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## **New tomographic method for measuring metatarsal rotation in hallux valgus**

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### **ABSTRACT**

**Introduction:** Hallux valgus is a 3-dimensional deformity involving an increased intermetatarsal I/II angle and a rotational deformity of the first metatarsal bone. Kim et al. developed a method for measuring the tibial sesamoid position relative to the coronal rotation of the first metatarsal bone in computed tomography scans under simulated weight-bearing conditions.

**Objective:** To describe a method for the topographic assessment of the correction of tibial sesamoid and metatarsal pronation using computed tomography scans under simulated weight-bearing and active toe extension.

**Method:** We performed computed tomography under simulated weight-bearing conditions with and without active toe dorsiflexion, observing the degree of metatarsal pronation and sesamoid subluxation. For measurement purposes, we used the classifications of Kim et al. and Smith et al.

**Results:** We observed tomographic correction, both angular and rotational, by measuring the intermetatarsal angle and tibial sesamoid position, which were confirmed by the change in the alpha angle suggested by Kim et al.

**Discussion:** Toe extension was described as a peroneus longus tendon activation test by Klemola et al., who used this maneuver to demonstrate clinical rotational correction of hallux valgus. We described the use of a tomographic technique that followed this principle to preoperatively observe the underlying factors that may affect the rotational correction of the deformity.

**Conclusion:** The method has the capacity for correction in various planes involving derotation of the first metatarsal bone and the relationship between such derotation and the change in sesamoid position in relation to the coronal plane of the foot.

**Keywords:** Hallux valgus; Tomography; Surgery.

