

Description

'Shin splints' is a general/non-specific name describing exercise induced shin pain with the repetitious pounding of the feet during running based exercise. This type of injury lies along a continuum of conditions from tibial stress fractures to tibial stress injuries. This continuum makes up most of the conditions that are typically called "shin splints".

A very common shin (or tibia) injury is called "Medial Tibial Stress Syndrome" (MTSS). MTSS represents a stress reaction within the bone, wherein the usual bone remodeling process adapts inadequately to the repetitive stress. The healing response is insufficient or inadequate to overcome the continual stress placed upon the bone.

Anatomy

Bone constantly remodels and adapts to a loading stimulus. Microscopically, it is a well-defined sequence. When a bone encounters mechanical stress, old bone is removed, and new porous bone created. In pathologic situations however, the porous bone inadequately accommodates continued loading, resulting in micro fractures that may progress to stress fracture.

MTSS presents most commonly with pain along the inside edge of the shin. Typically these patients are runners, although the condition is also quite common in rugby or soccer players, basketball, netball, dancing or racket sports. The abnormal forces being repetitively applied to the bone causes periostitis or inflammation of the tissue surrounding the bone. It was previously thought to be caused by over-pulling of the soleus and tibialis posterior muscles (calf muscles) on the tibia. More recent studies seem to show that the repetitive loading causes bending of the bone, ultimately causing a hyper-stimulation of the bone re-modeling.

Causes

The repeated cycle of the feet pounding and pushing off results in large shockwaves being applied to the lower limbs. If biomechanical abnormalities/poor training or exercising techniques exist, 'higher forces' are being applied to the muscle, and to the bone as the lower leg tries to absorb the shock wave traveling up. The following are some abnormalities related to shin splints:



Intrinsic Factors	Extrinsic factors
<ul style="list-style-type: none"> • previous injury • poor muscle strength/flexibility in the calf muscles soleus and gastrocnemius • low bone mineral density • abnormal lower limb and foot • biomechanics such as rigid high arches, flat feet • poor running technique • Overweight • female with menstrual irregularities 	<ul style="list-style-type: none"> • poor training methods (dramatic changes in training intensity, duration, mode) • inadequate recovery, no warm up • Hard or uneven training surface • Incorrect or poor footwear • diet - low calcium intake

MTSS and Stress Fracture Signs and Symptoms

FINDING	MTSS	STRESS FRACTURE
Tenderness on touch	Inside edge of shin (middle)	Very localized to bottom third of shin)
Percussion or vibration tenderness	Negative	May be positive
Erythma, induration	Positive or negative	Positive or negative
Stretching muscle, standing on toes, jumping etc	Painful	Painful

In the early stages, the pain is intermittent, however as the injury progresses, the pain becomes more constant. If the pain becomes a more localized spot and sharp or if there is tenderness on percussion, a stress fracture may be present. Bone scans are very helpful in diagnosing MTSS and stress fractures. It is therefore to be correctly diagnosed and referred to a sports physician or doctor experienced with the condition.

Treatment

Treatment for shin splints includes a mandatory rest period to stop further injury and aggravation. Correction of the intrinsic and extrinsic factors can then be commenced in conjunction with a physiotherapy consultation.

The time frame of rehabilitation is relative to the severity of the condition. Being an overuse injury, it may take weeks. Generally, extensive walking or running must be reduced until the pain is non-existent with daily activities for a week. Gradual walking/running can then be commenced.

Physiotherapy can include:

- period of non-weight bearing (stress fractures)
- Aerobic fitness maintenance programs
- Ice massage, soft tissue massage
- Return to sport programs
- Strength and flexibility programs
- Doctor or podiatry referral
- Biomechanical correction

Podiatrists can assist rehabilitation through assessing and correcting lower limb biomechanics (ie flat feet, rigid high arch) via orthotics and/or improved shoes with better cushioning.

Your role is to understand the circumstances that lead to these injuries and prevent them – avoid training errors (start low and go slow), introduce gradual changes in intensity, activity, terrain, maintain calf flexibility, replace worn-out shoes, correct abnormal foot biomechanics with orthoses, ensure good nutrition, lose weight, control menstrual irregularities etc. This all takes time and effort but is well worth it.

Please feel free to discuss any problems or queries with your physiotherapist or get up to date treatment options and protocols by subscribing online at www.rehabonthenet.com.