



Chronic exertional compartment syndrome

Chronic exertional compartment syndrome (CECS) is an uncommon, exercise-induced condition that causes pain, swelling and sometimes even disability in affected muscles of your legs or arms. Anyone can develop CECS, but it's more common in seasoned athletes who participate in sports that involve repetitive movements, such as running, fast walking, biking and swimming. CECS is sometimes called chronic compartment syndrome or exercise-induced compartment syndrome.

It can be difficult to diagnose, partly because the affected limbs generally look perfectly normal.

Your arms and legs have several groupings, or compartments, of muscles, blood vessels and nerves. Each of these compartments is encased by a thick layer of connective tissue called fascia (FASH-e-uh), which supports the compartments and holds the tissues within each compartment in place. The fascia is inelastic, which means it has little ability to stretch. In CECS, exercise or even repetitive muscle contraction causes the tissue pressure within a compartment to increase to an abnormally high level. But because the fascia can't stretch, the tissues in that compartment aren't able to expand sufficiently under the increased pressure. Imagine shaking up a soda bottle but leaving the cap on. An enormous amount of pressure builds up. As the pressure builds up within one of your muscle compartments, with no outlet for release, nerves and blood vessels are compressed. Blood flow may then decrease, causing tissues to get inadequate amounts of oxygen-rich blood, a condition known as ischemia (is-KE-me-uh). Nerves and muscles may sustain damage. Experts aren't sure why exercise or muscle contraction creates this excessive pressure in some people. Some experts suggest that biomechanics, how you move, may have a role. Other causes may include having enlarged muscles, an especially thick or inelastic fascia, or high pressure within your veins (venous hypertension).

This condition is most common in athletes under 40, although people of any age can develop it. Those who engage in exercise that involves repetitive motions or activity are most at risk. Young female athletes may be at particular risk, for reasons unknown. People with CECS typically experience pain that begins with activity, progressively worsens and then stops at rest. Over time, in people who continue to exercise despite the pain, the symptoms can develop sooner, be more severe and take longer to go away, sometimes lingering for a day or two. Taking a complete break from exercise may relieve your symptoms, but usually only temporarily. Once you start your activity again, those familiar symptoms usually come back immediately. The pain most often occurs in your lower legs. However, it occasionally occurs in your thighs, upper arms, forearms and hands. The pain and other symptoms associated with CECS may be characterized by:

- Aching, burning or cramping pain in the affected limb during exercise
- Tightness in the affected limb
- Numbness or tingling in the affected limb
- Weakness of the affected limb
- Occasionally, swelling or bulging as a result of a muscle hernia

CECS is often mistaken for shin splints. Don't try to exercise through the pain since this may make the condition worse and more difficult to eradicate. Try alternative pain free activities.

“Active rest” means avoidance of activities that reproduce the pain but allows any other sport or activity. If you think you have shin splints and they do not improve with self-care, talk to your doctor.

Before you see a doctor who specializes in sports medicine, orthopedics or orthopedic surgery, write down any symptoms you're experiencing, including any that may seem unrelated to the reason for which you scheduled the appointment. Obtain copies of any imaging tests you have had done, if possible. Ask your doctor's staff how you can have these forwarded to your doctor before the appointment. Use ice or take anti-inflammatory medications, such as Tylenol, Aleve, Advil, Motrin, etc. to reduce pain until you can see your doctor.

CECS is often difficult to diagnose. More common diagnoses are entertained first along with testing to exclude them. The problem with making this diagnosis is that the examination is most commonly completely normal. History is very important. Sometimes a patient will be asked to come in for an examination after running so that the pain or swelling will be present. Studies will be ordered as required. Studies often include bone scans, X-rays, doppler ultrasound and MRI's. While noninvasive testing sounds attractive, they often just rule out other potential diagnoses. A definite diagnosis is made by measuring the pressure within the compartment by inserting a needle with a pressure measuring instrument attached. High pressure measurements establish the diagnosis.

Options to treat CECS include both conservative and surgical methods. Surgical consists of releasing the tight fascia of each affected compartment (fasciotomy) or actually removing part of the fascia (fasciectomy). In either case, this decompression means the compartment is no longer trapped by the unyielding fascia, giving it room to expand when pressure increases. Although surgery is highly effective for most people, it's not without risk. The complications should be discussed with your surgeon prior to surgery. There isn't any self-care measures that will specifically help prevent or treat chronic exertional compartment syndrome. But following basic sports and fitness guidelines can help protect your health and safety during exercise:

- Warm up before starting exercise
- Cool down when finished exercising
- Discontinue if in pain
- Stay hydrated
- Engage in a variety of physical activities

Kenneth A. Jurist, M.D. and Joseph H. Guettler, M.D.
24255 Thirteen Mile Road, Suite 100
Bingham Farms, MI 48025
248-988-8085 Phone / 248-988-8565 Fax

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