

MEDIAL TIBIAL STRESS SYNDROME (Shin Splints)



■ ■ ■ Description

Shin splints is a term broadly used to describe pain in the lower extremity brought on by exercise or athletic activity. Most commonly it refers to medial tibial stress or periostitis. Periostitis is inflammation of the lining of the bone (periosteum).

■ ■ ■ Common Signs and Symptoms

- Pain in the front or more commonly the inner part of the lower half of the shin (lower leg), above the ankle
- Pain that initially occurs after exercise, progressing to pain in the beginning of exercise that lessens after a short warm-up period
- With continued exercise and left untreated, constant pain that eventually causes the athlete to stop sports participation

■ ■ ■ Causes

Shin splints are caused by overuse from repetitive activity, which leads to breakdown of the tissues. Continued activity, before the breakdown can be repaired, leads to inflammation of the periosteum (lining of the bone) and the tendon insertions into the bone and its lining. This breakdown exceeds the ability of the tendon and periosteum to heal completely, resulting in injury, more inflammation, and pain.

■ ■ ■ Risk Increases With

- Weakness or imbalance of the muscles of the leg and calf
- Poor physical conditioning (strength and flexibility)
- Inadequate warm-up and stretching before practice or play
- Sports that require repetitive loading or running, such as marathon running, soccer, walking, and jogging, particularly on uneven terrain or hard surfaces (concrete)
- Lack of conditioning early in the season or practice
- Poor running technique
- Flat feet
- Sudden change in activity level, distance, or intensity

■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Leg and ankle flexibility
 - Strength and endurance
 - Cardiovascular fitness
- Ensure proper shoe fit with adequate cushioning.
- Wear cushioned arch supports.
- Use proper technique and have a coach correct improper technique.
- Gradually increase activity.
- Run on surfaces that absorb shock, such as grass, composite track, or sand (beach).

■ ■ ■ Expected Outcome

This condition is usually curable with appropriate treatment and slow return to activity. This may take from 2 weeks to 2 or more months.

■ ■ ■ Possible Complications

- Frequent recurrence of symptoms, resulting in a chronic problem; appropriately addressing the problem the first time decreases frequency of recurrence
- Prolonged healing time if not appropriately treated or if not given adequate time to heal
- Altered level of performance or need to end sports participation due to pain if activity is continued without treatment

■ ■ ■ General Treatment Considerations

Initial treatment consists of medications and ice to relieve pain; stretching and strengthening exercises of the foot, ankle, and leg; rest; and modification of the activity that initially caused the problem. These can all be carried out at home for acute cases, although referral to a physical therapist or athletic trainer for further evaluation and treatment may be recommended. Arch supports (orthotics) for those with flat feet may also be indicated. Occasionally, taping, casting, or bracing the leg may be recommended. Slow return to activity is allowed

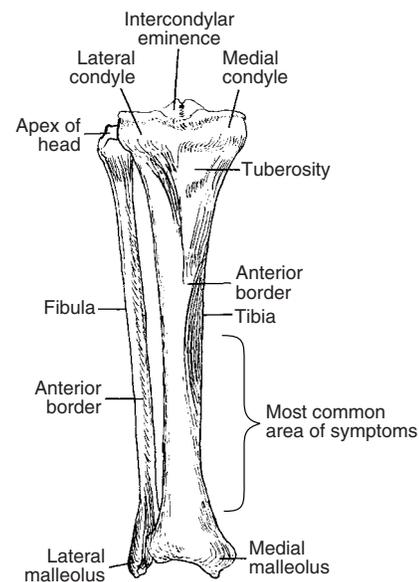


Figure 1

From Nicholas JA, Hershman EB: *The Lower Extremity and Spine in Sports Medicine*. St. Louis, Mosby Year Book, 1995, p. 852; modified from Clanton TO, Schon LC: *Athletic injuries to the soft tissues of the foot and ankle*. In Mann RA, Coughlin MJ, eds: *Surgery of the Foot*, 6th ed. St. Louis, CV Mosby, 1993.

after pain is gone. Rarely, surgery is attempted to remove the chronically inflamed tissue.

■ ■ ■ **Medication**

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Topical ointments may be of benefit.
- Pain relievers may be prescribed as necessary by your physician. Use only as directed and only as much as you need.

■ ■ ■ **Heat and Cold**

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 to

15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.

- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

■ ■ ■ **Notify Our Office If**

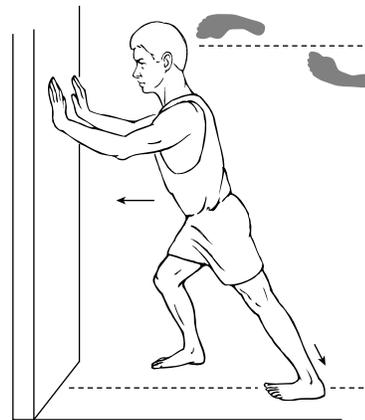
- Symptoms get worse or do not improve in 4 to 6 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

➤ **RANGE OF MOTION AND STRETCHING EXERCISES** • Medial Tibial Stress Syndrome (Shin Splints)

