

Treatment of Sprains/Strains/Contusions

Treatment

Acute soft-tissue injuries vary in type and severity. When an acute injury occurs, initial treatment with the RICE protocol is usually very effective. RICE stands for Rest, Ice, Compression, and Elevation.

- **Rest.** Take a break from the activity that caused the injury. Your doctor may recommend that you use crutches to avoid putting weight on your leg.
- **Ice.** Use cold packs for 20 minutes at a time, several times a day. Do not apply ice directly to the skin.
- **Compression.** To prevent additional swelling and blood loss, wear an elastic compression bandage.
- **Elevation.** To reduce swelling, elevate the injury higher than your heart while resting.

The most common soft tissues injured are muscles, tendons, and ligaments. These injuries often occur during sports and exercise activities, but sometimes simple everyday activities can cause an injury.

Sprains, strains, and contusions, as well as tendinitis and bursitis, are common soft-tissue injuries. Even with appropriate treatment, these injuries may require a prolonged amount of time to heal.

Cause

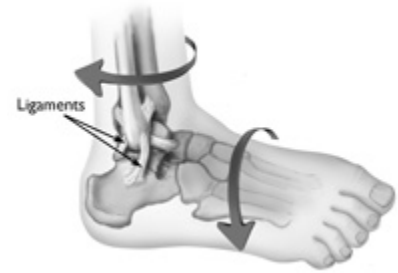
Soft-tissue injuries fall into two basic categories: acute injuries and overuse injuries.

- Acute injuries are caused by a sudden trauma, such as a fall, twist, or blow to the body. Examples of an acute injury include sprains, strains, and contusions.
- Overuse injuries occur gradually over time, when an athletic or other activity is repeated so often, areas of the body do not have enough time to heal between occurrences. Tendinitis and bursitis are common soft-tissue overuse injuries.

Sprains

A sprain is a stretch and/or tear of a ligament, a strong band of connective tissue that connect the end of one bone with another. Ligaments stabilize and support the body's joints. For example, ligaments in the knee connect the thighbone with the shinbone, enabling people to walk and run.

The areas of your body that are most vulnerable to sprains are your ankles, knees, and wrists. A sprained ankle can occur when your foot turns inward, placing extreme tension on the ligaments of your outer ankle. A sprained knee can be the result of a sudden twist, and a wrist sprain can occur when falling on an outstretched hand.



Right: A twisting force to the lower leg or foot is a common cause of ankle sprains. *Reproduced from The Body Almanac. © American Academy of Orthopaedic Surgeons, 2003.*

Sprains are classified by severity:

- **Grade 1 sprain (mild):** Slight stretching and some damage to the fibers (fibrils) of the ligament.
- **Grade 2 sprain (moderate):** Partial tearing of the ligament. There is abnormal looseness (laxity) in the joint when it is moved in certain ways.
- **Grade 3 sprain (severe):** Complete tear of the ligament. This causes significant instability and makes the joint nonfunctional.

While the intensity varies, pain, bruising, swelling, and inflammation are common to all three categories of sprains. Treatment for mild sprains includes RICE and sometimes physical therapy exercises. Moderate sprains often require a period of bracing. The most severe sprains may require surgery to repair torn ligaments.

Strains

A strain is an injury to a muscle and/or tendons. Tendons are fibrous cords of tissue that attach muscles to the bone. Strains often occur in your foot, leg (typically the hamstring) or back.

Similar to sprains, a strain may be a simple stretch in your muscle or tendon, or it may be a partial or complete tear in the muscle-and-tendon combination. Typical symptoms of a strain include pain, muscle spasm, muscle weakness, swelling, inflammation, and cramping.

Right: A severe hamstring injury where the tendon has been torn from the bone.



Soccer, football, hockey, boxing, wrestling and other contact sports put athletes at risk for strains, as do sports that feature quick starts, such as hurdling, long jump, and running races. Gymnastics, tennis, rowing, golf and other sports that require extensive gripping, have a high incidence of hand sprains. Elbow strains frequently occur in racquet, throwing, and contact sports.

The recommended treatment for a strain is the same as for a sprain: rest, ice, compression and elevation. This should be followed by simple exercises to relieve pain and restore mobility. Surgery may be required for a more serious tear.

Contusions (Bruises)

A contusion is a bruise caused by a direct blow or repeated blows, crushing underlying muscle fibers and connective tissue without breaking the skin. A contusion can result from falling or jamming the body against a hard surface. The discoloration of the skin is caused by blood pooling around the injury.

Most contusions are mild and respond well with the RICE protocol. If symptoms persist, medical care should be sought to prevent permanent damage to the soft tissues.

