Shin Splints:

Medial Tibial Stress Syndrome

Information for People Attending the Minor Injury Unit

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What are shin splints?

Shin splints is the name often given to exercise-induced pain along the front of the lower leg between the knee and the ankle - the shin.

Shin splints are really a symptom rather than a diagnosis because they are usually caused by a number of different problems in people who exercise.

In typical shin splints, pain is felt more over the inner (medial) part of your shin. Pain felt over the outer (lateral) part of your shin may not be due to shin splints and may be due to a compartment syndrome in your leg.

Shin splints are sometimes called medial tibial stress syndrome.

What causes shin splints?

The exact cause of shin splints is not certain, but they are thought to be because of overuse and typically occur in runners. Rest is the most important treatment. Shock-absorbent insoles in your training shoes, graduated running programmes and regularly replacing your training footwear may help.

Experts do not all agree on the cause of shin splints. These things have been suggested to make shin splints more likely:

- A sudden increase in training frequency or intensity.
- A lack of calcium
- Hard running surfaces
- Running up a hill
- Previous leg injury
- Poorly fitting or inadequate running shoes that do not support the feet and ankles
- Problems with muscles in the lower leg and foot position, including over pronation of the foot.
    - The foot (and ankle) normally role slightly inward when we move. Over-pronation is where the foot rolls inward more than normal.

Some experts suggest that shin splints are caused by small tears in the structure of the membrane between the two bones of the leg below the knee (the tibia and fibula).

This structure is called the interosseous membrane. Others suggest that they may also be caused by:

- Overuse injury of tendons (tendinopathy)
- Muscle sprains
- Inflammation of the membranes surrounding the tibia and fibula bones (periostitis)

- Tiny fractures (microfractures) in the surface of the tibia have also been suggested as a cause.

What are the symptoms of shin splints?

The main symptom is pain in the shin area. The pain tends to be in the middle and lower shin and on the inner (medial) half. Pain first comes on after running or exercising. However, over time, the pain can come on during running or exercising. If severe, it may also come on when climbing stairs.

What else could the pain be?

Stress fractures of one of the two bones in the leg below the knee (tibia) can also cause shin splint-type pain. A stress fracture is a type of incomplete fracture in a bone. Stress fractures can occur as a result of overuse and are known as overuse in Junes.

Do I need any tests?

Usually, doctors can find out what is wrong by asking where it hurts, seeing how well you can move, and talking about what happened before the pain started. This means you often do not need any tests.

X-rays of the sore area are sometimes used to check for other problems, such as a stress fracture in one of your bones. But not all stress fractures show up in X-rays. For people with shin splints, X-rays are usually normal. Your doctor might ask for an X-ray if your pain has lasted a long time or if they want to rule out another problem. However, not everyone needs an X-ray.

What is the treatment?

Rest. This is the main treatment for shin splints. This means avoiding any activity
such as running, that may have led to the shin splints.

Ice. Applying ice to your shin and raising your leg may also help to relieve pain from shin splints. You can make an ice pack by wrapping ice cubes in a plastic bag or towel. (Do not put ice directly next to skin as it may cause an ice burn.) A bag of frozen peas is an alternative. Gently press the ice pack on the injured part.
The cold from the ice is thought to reduce blood flow to the damaged ligament. This may limit pain and inflammation. After the first application, some doctors recommend re-applying for 10 minutes every two hours (during the daytime) for the first 48 hours.

Elevation of the lower leg aims to limit and reduce any swelling. Keep the foot up on a chair to at least hip level when you are sitting. (It may be easier to lie on a sofa and to put your foot on some cushions.) When you are in bed, put your foot on a pillow.

Painkillers such as paracetamol; are useful to ease pain. It is best to take these regularly initially. Anti-inflammatory painkillers are an alternative. There are many types and brands - for example, ibuprofen. They relieve pain and may also limit inflammation and swelling. Side-effects sometimes occur with anti-inflammatory painkillers. Stomach pain and bleeding from the stomach are the most serious. Some people with asthma, high blood pressure, kidney failure, and heart failure may not be able to take anti-inflammatory painkillers.

Please discuss with your urgent treatment clinician, doctor or pharmacist if you have any questions or concerns.

Can shin splints be prevented?

Studies and trials have been done to look at preventing shin splints. No single prevention method has been found to be consistently effective and further trials are needed.

However, one of the things that does show some promise is the use of shock absorbent insoles inside shoes while you are exercising. Special insoles to correct over-pronation of your foot (if you have this) may also be helpful. You should also regularly replace your running shoes. Graduated running programmes that build in rest days may also help.

Further Reading and References

- Shin splints/ Medial Tibial Stress Syndrome: Wheeless' Textbook of Othopaedics
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- StoryJ, Cymet TC:Shin Splints: Painful to have to treat. Xompr Ther, 2006 Fall32(3):192-5
- Craif DI: Current developments concerning medial tibial stress syndrome Phys Sportsmed, 2009 Dec37(4):39-44

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