

Ankle Sprains

The past several articles on running injuries have focused on overuse injuries incurred when runners exceed their body's limit through running too hard, too fast or too soon.

Another type of running injury encompasses trauma that renders a runner immediately in pain, usually with acute disability and frequently resulting in cessation of running. These are so-called “acute injuries” as opposed to chronic overuse injuries. Acute injuries can affect anyone, athlete or not, in shape or not! You often cannot prevent them from occurring, but I will mention some simple precautions you can take both before and during running to avoid one of the most common acute injuries: ankle sprains.

Our recent Running Room Sunday half marathon long run group began as usual with the formation of a 1 1/2 hour group, a 2 hour group and a “to finish” group. Roberta had just joined the half marathon group and was looking forward to finishing her first half marathon in less than 2 hours. She had a good foundation of running and had worked on hills and strength training. She had also just begun her speed workouts so was on top of her training — perhaps even “over-training” a little. The long run had been underway for 75 minutes when she “went over” on her ankle while running on the sidewalk with her group. The sidewalk had frequent dips in it to accommodate driveways into the homeowners’ garages. She fell to the road and complained of severe pain on the outside of her right ankle. Her fellow runners helped her stand. She was reluctant to put pressure on her foot. Bearing any weight caused severe pain on the outside of her ankle. She became aware of pressure in her ankle and soon saw a large area of swelling along the outer edge of her ankle just above her running shoe. It was about the size of a lemon. Unable to walk without pain, Roberta was able to get a taxi to return her to the Running Room store and take her car home. She was still able to “hobble” a few steps so felt she probably had not broken or fractured her ankle. What should she do know? Go to her local emergency room? Phone her family physician? Talk to a friend who is knowledgeable in sports injuries?

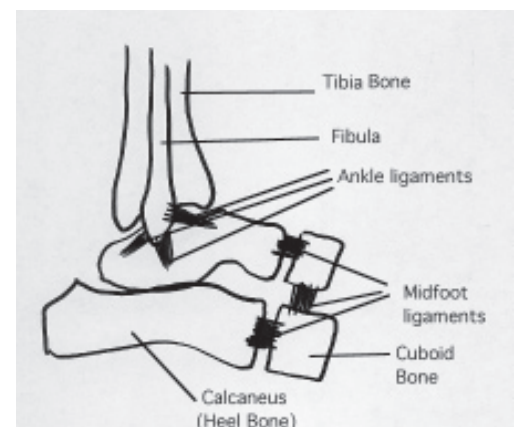
Roberta sought the advice of another runner who had suffered a sprained ankle in the past. Upon comparing notes, she felt a period of RICE (Rest, Ice, Compression, Immobilization) would be logical at this time, anticipating that a few hours of delay would not jeopardize the outcome if her ankle injury were more serious than originally thought.

Anatomy

The ankle joint is one of the most vulnerable areas of the body to suffer the stresses of running. The ankle is the joint that connects the foot to the leg and hence the rest of the body to the ground. The ligaments on the outside (lateral) of the ankle are the most prone to injury. Here there are three main ligaments, each or all of which may be stretched or torn completely. These are known as the lateral collateral ligaments of the ankle. A multitude of other bones and joints in the foot require their own unique and individual ligaments for stability. These include the calcaneal-cuboid joint and the cuneiform and cuboid bones. (Figure 1).

Figure 1. Ankle Ligaments

Ankle sprains refer to an injury that results in the tearing of any of the ligaments of the ankle. Ligaments are strong tissues that attach to the adjacent bones of a joint and are intended to give stability to the joint and limit excessive movement. Sprains are usually graded according to the severity of the injury. A Grade 1 sprain refers to a mild stretch of some of the ligament fibres only. You are able to initially walk on the ankle without much discomfort. There may be some swelling but recovery is usually complete in only a few days. Grade 2 injuries imply more trauma than Grade 1. The runner may feel a tearing sensation or “popping” sound. There is often quite impressive swelling over the injured ligament(s) appearing often in a matter of minutes. Walking is very painful but possible. These



