

essential skills

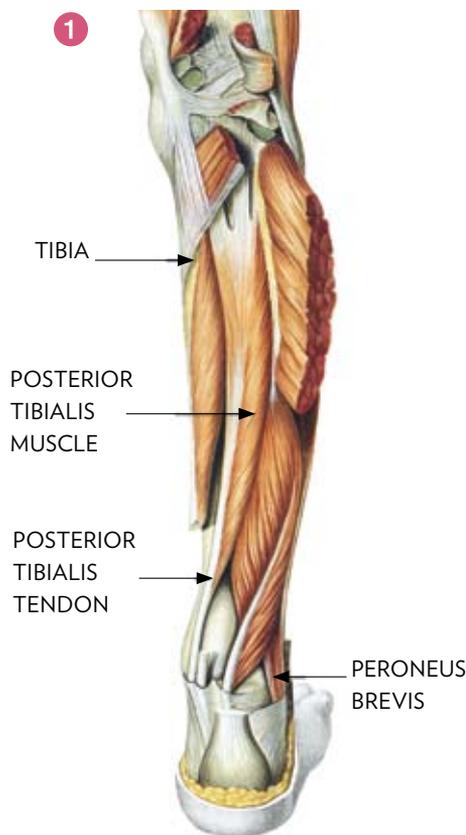
BY BEN E. BENJAMIN



POSTERIOR TIBIALIS INJURIES

If many of your clients are serious athletes, you've probably seen quite a few posterior tibialis strains. The posterior tibialis muscle originates at the medial aspect of the posterior borders of the tibia and fibula (Image 1). Some fibers attach to the interosseous membrane, a structure that attaches those two bones. The tendon travels down posteriorly to the medial ankle and inserts on the navicular, two of the cuneiforms, the cuboid, and several of the metatarsal bones.

This muscle-tendon unit serves a number of important functions. In addition to inverting the foot, it assists in plantar flexion and plays a key role in supporting the medial arch. Also, together with the peroneus muscles in the lateral lower leg and foot, it helps to provide stability when walking on uneven surfaces; these two structures are often referred to as the "stirrup muscles."



Putz/Pabst: Sobotta, Atlas der Anatomie des Menschen, 21st ed. 2000 © Elsevier GmbH, Urban & Fischer München

Posterior tibialis injuries can cause two distinctly different sets of symptoms, depending on which portion of the structure is affected. When the muscle is strained, the client feels pain high up at the medial aspect of the tibia. This is commonly referred to as posterior shin splints. When the tendon is strained, the client feels pain just superior to (above) or posterior to (behind) the medial ankle or on the medial foot itself, several inches anterior to the ankle. Although the pain tends to be most intense posterior and superior to the medial malleolus, it can occur at any point along the tendon.

HOW AND WHY THESE INJURIES OCCUR

This type of injury usually develops slowly as a result of fatigue in running and jumping sports. At first, it feels like a mild irritation somewhere behind the medial part of the ankle or the medial low leg. As the demands of exercise activity increase, it gets progressively worse until, in some cases, it becomes difficult to walk without pain. Predisposing factors include a failure to warm up properly and excessive pronation of the foot. In the latter case, the muscle-tendon unit must constantly strain to compensate for the extreme pronation. Eventually, this becomes too much and the fibers of the tendon begin to strain and then tear.

In severe cases where a bad fall or other trauma occurs suddenly, the medial ankle can become quite swollen and blow up like a balloon, making it difficult to assess the injury. (To my knowledge, the posterior tibialis tendon is the only tendon in the body that causes visible external swelling, similar to a sprained ankle.) Such severe, sudden injuries are common in sports like soccer, where two players often hit the ball simultaneously, and forcefully, with the medial ankle.

INJURY VERIFICATION

People with this injury usually feel pain while walking, running, or rising onto the ball of the foot. But most painful is inward movement (inversion) of the foot against resistance.



Photos by Melinda Bruno.

Be sure to educate your clients so that as their healing progresses, they take steps to prevent the injury from recurring.



RESISTED INVERSION OF THE FOOT

With the client lying supine, sit in a chair facing the bottom of the client's foot. If the left foot is injured, place your right hand under the heel and grasp it for support. Then, place your left hand on the inner arch just proximal to the great toe. (If the right foot is injured, reverse those hand positions.) Now ask the client to forcefully push medially as you resist with equal force (Image 2). It's OK for the foot to be slightly flexed or extended. If the tibialis posterior muscle or tendon is strained, this movement should cause some pain or discomfort. However, if it generally takes a few miles of running for the person to feel sore, you probably will not get a positive reading. In this case, it's best to have the person go out and run until he or she begins to feel some discomfort, and then repeat the test at that moment.

