EXERTIONAL (CHRONIC) COMPARTMENT SYNDROME

Description

The leg is divided up into four main compartments separated by thick ligament-like tissue called fascia. Within these compartments are muscle, nerves, arteries, and veins. When there is swelling within a compartment, the fascia does not stretch. The swelling within the compartment leads to increased pressure within the compartment. This increased pressure eventually stops blood flow in the veins and arteries and leads to injury of muscle and nerves by direct pressure and loss of blood supply. This is called compartment syndrome. Chronic compartment syndrome involves increased pressure within muscle and is associated with exercise.

Common Signs and Symptoms

- Leg pain that begins at the same time or distance from the onset of exercise and gets better after stopping exercise (although more severe pain may persist for hours or days)
- Feeling of fullness, pressure, or ache in the leg; occasionally the pain may be sharp
- Numbness, tingling, or burning in the leg, foot, or ankle
- Weakness of the muscles of the foot and ankle

Causes

The exact cause of chronic exertional compartment syndrome is unknown, but it is thought to be due to increased pressure within muscle due to hypertrophy (enlarged muscles from exercise or training), thickened fascia, or other possibilities.

Risk Increases With

- Sports that require endurance training or competition
- Poor physical conditioning (strength and flexibility)
- Defects in the fascia where muscle can poke through
- Poor running technique

Preventive Measures

No preventive measures are known, although appropriately warming up and stretching before practice or competition, as well as maintaining appropriate conditioning, flexibility, and strength, may help.

Expected Outcome

This condition is usually curable with appropriate treatment, most commonly including surgery.

Possible Complications

- Frequent recurrence of symptoms, resulting in a chronic problem
- Permanent injury to muscles and nerves of the leg, foot, and ankle

Performance will be affected, and you may even have to stop performing 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. Usually, however, these treatments are unsuccessful. Some may wish to alter their activity to avoid exertional pain. Otherwise, surgery is recommended to release (cut) the fascia to relieve pressure on the structures within the compartment. Returning to the same level of sports activity may be difficult following surgery.

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, usually only after surgery. Use only as directed and only as much as you need.

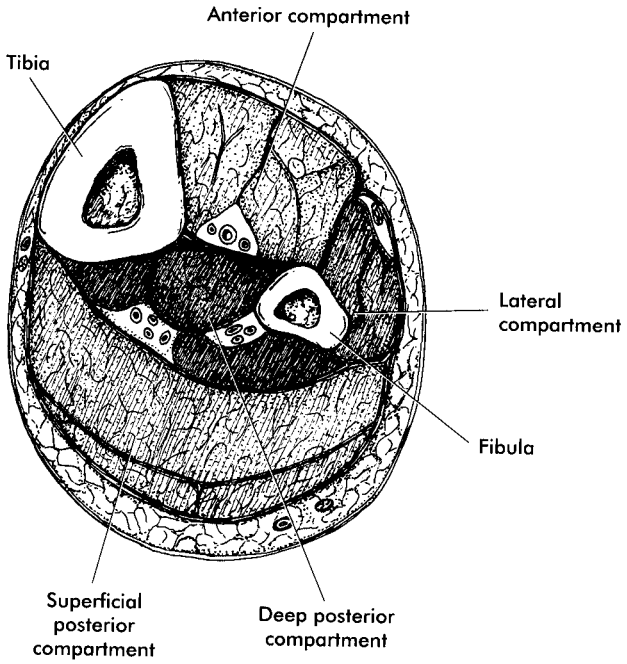


Figure 1
From Baxter DE: The Foot and Ankle in Sport. St. Louis, Mosby Year Book, 1995, p. 266.

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

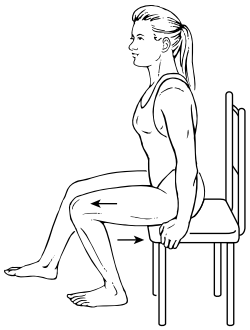
- Symptoms get worse or do not improve in 2 to 4 weeks despite treatment
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

➢ **RANGE OF MOTION AND STRETCHING EXERCISES** · Exertional (Chronic) Compartment Syndrome

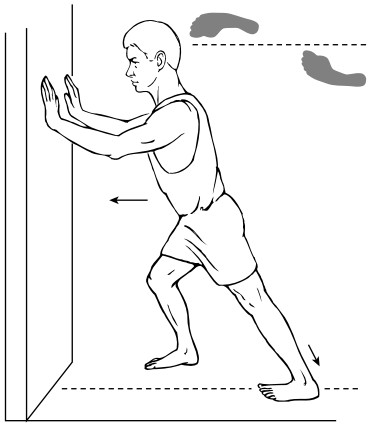
Proper flexibility is the key concern to attempt to alleviate this condition without surgery. These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please 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.



RANGE OF MOTION · Ankle Dorsiflexion

1. Sit on the edge of a chair as shown.
2. Place your _____ foot closest to the chair
3. Keep your foot flat on the floor and move your knee forward over the foot.
4. Hold this position for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.

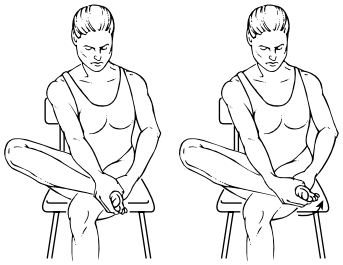


STRETCH · Gastrocsoleus

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.

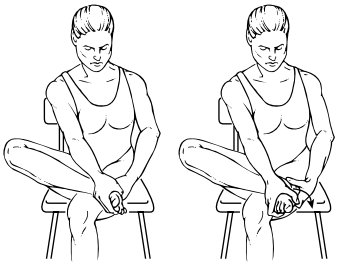
RANGE OF MOTION · Ankle Plantar Flexion

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** · Exertional (Chronic) Compartment Syndrome

Strengthening exercises are ***usually*** not required for this condition. Emphasis and time are placed on appropriate flexibility of the muscles of the lower leg.

Notes: (Up to 4400 characters only)

Notes and suggestions