



# St. Francis Sports Medicine

## *Shin Splints*

### What are Shin Splints?

“Shin-splints” is a catch-all term used to describe exercise-induced pain along the posterior-medial or anterior-lateral aspects of the proximal 2/3 of the tibia.

### Causes

- Overuse. Usually “**too much too soon**”; people who haven't run for awhile are especially prone to shin splints after they first get started, especially when they run downhill.
- Abrupt changes to the workout regimen or training including increasing the usual pace, adding distance, or changing running surfaces.
- Improper footwear

### Two Types of Shin Splints

#### **Anterior-lateral**

Tend to affect people who take up a new activity, such as jogging, sprinting, or playing sports that require quick starts and stops. The unfamiliar forces place a heavy strain on the anterior tibialis muscle, causing it to become irritated and inflamed. This commonly happens when people who aren't regular runners decide to go on a long jog. The anterior tibialis muscle must work hard to control the landing of the forefoot with each stride. Running downhill puts even more demands on this muscle in order to keep the forefoot from slapping down. People who run on the balls of their feet or who run in shoes with poor shock absorption tend to get anterior shin splints.

#### **Posterior-medial** (a.k.a. medial tibial stress syndrome)

Generally, caused by imbalances in the leg and foot. Muscle imbalances from tight calf muscles can cause this condition. Imbalances in foot alignment, such as having flat arches (overpronators) can also cause posterior shin splints. As the foot flattens out with each step, the posterior tibialis muscle gets over-stretched, causing it to repeatedly tug on its attachment to the tibia. The posterior tibialis muscle attachment eventually becomes damaged (periostitis), leading to pain and inflammation along the inside edge of the lower leg.



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## COMPARTMENT SYNDROME

- A concerning complication of shin splints. A condition where pressure from muscle damage and swelling builds up inside a section (compartment) within the body.
- As the pressure builds in the compartment, the small blood vessels (called capillaries) that supply blood to the muscles in that compartment are squeezed shut.
- This happens when the pressure in the compartment is higher than the blood pressure that keeps the small blood vessels open. When the muscle loses its blood supply it begins to ache, like a muscle cramp.
- If the pressure continues to rise, it can squeeze the larger blood vessels and nerves as well. Patients may feel coldness, numbness, and swelling in the lower leg and foot.
- If pressure builds up and is not treated, it can cause serious tissue damage in the leg/foot. Treatment for compartment syndrome is usually by surgical means (fasciotomy).

## SYMPTOMS

- Develops as a dull, aching pain gradually with activity. Pain is often noted at the early portion of the workout, then lessens only to reappear near the end of the training session and typically decreases with rest.
- The involved area may be swollen and tender to touch. Anterior shin splints are typically felt in the front of the tibia especially when bending foot upwards (dorsiflexion). Posterior shin splints produce symptoms along the inside edge of the lower leg and small bumps may also be felt along the edge of the tibia in this area.
- Pain may be worse when first get up after sleeping since the sore tibialis muscle shortens while resting, and stretches painfully when begin weight bearing on the foot.

## TREATMENT

### “Relative Rest” from activity.

(Avoid activity that provokes pain).

- Weight bearing sports can be temporarily replaced by swimming and/or cycling to maintain cardiovascular fitness and weight training can be used to maintain fitness.
- Ice can be applied to the painful area to reduce inflammation/pain.
- Over the counter medication such as non-steroidal anti-inflammatory pills (Ibuprofen-Advil/Motrin, Naproxen-Aleve/Naprosyn, Aspirin) can be used. Always consult a physician before taking medication
- Proper/appropriate shoe fit/wear including choosing a stability or motion control shoe (flexible pronator)

versus a cushioning shoe (rigid supinator). Shock-absorbing inserts can help reduce the shock and impact transmitted through the foot to the lower leg, particularly when running on hard surfaces and/or for long periods of time.

- Run only when symptoms have generally resolved (often about two weeks) and with several restrictions:
  - A level and soft terrain is best
  - Distance is limited to 50% of that tolerated pre-injury
  - Intensity (pace) is similarly cut by 50%
  - Over a 3-6 week period, a gradual increase in distance is allowed
  - Only then can a gradual increase in pace be attempted

## Physical Therapy

- Evaluation of alignment and muscle flexibility/strength imbalances to eliminate or modify the cause is important to prevent recurrences.
  - Treatment/Modalities to decrease inflammation.
  - Correct the abnormal foot alignment with appropriate foot orthotics to control excessive pronation (more common with posterior shin splints).
  - Soft tissue mobilization
- Taping including reverse figure “8” of ankle, taping shin for support, and compressive shin support. This should be used to help pain and healing of tissues and not used as a method to keep training!



- Stretch tight structures including calf muscles (gastrocnemius and soleus).
- Strengthen the muscles in dysfunction (anterior tibialis or posterior tibialis).
- As flexibility and strength improve, emphasis needs to be placed on endurance in the involved muscle with **GRADUAL** return to sport.
- Once return to pain-free full activity, teach **PREVENTION**:
  - Stretching (before and after activity)
  - Gentle repetitive warm-ups
  - Use of proper foot support
  - Importance of allowing for recovery time