PALPATION

From the same testing position described above, ask the client to resist slightly so that the tendon is under some tension and protrudes a little. Then, palpate all along the tendon with a few firm transverse friction strokes to see whether it is tender. Check the other foot to see if there is any difference. If there is tenderness on both left and right sides, the test is inconclusive. (Some people just have sensitive tendons.) If palpating one side causes no discomfort, but palpating the other side reproduces the client's pain, you can be pretty sure that the posterior tibialis tendon is injured. Remember that there is no referred pain in the foot, so the area that hurts tells you the location of the injury.

TREATMENT CHOICES

SELF-TREATMENT

First, it's important to have the client stop doing things that cause pain. If the person can run, dance, play tennis, or do another sort of exercise for a certain amount of time without pain, it is good for the healing process that he or she continues that activity—so long as the client does not go overboard. However, any exercise that causes pain (either during or immediately after the activity) should be discontinued. Keep in mind that when tendons are warmed up, pain is often masked, so clients should take it slowly at first.

If the strain is not too severe, rest combined with the rehabilitation exercises described below may be sufficient for recovery. Be sure to educate your clients so that as their healing progresses, they take steps to prevent the injury from recurring. This means not returning to full activity too soon, warming up thoroughly before vigorous sports, and, if necessary, correcting poor foot alignment through exercises or orthotic devices.

Some clients ask the therapist to teach them how to perform friction therapy on themselves. I do not recommend this. Clients tend to either work too hard and hurt themselves or work too lightly, so the treatment fails.

FRICION THERAPY AND MASSAGE

Before beginning treatment, you must first locate the precise area of injury. Often, the client will be able to point right to the injured area, because there is little to no referred pain in the lower leg or foot. When the muscle is strained, the person will experience pain at the medial and posterior segments of the lower leg. If you suspect a tendon injury but the person has difficulty pinpointing the exact location, use the palpation test described above. Often this injury occurs posterior to the medial malleolus, but it can affect any segment of the tendon.

If the muscle is injured, no friction therapy is required. Simply perform deep massage on the calf and give the client the exercises described below. If the tendon is injured, combine the massage and exercises with the following friction protocol.

Location and Friction of the Posterior Tibialis Tendon

Sit or stand at the client's feet. Hold the foot at the medial arch, place the leg in lateral rotation, and position your fingers at the site of the injury (usually just above the medial malleolus). Place your thumb on the lateral side of the lower leg to stabilize your hand, and then use your middle and index fingers to apply a squeezing force. Friction in one direction only, moving your whole arm and wrist (not just your fingers) and using your thumb as a fulcrum (Image 3). Before you begin the friction treatment, have the client move the foot medially for a moment, as he or she did in the test, to confirm that you're in the right spot. If the person complains of a sharp, twinging type of pain while you're working, that means you're hitting a nerve that passes posterior to the medial ankle; try doing the stroke in the opposite direction. If you can't figure out how to prevent this from happening, discontinue the friction treatment or get someone more skilled at this kind of work to help you.

This friction technique breaks up adhesive scar tissue and stimulates the healing process, while preventing unwanted scar tissue from re-forming. Since scar tissue begins to form within minutes of an injury, prophylactic treatment can theoretically begin the same day the injury occurs. However, I generally recommend waiting at least four or five days, unless the therapist is very experienced and knowledgeable in treating these types of injuries. In the first few days, all that is needed to prevent adhesions are two or three well-placed friction strokes; frictioning too harshly or for too long can interfere with the normal healing process. In most cases, you won't see a person for at least several weeks after an injury has occurred, so this is not usually a concern.

Include 10–12 minutes of friction therapy in each treatment session. I suggest doing 5–6 minutes of friction, taking a brief break, and then repeating the procedure. Go gently at first, only increasing your pressure slightly if discomfort is minimal. Following the friction therapy, massage the entire leg and foot—as well as the other leg, which has probably been overworked. The client should receive treatment twice a week for 4–6 weeks if the injury is mild, and 8–12 weeks if the injury is severe.

As the injury heals, reduce the visits to once a week, then twice a month. When the client no longer experiences pain during daily activities, the tendon is not overly sensitive to the touch, and the injury verification test is negative, treatment can be discontinued. For most posterior tibialis tendon injuries, this combination of deep massage and friction therapy—supplemented by the exercises given below—is successful in bringing about a full recovery.



ORTHOTICS

For any client who has excessively pronated feet, orthotic devices are a crucial component of treatment. Advise the person to see a sports podiatrist and inquire about orthotics to protect the posterior tibialis muscle and tendon from further strain.

