

Ankle Sprain

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by

William Cappiello, M.D., and Darlene Weedman, M.A., ATC
Department of Sports Medicine and Orthopedics

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I Introduction

The ankle is one of the most commonly injured joints in sports activities. As a major weight-bearing joint, it is also susceptible to injury even with daily activities. Of all possible ankle injuries, a ligament injury, or sprain, is the most common. When people sprain their ankle joints, they usually know instantly. A tear or “pop” is felt on the outside (rarely the inside) of the ankle. After several minutes of intense pain, the symptoms may improve temporarily, and the person may feel as if they can “walk off” the injury. However, with significant injury, pain and tenderness will return, accompanied by swelling and later bruising.

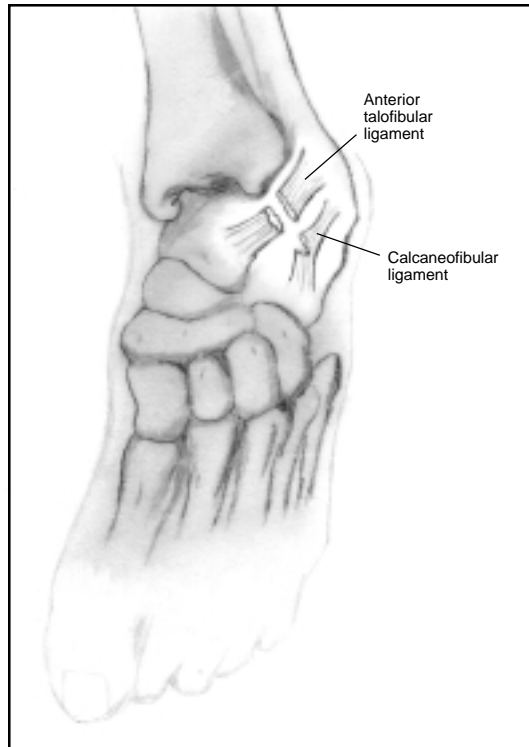
Although the symptoms can be quite severe, most ankle sprains will recover completely without the need for surgery or casting. The key to the return of normal function is rehabilitation coupled with appropriate activity modifications. In this brochure, we will attempt to give you the information you need to assist in your full recovery.

II. Classification of Ankle Sprains

Sprains usually occur from traumatic twisting injuries where the ankle most often “turns in.” Common examples are when a person lands awkwardly from a jump, or inadvertently steps on someone else’s foot and “rolls” the ankle. These twisting forces stretch and/or tear the ligaments and sometimes the surrounding connective tissues. A ligament is a specialized part of the deep connective tissue layer that connects the two ends of the bone across the involved joint. The important ankle joint ligaments and pertinent anatomy are detailed in the next section.

Ligament sprains are classified into three types. A first degree sprain is a stretch of the ligament without disruption of its fibers. It involves some swelling and tenderness but because the ligament remains intact, there is no resulting joint laxity.

A second degree sprain is a partial tear of one or more of the ankle ligaments and sometimes the surrounding connective tissues. In this case, some instability of the joint will be present. A third degree sprain is a complete tear and will result in an unstable joint. Despite tearing and damage to these tissues, normal stability of the ankle is recoverable with proper care.



Sports Drills:

Figure 8s: Start at an easy pace, with gentle, larger turns.

Gradually increase the speed and “tighten up” the loops.

Shuttle run: Run a short distance, stop suddenly, pivot, and then run back toward the original starting point. A modification of this would be sharp cuts in a zig-zag pattern, alternating the side you are pivoting on.

