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**EFFECT OF UNILATERAL AND BILATERAL USE OF
LATERALLY WEDGED INSOLES WITH ARCH SUPPORTS
ON IMPACT LOADING IN MEDIAL KNEE
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Background Increased impact loading is implicated in knee osteoarthritis development and progression. This study examined the initial impact force and first ground reaction force (GRF) peaks, their loading rates, their relative timing to the stance phase timing and the walking speed during unilateral and bilateral use of different inclinations of laterally wedged insoles (LWI) with arch supports.

Methods Data were collected from 33 female patients with medial knee osteoarthritis, using an AMPTI forceplate, under five insole conditions (unilateral 6° & 11° and bilateral 0°, 6° & 11°) and a without-insole one.

Results Repeated measures MANOVA revealed significant ($p < 0.05$) increase in the impact force in the bilateral 11° vs each of the unilateral 6° and without-insole conditions. The impact loading rate decreased significantly in the unilateral 11° vs the bilateral 6° insole condition. The relative timing of the impact force increased significantly in each of the bilateral 6°, bilateral 11° and unilateral 11° vs the bilateral 0° insole condition and in each of the bilateral 11° and unilateral 11° vs the without-insole condition. Moreover, there were significant ($p = 0.000$) positive correlations between the impact and GRF loading rates and the walking speed and each of the impact force, impact loading rate and GRF loading rate. Finally, the Chi-square test revealed insignificant ($p > 0.05$) association between the insole conditions and the presence of impact forces.

Discussion/Conclusion Patients with medial knee osteoarthritis are advised to use unilateral 11° LWI and walk slowly to decrease impact

loading. Unilateral use of 11° LWI decreases impact loading possibly through increasing foot pronation (Abdallah A.A. & Radwan A.Y, 2011)*.

REFERENCE

- 1 Abdallah Amira, Radwan Ahmed. *Clin Biomech* 2011;26:783.



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