

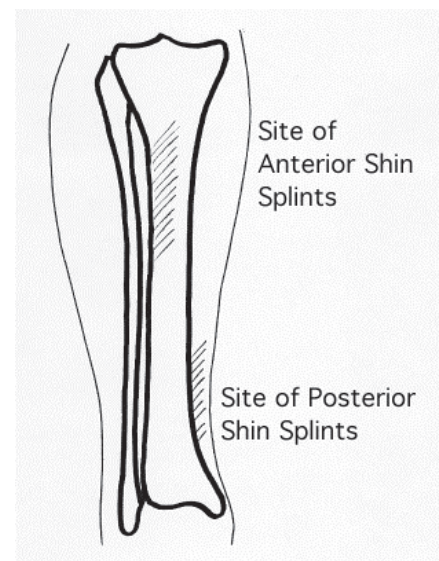
Shin Splints or Tibial Stress Syndromes

Shin splints is a term used to describe an injury to the leg that causes pain in the shin. Before the advent of sports medicine as a specialty, shin splints usually referred to pain occurring anywhere in the lower leg.

Terminology has now become more specific to describe different types of shin splints depending on their location and sometimes etiology. They are now divided into three groups:

1. Tibial Stress Syndrome
2. Posterior Tibial Syndrome
3. Medial Tibial Stress Syndrome

CAUSE: Repetitive use of the leg in running causes many cycles of ankle and foot movements. This is a result of frequent contractions and relaxations of the muscles of the lower leg: the plantar flexors (the calf muscles at the back of the leg) and the dorsiflexors (the front of the leg). Repetitive movements can cause small tears in the attachments of the muscles to the tibia (shin bone) or in the muscles themselves leading to tibial stress syndromes. This occurs especially when the muscle is either too tight or too weak. The tibialis anterior muscle (tibial stress syndrome) is responsible for lifting the foot up during the swing phase of running. It is also responsible for slowing down the foot in preparation for heel strike when landing. Therefore, any biomechanical abnormality (weakness or abnormal tone) in this muscle and its function can lead to injury. This leads to local pain and tenderness in the bone and muscle. Shin splints are also more common in runners with overpronation (posterior tibial stress syndrome) or other altered running styles such as excessive in-toeing or out-toeing or running on one's toes or balls of their feet. Some of the pain and tenderness may not be precisely at the bony surface, but rather over the actual injured muscle and tendon itself. Shin splints can also present when there has been a change in your running style or distance or when you have done an extended amount of running on hard surfaces.



SIGNS & SYMPTOMS: Pain and tenderness along the shin bone area are typical. Although there are myriad of other causes, shin splints are one of the commonest causes of leg pains in runners and walkers. Shin splints manifest themselves usually in four ways: pain, tenderness, swelling, and lameness (limitation of use).

Tibial stress syndromes can progress through four stages of injury (after Noakes, T., "Lore of Running"). In stage one, vague and poorly localized discomfort will occur, often after running has ceased. The next stage will be that of pain with running but you are still able to "run through it." Once the pain becomes so severe that running is not possible, stage three has been reached. The tibial stress syndromes that advance to stress fractures indicate stage four, and neither running nor walking is possible without severe pain and limping.

The pain begins as a gradual discomfort that may eventually progress to severe pain that makes running impossible. The pain, however, may not begin until after several kilometres of running. This pain-free interval gradually shortens as the untreated condition is allowed to progress. You may have discrete tenderness to touching the affected area of the leg, usually in the front, below the knee and above the ankle. You may feel small tender bumps in the area immediately beneath the skin over that part of the leg not covered by muscle allowing you to more closely feel the actual bone surface. You may notice swelling of the leg where the injury has occurred. Certain activities are more painful than others are; downhill running is particularly painful. Endurance training especially causes the pain to get worse.

TREATMENT: Initially, you, as a runner, can begin your own treatment. Mild or even moderate pain does not require medical referral. Review your training and running pattern and see if you have increased or altered it in any

way. This may help to pinpoint when something changed that placed more forces on your leg, etc. As long as you can walk and lightly run without too much pain you should be able to manage the condition yourself. Applying ice to the tender area for fifteen minutes three times a day especially after a run and taking over-the-counter (OTC), non-prescription, anti-inflammatory medications on a regular basis, combined with a slight reduction in your running distances may be all that is required. You should also begin and maintain an appropriate program of muscle strengthening to the dorsiflexors and plantarflexors of the foot. Some runners get relief with using a compressive bandage or brace to the leg when running. This should be applied very loosely so as not to occlude blood flow and cause further pain and injury. More resistant cases that do not respond after two to three weeks of this therapy may require a visit to your local physician or therapist for assessment of running style, foot position, and possibly other causative problems. This may mean treatment of associated conditions and may also require foot orthotics for management of abnormal foot positions. Following this, if pain persists, then further investigations may be needed, including x-rays of the leg and possibly a bone scan to exclude other more serious causes. The treatment goals are to reduce or reverse progression of the pain and particularly avoid the progression to stages three and four.

PROGNOSIS: Tibial stress syndromes are one of the commonest leg conditions that affect runners. They occur more frequently in the novice runner, before the muscles are strengthened and a training plateau is achieved. This is why stress syndromes become less of a problem in seasoned runners. Fortunately when one does suffer from tibial stress syndromes, or shin splints, they usually respond to relatively simple treatment modalities and the prognosis is excellent.