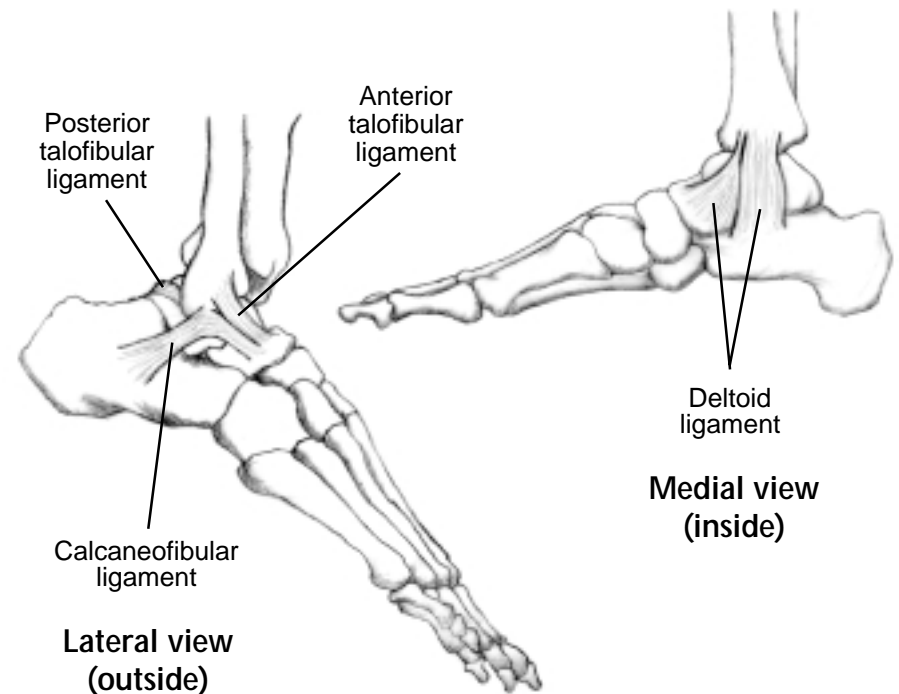
Hops: Practice hopping on both feet at first, with short or shallow hops, progressing to higher and faster ones. Eventually, this should be done with one leg only. Hopping side to side is a modification of this drill which is useful.

Backwards and sideways running: Change direction from forward to backward running by “crossing over” your feet. This drill may be done sideways also, initially crossing left foot over right and then switching sides.

If all of the phases of rehabilitation have gone well and your ankle feels strong and pain free with the drills, regular activities may be resumed.

III. Anatomy

The ankle joint is formed by the connection of the two lower leg bones, the tibia and the fibula, with the talus bone of the foot. As mentioned, the ligaments are specialized expansions of the deep joint capsule which connect the bones across the joint and provide support and stability. On the inside of the ankle, there is one broad, thick and tough ligament that prevents the ankle from everting, or turning out. On the outside of the ankle there are three distinct ligaments, as indicated in the diagram, that help prevent the ankle from turning in. The bony bump on the outside of the ankle from which the lateral ligaments originate is called the *lateral malleolus*, and the one on the inside is called the *medial malleolus*. Muscles, tendons, and of course the skin surround the ankle joint and its capsule. The muscles help contribute to the stability of the joint.



IV. Injury

An ankle sprain, with damage to one or more ligaments, causes pain and tenderness, swelling, and bruising. The ligament and tissue trauma cause fluid to accumulate in the area, which increases pressure and causes additional pain. Ice and elevation help control these symptoms but it is not unusual for them to last 2 to 6 weeks depending on the severity of the injury. Blood collects in the damaged area and accounts for the bruising that is seen—color changes in the bruising occur as healing progresses. A health care professional will be particularly careful to determine whether or not fracture of the bone has occurred, and X-rays may be done.

Resumption of Sports Activities (Phase III):

