



Effect of shoe insole on the selected biomechanical parameters of Lower extremities in individuals with leg length discrepancy during walking

Oral Presentation

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Abstract

Introduction: The aim of the present study was to evaluate the effect of internal and external heel lift insoles on pelvic kinematics and low extremity joint moments in individuals with mild leg length discrepancy during Stance Phase of walking.

Methods: Biomechanical data of twenty-eight men with structural leg length discrepancy (10-25 mm) were collected while they walked under three conditions: shoes without insole (SH), shoes with internal heel lift insoles (IHLI) and shoes with external heel lift insole (EHLI). The tests were performed for both short and long legs. Pelvic kinematics and joint moment were measured with a motion capture system and force plate. Five walking trials were performed for every condition. Average value of five successful trials were used for further statistical analysis. Repeated measures ANCOVA with Bonferroni's post hoc test were used for between group comparisons ($P \leq 0.05$).

Results: In both IHLI and EHLI, there were significant decreases in the peak values of lateral and anterior pelvic tilts of long leg, hip and knee moments of long leg and ankle moment of short leg ($P \leq 0.05$). Furthermore, significant increases in peak values of lateral and anterior pelvic tilt of short leg in IHLI and EHLI were observed as compared to SH condition ($p \leq 0.01$). In addition, a significant difference was observed between the IHLI and EHLI conditions in peak anterior pelvic tilt of long leg and plantar flexor moment of short leg ($p = 0.043$ and $p = 0.044$, respectively).

Conclusion: Our findings indicate that both IHLI and EHLI can play an important role in controlling excessive pelvic movements in the sagittal and frontal planes in individuals with mild leg length discrepancy during walking. It suggests that the EHLI may have a better effect in preventing musculoskeletal injuries compared to the IHLI.

Keywords

Leg length discrepancy; Shoe insole; Kinematic

Reference:

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