injuries may take two to four weeks to completely heal. Grade 3 injuries refer to a complete tear usually of all the ligaments of the ankle: often all three lateral collateral ligaments. Fellow runners may also hear the popping sound of the ligaments tearing. There may not be dramatic swelling with Grade 3 injuries compared to Grade 2 since the ankle joint capsule is also torn thereby allowing the blood, which causes the swelling, to dissipate and diffuse around the ankle and not form as localized or dramatic-looking a “lump.” You probably cannot take any more than a few steps and usually need help to walk. Complete ligament tears can take six weeks for most of the reparative process to occur, and in some situations surgery may be required to repair the ligaments.

The more serious injuries do require a visit to your local emergency department or clinic. You may need to have an X-Ray taken to rule out or diagnose a fracture or break in the one of the ankle bones. Most people are not sufficiently trained to decide by themselves whether or not an X-Ray is needed. The Quebec Protocol is a system used to determine if X-rays are needed. Your local clinic or ER department may refer to these guidelines.

	Grade 1	Grade 2	Grade 3
Extent of injury	Partial	Partial	Complete
Localized Swelling	Yes	Yes	No
Able to walk	Yes	Yes—limps	No
Can self-treat	Yes	Partial	No
Visit to Emergency	No	No	Yes
X-Ray required	No	No	Yes
Complete recovery	Yes	Usually	Maybe not

Table 1: Summary of Signs, Symptoms and Early Management for Ankle Sprains

Treatment

In the past, an ankle sprain was treated with a prolonged period of immobilization in a cast. New evidence suggests that faster healing and return to activity is achieved by more rapid mobilization following an ankle sprain. This means that in the absence of a complete tear of all the ankle ligaments (Grade 3) or a fracture (broken bone), early weight bearing and light running can be done after only a few days of rest. The lessening of the ankle swelling is a good indicator that you can begin gentle running. Sometimes an air cast or air splint gives additional support to make running more comfortable.

The initial management (first 12 to 24 hours) of an ankle sprain should involve resting the leg. This means staying off it as much as possible—no long walks or running for a few days. You should apply an ice pack to the area of swelling as soon as possible after the injury. Elevation is always good initial advice. “Elevation” also keeps you from walking on your leg! A light compressive tensor bandage or wrap will also help to control excessive swelling.

During all this initial treatment, instituting some active range of movement (ROM) exercises is probably one of the most important thing you can do. While sitting or lying on your back, point your leg upwards and make gentle circular movements, first with your whole leg and then concentrating mainly on your ankle movement. You could trace imaginary figure 8 loops in the air. This helps maintain ROM, decrease eventual stiffness and dissipate swelling. This exercise should be done three times a day for five minutes each time.

Physiotherapy is usually an integral part of the rehabilitation process for ankle sprains. This is particularly important if you suffer from “recurrent” ankle sprains; i.e. more than one or two ankle sprains in a two-year period. The therapy usually involves strengthening the everters or outside muscles of the ankle (the peroneal muscles). Probably more important is stretching of the heel cord complex since mild underlying heel cord tightness is one of the most common associated findings leading to ankle sprains. Proprioceptive and biofeedback procedures are also useful.

Prognosis

Ankle sprains, if treated early and properly, will usually heal completely. If Grade 2 or Grade 3 ankle sprains are incompletely treated, the ligaments may become loose, resulting in chronic ankle instability and leading to recurrent ankle sprains. Recurrent ankle sprains may require surgery to avoid the development of “post-traumatic” degenerative osteoarthritis of the ankle.

Hints & Precautions

(especially for someone already prone to ankle sprains):

- Have appropriate running shoes that provide adequate heel counter support
- Maintain flexibility through regular stretching of the Achilles tendon complex
- Ensure your muscles are strong enough to support your running activity
- Try to run on level surfaces
- If running on uneven surfaces, keep an eye out for changes in terrain
- Use a head light or flashlight if running in the dark



Figure 2. Mechanism of Ankle Inversion

Figure 3. Appearance of an ankle sprain several days later

