

What Is Cuboid Syndrome

In this review article, a Physical Therapist from the University of Wisconsin - La Crosse explains what a cuboid syndrome is, causes, effects, diagnosis, and treatment. A complete review of the anatomy, mechanics during standing and walking, and clinical presentation are also included. Other names for this condition are cuboid fault syndrome, dropped cuboid, subluxed cuboid, locked cuboid, peroneal cuboid syndrome, and lateral plantar neuritis.

The first thing to know about cuboid syndrome is that it causes pain along the lateral (outside) edge of the foot. The cuboid bone is one of many bones in the foot. It is situated close to the center of the foot and is surrounded by other bones. It is an oddly shaped bone with smooth places (the articular surfaces) where the other bones connect and are held together by ligaments and tendons.

The main area where the cuboid bone makes contact with the calcaneus (heel bone) is called the calcaneocuboid (CC) joint. This is an important joint for stability, load transfer, and movement of the foot and ankle. As some of the names for this condition suggest, a shift in the position of the cuboid bone can cause loss of motion with the bone "locked" in place. The surfaces of the connecting bones no longer line up. This effect with the accompanying symptoms is a cuboid syndrome. When this happens, we say the joint has lost its congruence.

The loss of congruence can be small enough that it doesn't show up on an X-ray or other types of imaging studies. Pain develops along the lateral side of the foot. It feels like a ligament sprain. Loss of ankle and/or foot motion is common. Putting weight on the foot (especially the outside edge of the foot) becomes difficult. The ability to stand, walk normally, or hop on the painful foot is affected.

Lateral foot pain could be caused by a number of other problems. The list of possible sources of lateral foot pain includes gout, compression neuropathy of the sural nerve, ankle impingement, tendinopathy, or congenital fusion of the bones in that area (calcaneus, navicular, talus).

Even though cuboid syndrome is fairly common, there haven't been enough studies done to find reliable and accurate tests to diagnose the problem. The examiner must rely on the patient's history, perform some clinical tests (e.g., palpation, movement of the bones, movement of the joints), and treat the problem.

The history may be helpful (if there has been trauma) but in many cases, there is no known cause. Anything that disrupts the joint alignment between the cuboid and the surrounding bones can result in a cuboid syndrome. X-rays may be taken to rule out bone fracture(s).

Cuboid syndrome is clearly a mechanical problem but one that could be caused by impaired muscle or tendon function, faulty anatomy such as flat feet, being overweight, or wearing the wrong kind of shoes. Other factors that may increase the risk of developing cuboid syndrome include poorly constructed orthotics (shoe inserts), training on hard or uneven surfaces, and overtraining without enough rest or time to recover.

As these risk factors suggest, athletes and especially ballet dancers are affected most often by cuboid syndrome. In fact studies show that four per cent of all athletes with foot pain have pain coming from the cuboid bone. And in several studies, 17 per cent of ballet dancers examined with lateral foot pain had cuboid syndrome. Anyone (athlete or nonathlete) who has sprained an ankle is also at risk for this problem.

If the treatment for cuboid syndrome is applied and the symptoms go away, the diagnosis may be confirmed.

Treatment is with manipulation of the bones. The Physical Therapist holds the foot to stabilize the bones around the cuboid and then applies a force to shift the bone back in place. The patient may feel and/or hear a click or pop. Immediate pain relief is often reported after manipulation.

For those professionals who examine and treat foot pain, the tests used to evaluate the cuboid position and movement are included in this article. The author provides photos and descriptions of each test (e.g., dorsal-plantar cuboid shear test, midtarsal supination test, midtarsal adduction test). Two techniques used to manipulate the cuboid are also featured (the cuboid whip and the cuboid squeeze).

From experience, the therapist notes that it may take more than one manipulation to completely resolve the problem. The longer the patient has had this condition, the more likely that a series of manipulations will be needed. Manipulation may be followed by local treatment such as icing, taping, ultrasound (heat), massage, or electrical stimulation. Stretching of the leg muscles and/or shoe inserts to support the cuboid bone may be provided.

In cases of recent ankle/foot sprain, a high-velocity thrust manipulation may not be appropriate. It may be better to apply this treatment method after the injured soft tissues have had time to heal and can withstand the force of a manipulative movement.

Anyone with lateral foot pain who does not respond to treatment for a cuboid syndrome may have some other problem. At that point, reevaluation is required. It may be that there is a sprain severe enough to require unloading with a cane or crutches or off-loading in a cast or splint. If an X-ray has not been previously taken, this may be the time to take one.

The author concludes that further research is needed in this area. Evidence-based guidelines for the diagnosis and management of cuboid syndrome currently do not exist. It would be helpful to know if there are any predictive risk factors for success or failure of manipulation for this problem before applying the technique. Since cuboid syndrome is fairly common, this information could potentially benefit many people (athletes as well as nonathletes).

Reference: Chris J. Durall, DPT, ATC, MSPT. Examination and Treatment of Cuboid Syndrome: A Literature Review. In *Sports Health*. November/December 2011. Vol. 3. No. 6. Pp. 514-519.