Lower limb biomechanical tests and their relationship to outputs from the Zebris Winfdm-t force platform system

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Background

Certain biomechanical tests, when performed correctly, are said to be indicators of dynamic function. It is therefore reasonable to ask, what, if any, association exist between these commonly performed biomechanical tests and scientific data capture systems. The aim of this study was to evaluate particular biomechanical tests and compare the findings of these tests with data obtained from the Zebris WinFDM-T force platform system.

Methods

15 health subjects attended the QUT podiatry clinic during December 2011. Subjects were examined and data recorded on clinical tests such as; Manual Supination Resistance (MSRT), Jack's, Lunge, Foot Posture morphology, facial cord tension and hamstrings tension tests [1-3]. Two dynamic force tests were then undertaken using the Zebris WinFDM-T and GAITrite walkway systems. Gait, pressure and force parameters as wells as walking speed, stance duration were all recorded. SPSS data analysis software was then used to analyse associations between clinical and outcome measures.

Results

Several important relationships were identified between the various clinical tests and the gait analysis data. Of significance is the potential for variables such as body weight to directly confound the finding of some kinetic test such as the MSRT. In particular, when controlling for body weight, MSRT was not found to be predictive of differences in vertical ground reaction force during the gait cycle.

Conclusion and Clinical Relevance

The findings of this pilot work call into question the validity of some commonly performed clinical tests and care should be exercised when interpreting the findings of these tests.

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