Treatment Options for Shin Splints

By Mark Charrette, DC

The lay term shin splint is a generalized description of lower leg pain. Most causes of shin splints develop from overstress or inappropriate sports training, which are easily treated with conservative care. Evaluation of lower extremity biomechanics is an important part of care, since shock-absorbing orthotic support is often necessary. Factors that predispose to shin splint development include: excessive pronation, pes planus, pes cavus, tarsal coalition, leg-length discrepancy and muscle imbalance.

What to Look For

Shin splints are muscle injuries that develop insidiously in one or both lower legs. The pain is usually described as an “aching soreness” that has been getting worse and is particularly noticeable when walking. This is an overuse condition that develops secondary to repetitive strain at the muscle insertion - either in the very active athlete or in a patient who has started or increased a new walking or jogging routine. Therefore, a careful history of recent weight-bearing exercise habits is vital.

The involved leg is tender to palpation along the muscle insertions in the middle or lower third of the tibia, along primarily either the anterolateral or the posteromedial aspect. Manual testing finds mild to moderate weakness of the involved muscles, and the isometric testing often causes increased pain of the muscle. There are normally no sensory or reflex changes, and no significant asymmetry in muscle mass.

Common Causes

There are two major types of shin splints which are differentiated by location and involved muscles. The underlying biomechanical abnormalities (and therefore the type of orthotic support needed) are also quite different.

Anterolateral. The shin splint that affects primarily the anterior and lateral aspect of the leg involves the tibialis anterior, extensor hallucis longus and extensor digitorum longus muscles. Since these muscles decelerate the foot and absorb the shock stress at heel strike, they are placed under increased demand when there is excessive running on hard or downhill surfaces or when the shoe has lost its shock-absorbing qualities. In addition to biomechanical support and a better heel pad, good forefoot cushioning is also
recommended for the anterolateral type of shin splint.

Posteromedial. When there is excessive pronation, the muscles that try to stabilize the ankle become overstrained and cause shin splints. These are the muscles along the posterior and medial aspect of the lower leg, including the tibialis posterior, flexor hallucis longus, and flexor digitorum longus muscles. Occasionally the soleus muscle is implicated. Arch support and a medial pronation wedge under the calcaneus are needed to reduce the stress on these muscles. Shock absorption is helpful, but supporting the foot and ankle biomechanics is most important.

Injury Management

- The first step is to stop the causative activity and substitute nonstressful exercises. A switch to swimming or cycling can maintain aerobic endurance.
- Specific adjustments of all pelvic, lumbosacral, 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 and electrotherapy if necessary. The most effective method seems to be ice massage.\(^3\)
- Gentle stretching, massage and even transverse friction treatment may speed the healing response in the involved muscle tissues.
- Dynamic (isotonic) exercises are necessary to strengthen the weakened support muscles (tibialis anterior and/or posterior) and help prevent future recurrences. An excellent program for strengthening the involved muscles uses elastic tubing with a series of ankle exercises.
- 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/cool-downs, and even increased dietary calcium intake.\(^4\)
- Stabilizing, custom-made orthotics are necessary for many athletes to support the arches and reduce pronation, as well as decrease the stress of heel-strike on the foot and leg. A heel lift may be necessary for even mild amounts of anatomic leg-length discrepancy. The orthotics should provide shock absorption, which Craig concludes offers the "most promising outcomes."\(^5\) Anterolateral shin splints may respond more quickly to an orthotic with additional forefoot cushioning.\(^6\)

Back to Full Activity
A patient who reports pain in the lower leg following exercise or similar activity is often experiencing shin splints. Differentiation between anteromedial and posterolateral helps to determine the patient’s treatment and orthotic support needs. Conservative care, including isotonic exercises and flexible, custom-made orthotics for biomechanical imbalances will allow a rapid return to full activities. To prevent recurrences, athletes should be educated to replace their shoes before they are obviously broken down, and to avoid abrupt changes in training. When patients with shin splints are treated by doctors of chiropractic, they also have the opportunity to have their posture and gait analyzed. Often, small changes in biomechanical function can significantly improve athletic performance.

References


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