

essential skills

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LATERAL ANKLE SPRAIN

I have rarely met a person who has not sprained at least one ankle. After the low back, the ankle is probably the second most common area of injury. The seriousness of a sprain can vary considerably. In minor sprains only a small number of ligament fibers swell or tear, while in most serious sprains, one or more ligaments rupture completely. The vast majority of ankle sprains affect one or more of the three lateral ligaments: the anterior talofibular ligament, the calcaneofibular ligament, and the posterior talofibular ligament (see Figures 1 and 2).

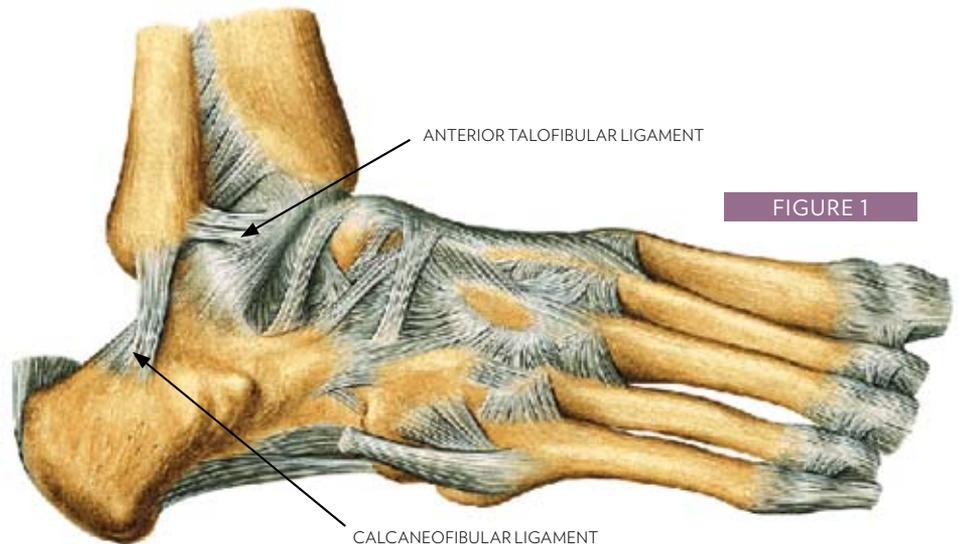


FIGURE 1

The anterior talofibular ligament connects the distal anterior fibula to the neck of the talus and prevents anterior subluxation of the talus. It is the shortest and weakest of the lateral ligaments and the most vulnerable to injury. The calcaneofibular ligament, the longest lateral ligament, is a narrow, rounded cord that connects the distal tip of the fibula to the posterior lateral aspect of calcaneus. This structure plays a major role in stabilizing the ankle joint and limiting inversion. Because it is not contiguous with the joint capsule of the ankle, it causes relatively little swelling when injured. The posterior talofibular ligament connects the posterior surface of the lateral malleolus to the lateral tubercle of the talus. It is strongest of the lateral ligaments and prevents posterior subluxation of the talus.

In the majority of ankle sprains, the anterior talofibular ligament is most strongly affected, and in severe sprains, one or both of the other two lateral ligaments may be affected as well.



FIGURE 2

POSTERIOR TALOFIBULAR LIGAMENT

CREDIT: Putz/Pabst: Sobotta, *Atlas der Anatomie des Menschen*, 22nd edition, 2006 Elsevier GmbH, Urban & Fischer München

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HOW IT HAPPENS

Lateral ankle sprains commonly occur during athletic activity. They are often caused by a sudden, severe trauma such as landing incorrectly from a jump in basketball, crashing into somebody in soccer, sliding into third base, or tripping on some uneven ground while running. In some cases, the person immediately feels severe pain. They may also hear a disconcerting snap. After an hour or so, swelling occurs, the pain gets worse, and it becomes very difficult to walk.

In other cases, the sprain is not immediately apparent. In the heat and excitement of activity, a slight falling over on the ankle is barely noticed; the person recovers balance without missing a step. A little while later, a nagging discomfort begins to develop. It may be just a slight ache or irritation that slowly worsens over the next few days as the ankle is used, or it may become very painful. There may or may not be swelling.

Ankle sprains can also occur during everyday activities like taking a walk on uneven ground, stepping off a curb, or horsing around with the kids.

A variety of factors can increase vulnerability to ankle sprains. These include high arches, which make the ankle less stable; poor alignment of the bones of the feet, where the arches pronate and drop toward the ground; and extremely hypertonic calf and shin muscles, which reduce a person's ability to adapt to changes in the ground surface. Excessive flexibility at the ankle joint due to stretched or congenitally loose ligaments also increases the likelihood of a sprain. Other causes include muscular imbalance in the lower leg and wearing very high-heeled shoes or platform shoes. Of course, a person may be doing everything just right and yet slip on a patch of ice or trip and fall and end up with a severely sprained ankle.