Common Overuse Soft-Tissue Injuries

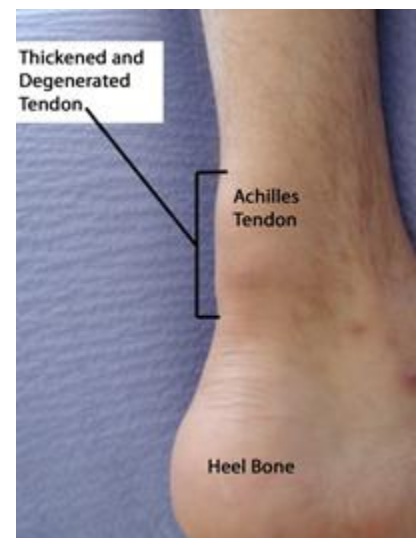
Tendinitis

Tiny tears in the Achilles tendon cause it to swell and thicken.

Tendinitis is an inflammation or irritation of a tendon or the covering of a tendon (called a sheath). It is caused by a series of small stresses that repeatedly aggravate the tendon. Symptoms typically include swelling and pain that worsens with activity.

Professional baseball players, swimmers, tennis players, and golfers are susceptible to tendinitis in their shoulder and arms. Soccer and basketball players, runners, and aerobic dancers are prone to tendon inflammation in their legs and feet.

Tendinitis may be treated by rest to eliminate stress, anti-inflammatory medication, steroid injections, splinting, and exercises to correct muscle imbalance and improve flexibility. Persistent inflammation may cause significant damage to the tendon, which may require surgery.



Bursitis

Bursae, are small, jelly-like sacs that are located throughout the body, including around the shoulder, elbow, hip, knee, and heel. They contain a small amount of fluid, and are positioned between bones and soft tissues, acting as cushions to help reduce friction.

Bursitis is inflammation of a bursa. Repeated small stresses and overuse can cause the bursa in the shoulder, elbow, hip, knee or



ankle to swell. Many people experience bursitis in association with tendinitis.

Bursitis can usually be relieved by changes in activity and possibly with anti-inflammatory medication, such as ibuprofen. If swelling and pain do not respond to these measures, your doctor may recommend removing fluid from the bursa and injecting a corticosteroid medication into the bursa. The steroid medication is an anti-inflammatory drug that is stronger than the medication that can be taken by mouth. Corticosteroid injections usually work well to relieve pain and swelling.

Although surgery is rarely necessary for bursitis, if the bursa becomes infected, an operation to drain the fluid from the bursa may be necessary. In addition, if the bursa remains infected or the bursitis returns after all nonsurgical treatments have been tried, your doctor may recommend removal of the bursa.

Removal (excision) of the bursa can be done using a standard incision (open procedure), or as an arthroscopic procedure with small incisions and surgical instruments. Your doctor will talk with you about the best procedure for your medical needs.

Prevention

Injuries often occur when people suddenly increase the duration, intensity, or frequency of their activities. Many soft-tissue injuries can be prevented through proper conditioning, training, and equipment. Other prevention tips include:

- **Use proper equipment.** Replace your athletic shoes as they wear out. Wear comfortable, loose-fitting clothes that let you move freely and are light enough to release body heat.
- **Balanced fitness.** Develop a balanced fitness program that incorporates cardiovascular exercise, strength training, and flexibility. Add activities and new exercises cautiously. Whether you have been sedentary or are in good physical shape, do not try to take on too many activities at one time. It is best to add no more than one or two new activities per workout.
- **Warm up.** Warm up to prepare to exercise, even before stretching. Run in place for a few minutes, breathe slowly and deeply, or gently rehearse the motions of the exercise to follow. Warming up increases your heart and blood flow rates and loosens up other muscles, tendons, ligaments, and joints.
- **Drink water.** Drink enough water to prevent dehydration, heat exhaustion, and heat stroke. Drink 1 pint of water 15 minutes before you start exercising and another pint after you cool down. Have a drink of water every 20 minutes or so while you exercise.
- **Cool down.** Make cooling down the final phase of your exercise routine. It should take twice as long as your warm up. Slow your motions and lessen the intensity of your movements for at least 10 minutes before you stop completely. This phase of a safe exercise program should conclude when your skin is dry and you have cooled down.

- **Stretch.** Begin stretches slowly and carefully until reaching a point of muscle tension. Hold each stretch for 10 to 20 seconds, then slowly and carefully release it. Inhale before each stretch and exhale as you release. Do each stretch only once. Never stretch to the point of pain, always maintain control, and never bounce on a muscle that is fully stretched.
- **Rest.** Schedule regular days off from vigorous exercise and rest when tired. Fatigue and pain are good reasons to not exercise.
- **Avoid the "weekend warrior" syndrome.** Try to get at least 30 minutes of moderate physical activity every day. If you are truly pressed for time, you can break it up into 10-minute chunks.

Reference: <http://orthoinfo.aaos.org/>