Rehab Recommendations for Anterior Tibialis Tendinosis

By Kim Christensen, DC, DACRB, CCSP, CSCS

Patients and athletes often develop nagging symptoms in the ankle and lower leg that are not due to any injury or recent trauma. They may report feeling pain when going down stairs or walking or running on hills.

Often, a chronic irritation of a tendon is noted, which can lead to the development of persistent tendinitis. While some of these injuries are due to overstretching trauma, the vast majority fall into the category of overuse syndromes. When the anterior tibialis muscle is overused, its tendon in the anterior aspect of the lower leg develops a chronic pain: anterior tibialis tendinosis.

Tendinosis and Peritendinitis

All forms of tendinitis are due to repetitive microtrauma, either from excessive or abnormal activity on a normal tendon, or from normal stresses on an abnormal tendon. Since tendons are connective tissues attached to muscles and exposed to frequent movement, they are very susceptible to overload. When overloaded, they develop a nonacute inflammatory response (tendinitis), which is more accurately termed a "tendinosis" condition. Inflammation develops in and around the tendon (peritendinitis). Symptoms usually are described as diffuse pain that is aggravated by activity such as walking, running or going down stairs. In addition to tenderness, palpation may identify a tender thickening of the peritendon, and there can be crepitus during plantar and dorsiflexion.

Biomechanical Stresses on the Ankle

A tight calf muscle is frequently seen in association with anterior tibialis tendinitis. The biomechanical stress develops when the tight Achilles tendon limits ankle motion. This causes the foot to hit the ground with a great deal of force. The muscles in the lower leg try to control and slow the foot strike, which leads to overuse muscle fatigue and, eventually, muscle inflammation and pain.

The muscle in the front of the leg that usually becomes painful is the anterior tibialis muscle, which is encased in a thin sheath. This muscle attaches to the foot and flexes the foot upward or back toward the shin; as long as the foot is in proper alignment with the leg, the muscle functions efficiently and pain-free.
However, when the foot is pronated (the foot rolls outward at the ankle and you walk more on its inner aspect), the anterior tibialis muscle twists within its sheath. This twisting can cause tiny tears in the muscle, or the muscle may rub abnormally against its sheath, producing inflammation and pain.

If we recognize anterior tibialis tendinosis as a mechanical problem, we are safe to assume a mechanical solution is in order. The symptoms of inflammation may be treated by various means, including cryotherapy and electrotherapy. However, if the biomechanical imbalance component of anterior tibialis tendinosis isn’t addressed, recurrence is likely.

The structures and the functioning of the foot, ankle and knee are all exposed to greater stresses during running. The most important biomechanical actions during running are the timing and amount of pronation at the foot and ankle. If there is too much pronation or if the foot stays in pronation too long (prolonged pronation), the biomechanics of gait are altered and running is less efficient. Excessive pronation also increases the internal rotation of the tibia, placing additional stress on the knee.

When running is a dominant component of the recreational choices of an individual, the natural biomechanics must be able to sustain these higher forces. Studies have demonstrated a significant decrease in tibial internal rotation and pronation velocity when using orthotics, which will help to prevent injuries to this area.

**Management of Anterior Tibialis Tendinosis**

The first step in treatment is to stop the causative activity and substitute with other, nonstressful exercises. This may mean avoiding hill climbs or sprinting, or simply decreasing the amount of running and/or walking. A switch to swimming or cycling can maintain aerobic endurance.

Specific adjustments of all lumbosacral, pelvic and foot/ankle joint dysfunctions are necessary. The most common foot problems are a dropped navicular or a posterior calcaneus. Inflammation in the area of the muscle injury should be dealt with conservatively, using frequent cryotherapy as well as electrotherapy if necessary. The most effective method seems to be ice massage (the frozen Dixie cup technique).

Gentle stretching, massage, and even transverse friction treatment or use of Graston procedures may speed the healing response in the involved muscle tissues. Achilles tendon stretching often is needed to increase the range of ankle dorsiflexion. Dynamic (isotonic) exercises are necessary to strengthen the anterior tibialis muscle and help prevent future recurrences.
As the patient returns to weight-bearing exercise, methods to decrease lower leg stress should be reviewed. These include better-fitting and more supportive shoes, softer running surfaces, smoother gait and running style, better warm-ups and cooldowns, and even increased dietary calcium intake.\textsuperscript{7}

Custom-made stabilizing orthotics are necessary for many athletes to support the arches and reduce pronation, as well as to decrease the stress of heel strike on the foot and leg. A heel lift may be needed for even mild amounts of anatomic leg-length discrepancy. Anterior tibialis tendinosis may respond more quickly to an orthotic with additional forefoot cushioning.\textsuperscript{8}

References