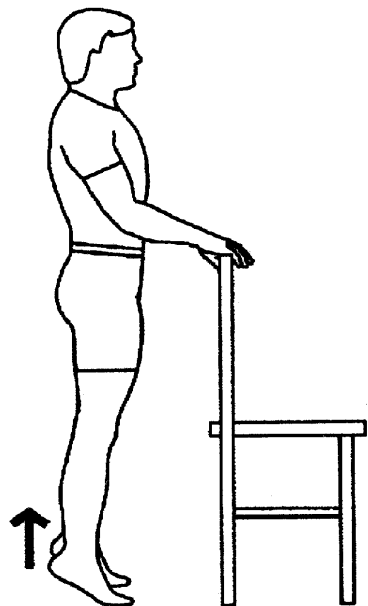
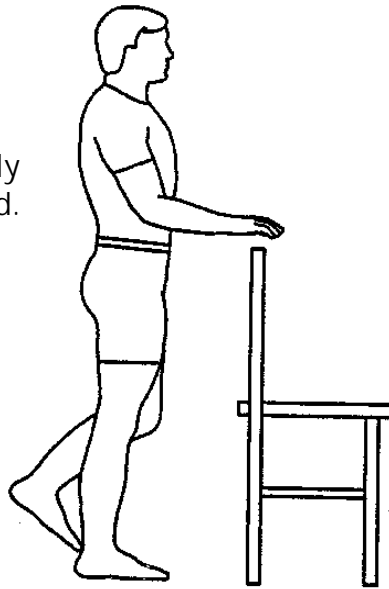
Return to sports is sometimes difficult depending on the severity of the injury. A more thorough weight training program is suggested to regain overall lower extremity strength and endurance prior to return. Following an ankle injury, the decision of when to return to sports or other demanding activities can be tricky. Your symptoms of pain and swelling are not totally reliable, but may be used as guidelines. Generally speaking, you should expect not to resume running and jumping activities until there is no pain with daily activities, including brisk walking. When you reach that point (which may be 6-8 weeks after the initial injury), you may try running straight ahead for a brief duration or distance. If this activity is tolerated well, you should gradually increase your running activity 3-5 times/week until you achieve a reasonable training duration for your planned sports or exercise goals. If you then wish to return to a demanding pivoting or cutting activity (soccer, basketball, etc.), we recommend a series of increasingly demanding drills to test your ankle. The rapidity of progression through these drills depends in part on your confidence and on what happens to your ankle as you introduce the new activity. Before moving on to the next drill, you should increase the speed of the drill. The ones we list are examples—we encourage you to design your own activities which may be more suitable to the sport(s) in which you are involved. Often a coach or athletic trainer will be able to assist you with the program. Good luck and remember to keep up with the foundation of strengthening and conditioning exercises in order to prevent recurrent injury.

- Single Leg Balance: Stand, using chair for balance if needed. Slowly raise uninjured foot off the ground. Attempt to maintain balance without support. Perform 1 set of 10 repetitions, 1-2 times a day. Hold exercise for 10-20 seconds.

To progress exercise:

Perform with

- eyes open eyes closed
- ball toss balance board



- Standing Calf Raises: Stand as shown and raise up on balls of feet. Progress to single leg calf raises. Lift uninjured foot off ground and raise up on injured foot only. Perform 2 sets of 10 repetitions, twice a day.

V. Treatment

In the acute stage of the injury the best treatment is: **RICE**

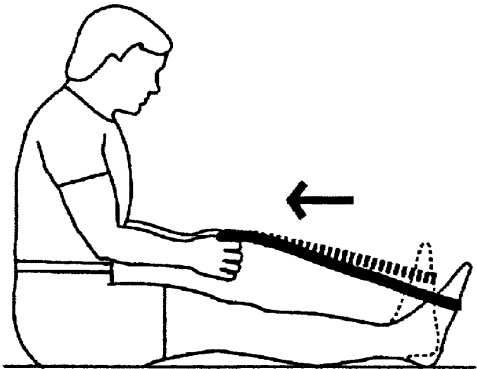
- R**EST or modified activity, is essential to prevent further swelling and tissue damage. Examples of modified activity include less walking, easy bicycling, and water exercises instead of running and jumping activities.
- I**CE should be applied for 15 minutes 3-5 times a day until swelling, pain and bruising are gone.
- C**OMPRESSION using a felt pad and ace bandage or other supportive device will also help control the swelling and support the injured joint.
- E**LEVATION as much as possible, keeping the foot and ankle above the heart when lying down.

VI. Rehabilitation

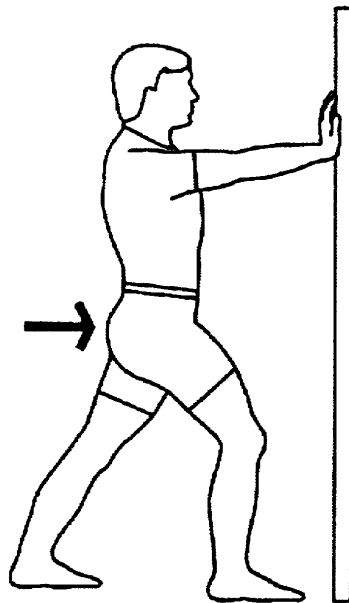
Rehabilitation consists of stretches, exercises to gain ankle motion, and strengthening exercises. Stretching and range-of-motion exercises can begin immediately following an injury. All stretches should be held for 30 seconds. Rest between stretches and perform 3-4 repetitions 2-3 times a day.

