



What is Medial Tibial Stress Syndrome (MTSS)?

Medial tibial stress syndrome (MTSS), commonly encompassed under the umbrella term shin splints, occurs along the bottom two-thirds of the shin. Pain is more diffused than “pin pointed” and will spread out at least 5 cm over a large area of the inner shin.

Symptoms of pain may be experienced at the beginning of activity, subside during activity, but then return following completion. It is one of the most common overuse injuries among runners or jumping athletes, and tends to affect females more than males.

There is no true definition of MTSS, likely due to the inconsistent use of terminology within the current research. This leads to a lack of understanding surrounding this syndrome and the exact musculature involved. However, a range of hypotheses have been proposed around this syndrome, ranging from periostitis (inflammation of the connective tissue surrounding the muscle), enthesopathy (involving the muscle’s tendon attachment to the bone), to myofascial strain, or even a bone stress reaction.

What do people experience?

- Sharp pain along the lower, inside part of the shin.
- Pain following the completion of exercise will usually occur in the early stages of MTSS. However, it can then progress to being felt at the beginning and even during exercise.
- Diffused inner shin pain that becomes evident during palpation over a distance of at least 5 cm.
- Trouble running up or down hills.

Risk factors & how to avoid discomfort

Internal

- Increased navicular drop (>10mm)
- Previous history of MTSS
- Females are at a higher risk than males for developing MTSS
- Increased body mass index (BMI)
- New or beginner level runner
- Increased external rotation of the hip (in males)

External

- Running surface (hard surfaces)
- Uphill or downhill running
- Too old or worn footwear that is improper for your activity
- Participating in high impact sports (basketball, volleyball, racket sports, etc.)

Avoid discomfort through:

- Proper footwear selection based on your biomechanics and foot type
- Slowly progress into activity; avoid too much, too soon, too fast
- Minimize over-training through the proper progression of activity and adequate rest
- Proper strength and flexibility in the lower limb given your activity

What are my options for treatment? Who else can help?

As always, utilizing the proper healthcare professional during the rehabilitation process is important in order to implement changes in a controlled manner. With the amount of information available in books and on the internet, it can be difficult to know what information will be useful and beneficial to you.

Treatment options

Nonsteroidal anti-inflammatory drugs (NSAIDs)

These can help decrease pain and swelling within your lower leg. Please contact your family physician for more information before utilizing this as an appropriate method of treatment.

Footwear change

Changing your footwear if it is old and worn should be your first option. Well-worn shoes may exaggerate your biomechanics in a way that your body may not respond well to, which can ultimately lead to injury. Also, making sure that you are in the proper footwear given your biomechanics and foot type is important when being active. Ensure that you are getting the proper amount of support and cushioning for your activity. Contact your pedorthist to have your biomechanics assessed properly and for a proper footwear recommendation.

Stretching and strengthening

Ensuring that you have the adequate strength and flexibility for the activity you are participating in is always crucial. Having the proper flexibility in the calf muscles (soleus and gastrocnemius) is beneficial in minimizing the risk of MTSS. Consult a physiotherapist or pedorthist for the proper protocols regarding this musculature.

Rest

The literature supports the use of rest and icing when MTSS is in the acute phase. Because MTSS is an overuse injury commonly found in athletes, many find it hard to decrease the level of activity for an extended period of time. Ice applied for 15-20 minute intervals to the area of concern can provide some pain relief. Talk to your healthcare professional about the proper protocol that can be implemented given the duration of your symptoms.

Modified Training

Your training regimen should be modified with the presence of pain. Intensity, duration, and frequency should be decreased while pain is present. During this

time, low impact and cross-training exercises (such as swimming, biking, or elliptical running), can be performed in a controlled manner. Ask your healthcare professional about other exercises you can perform during this rehabilitation period.

If conservative treatment does not seem to prove beneficial, it is advised that you visit your family physician and rule out other pathologies also commonly found in the lower leg, such as tibial stress fractures and compartment syndrome. MRIs are commonly recommended and can help grade the severity of tibial injuries to ensure the proper treatment is implemented.

Staying active with pain

When experiencing pain caused by MTSS, there are a few things that should be done to stay active:

- Decrease the intensity, duration, and frequency of exercise. This does not mean ceasing activity altogether but limiting the factors that contribute to overuse injuries.
- Participate in low impact or cross-training exercises. Instead of going for a run on the treadmill, go for a swim, ride a bike, or use an elliptical machine to remain active.
- Avoid training on hills. This means no excessive running up or down hills. This can stress the lower limb musculature and delay the rehabilitation process.
- Allow for adequate rest between training sessions.
- Once symptoms have resolved, progress slowly back into activity rather than ramping up all at once.

PAIN IN YOUR SHINS DURING OR AFTER A RUN?

To feel better, read on!

How can SoleScience help you feel better?

Your SoleScience Pedorthist will create an individualized treatment plan that suits your specific needs, goals, and symptoms. We will work with you to determine not only what we need to do to address your current concerns, but also to prevent future problems.

Your pedorthist will complete a thorough and comprehensive foot examination at your initial appointment. A comprehensive follow-up exam will ensure that you are meeting your goals and allow your pedorthist to reassess your treatment plan (as necessary). During these appointments we will:

- Assess joint and muscle function, including range of motion and gait assessment
- Assess your footwear for both fit and function
- Identify any risk factors that can be modified and make recommendations for change
- Identify areas of risk with specialized tools such as pressure mapping (F-Scan or Pedograph)
- Discuss a treatment plan, which may include a change in footwear, activity modification, or custom foot orthoses and/or a complementary treatment referral (such as physiotherapy)

In addition to your individual treatment plan, your SoleScience Pedorthist will provide you with educational resources to help you best maintain your foot health.

Our take on the need for custom foot orthoses

Custom foot orthoses are appropriate for a variety of conditions, and MTSS is no exception! Depending on your foot type and biomechanics, an off-the-shelf orthotic may work just fine. However, if there are numerous factors such as shock absorbency issues and abnormal biomechanics contributing to the problem, custom orthotics can be the better option.

It has been shown that the amount of pronation happening within the inside part of your foot can be a contributing factor to MTSS. The change in your arch height from a non weight-bearing to weight-bearing position can be a good indication as to why you may be experiencing this pain while being active. Through the use of custom orthotics, we can capture the desired position of your foot to limit and control the movements that contribute to this issue while providing you a level of cushioning and comfort. Finally, the adjustability of the custom orthotic allows us to tailor it to your specific needs and activities.

Custom vs. OTS

OTS, or off-the-shelf orthotics, are pre-fabricated devices that can be fit in to your shoes right from the shelf. This type of orthotic is typically heat moldable allowing for a degree of immediate customization. Truly custom-made foot orthoses are differentiated in that they are designed specifically around a 3D model of your foot. This type of orthotic can be completely tailored to suit your needs.

Footwear recommendations

Appropriate footwear selection is important for day-to-day comfort and activity demands on your specific foot mechanics. Generally speaking, footwear with ample cushion and the proper support can work well when managing pain related to MTSS. No matter which shoe you select, proper fit is vital. Length, width, depth, and heel height are important considerations to take into account. Consult with your pedorthist for recommendations specific to your foot type and intended use.