When an ankle sprain does not heal properly, it can become a chronic problem. The ligament may have been stretched or may have developed poorly formed (and therefore weak) adhesive scar tissue, causing instability at the joint. Strenuous activities continually re-tear the scar tissue, resulting in a seemingly endless cycle of pain that comes and goes, with intermittent swelling. This can continue for many years if the injury is not properly treated.

INJURY VERIFICATION

Within about an hour after an ankle is sprained, the swelling and pain are usually quite severe. In fact, the ankle can swell to the size of a grapefruit. This can make it difficult to perform a precise assessment at that time. It may take a few days before the swelling goes down and an accurate assessment is possible.

There are three grades of sprains: Grade 1 (slight damage, not affecting ankle stability); Grade 2 (more serious damage, with no significant instability but pain on walking); and Grade 3 (a complete tear of one or more ligaments, causing instability and typically making walking difficult). Usually the more severe the damage, the greater the pain and swelling. When a ligament totally ruptures—although the ankle feels extremely unstable, the pain often subsides quickly. The most commonly ruptured lateral ligament is the anterior talofibular ligament. When dealing with any sprained ankle, especially when swelling and pain are present, be sure to have the client get an X-ray before you begin treatment. The ankle could be broken, requiring medical attention before any hands-on treatment is appropriate.

If the X-ray is negative, proceed with the following tests, which attempt to reproduce the type of movement that originally caused the sprain.

TEST 1. PASSIVE SUPINATION (ANTERIOR TALOFIBULAR LIGAMENT)

With the client lying supine, place your left hand under the back of the client's left heel for support, then firmly grip the top of the foot with your right hand. (Reverse these directions if you're testing the right ankle.) Now gently supinate the foot (supination is a combination of plantar flexion, medial rotation, and inversion, all done simultaneously). Pull the foot medially into plantar flexion as you internally rotate it. If the ankle is sprained, this should cause pain at the anterior lateral ankle.

If the sprain is very mild or if it is old and chronic, you will need to give the foot an overpressure movement after you have it in the fully stretched position. This should reproduce the pain of an old or mild sprain. Remember to go gently at first and press harder only if necessary. Stop as soon as the client feels discomfort.



TEST 2. PASSIVE INVERSION OF THE HEEL IN DORSIFLEXION (CALCANEOFIBULAR LIGAMENT)
Hold the client's foot in dorsiflexion with your medial hand wrapped around the ball of the foot, and grip the calcaneus with your lateral hand. Now, forcefully stretch the lateral ankle by rotating the heel medially while keeping the foot in dorsiflexion.



TEST 3. RESISTED EVERSION (PERONEUS TENDONS)
Note: I include resisted eversion in the testing protocol because injury to the peroneus brevis or longus tendon is sometimes mistaken for a mild ankle sprain. These two tendons pass around the back of the ankle very close to the lateral ligaments and therefore cause pain in a similar place.

Also, in cases of severe ankle strain, it's common for one or both of the peroneal tendons to be stretched and injured along with the ligaments. As a result, while the ligaments may heal, the pain remains until the strained tendons get treated. If five or six weeks pass and an ankle you have treated still hurts posterior or inferior to the lateral ankle, check the peroneal tendons. Better yet, check them before you begin.

Resisted eversion in dorsiflexion (tests the peroneus brevis). Place your medial hand on the client's heel for support and your lateral hand on the lateral foot just proximal to the toes. Then, ask the client to push outward forcefully, keeping the foot in a dorsiflexed position as you push inward with equal force. Pain is felt at the lateral foot and ankle.



Resisted eversion in plantar flexion (tests the peroneus longus). Perform the same action as in the previous test, but with the foot extended in plantar flexion. Pain is felt at the lateral foot and ankle.



TEST 4. PALPATION (POSTERIOR TALOFIBULAR LIGAMENT)
Aside from palpation, there is no effective assessment test for injury to this ligament. The client will point to the posterior ankle as the site of pain, and the ligament will be tender upon palpation.

TREATMENT CHOICES
SELF-TREATMENT

In any case of ankle sprain, the individual should immediately stop strenuous activity, elevate the leg, and ice the ankle. A doctor should be consulted right away to check for broken bones or complete rupture of the ligaments. As soon as the ankle can be moved, the foot should be flexed, extended, and moved circularly in both directions throughout the day in order to prevent scar tissue adhesions from forming. It is best for the leg to be elevated during these exercises. The person should not walk on the ankle until only mild discomfort is felt; with proper self-care, this should take no more than three to five days. Care should be taken not to rush into any sports or strenuous activities, for a re-sprained ankle is often worse than the original injury.

In mild cases of ankle sprain, these self-care measures can promote successful healing without any other form of treatment. Recovery usually takes three to six weeks, depending on the severity of the injury. However, in most of the cases I have seen, ankle sprains do not heal well without some treatment. Instead, they improve and then recur regularly. Initiating massage therapy within two to six weeks of a sprain goes a long way toward enabling proper healing.