EXERCISES

The first exercise described here strengthens the posterior tibialis, the second one works on balancing the use of the posterior tibialis and peroneus muscles, and the third one builds strength throughout the calf muscles. These should be started in the second week of treatment and only done if they do not cause pain. Typically, they're done once per day, but you might have enthusiastic clients increase to twice per day after a week or so.

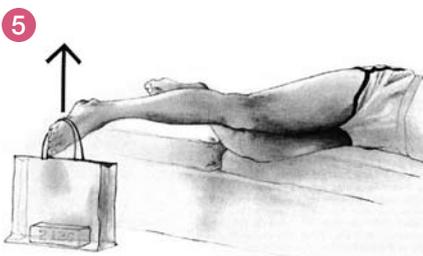
Inner-Ankle Lift

This exercise requires the use of props—either weights that attach to the foot in some way or a small plastic shopping bag containing a 1- to 5-pound weight. To begin, have the client sit in a chair and cross the injured leg over the good leg, with either the weight apparatus or the loaded shopping bag across the front part of the foot, just behind the toes. Now instruct the client to raise the foot toward the ceiling 5–10 times, take a brief rest, and repeat (Image 4). Don't use too much weight to start; begin with a lighter weight and gradually build up to using 5–10 pounds over the course of the treatment. The client should begin to feel tired after 5–10 repetitions. If the exercise causes pain, it means the person either is using too much weight or is not yet ready to begin exercising.



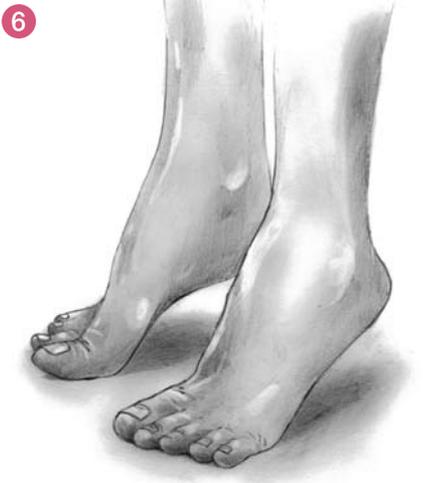
Outer-Ankle Lift

This exercise requires the same props as the Inner-Ankle Lift, but is done from a side-lying position on a couch or bed. Have the client start with the knees bent, injured ankle on top, and then extend the top leg off the edge of the couch or bed (while wearing the weight or the shopping bag). Then have the person lift the outside of the foot toward the ceiling—10 times with the foot in plantar flexion, and then another 10 with the foot in dorsiflexion (Image 5). Build up slowly to three sets of 10 repetitions in both foot positions.



Heel Raises

Start with the client standing, feet parallel, holding on to something for balance. Have the person rise up onto the balls of the feet, without bending the knees, and stay there for a moment before coming down again (Image 6). After five repetitions, repeat this same exercise with the knees slightly bent. Build up slowly to eight repetitions of five, for a total of 40 repetitions.



SUPPORTING A LASTING RECOVERY

Successful recovery from a posterior tibialis injury requires not just getting the appropriate treatment, but also taking steps to avoid future strains. It's important to check the balance in the client's feet; excessive pronation puts more of the weight load on the medial side of the lower leg, thus overworking the posterior tibialis, underworking the peroneous, and creating a high vulnerability to injury. If the client's feet are pronated, be sure that the person does corrective strengthening exercises and gets orthotics if necessary. This is a critical investment in the long-term health of the feet and the lower body as a whole. In addition to foot and ankle injuries, excessive pronation predisposes a person to knee, hip, and back pain. By encouraging clients to address this underlying issue, you can help interrupt a chronic cycle of recurring injuries and help protect long-term balance and mobility. **m&b**

6 Ben E. Benjamin, PhD, holds a doctorate in education and sports medicine. He is founder of the Muscular Therapy Institute. Benjamin has been in private practice for more than 45 years and has taught communication skills as a trainer and coach for more than 25 years. He teaches extensively across the country on topics including SAVI communications, ethics, and orthopedic massage, and is the author of *Listen to Your Pain, Are You Tense?* and *Exercise Without Injury*, and coauthor of *The Ethics of Touch*. He can be contacted at 4bz@mtti.com.

Editor's note: *Massage & Bodywork* is dedicated to educating readers within the scope of practice for massage therapy. *Essential Skills* is based on author Ben E. Benjamin's years of experience and education. The column is meant to add to readers' knowledge, not to dictate their treatment protocols.