Ankle Sprains

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What is this injury?
A sprained ankle is a stretching or tearing of the ligaments (connective tissue holding bone to bone) on either the outside (lateral) or inside (medial) part of the ankle. Since most sports require full body weight support on the ankles as well as full range of motion when running, jumping, and landing, it's no surprise that ankle sprains represent the most common of all sport injuries. A sprain of the lateral ankle ligament is much more common than a sprain of the medial ankle ligament, partly because of the biomechanical demands of most weight-bearing sporting events and partly because the lateral ligament is thinner and weaker than the medial ligament.

Diagram of Lateral Ankle Sprain
Ankle sprains are classified as Grades 1, 2, or 3, depending on the severity of injury. In all cases, there is damage to the ligament or ligaments and to connective tissue between bones of the ankle complex. Sprains are not to be confused with ankle strains, which involve damage to muscle and tendon (connective tissue joining muscle to bone). Grade 1 sprains are mild and usually reflect stretching of the ligament fibers. Grade 2 ankle sprains are moderate in severity and characterized by both stretching and tearing of ligament fibers. Grade 3 ankle sprains involve complete tearing of one or more ligaments.

How does the injury occur?
Ankle sprains occur when the foot turns in a way that causes body weight to be supported by ankle ligaments. Lateral sprains happen when the lower leg rolls over the ankle to the lateral side, pressing the bottom of the foot inward, a movement known as foot inversion. Medial sprains occur when the lower leg rolls over the ankle to the medial side, forcing the bottom of the foot outward (called foot eversion). Many victims of either common type of ankle sprain report hearing a snap or pop at time of injury and thus think the ankle has been broken.

Perhaps the activity that most often causes ankle sprain is landing after a jump or a vault. A gymnast might sprain an ankle when dismounting equipment, a basketball player when rebounding a ball. Ankle sprains also occur during changes of direction while running, such as in soccer and rugby. But an ankle can also be sprained while walking or running over uneven surfaces, or even while simply stepping off a curb.

What are the symptoms?
Probably the most striking symptom of ankle sprain is instant and severe pain. Weight bearing by the affected foot is usually very painful, though a Grade 1 sprain might briefly accept some weight, resulting in a hobble. Swelling occurs rapidly, usually within the first few minutes, with discoloration over the area of the damaged ligament following within five to 20 minutes. The amount of swelling and discoloration depends on severity of damage to the ligament and to adjacent blood vessels. Range of motion of the afflicted ankle is reduced immediately because of pain, and subsequently reduced due to swelling.
How is the injury diagnosed?
A review of conditions surrounding the injury can aid in diagnosis. Your physician will perform an examination to include tests of the ligaments in order to determine the severity of your injury. In some cases, swelling may be marked, and you will need to be seen in a follow-up visit to test the ankle. It is necessary in many cases, especially in instances of Grade 2 and 3 sprains, to x-ray the ankle to ensure that a fracture has not occurred.

How is the injury treated?
Immediately upon suffering the injury, and for 48 hours subsequently, the proven treatment is rest, ice, compression, elevation (RICE), followed by early mobilization. Treating the injured area with ice compresses or gentle ice massage helps constrict damaged blood vessels and control swelling. Likewise, compression via application of an elastic bandage or similar device controls swelling. Elevation of the damaged ankle prevents gravity from pulling fluid to and through ruptured capillaries in the injured area, thus reducing swelling. In spite of these measures, considerable swelling will occur.

For a Grade 1 sprain, the RICE treatment described above plus support of the ankle with either a light brace or elastic bandage for two or three weeks is usually sufficient for rehabilitation. Weight bearing and early mobilization is appropriate when reduced pain allows it. In fact, care should be taken to avoid overprotection of the injury. Use of the injured part as pain allows is therapeutic.

Grade 2 sprains benefit from RICE and respond similarly to Grade 1 sprains. However, a Grade 2 sprain usually requires a longer period of relative rest, sometimes up to three to four weeks, and often a stiff brace, as opposed to an elastic bandage, is required. In most cases, Grade 2 sprains are also slower to accept weight bearing. Crutches may be required initially. Again, the ankle should bear weight only as reduction of pain permits.

Grade 3 sprains of the ankle represent a true therapeutic challenge. Forty-eight hours of RICE as described above is essential. A stiff ankle brace is necessary, and casting may be required. Use of crutches is usually necessary due to pain from weightbearing. As with less serious sprains, pain should dictate initiation of weight bearing. In severe cases, surgery may be required to ensure a stable joint in the future. Such surgery is more likely to be recommended for professional and semiprofessional athletes than for others.

