
Shin Splints

Shin splints is a vague term used to describe pain in the lower leg that often results from participation in various athletic activities, including running. Two types of this condition exist, named for the location of the pain. Anterior shin splints occur in the front (anterior) portion of the shin bone (tibia). Pain from posterior shin splints is felt on the inside (medial) part of the leg, along the tibia (Figure 6.1).

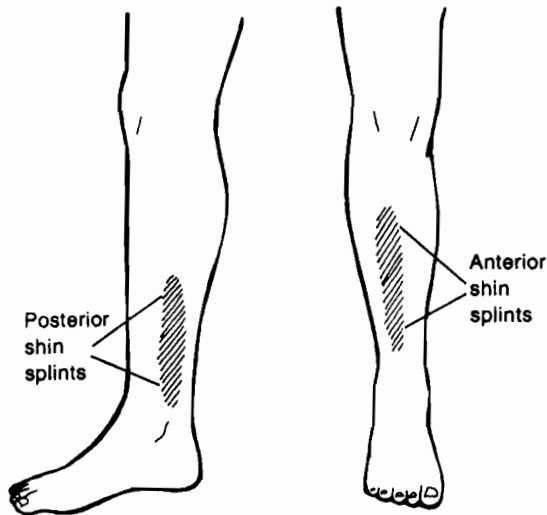


Figure 6.1 The shaded areas indicate the most common locations for shin splints.

Shin splints are caused by very small tears in the leg muscles at their points of attachment to the shin. The athlete may first notice a pulling or vague aching sensation after running. If ignored and allowed to continue, this aching may become more intense and could occur even during walking. Tender areas can usually be felt as one or more small bumps along either side of the shin bone.

Causes

Anterior shin splints are due to muscular imbalances, insufficient shock absorption, toe

running, or excessive pronation of the foot. Posterior muscle groups located in the back of the lower leg are primarily responsible for propelling the body forward. Generally, they are much stronger than muscles in the front part of the lower leg, thus creating a muscle imbalance. In running, anterior leg muscles lift the foot upward toward the leg, allowing it to clear the ground and swing forward. These muscles also prepare the foot to strike the running surface. Any tightness in the opposing (posterior) leg muscles places unnecessary strain on the anterior muscles and may contribute to shin splints.

Insufficient shock absorption can cause anterior shin splints. Anterior leg muscles prepare the foot to strike the ground by helping reduce the amount of shock transferred through the foot to the rest of the body. Running or other athletic activity on hard surfaces such as concrete or asphalt roads increases this stress. Softer surfaces, such as grass, dirt trails, or cinder tracks, are capable of absorbing more shock and therefore transfer less to the shins. Old shoes may need to be replaced. All shoe cushioning materials tend to compress and lose resiliency after an extended period of wear. Shock-absorbing insoles, sold at running stores, and running or aerobic shoes specially made for landing on hard surfaces, also decrease shock to the legs.

Toe running occurs when the athlete lands only on the balls of the feet, without the normal heel contact. This inefficient method places the gastrocnemius and soleus muscles in continuous contractions.

Excessive pronation contributes to both anterior and posterior shin splints. Pronation is a complex motion of the foot, affecting the position and range of motion of almost every joint in the lower extremities. Understood simply as the flattening of the arch, pronation allows the foot to better absorb shock and adapt to uneven terrain. Though some pronation is necessary for normal joint function, too much produces an extremely unstable foot that may lead to an injury.

Instability occurring with excessive pronation results from misalignment of the joints of the foot. This causes the ankle, knee, and hip joints as well as joints of the lower back to undergo unnecessary, and often injurious, ranges of motion. As the muscles of the foot and leg overwork in an attempt to stabilize the foot, increased stress is transmitted to their attachments in the leg. Repeated stress may create very small tears at the points where leg muscles attach to the shin bone. Efforts to relieve this condition must be directed toward the excessive pronation.

Treatment

With a little basic medical knowledge and some common sense, many athletes can successfully treat themselves. Aspirin is a very effective anti-inflammatory medication and can be used in relieving pain from shin splints. If it can be taken without stomach irritation or other medical problems, two tablets with each meal (six per day) are recommended. Questions about aspirin safety can be answered by a family physician.

Ice massage also is helpful in treating shin splints. Immediately after running, firmly massage tender areas with ice for 10 to 15 minutes. Freeze a small styrofoam or paper cup filled with water, then peel away the top part of the cup. You should always do icing after running, never before.

A reduction in daily mileage and a change in running course may also be beneficial to the runner. By reducing mileage 50 percent for at least a week and avoiding hills and hard running surfaces, you may prevent further injury.

If you believe your feet are pronating too much, athletic shoes with a varus wedge may help. This wedge lifts up the inside part of the foot and reduces the amount of pronation. Custom-fitted orthotic devices may be necessary for more extreme cases.

Exercises

Most athletes with anterior shin splints improve with the use of weight-training programs to strengthen the muscles in the front of the lower leg. These exercises are also good prevention against shin splints. If weight equipment is not available, household items,

such as a handbag filled with rocks or a few large books bound together with rope, can be used (see Strength Exercise 25 in chapter 12). Exercise with both legs, even if shin splints are present in only one leg.

It is also important to stretch the leg muscles in the back part of the leg and thigh gently as part of your recovery program (see calf stretching exercises in chapter 12). Strengthening and stretching exercises should be done only in the absence of pain.

Specialists

Persistent problems may necessitate a visit to a sportsmedicine specialist who deals with the foot and its function as it relates to the rest of the body. A biomechanical examination—including a study of your body structure, muscle strength, flexibility, and ranges of joint motion—as well as an evaluation of how you walk and run, may be performed. Strengthening and flexibility programs may be designed to correct muscular imbalance. Recommendations for shoes, training schedules, running surfaces, and courses often are provided. If you pronate excessively, orthotic devices may be suggested. Oral anti-inflammatory medications may be prescribed. Physical therapy such as ice massage, ultrasound, electrostimuli, and heat are also commonly used to reduce inflammation and pain.

The Best Prevention

Maintaining good muscle strength and flexibility is the best way to prevent serious athletic injuries. Remember, small aches often grow into large pains. Running through an injury without proper medical advice and common sense can be a big mistake.

Suggested Reading for “Shin Splints”

Brody (1980)

Sloan (1980)

Viitasalo & Kvist (1983)
