BAREFOOT RUNNING CAUSES ACUTE CHANGES IN LOWER LIMB KINEMATICS IN HABITUALLY SHOD MALE RUNNERS


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ABSTRACT

The purpose of this study was to compare differences in knee and ankle kinematic and spatio-temporal variables at foot strike between barefoot and shod running. Twelve male runners (age 21.6±1.26 years) performed six running trials in each running condition on a 12m indoor runway at a self-selected pace. Lower limb kinematics and spatio-temporal variables were recorded with a six-camera T10 Vicon motion capture system (200Hz). In the barefoot condition runners landed with significantly greater knee flexion (p<0.01; ES=2.61) and less ankle dorsi-flexion (p<0.05; ES=1.12) compared to in the shod condition. No significant differences were found between knee varus/adduction (ES=0.78) or ankle inversion/adduction (ES=0.85) between the barefoot and shod conditions. The barefoot condition had significantly shorter contact time (p<0.01; ES=1.99) and step time (p<0.05; ES=1.13), while significantly higher step frequency (p<0.05; ES=1.25) compared to in the shod condition. Results indicated that immediate adaptations occurred when transitioning from shod running to barefoot running.

Key words: Barefoot running; Kinematics.