

What is it?

CECS syndrome refers to exercise-induced leg pain resulting from muscle 'swelling' and an increase in pressure in a compartment of the lower leg. The muscles in the lower leg are divided into a number of separate compartments by 'sleeves' of thick, inelastic connective tissue. When you exercise, blood flow is increased to this compartment and the contained muscles increase in volume (swell). When there is not enough room within the compartment for this increased muscle volume, compartmental pressure rises. This can interfere with the blood flow to the muscles and nerves in the compartment, causing pain. Factors that may contribute to compartment syndrome include an increase in the size and volume of the muscles within the compartment, unaccustomed strenuous exercise, or progressive tightening of the surrounding connective tissue 'sleeve'.

What are the symptoms?

The most common sensation when you have compartment syndrome is pain along the lower leg. This is commonly felt from the outside of the front edge of the shin (tibia). It may be an aching, tight, cramping or squeezing pain. It is generally only felt during exercise and does not go away until you lower your exercise intensity or stop exercising. When you stop, the pain slowly disappears as muscle volume (swelling) and pressure within the compartment return to normal. In some instances, you may also experience lower leg weakness and numbness. Numbness results from compression of a nerve which passes through the compartment.

Fig. 1

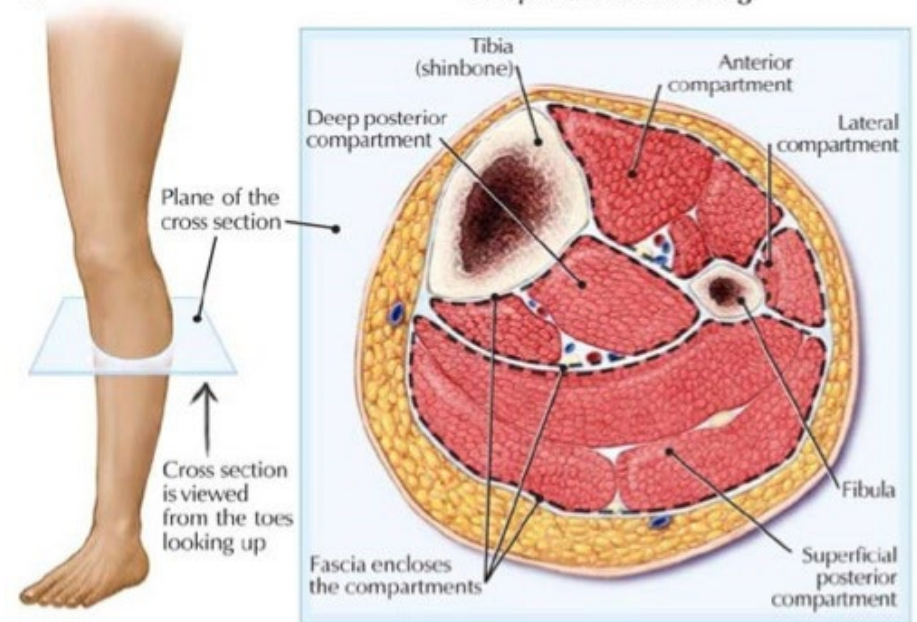


Figure 1 indicates the cross section of a healthy leg and the various compartments within it.

How did I get it?

There are quite a few reasons that a compartment can become tight. A history of severe injury can cause scar tissue or injury to the compartment sleeve. Weight gain can also be associated with increasing compartment pressures. Drugs such as anabolic steroids can cause the muscle to increase in size but the compartment does not increase to accommodate it. Supplements such as creatine might cause swelling of the muscle. Training errors including excessive training frequency, type of exercise and poor running mechanics are also associated with fatigue and swelling of the muscle, increasing compartment pressure.

What should I do?

Compartment syndrome generally does not get better on its own. Therefore if you have or suspect you have compartment syndrome it is advised you seek the assistance of a sports medicine professional. In the meantime you should avoid activities which bring on your pain and you may begin initial treatment. The latter should consist of deep massage of the compartment (area of soreness) followed by ice to reduce any post-massage soreness. If you have or suspect you have compartment syndrome, you shouldn't attempt to exercise through the pain. This can make your problem worse by causing further tightening of the connective tissue 'sleeve'. Compartment syndrome does not produce any long-term effects, as long as it is properly diagnosed and appropriately treated.

How is a diagnosis made?

A diagnosis is made on the description of the nature and site of the pain. What it feels like when the symptoms occur and when they dissipate in relation to exercise, is important. Sometimes it may be necessary to go for a run immediately prior or even during the consult to bring on the symptoms so that an examination can be performed at the time of the symptoms. Occasionally compartment pressure testing will need to be performed. This test involves piercing the compartment with a needle and measuring the pressure within the muscle compartment after exercising.

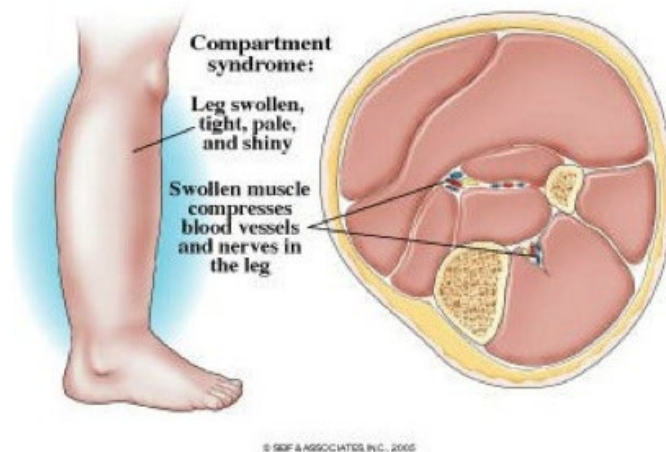


Figure 2 demonstrates how the compartments of the muscles expand and places pressure on the blood vessels and nerves

What does rehab involve?

Weight loss: When you gain weight the muscle has to work harder and there is potentially more mass in the compartment which increases pressure. Keeping weight as low as is appropriate is often helpful. Some athletes experience symptoms only after returning to running after a layoff and any increases in weight during this layoff may be a factor in increasing compartment pressure resulting in pain.

Flexibility training: If a muscle group is tight, the muscles that pull in the opposite direction have to work harder than normal.

Running modifications: As mentioned earlier some athletes experience symptoms only after

returning to running after a layoff. A subtle change in running technique can be a cause of this. Feeling “relaxed” during the run may help as it can make changes to foot strike position.

Training modifications: It is important to effectively train around the injury without provoking symptoms. Swimming, cycling and a variety of gym based machines can be used in place of running. Interval runs of short duration and high speed are often less symptom provoking than longer steady state runs. Using short interval runs in place of longer runs can keep you running without bringing on symptoms.

Soft tissue treatments: Including massage may be useful to decrease the degree of muscle swelling.

Biomechanical assessment and correction: Assessment and correction of your biomechanics may potentially be very useful.

Surgery: Surgery to cut the ‘sleeve’ of connective tissue surrounding the compartment is necessary in some cases, as this enables the muscle to expand during exercise without increasing pressure.



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