patients experience a condition called postinjection flare. The flare can cause pain at the injection site or in the joint; it can be managed with ice packs and over-the-counter pain medications. The injection flare usually subsides within 2 days. Facial flushing can occur within a few hours of an injection and can last a few days. Loss of skin pigment and atrophy (shrinkage) can also occur at the site of the injection.

Systemic side effects are very rare, but they can include a mild, temporary increase in blood sugar levels. A decrease in your body's normal cortisol production can also occur. The decrease is often associated with the simultaneous injection of 2 larger joints, such as the knee or hip. For this reason, injecting more than 1 joint at a time is done cautiously.

Although infection is rare with a corticosteroid injection, any sign of infection—redness, increasing pain, swelling, or fever—should prompt a call to your physician or a visit to the emergency department. Injections are not recommended if you have an existing infection because the infection can spread and cause serious complications—especially in a joint.

Corticosteroid injections are a good option for patients who experience joint pain because the risks and side effects are often minimal. Injections can be a good alternative for you when surgery is not an option because of other health conditions or if you simply don't want to have surgery. If you have an injection, you should follow your doctor's recommendations, which can include limiting sport or activity and beginning physical therapy.

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Impetigo

Impetigo is a highly contagious bacterial skin disorder that often affects infants and children. Caused primarily by 2 types of bacteria, *Staphylococcus aureus*, the most common cause of infection, or *Staphylococcus pyogenes*, impetigo can be transmitted through contact with an infected person or contact with a surface that has been infected. The infections often occur in warm humid environments, and sores appear on the body where previous skin disease or injury occurred. They most often appear on the face, arms, legs, and trunk. Impetigo usually runs its course without a fever. Contact sports, such as football and wrestling, have an increased incidence of transmission.

Treatment

If an athlete appears to have impetigo, he or she should be withdrawn from contact sports and activities and be immediately referred to a physician for treatment. The sooner contamination is stopped and treatment begins, the less likely it is that others will become infected. Treatment includes keeping the affected areas clean, applying topical antibiotics, and taking prescribed oral antibiotics.

According to the National Federation of State High School Associations physician release form, which can be obtained at: www.ghsa.net, to be considered

“noncontagious,” all lesions must be scabbed over with no oozing or discharge and no new lesions should have occurred in the preceding 48 hours. Oral antibiotics for 3 days is considered a minimum to achieve that status. If new lesions continue to develop or drain after 72 hours, CA-MRSA (community-associated methicillin-resistant *Staphylococcus aureus*) should be considered and oral antibiotics should be extended to 10 days before returning the athlete to competition or until all lesions are scabbed over, whichever occurs last. If a designated on-site physician is present at an event, he or she may overrule the diagnosis of the physician signing the physician release form for an athlete to participate or not participate with a skin condition.

Prevention

Clean and sanitize equipment and surfaces that may have been contaminated from contact with impetigo blisters or sores. Mats, towels, and other equipment, especially equipment that can be shared, should be cleaned daily to prevent the spread of impetigo and other infections. Athletes should practice good hygiene by treating cuts and wounds right away by washing the injury and applying antibiotic ointment. Washing hands frequently can also help to prevent the spread or reoccurrence of infection.

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3 types of impetigo

Nonbullous impetigo

- Itching, usually associated with eczema
- Often a culture is needed to verify infection
- Red sores that quickly rupture and form a yellowish-brown crust



Photo courtesy of Joshua E. Lane, MD ©2012

Bullous impetigo

- Itching
- Painless, fluid-filled blisters
- Wash with soap and water twice a day, if not effective an antiseptic wash may be recommended by a physician for older children and adults



Photos courtesy of Clark H. Cobb, MD, FAAFP ©2012

Ecthyma (more serious form)

- Itching
- Painful, pus-filled sores that turn into deep ulcers
- A physician may need to remove dead tissue to help with healing
- Possible scarring



Lightning Safety

FOR ATHLETIC TRAINERS, COACHES, AND PARENTS

With warmer weather approaching, we are looking forward to more outside activities. Along with the increase in temperatures comes the occurrence of sudden thunderstorms. Lightning is among the top 3 causes of death by nature, but often deaths can be avoided if proper precautions are taken.

The National Lightning Safety Institute* suggests following these 7 safety tips during outside sporting events:

1. A responsible person should be designated to monitor weather conditions. Local weather forecasts from The Weather Channel, NOAA Weather Radio, or local TV stations should be monitored 24 hours before an athletic event. An inexpensive portable weather radio can be used for up-to-date storm data, as well.
2. Suspending and resuming athletic activities should be planned in advance. Know what safe shelter is near in case evacuation becomes necessary. Safe sites include substantial buildings, such as a clubhouse. If no building is available, go to an enclosed vehicle and keep the windows up. If you must remain outside, reduce the amount of body contact with the ground, such as standing on your tip toes crouched down, but do not lie flat or in a fetal position.



