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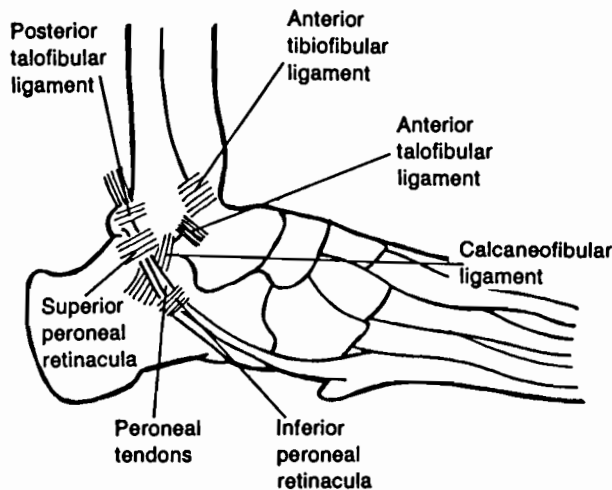
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# Ankle Sprains

Ankle sprains are one of the most common acute athletic injuries. Unlike overuse injuries, which result from low-grade stresses applied repeatedly over long periods of time, acute injuries develop from sudden blows or twists.

Ankle sprains can affect either side of the ankle but most frequently damage the lateral (outside) ligaments. This occurs when the foot turns under the leg, stretching the ligaments to the point where they may tear or rupture (lateral ankle joint ligaments are shown in Figure 5.4).



**Figure 5.4** The lateral ankle ligaments are most frequently injured in ankle sprains.

## Degree of Sprain

Sprains are graded as mild, moderate, or severe. A mild sprain usually affects only the anterior talofibular ligament, causing a partial rupture. A moderate sprain involves the anterior talofibular and calcaneofibular ligaments, resulting in increased damage to the structure of the ligaments. A severe sprain affects these two ligaments as well as the posterior talofibular ligament and may result in their complete rupture or, occasionally, a fracture of adjacent bones.

## Treatment

The degree of sprain determines treatment necessary and how long it takes before resuming regular exercise. Although some mild sprains may allow a return to activity in 2 or 3 days, the seriousness of a moderate or severe ankle sprain should not be underestimated. Improper treatment may result in a chronically unstable ankle that is prone to repeated injury, forces limitation in sports activities, causes early arthritis in the ankle joint, and eventually results in the need for surgery. For the athlete to avoid these complications, each ankle injury should be evaluated and treated properly.

## Mild Sprains

Mild ankle sprains cause some initial discomfort, mild swelling, and little or no bruising. Treatment should include immediate discontinuation of the physical activity, icing the ankle as soon as possible for 20 to 30 minutes, and applying an elastic wrap. The affected foot should be kept elevated as much as possible. If swelling persists, icing should be repeated several times a day. Make an ice "popsicle" by freezing water in plastic or paper cups and tearing away the sides to expose the ice. This initial treatment is referred to as RICE—rest, ice, compression, and elevation. With mild ankle sprains, RICE usually needs to be continued for only 2 or 3 days, followed by a gradual return to running.

## Moderate Sprains

Moderate ankle sprains cause a greater amount of pain around the outside of the ankle than mild sprains as well as increased swelling and bruising within 12 to 24 hours. Initial treatment is the same as for mild sprains: using the RICE method. In addition, moderate sprains require increased protection, such as a soft cast, to allow proper healing of the ligaments. Anyone with a suspected moderate to severe sprain should seek professional help, because

of possible ligament damage. X-rays should be taken to rule out any bony damage. Immobilization of the moderate ankle sprain may have to be continued for 2 or 3 weeks. After the ligaments have healed, exercise involving the ankle can gradually be resumed. (A rehabilitation program will be described later.)

### Severe Sprains

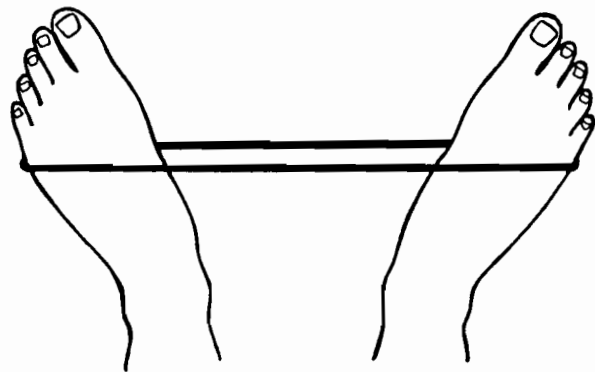
A severe ankle sprain is a serious injury. A tearing or popping may be heard or felt. There is immediate pain, with swelling within 5 minutes of the injury. Although it may be possible to walk on the ankle immediately afterward, pain and swelling increase over the next 30 minutes, until it becomes difficult to walk. There may be extensive bruising over the outside of the ankle, foot, and leg. Walking or running right after a severe ankle injury worsens swelling and bruising, and more damage to the ligaments results.