Stretches:

- Seated towel stretch: Sit as shown, loop a towel around ball of foot. Gently pull on towel until a stretch is felt in calf. Perform with a straight knee to stretch the *gastrocnemius* muscle.

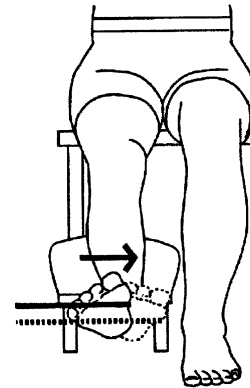
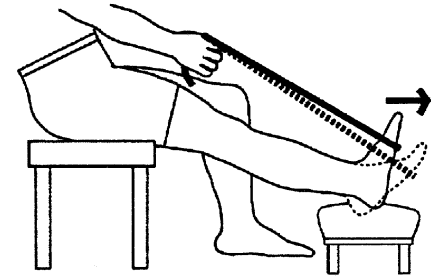


- Standing gastroc stretch: Stand facing the wall with back leg straight and heel on the floor. Lean into the wall, bending elbows, until a stretch is felt in the calf. Repeat again with the back knee bent to stretch the *soleus* and *achilles tendon*.

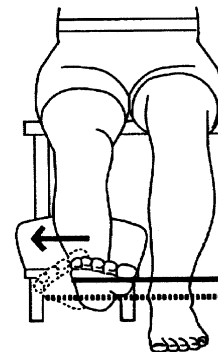


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- Theraband Plantar Flexion: Hold elastic in hand and loop one end around ball of foot. Push away against elastic.



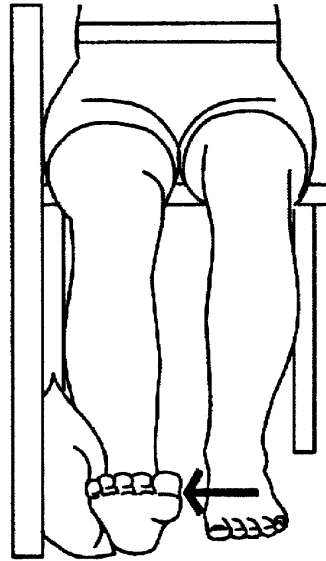
- Theraband Inversion: Support calf and secure elastic as shown. Pull forefoot inward against elastic using only ankle motion. Do not allow the knee to move.



- Theraband Eversion: Support calf and secure elastic as shown. Pull forefoot outward against elastic using only ankle motion. Do not allow the knee to move.

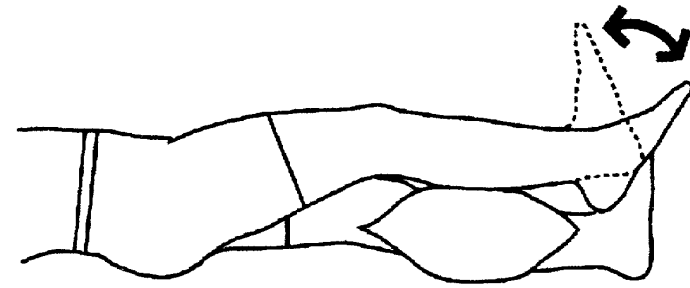
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- Isometric Eversion:** Sit with outside of foot against a wall. Place a pillow between foot and wall. Push outward against pillow as shown. Hold 10 seconds. Repeat 15 times, twice a day.



Range-of-Motion Exercises:

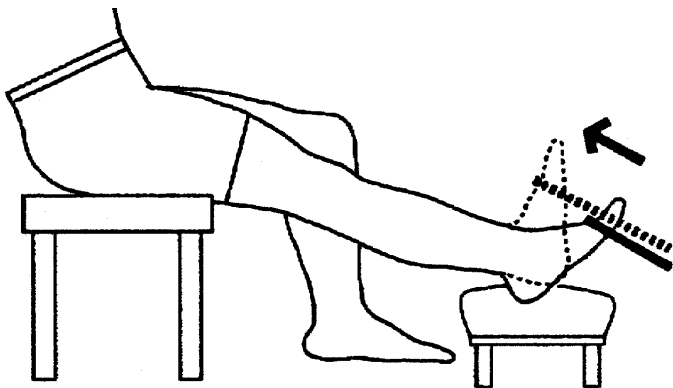
- Elevated ankle pumps:** Lie on back with foot elevated on a pillow. Move foot up and down, pumping the ankle. Repeat 15 times, 3 times a day.