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Follow this safety slogan

If you can see it, flee it;
if you can hear it, clear it.

3. Unsafe shelters include all outdoor metal objects, such as flagpoles, fences, gates, high mast light poles, metal bleachers, golf carts, and machinery. Avoid trees, water, open fields, and high ground.
4. You can calculate the distance lightning is from you. If you hear thunder, it and the associated lightning are within auditory range, which is about 6 to 8 miles away. The distance from Strike A to Strike B can also be 6 to 8 miles; therefore, you and the athletes are within striking range. You should follow this lightning safety motto: "If you can see it (lightning), flee it; if you can hear it (thunder), clear it."
5. If you feel your hair standing on end or hear "crackling noises," you are in the lightning's electric field. If caught outside during close lightning, immediately remove metal objects (including your baseball cap), place your feet together, duck your head, and crouch down low in a baseball catcher's stance with your head down and hands on your ears.
6. Wait a minimum of 30 minutes from the last observed lightning or after hearing thunder before resuming activities.
7. People who have been struck by lightning do not carry an electrical charge and are safe to touch. If you are qualified to do so, apply first aid and call 911 to get emergency help.

Weather devices can provide accurate methods for measuring your distance from a storm. The devices can be expensive but are often well worth the cost. The best prevention is to be aware of your surroundings and to seek shelter immediately upon seeing the signs of an incoming storm. For more information about how you and your athletes can stay safe on the field, go to <http://www.lightningsafety.com/>.

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*Safety tips reprinted with permission from the National Lightning Safety Institute.

Childhood Obesity

Over time, man has improved his quality of life in many ways. Inventions, such as the light bulb, the airplane, and air conditioning have made life easier. However, the most significant life-changing advancement is the transition from the hunter-gatherer survival method to the agricultural practices we know today. The development of sustainable agricultural methods has provided us with increased leisure time, but it has also facilitated the obesity epidemic that stems from readily available, high-calorie food sources.

A recent survey by the Centers for Disease Control and Prevention reveals that 32% of American children are overweight and 17% are obese. Statistics show that only 54% of children are involved with gym class and only 84% of those children exercise for more than 20 minutes during that time. At home, approximately 21% of children spend more than 3 hours a day on a computer, and 37% watch more than 3 hours of television each day.

The problem

Childhood obesity poses a significant risk to a child's personal health; it carries a tremendous healthcare burden with its disease-related costs; and it causes a significant number of loss in work hours for working parents. Some of the more disconcerting findings include the following:

- 4% of obese children have type II diabetes,
- 50% experience depression,
- 33% experience anxiety,
- 25% of children and 21% of adolescents have high non-fasting glucose levels between 140 and 200,
- an increased risk of high blood pressure, high cholesterol, and sleep apnea,
- Blount's disease and slipped capital femoral epiphysis (2 disorders of the growth plates of the tibia and femur) are seen almost exclusively in obese children.

The solution

Many factors contribute to childhood obesity, but the most obvious factor is excessive caloric intake coupled with decreased energy expenditure. To put it plainly—too many snacks, sodas, and video games, and too few veggies and too little exercise. This statement, although obvious, does not help children to lose weight. Research has shown that breast fed children have a significantly lower risk of obesity, and babies born to mothers who smoke have a higher risk of obesity. Moreover, children learn their behaviors from their parents; therefore, obese adults are more likely to have obese children, and those children are more likely to become obese adults. The reverse is also true; obese

Metabolism

The rate which your body uses calories to support life:

Healthy Food Portions
(Consumed Calories)

= or <

Physical Activity
(Burned Calories)

10 X
your weight
(lbs)

=

Calories needed
to maintain
current weight

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Weight Loss Example

<u>Starting weight:</u>	<u>Goal weight:</u>
130 lbs	100 lbs
10 x 130 lbs =	10 x 100 lbs =
1,300 calories	1,000 calories

Rate of weight loss:
This is a difference of 30 lbs and 300 calories per day. Safely reducing your diet by 500 calories per day = 1 lb of weight lost per week.

Therefore, it would take approximately 30 weeks or 4.3 months to lose the weight.

To maintain a weight of 100 lbs
Consuming 1,000 calories = Burning 1,000 calories

parents who exercise with their children and eat healthier foods are both more likely to lose weight and become more physically fit. Regular family meals around the dinner table, rather than eating in front of the television or computer, also encourage healthier weights.

Pediatricians can often facilitate weight loss programs and are vital in a child's routine health maintenance by monitoring blood pressure, blood glucose levels, and kidney and liver function. For severely obese children with related health problems, some doctors recommend surgical intervention to decrease caloric intake. For most, however, eating a healthy diet, increasing physical activity, and avoiding high calorie foods and sugary drinks can lead to weight loss. Childhood obesity is treated most effectively with the help of parents who are healthy role models.

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