Initial treatment, as with lesser ankle injuries, is RICE. Crutches may be necessary to help completely rest the injured ankle. A professional examination and x-rays should be obtained as quickly as possible. If there is a complete rupture of the ankle ligaments, surgical repair may be required. If all the ligaments have been damaged but the ankle is still stable (this can be determined by stressing the ankle while taking x-rays), a cast may be necessary for 4 to 6 weeks. After recovery from a severe ankle sprain, a period of rehabilitation is needed.

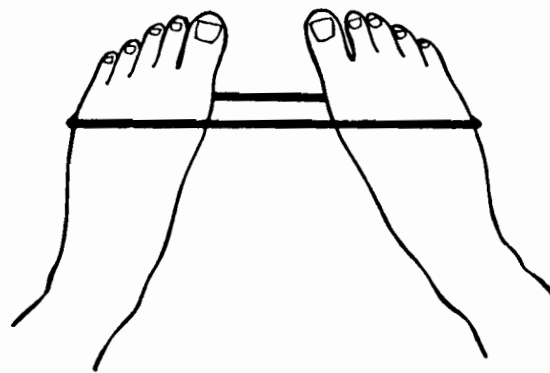
## Ankle Rehabilitation

An ankle rehabilitation program should be started after the ankle ligaments have had adequate time to heal, a period determined by the severity of the ankle sprain. Following the program below, begin with the first exercise and do not proceed to the next until the first can be done without pain. If you have any doubt about whether you can perform these exercises, check with your doctor.

1. Range-of-motion exercises without resistance. While sitting, move your foot up and down at the ankle 30 to 40 times. Then, invert (turn the foot in) and evert (turn the foot out) 30 to 40 times. This should be repeated three or four times daily.
2. Inversion-eversion exercises while standing. While standing with your feet 12 to 18 inches apart, alternate raising the inside and outside of the feet with your knees slightly bent. Repeat 20 to 30 times, three to four times a day.
3. Peroneal muscle strengthening. Place a large rubber band, cut from an inner tube or thick elastic material, over your toes while sitting on the floor with your legs straight. With the rubber band providing resistance, evert your foot (see Figure 5.5). Ankles should be 4 to 6 inches apart. Slowly allow the foot to invert (see Figure 5.6). This should be repeated 20 to 30 times, three times a day. If there is pain along the outside of the ankle, the exercises should be reduced in number so they can be done without pain, and then increased gradually.



**Figure 5.5** Use your feet and ankles to stretch the band out or evert your feet.



**Figure 5.6** Use your feet and ankles to slowly release the band or invert your feet.

4. Toe walking, with shoes. Stand on your toes with your shoes on and walk around for as long as you can, or up to 5 minutes. Repeat two or three times a day.
5. Heel walking, with shoes. Walk on your heels with your shoes on for as long as you can, or up to 5 minutes. Repeat two or three times a day.
6. Gradual return to activity. As the exercises increase the strength in your ankles and the pain diminishes, you can gradually return to running and other normal fitness activities. When walking becomes comfortable, a slow jog can be started, including running large figure eights. Start with a large, slow figure eight, 20 to 30 yards in length, and gradually shorten the distance and tighten the turns. This helps to increase range of motion in the ankle and strengthen the surrounding stabilizing muscles.

As you increase your activity, some soreness may be noticed afterward. This can be reduced by applying heat for 5 minutes before exercising and ice afterward for 10 to 15 minutes.

Return to normal activity gradually. Exercises should be increased only if there is no pain. Returning too quickly may result in re-injury more serious than the original sprain, which will take even longer for recovery.

### **Prevention**

A continued program for prevention of additional injuries should be carried out after your rehabilitation program. Tape or an elastic wrap should be used to support your ankle for

4 to 6 weeks after starting to exercise again. Strengthening exercises, particularly peroneal muscle strengthening, should be continued for 2 or 3 months. If you have had any history of repeated ankle sprains, exercises and the elastic ankle wrap should be continued indefinitely.

Ankle sprains are one of the most common injuries sustained by athletes. They should be taken seriously. Accurate diagnosis, a proper treatment program based on the severity of the injury, adequate rehabilitation, and preventive measures are all necessary for complete recovery from an ankle injury without later complications.

### **Suggested Reading for "Ankle Sprains"**

- Cetti (1982)
  - Crean (1981)
  - Hutson & Jackson (1982)
  - Kay (1985)
  - Laughlin et al. (1980)
  - Mack (1982)
  - Nemeth & Thrasher (1983)
  - Sando (1984)
  - Scheller et al. (1980)
  - Smith & Reischl (1986)
  - Stover (1980a, b)
  - Tropp et al. (1985)
  - Vesso & Harmon (1982)
  - Wilkerson (1985a, b)
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