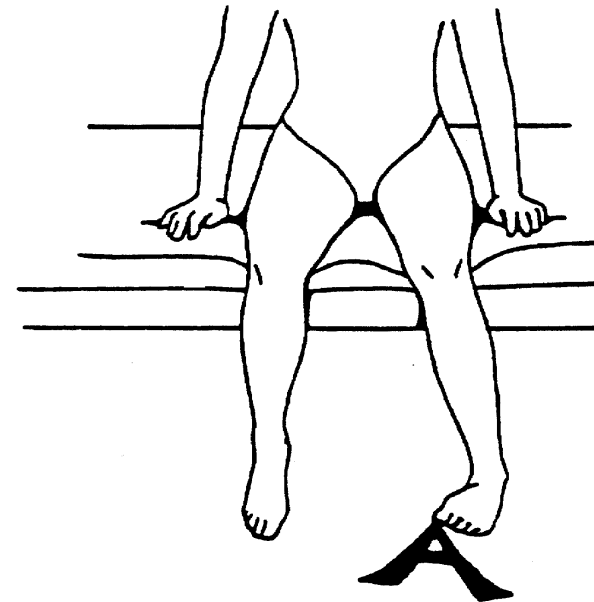
Strengthening Exercises (Phase II):

For all exercises do 3 sets of 15 repetitions once a day. Begin with yellow elastic and progress as tolerable.

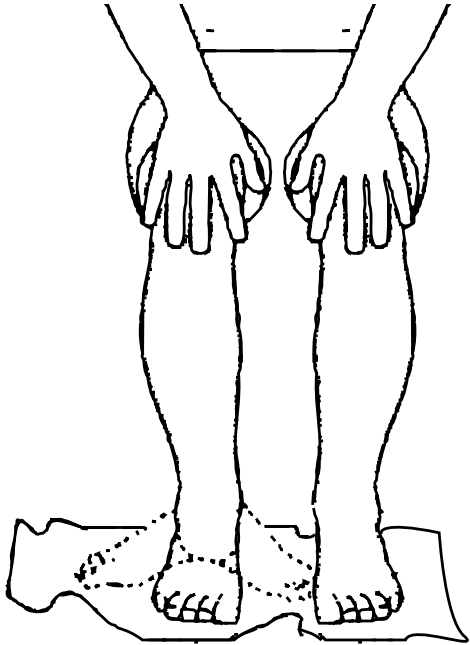
- Theraband Dorsiflexion:** Sit with leg straight and calf supported. Attach the elastic to a secure object and loop around the ball of foot. Pull foot toward shin, against elastic (as shown).



- Ankle alphabet:** Using the foot and ankle, trace the letters of the alphabet in the air. Repeat 5 times, twice a day.



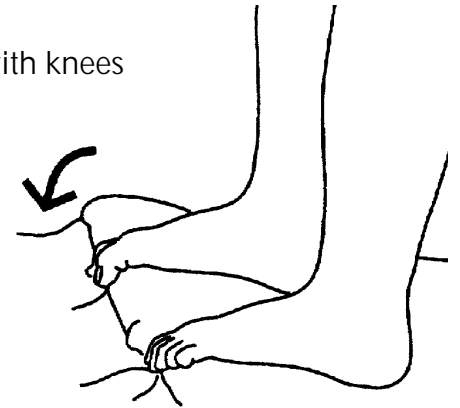
- Windshield Wipers: Sit in a chair with knees bent and feet on a towel. Turn feet inward and outward leaving the heels and soles of feet on the towel. Do not allow knees to move.



Strengthening Exercises (Phase 1):

Exercises will be done in two progressive phases beginning with isometric exercises and progressing to weight bearing and resisted exercises. A final phase of sports drills will help you return to your regular exercise and sports activities.

- Towel Curls: Sit in a chair with knees bent and both feet on a towel. Using your toes, bunch the towel up pulling it toward you. Push the towel out again and repeat 3 times.



- Isometric Inversion: Sit with a pillow between feet. Push feet inward against pillow, as shown. Hold 10 seconds. Repeat 15 times, twice a day.

