

# Manipulation of the Cuboid

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Manipulation of the cuboid is perhaps one of the easiest yet most rewarding of all foot mobilizations. Several types of techniques exist, but the aim of this article is to describe the simplest and most gentle method. The key to a successful yet gentle procedure involves accurate diagnosis of a cuboid restriction as well as careful positioning of the foot. Since the inferior surface of the cuboid can be extremely tender when restriction to motion exists, following proper protocol makes this as comfortable as possible for the patient.

## Etiology and Indications for Care:

Restriction of the cuboid can present with a variety of symptoms. The cause of this restriction can be the result of a minor to severe ankle sprain, mild twisting injury, or idiopathic. While idiopathic is listed as an etiology, injuries that will predispose one to this condition, may be so subtle, that they are thought to be non-injurious, and thus overlooked. Pain will often not develop for 2-3 days, so placing cause with effect is often impossible, thus rendering the underlying cause as undetermined. Keeping cuboid restriction as a diagnostic rule-out will help to not miss this entity during examination.

## Symptoms associated with cuboid restriction are as follows.

### 1. Lateral column pain including the cuboid area

These symptoms may involve the 4th innermetatarsal space, 4th or 5th rays or the area surrounding the cuboid. There is rarely any erythema or edema associated with these complaints.

### 2. Vague dorso-lateral foot pain

This is perhaps the most common presenting symptom. Pain appears across the top, outside of the foot. There is often no recollection of injury. X-rays of the foot are negative. Pain tends to be located just proximal and superior to the bases of the 3rd and 4th metatarsals.

### 3. Lateral ankle pain

This type of pain most often follows ankle sprain. Patients may often wait long periods of time prior to presenting, as they felt the pain was directly related to the sprain, and that time was required for healing. In this case, the signs normally associated with ankle sprain (eccymosis, swelling, etc) have long since resolved.

### 4. Lateral forefoot pain, ie sub 4/5 met heads

As will be seen in the exam technique, there is a very limited amount of dorsiflexion of the lateral column associated with cuboid restriction. Since it is this lateral column range of motion that relieves excessive pressure from the metatarsal heads, the loss of this motion can result in overuse to the heads of these bones.

### 5. Peroneal tendon pain

Peroneal tendon pain and/or peroneal cuboid syndrome can be synonymous with cuboid restriction.

## Examination:

(Exam technique will be described for the left foot. Technique is reversed for the right foot.)

With the patient in the seated position, the clinician grasps the rear foot with left hand, and holds it in as stable a position as possible. Then, with the right hand, the 4th and 5th metatarsal head region is grasped. (Figures 2-3)



Figure 2.



Figure 3.

A plantar to dorsal force is then applied to the plantar surface of the 4/5 rays, seeing how much dorsiflexion of this lateral column is available. When cuboid restriction is present, there is a marked limitation to this range, and, when combined with the associated symptoms, becomes diagnostic for cuboid restriction. Care should be taken to ensure a strong grip on the rearfoot when the lateral column is dorsiflexed. It is important to view the motion at the calcaneal cuboid joint via lateral column dorsiflexion, and failure to maintain the rearfoot stable can produce a false negative finding. If the clinician is in doubt as to whether or not the test is positive, then comparisons to the contralateral, asymptomatic side should be performed.

## Manipulation Technique:

(This technical explanation is provided for the left foot. The reverse applies for the right.)

The patient remains in the seated position. They are seated with the buttocks firmly against the back of the exam chair. The knee is fully extended and the patient instructed not to allow for knee flexion during this manoeuver. The inferior surface of the cuboid is then identified. (Figure 1)



Figure 1.

It is located just proximal and medial to the base of the 5th metatarsal. The inferior pole of the cuboid can be palpated in most cases. Once identified, the clinician then places their left

thumb against the inferior pole of the cuboid. The thumb is then flexed at the IP joint. (Figure 4) The right hand is then placed over the left thumb, effectively making the left thumb a piston that will be pushed into the cuboid with the right hand. (Figure 5) As the position is established, the patient is then asked to GENTLY flex the digits towards the clinician. As the patient GRADUALLY AND GENTLY, flexes their toes, the inferior surface of the cuboid can be felt to relax. It is this digital flexion that forms the ideal position for manipulation. Make sure that once the cuboid is felt to relax, no further movement of the toes is attempted. The adjustment is

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Figure 4.



Figure 5.



then performed by thrusting with a rapid but only moderate force against the inferior cuboid. There is rarely any audible sound made by this technique. Once completed, return to the exam position to see if range of motion has returned to the lateral column.

## Conclusion:

Restriction of motion of the calcaneal cuboid joint can cause or perpetuate pain in the foot/ankle. Mobilization can be performed in a very gentle fashion, with range of motion returning to normal immediately following this procedure. Care should be taken to avoid excessive force, as the inferior surface of the cuboid may be tender when restriction to motion has been longstanding.