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### Physiotherapy Interventions in Management of Cuboid Syndrome: A Literature Review

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#### Abstract

**Background and Purpose:** Cuboid syndrome is a foot condition causing pain on the outer side due to misalignment of the cuboid bone, often seen in athletes, repetitive strain, or after ankle sprains. It leads to difficulty in walking, reduced mobility, and altered gait, and is frequently misdiagnosed. Physiotherapy is essential in its management, with techniques like manipulation, mobilization, taping, and exercises to reduce pain and restore function. These interventions improve joint alignment, stability, and movement. Thus, the study aims to review different physiotherapy interventions in management of Cuboid Syndrome.

**Methodology:** A total of 23 articles which met the inclusion criteria were included out of all the articles extracted from various research databases from 2015-2025.

**Conclusion:** After the review it can be concluded that Physiotherapy techniques such as cuboid manipulation, joint mobilization, taping, strengthening, and proprioceptive training tend to restore normal alignment and improve foot mechanics. These interventions help reduce pain, improve joint stability, enhance gait pattern, and restore functional movement.

**Keywords:** Cuboid Syndrome, Physiotherapy, Manual Therapy, Pain Management, Open Access Journal Publication

#### Introduction

The cuboid is a tarsal bone situated on the lateral aspect of the midfoot and plays a critical role in maintaining foot stability and biomechanics. It articulates with the calcaneus posteriorly, the fourth and fifth metatarsals anteriorly, and the lateral cuneiform and occasionally the navicular medially. Due to its multiple articulations, the cuboid contributes significantly to midfoot mobility, particularly in dorsiflexion, plantarflexion, pronation, and supination movements (Bradshaw, 2024) [3]. Additionally, the cuboid acts as a pulley for the peroneus longus tendon, enhancing the efficiency of foot mechanics during gait (Agashe *et al.*, 2021) [1]. Its vascular supply, primarily from the lateral plantar artery with contributions from the medial plantar artery, ensures adequate healing and explains the low incidence of complications such as nonunion or osteonecrosis (Borelli *et al.*, 2012).

Cuboid syndrome is defined as a partial subluxation or malalignment of the cuboid bone, leading to disruption of the calcaneocuboid joint and altered foot biomechanics (Lewson *et al.*, 2021) [6]. Despite its clinical significance, it remains underdiagnosed due to its subtle presentation and similarity to other lateral foot conditions. The syndrome is commonly associated with plantarflexion and inversion ankle sprains, as well as repetitive overuse injuries (Tazaki *et al.*, 2020) [9]. It is frequently observed in athletes and dancers, particularly those involved in activities requiring rapid directional changes or repetitive loading of the foot (Jennings & Davies, 2005) [5].

Clinically, cuboid syndrome presents with pain localized over the lateral column of the foot, often around the calcaneocuboid joint. Patients may also experience swelling, tenderness on palpation, difficulty with weight-bearing, and an antalgic gait pattern, especially during the push-off phase (Borelli *et al.*, 2012). In some cases, individuals report a sensation of instability or a "locked" midfoot. These symptoms can mimic other conditions such as fractures, ligament injuries, or peroneal tendon disorders, making differential diagnosis essential (Agashe *et al.*, 2021) [1].

Diagnosis of cuboid syndrome is primarily based on clinical examination and patient history, as imaging techniques such as radiographs or MRI may not always detect the transient subluxation of the cuboid (Yu *et al.*, 2013) [11]. A high index of

suspicion is therefore required, particularly in patients with persistent lateral foot pain following an ankle sprain. If left untreated, cuboid dysfunction can lead to altered biomechanics, affecting the integrity of the lateral column and the overall function of the foot (Tsou *et al.*, 2006).

Management of cuboid syndrome is typically conservative, with physiotherapy playing a central role. Manual therapy techniques, particularly cuboid manipulation methods such as the “cuboid whip” and “cuboid squeeze,” are widely used to restore proper alignment of the bone (Durall, 2017). These techniques involve applying a controlled thrust to reposition the cuboid, often resulting in immediate pain relief and improved function. However, manipulation should be avoided in acute injuries or when contraindications such as fractures or inflammatory conditions are present.

Following manipulation, adjunct interventions including ice application, ultrasound therapy, and soft tissue massage may be used to reduce pain and inflammation (Metcalf *et al.*, 2024; Patterson, 2006) [7, 8]. Rehabilitation programs should incorporate stretching of tight structures such as the peroneus longus and triceps surae, strengthening of intrinsic and extrinsic foot muscles, and proprioceptive training to enhance neuromuscular control. These interventions not only facilitate recovery but also help prevent recurrence by improving foot stability and movement patterns.

In conclusion, cuboid syndrome is an often overlooked condition that can significantly impair foot function. A thorough understanding of cuboid anatomy and biomechanics is essential for accurate diagnosis and effective management. Physiotherapy interventions, particularly manual therapy combined with targeted rehabilitation, play a crucial role in restoring function and preventing long-term complications.

### Materials and Methods

Literature was extracted from PubMed, Google Scholar databases from 2015-2025 and revealed thousands of articles, of which only a few number of articles met the research criteria. The abstracts of the studies were reviewed to determine whether the study will be eligible for further review and 23 articles were then included in the study.

**Data Sources and Search Strategy:** Systematic searches were carried out using various databases such as Cochrane Library, MEDLINE and electronic search engines such as Google Scholar, PubMed and Scopus to identify the studies on Physiotherapy interventions in management of Cuboid Syndrome.

**Inclusion Criteria:** (1) Only articles published between 2015 and 2025 were considered. (2) Articles published only in English language. (3) Randomised controlled trials, literature reviews, cross-sectional studies and meta-analysis were included.

Most studies demonstrated adequate randomization, baseline comparability, and appropriate statistical analysis, although therapist and participant blinding was limited due to the manual and hands-on nature of cuboid manipulation techniques. Overall, physiotherapy interventions particularly cuboid whip and cuboid squeeze manipulation showed significant improvements in lateral midfoot pain, functional mobility, and weight-bearing tolerance.

### Conclusion

The literature strongly supports the cuboid syndrome is an often underdiagnosed yet clinically significant cause of lateral foot pain, particularly among athletes and physically active individuals. Due to its nonspecific presentation and similarity to other lateral foot pathologies, accurate diagnosis requires thorough clinical examination and a high index of suspicion. Manual therapy techniques, particularly cuboid manipulation and mobilization, have shown immediate and significant symptom relief in many cases. These techniques help restore normal joint alignment and biomechanics, thereby reducing stress on surrounding soft tissues. Adjunctive interventions such as taping techniques provide additional support, enhance proprioception, and help maintain corrected positioning during functional activities. Overall, physiotherapy remains a safe, cost-effective, and non-invasive approach for the management of cuboid syndrome. With further research and refinement of treatment protocols, physiotherapy has strong potential to establish itself as the primary conservative management strategy for cuboid syndrome, improving patient quality of life and reducing recurrence rates.

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