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FRICITION THERAPY AND MASSAGE

Friction therapy stimulates healing of a ligament while removing adhesive scar tissue. Combining friction therapy with massage makes treatment even more effective. Massage applied directly to the foot and leg can reduce the swelling and help speed the healing process. Gentle effleurage may begin soon after the injury occurs.

FRICITION OF THE ANTERIOR TALOFIBULAR LIGAMENT

With the client lying supine, gently supinate the foot with one hand and use the thumb of the other hand to feel the lower edge of the lateral malleolus. Go to the base of the lateral malleolus and then work your way around toward the anterior portion of this bone. The anterior talofibular ligament is located slightly medial to the distal aspect of the lateral malleolus. When the ankle is sprained, it is not difficult to locate this ligament, because it is very tender. Keeping the ligament stretched by holding the foot supinated, friction in either direction with your thumb or forefinger.



FRICITION OF THE CALCANEOFIBULAR LIGAMENT

The calcaneofibular ligament is located directly below the lateral malleolus and runs vertically down and slightly back to the calcaneus. The tear may occur anywhere along the length of the ligament but is usually just inferior to the malleolus. Frictioning is done by pressing the ligament up under the inferior edge of the malleolus or against the calcaneus. Sometimes both this ligament and the anterior talofibular ligament are sprained. In these cases, alternate a minute or so on each ligament and come back to each place two or three times.



FRICITION OF THE POSTERIOR TALOFIBULAR LIGAMENT

With the client lying supine, use one hand to rotate the foot medially. Place the index finger of your other hand directly on the posterior aspect of the lateral malleolus and friction in a superior-to-inferior direction at the ligament's bony attachment.



EXERCISES

To increase the stability of the ankle and prevent the development of poorly formed scar tissue, clients should perform the following exercises daily during the rehabilitation phase of therapy. Give them the following instructions:

ANKLE CIRCLES. While sitting in a chair, cross the injured leg over the uninjured leg. Rotate the foot in as wide a circle as you can, both clockwise and counterclockwise. Begin with ten circles in each direction and build up to fifty.

ANKLE FLEXION. Sitting in a chair with the injured leg crossed over the uninjured leg, flex the ankle so the toes come toward the knee. Hold the flexion for one or two seconds, and then point your toes and hold that position for one or two seconds. Begin with five repetitions of flexing and pointing and build up to thirty, taking rests as you need them.

HEEL RAISES. Stand holding on to something for balance. Keeping your feet parallel, rise up onto the balls of your feet without bending your knees. Stay there for a moment and come down again. Begin with five repetitions and then repeat this same exercise with the knees slightly bent. Build up slowly to eight repetitions of five.



INNER-ANKLE LIFT. To do this exercise, you'll need some props. You can use weights that attach to the foot in some way or use a small plastic shopping bag containing either a two- to five-pound weight or cans that total five pounds. Sitting in a chair, cross the injured leg over the uninjured leg with the weights or loaded shopping bag across the front part of your foot, just behind your toes. Now raise the foot toward the ceiling five times. Repeat after a brief rest. Gradually build up to three sets of ten repetitions.



OUTER-ANKLE LIFT. For this exercise, you'll need the same props you used for the inner-ankle lift. Lie on your side on a couch or bed with your knees bent and the injured ankle on top, then extend the top leg off the edge of the couch or bed. Now, with the weight or the shopping bag across the front part of your foot, lift the outside of the foot toward the ceiling, keeping the foot pointed. Repeat this exercise ten times and then do it again, this time keeping the foot flexed. Build up slowly to three sets of ten repetitions.



SURGERY

When a ligament is totally ruptured, surgery is required to sew the torn ends of the ligament together. This type of surgery tends to be very successful. However, the more time that passes after the injury, the less likely it is that the surgery will succeed. A ruptured ligament will tend to shrivel up and adhere to whatever structure it is nearest to, making it difficult or impossible to perform the repair.

A FREQUENT CHALLENGE

Lateral ankle sprains are one of the most common types of injury, affecting almost all of us at some point in life. Because they happen so frequently, it's easy to regard them as merely a minor, temporary annoyance. However, without proper care, even a relatively mild sprain can develop into a chronic problem. I've seen clients who have suffered from a poorly healed ankle sprain for fifteen to twenty years before receiving effective treatment.

When an ankle sprain does not heal properly, it can become a chronic problem.



After reading this article, you're in a better position to help any client with a lateral ankle sprain, no matter how old or recent the injury is. You've learned how to perform assessment tests to determine which structure or structures have been injured; use friction therapy and massage to stimulate healing while removing adhesive scar tissue; and teach the client exercises to promote stability and prevent any more damaging scar tissue from forming. You've also learned about other treatment options that may be appropriate in certain cases, including self-care and surgery. Armed with this knowledge, you can help ensure that an ankle sprain remains a temporary problem, allowing your clients to return as quickly as possible to a pain-free, active life. **m&b**

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