Medial Tibial Stress Syndrome

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Medial Tibial Stress Syndrome
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Introduction

Medial Tibial Stress Syndrome (MTSS) is an injury of the lower extremity, and the most common leg pain in athletes. A common name for MTSS is “shin splints.” MTSS is an inflammation of the periosteum or muscle from overuse. The cause of this condition is due to many factors including training errors and biomechanical abnormalities. Muscle imbalance and tightness over the gastrocnemius, soleus, and plantar muscles are associated with MTSS. New research shows that a spectrum of tibial stress injuries is likely involved in MTSS. The percentage of MTSS is between 4 and 35% in athletic and military populations.

Conservative treatment options include rest and ice in the acute phase, and therapy such as whirlpool baths. After the acute phase, stretching of the gastrocnemius, soleus, and peroneals is an important part of treatment, as are exercises that focus on improving the strength and endurance of the muscles which produce dorsiflexion, plantar flexion, inversion, and eversion at the ankle.

Treatment should focus on restoring proper biomechanics, as well as developing lower extremity strength and proper muscle balance to improve shock attenuation for the lower extremity. Proper diagnosis and management of MTSS are key for helping athletes return to full activity. It is important to learn more about this condition because it is a common injury, and athletes do not know how to treat it properly.

Exercise Methods

Ice Massage:
Applying ice massage of the affected area is a great way to relieve pain symptoms. Ice is also used for the first massages should last for 20 minutes for maximal effectiveness.

Orthesis:
The use of orthotics can be helpful in correcting biomechanical abnormalities. For example, the addition with support helps correct excessive pronation.

Preventative Stretch:
Stretches are important in any program for MTSS. The patient should be encouraged to perform exercises to help prevent MTSS. One way to stretch is to step up and down on the floor. The patient should turn so that wall is until a stretch is felt. To stretch the ankle, one performs essentially the same exercise, but this time with the heel on the floor. Each of these stretches should performed for 30 seconds.

Stretching:
This image demonstrates how to perform exercises with a rubber resistance band.

Iliotibial Band:
The movements include plantar flexion, dorsiflexion, inversion, and eversion. Resistive plantar flexion strengthens the gastrocnemius and soleus muscles, while dorsiflexion strengthens primarily the peroneal, tibialis anterior, gastrocnemius, and soleus. Perform 3 sets of 10 repetitions.

Peroneal Stretch:
To stretch the peroneal muscles, sit in a chair with the ankle of the leg to be stretched resting on the floor. The patient should lean the foot forward (dorsiflexion) and back (plantar flexion) for 30 seconds.

Personal Stretch:
This image demonstrates how to stretch the peroneals.

Eccentric Calf Raises:
These exercises are useful in strengthening the dorsiflexors. One way to perform this exercise is to stand on a step with your toes and one foot back. Perform 1 set of 15 repetitions.

References


5. The use of a rubber tubing or rubber band is an effective way to resist all motions of the ankle, and therefore strengthen the involved muscles. Eccentric calf raises are a way to strengthen the plantar flexors specifically.

6. The final step of rehabilitation for MTSS includes a progressive return to running or activity. The patient must resume running by gradually increasing the distance and frequency. The patient should be encouraged to avoid running on hills, or on uneven or very hard surfaces.

Discussion

In rehabilitating a subject who suffers from medial tibial stress syndrome, it is essential to address not only the symptoms, but also the underlying problems that are causing the condition. Cryotherapy, such as ice massage, can be used to relieve symptoms in the acute phase. Rest is also essential for this point of the injury. Some sources have mentioned the use of a graded running system, where the athlete begins with participation in light exercise and gradually increases the intensity. However, it is not been proven whether this is more beneficial than complete rest. Lack of flexibility of the muscles of the leg is a likely contributor to MTSS. Therefore, flexibility exercises should be performed after the acute phase of the injury. This includes daily stretches for the gastrocnemius, soleus, and peroneous.

Muscles of the lower extremity that lack endurance or strength are probable culprits for MTSS. It is also important to identify and correct any biomechanical abnormality in the lower extremity during the rehabilitation of this condition. This includes improper alignment due to muscle imbalance, and particularly an imbalance in strength between the inverter and evertor muscles, which can cause excessive pronation. It is important to put into action a strengthening program to correct this imbalance. Therefore, after a stretching regimen has been adhered to, the patient should add a strengthening program to their rehabilitation process.

The strengthening program should focus on all motions of the ankle joint and the muscles that produce these motions. This includes plantar flexion, dorsiflexion, inversion, and eversion. The use of a rubber tubing or rubber band is an effective way to resist all motions of the ankle, and therefore strengthen the involved muscles. Eccentric calf raises are a way to strengthen the plantar flexors specifically.

The final step of rehabilitation for MTSS includes a progressive return to running or activity. The patient must resume running by gradually increasing the distance and frequency. The patient should be encouraged to avoid running on hills, or on uneven or very hard surfaces.