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Comparison of first ray mobility in normal individuals and patients with hallux valgus

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ABSTRACT

Introduction: The role of first ray sagittal mobility (FRSM) in the etiology and treatment of hallux valgus (HV) remains controversial. The manual clinical test of FRSM performed during the physical examination of HV is completely subjective. Our objective was to compare individuals with and without HV using a previously described manual device validated to evaluate FRSM and to assess the correlation between FRSM and HV severity and between FRSM and the degree of foot flatness.

Methods: Thirty-seven feet with HV and 35 control feet were compared using a Eulji Medical Center (EMC)-like manual device. The HV grade was measured using the HV angle (HVA), and the degree of foot flatness was measured using Meary's angle.

Results: FRSM in controls: 6.31mm; in cases: 8.97mm, p<0.001, with a difference between controls and cases of 2.66mm. HVA in controls: 8.75°; in cases: 23.74°, p<0.001. Correlation between FRSM and HVA in controls: r=-0.09, p=0.63; in cases: r=-0.08, p=0.63. Correlation between FRSM and Meary's angle in controls: r=-0.04, p=0.83; in cases: r=-0.02, p=0.89. The 90th percentile in controls was 8mm.

Conclusion: The individuals with HV had greater FRSM than the controls, and the mean difference was 2.66mm; a previous study using a Klaue device showed a similar difference of 3.62mm. There was no correlation between HV severity and FRSM; that is, the more severe cases of HV did not show greater mobility. Therefore, more severe cases will not have a greater likelihood of tarsometatarsal arthrodesis based on the FRSM. There was no correlation between FRSM and foot flatness (Meary's angle); that is, the FRSM did not increase with foot flatness. The 90th percentile in controls was 8mm; in other words, 10% of individuals without HV have mobility equal to or greater than 8mm.

Keywords: Hallux valgus; First ray sagittal mobility.