

# Shin splints

Shin splints are exercise induced pain in the front of the lower legs or shins. The shin pain is often worse during or after vigorous activity, particularly brisk walking, running, or sports with sudden stops and starts, such as basketball and tennis. They are quite common, for example, they are thought to account for 13% of running injuries.

The muscle in the front of the shin, when functioning normally, allows both the controlled landing of the foot during its contact with the ground and also holds the foot off the ground as the leg swings through the air preventing tripping during walking or running. When this muscle (called the Tibialis Anterior) becomes overworked it weakens and can cramp up causing shin splints. The pain is felt along the shin bone (tibia). The shin bone is the largest of the bones that run from the knee to the ankle.

It starts with a dull, aching pain and can become so painful that the exercise causing the pain has to be stopped. Many runners notice pain early in the training session, which then lessens, only to reappear near the end of the training session. Ignoring the pain and continuing to exercise can make the problem worse. Do not try to 'run off the pain' because shin pain may be a sign of an injury to the bone and surrounding tissues in your leg. When severe, climbing stairs can also be painful.

## Why shin splints happen

Shin splints have a number of causes. Medial tibial stress syndrome (MTSS) is the most common cause. MTSS can be caused by frequent and intense periods of exercise which the body is not used to it. Suddenly increasing the distance and/or pace of running are also common causes. Building up the intensity of an exercise regime over weeks or months can help prevent shin splints developing. Long-distance running and sports that involve a lot of stopping and starting, such as basketball and tennis are a common cause of MTSS. These activities place a considerable amount of pressure on the legs, particularly if done on hard ground; this can cause injury to bone and surrounding tissues. A poor running technique can contribute to shin splints.

MTSS is thought to occur when the layer of connective tissue that covers the surface of the shin bone (periosteum) becomes inflamed. It can become inflamed if too much pressure is placed on the shins, or if the foot rolls excessively when it hits the ground. The pain usually occurs in both shins and can take several days or even weeks to ease once activity is stopped.

## Self-care

The activity that causes the shin splints should be stopped for at least two weeks. After this time, activity can gradually resume. During this "rest" period, low impact activities, such as cycling or swimming can be continued. Apply ice wrapped in a towel or other cloth to the affected shins to reduce inflammation, swelling and pain. This should be for about 10 minutes every 2 to 3 hours for about two days. Over-the-counter painkillers such as paracetamol and ibuprofen relieve the pain. Ibuprofen is also an anti-inflammatory so may be more effective than paracetamol. Stretching calf muscles and the front of the leg can also help. Running shoes should give the right amount of cushioning and support for weight and foot type. If the foot rolls inwards, orthotics (rigid shoe inserts) can be fitted. A physiotherapist can measure you for orthotics. In Whelehans, we stock specialist supportive inserts which our Chiropodist can advise on.

If buying running shoes before undertaking to do a lot of running (eg. training for a marathon), a specialist running or sport shop can advise on the correct type of shoe. For example, Asics Kayano® are a good choice of running shoe as they have a special gel support, however there are many other brands. A trained member of staff will be able to carry out a number of tests such as gait analysis and advise which shoes suit best.

If you continue having problems with your shoes, a physiotherapist or a chiropodist can give a more expert opinion by assessing overall lower limb biomechanics. A physiotherapist specialises in maintaining and improving movement and mobility and is an expert at treating and preventing tissue injuries and sports injuries such as shin splints. A chiropodist is an expert in diagnosing and treating foot problems. Whelehans have a chiropodist in store every Tuesday and Thursday. We have a special rate of €25 for over 60's.

Fasciotomy may be required for severe cases or when conventional treatment is ineffective. Fasciotomy is a surgical procedure that cuts away the fascia to relieve tension or pressure. The fascia is thin connective tissue which covers or separates muscles. Fasciotomy releases the pressure on the muscles in your lower leg, especially in cases of compartment syndrome (see later). Occasionally stress fractures need an operation help healing.

## **Could it be something else?**

Other possible causes of pain in this area that won't improve with the above advice include:

- Reduced circulation or clots in the lower leg. This is more common in smokers.
- Stress fractures (tiny cracks) in the shin bone. Stress fractures usually only give pain in one leg. Stress fractures can take up to 12 weeks to heal.
- Muscle hernia, this is a bulge in the leg muscle.
- Compartment syndrome. This happens when muscles swell. Muscles sit inside an enclosed compartment, so they don't have much space for expansion. When your muscles swell, the pressure increases and blood can't flow into the muscle properly. This causes severe pain. The swelling of the leg muscle can compress nearby nerves and blood vessels. The pain of compartment syndrome generally occurs in both legs and only comes on when exercising. The pain can occur in the front, side or back of the leg or at times in all three. It can cause a numb toe in some cases. Unlike MTSS, the pain due to compartment syndrome quickly eases when exercise stops. Compartment syndrome most often occurs due to long distance running, hill walking or over-flexible shoes.
- Radiculopathy, this is compressed nerves in the spine which can lead to nerve problems in the lower back and legs.

Seek immediate medical advice if:

- pain is severe and follows a fall or injury
- the swelling gets worse
- shin area become hot and inflamed
- the pain persists during rest

Other possible causes of pain in the shin area include periostitis (inflammation, swelling and tenderness around bones), tendonitis (inflammation of the tendon), muscle strain and infection. If diagnosis is proving difficult or shin splints are recurring, an MRI scan is the most useful investigation as it can confirm or rule out shin splints. For example, an MRI discriminates between

stress fractures and shin splints more effectively than X-rays. A physiotherapist can assess the injury, give exercises to do and advise on a suitable recovery plan.

## **Getting back to normal exercise**

Exercise is still possible during the “rest period” to maintain cardiovascular fitness, but it should be exercise that does not put too much strain on the shins, such as swimming, cycling, cross-training or yoga. Usual activity can usually resume after at least two weeks of rest, but only after the pain has gone.

Increase the activity level gradually, building up gradually the time spent running or doing sports. It is best to run on flat, soft surfaces such as grass. The length and intensity of the run to 50% of what it was before the shin splints started. Stop if the pain returns. Gradually, over a period of 3-6 weeks, increase the distance of the run. After six weeks, the pace can return to pre activity levels.

Warm up before starting exercise and cool down after exercise. Stretching before and after exercise is important.

## **Preventing shin splints returning**

- wear running shoes that give adequate cushioning and support
- orthotics (supportive insoles) can help if you have flat feet (a physiotherapist or chiropodist will be able to advise on this)
- train on softer surfaces like grass
- build up activity level gradually
- improve overall strength and flexibility with proper stretching exercises before and after exercise

## **Risk factors**

- running on hard ground
- running on slopes, arched or slanted surfaces.
- Change of running pattern (eg) from running on a synthetic running track or a treadmill to running on the road.
- poorly fitting or worn out running shoes will not cushion and support feet
- Being inexperienced at running
- being overweight; this places extra stress on the legs
- having flat feet or feet that roll inwards; this puts more pressure on the lower legs
- weak ankles muscles
- a tight Achilles tendon (connects the calf muscle to the heel)
- having tight calf muscles
- Not stretching after a run

**Disclaimer: Consult with a healthcare professional such as a physiotherapist before making changes recommended**

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