

Calcaneal Eversion as a Predictor of Knee Conditions: A Narrative Review

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ABSTRACT

Calcaneal eversion refers to the outward rotation of the calcaneus away from the midline of the body, which is a critical movement in the biomechanics of the foot and ankle. The significance of calcaneal eversion on the knee is multifaceted, influencing knee alignment, rotational dynamics, and potential injury mechanisms. Understanding calcaneal eversion is essential for assessing its impact on injuries and rehabilitation. To explore the impact of calcaneal eversion on knee injuries, we conducted a literature search in databases such as PubMed and Google Scholar focussing on publications from 2014 to 2024. Search terms included "calcaneal eversion", "knee injury", "ankle biomechanics", "athletes", "alignment". This review entailed 9 publications comprising randomised controlled trials, systematic reviews, cross-sectional surveys, observational studies and scoping reviews. This review showed that overweight individuals exhibit greater calcaneal eversion. Also, excessive calcaneal

eversion can lead to abnormal tibial rotation, leading to increased risk of knee injuries due to the mechanical coupling at the ankle joint complex. Increased hindfoot and forefoot eversion correlates with medial knee displacement and lead to exacerbation of knee conditions. The review also revealed that calcaneal eversion has a coupling coefficient of 0.68, indicating a significant relationship with tibial movement. Conversely, while calcaneal eversion is linked to knee conditions, some studies suggest that not all individuals with eversion experience knee issues, indicating that other factors, such as muscle strength and overall biomechanics, act as an important marker in knee health. The study concluded that calcaneal eversion plays a crucial role in knee joint mechanics, with its impact evident in various knee pathologies.

Keywords: Ankle joint, Biomechanics, Calcaneus, Cross-sectional studies, Rotation.