How long will the effects of the injury last?
Grade 1 sprains are usually fully rehabilitated within two to four weeks. For Grade 2 sprains, major symptoms should disappear in two to six weeks. Duration of effects of Grade 3 sprains vary widely. The best scenario is to have full weight bearing within two to eight weeks, but in some cases pain upon weight bearing persists for months after the injury. Some doctors claim recovery from a fracture is often quicker than recovery from a Grade 3 ankle sprain. Patience is key to full recovery. In the case of an athlete, return to play should be delayed until pain is gone and all movements appropriate to the sport can be easily and effectively performed.

When can I return to my sport or activity?
This is a question best answered by a health care professional, with the patient’s input. No one knows more about the pain than the patient does. Gentle activity often provides useful information. If gentle movements are unaccompanied by pain, they can be tried with greater vigor. As general guidelines, if an athlete’s activity is not a contact sport, he or she might return to modest intensities of activity two to four weeks after
a Grade 1 sprain. A Grade 2 sprain needs six to eight weeks of recovery before modest activity should be attempted. Return to activity after a Grade 3 sprain should be closely supervised by a health care professional. As a rule, a return to modest activity following a Grade 3 sprain should not be expected for two to three months. In the case of contact sports, return to full activity is not recommended until all movements essential to the sport can be performed effectively and without pain.

Patience is important. A too early returning to activity can lead to more serious reinjury. Once sprained, the ankle may be more susceptible to injury. Coming back a week early might result in lost months of activity later.

**How can I prevent the injury?**
As evidenced by their high incidence of occurrence, preventing ankle sprains is a challenge. Rehabilitating an ankle sprain, often through the direction of a physical therapist or athletic trainer, may help prevent recurrent injury.

The next section describes rehabilitative exercises for a sprained ankle. Continuing these exercises after the rehabilitation period helps prevent later injury.

To prevent ankle sprains, be sure all protective equipment pertinent to the activity, including shoes, is in good condition. Also ensure that playing surfaces are in good states of repair. Never play on a field or court with holes, cracks, or unevenness.

**Rehabilitation?**
Rehabilitation in the case of Grades 1 and 2 sprains can begin on a small scale almost immediately. With the foot elevated, gently move the foot through as much of its range of motion as pain and swelling will allow. As days pass, greater ranges of motion can be achieved. Never go beyond the point of pain.

With most sprains, even Grade 3, serious rehabilitation can begin after three weeks.
Resisted Plantarflexion: Use an elastic band to provide resistance to downward movement of the forefoot as shown in the following illustration. Press toes downward, and then allow them to return to the starting position. Ten repetitions are recommended. This exercise may be done several times a day.

![Resisted Plantarflexion](image1)

Assisted Dorsiflexion: Use an elastic band to provide only slight resistance to upward movement of the forefoot as shown in the following illustration. Pull toes upward with the help of the elastic band, then allow them to return to the starting position. Ten repetitions are recommended. This exercise may be done several times a day.

![Assisted Dorsiflexion](image2)
1. **Achilles Stretch**: Begin with stretching of the Achilles tendon (heel cord), using the jogger's wall push illustrated below. The afflicted leg should be extended backward from the wall 18 to 24 inches. With hands on the wall, lean inward until stress is felt in the back of the extended leg. Perform 10 repetitions. This exercise can be done several times daily.
Resisted Eversion: As shown in the following illustration, make a loop of a piece of elastic band or tubing. Place uninjured foot within the loop, just under the ball of the foot. As the tubing is anchored around uninjured foot, turn injured foot outward using the band for resistance and then allow both feet to return to the starting position for 10 repetitions. This exercise can be repeated several times daily.
**Resisted Inversion:** As shown in the following illustration, make a loop of a piece of elastic band or tubing. Place injured foot within the loop, just under the ball of the foot. Cross legs so that injured foot is underneath. Use uninjured foot to slowly turn injured foot inward, with elastic band for resistance.
*Heel Raises:* Heel raises against body weight strengthen the ankle and increase its range of motion. See the illustration below. Begin with two-legged heel raises. When pain in the affected ankle is minimal, perform single-leg raises.

![Heel Raises Illustration](image)

**Heel Raises**

Usually after six to eight weeks, depending on the severity of the injury, slow jogging may be recommended by a health care professional. Pain must be the guide for duration and intensity of jogging.

It is suggested that for Grade 2 and 3 sprains, proprioceptive training and sports-specific training are extremely important for recovery. These techniques can be done with a physical therapist or athletic trainer.