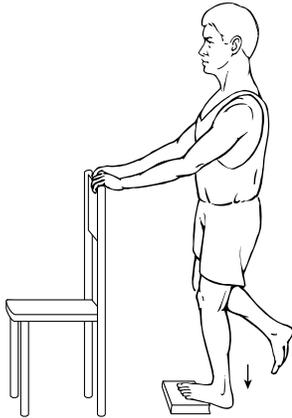
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



STRETCH • Gastrocnemius

1. Stand *one* arm length from the wall as shown. Place calf muscle to be stretched behind you as shown.
2. Turn the *toes in* and *heel out* of the leg to be stretched.
3. Lean toward wall leading with your waist, allowing your arms to bend. **Keep your heel on the floor.**
4. First do this exercise with the knee straight, then bend the knee slightly. Keep your heel on the floor at all times.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



STRETCH • Gastrocnemius

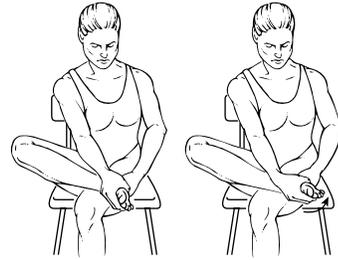
Note: This exercise can place a lot of stress on your foot and ankle and should only be done after specifically checking with your physician, physical therapist, or athletic trainer.

1. Place your toes and the ball of your foot on a book(s) or the edge of a stair. Your heel should be off the ground.
2. Hold on to a chair or stair rail for balance.
3. Allow your body weight to stretch your calf.
4. First do this exercise with the knee straight, then bend the knee slightly.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



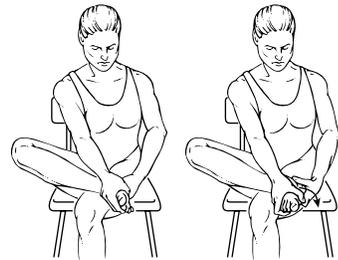
RANGE OF MOTION • Ankle Plantar Flexion

1. Sit in the position shown.
2. Using your hand, pull your toes and ankle down as shown so that you feel a gentle stretch.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.



RANGE OF MOTION • Ankle Inversion

1. Sit with your _____ leg crossed over the other.
2. Grip the foot with your hands as shown and turn the sole of your foot upward and in so that you feel a stretch on the outside of the ankle.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.



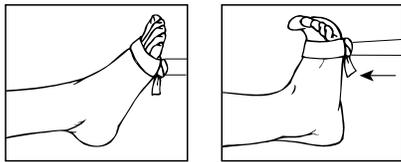
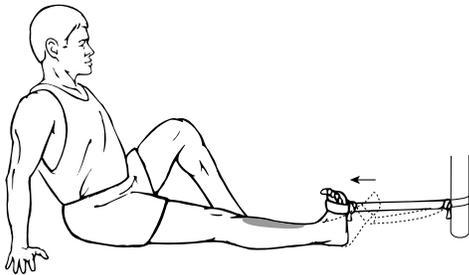
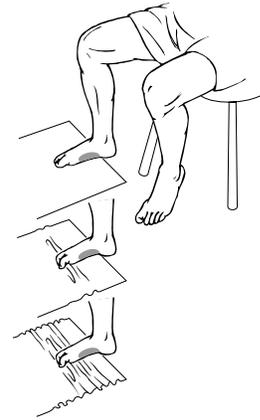
RANGE OF MOTION • Ankle Eversion

1. Sit with your _____ leg crossed over the other.
2. Grip the foot with your hands as shown and turn the sole of your foot upward and out so that you feel a stretch on the inside of the ankle.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.

> STRENGTHENING EXERCISES • Medial Tibial Stress Syndrome (Shin Splints)

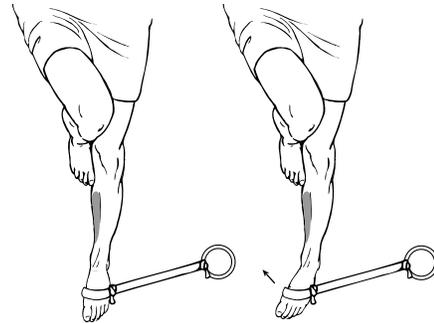
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



STRENGTH • Towel Curls

1. Sit in a chair and place a towel on a noncarpeted floor. Place your foot/toes on towel as shown. (You may also stand to do this exercise rather than sit.)
2. Curl/pull towel toward you with your toes while keeping your heel on the floor. Move towel with toes only. Do not move your knee or ankle.
3. If this is too easy, place a light weight (book, hand weight, etc.) at the far end of the towel.
4. Repeat exercise _____ times, _____ times per day.



STRENGTH • Dorsiflexors

1. Attach one end of elastic band to fixed object or leg of table/desk. Loop the opposite end around your foot as shown.
2. Slowly pull the foot toward you. Hold this position for _____ seconds. Slowly return to starting position.
3. Repeat exercise _____ times, _____ times per day.

STRENGTH • Ankle Inversion

1. Attach one end of elastic band to fixed object or leg of table/desk. Loop the opposite end around your foot.
2. Turn your toes/foot inward as far as possible, attempting to push your little toe down and in. Hold this position for _____ seconds.
3. Slowly return to starting position.
4. Repeat exercise _____ times, _____ times per day.

Notes:

(Up to 4400 characters only)

Notes and suggestions