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# The repeatability of lower limb biomechanical variables during a sidestep 90 and 135 degree cutting tasks

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**Introduction & Aim:** Change of direction (cutting) manoeuvres are important for many field sports, however, they are unfortunately associated with non-contact ACL injuries. Particularly, changes in the frontal plane angle of the knee during cutting are thought to predict an increased risk of non-contact ACL injury. High knee abduction angles during cutting tasks are associated with joint positions including increased hip flexion, adduction and internal rotation angles. So, it is important to look at the correlation between dynamic knee-valgus variables and lower extremity kinematics. However, our understanding of the hip movement and the relationship to ACL injury mechanism throughout side-step cutting tasks at 90° and 135° angles is limited. Thus, the aim of this study to investigate between-days reliability of using 3D movement analysis system to measure lower limb kinetic and kinematic variables during sidestep cutting manoaeuvre at 90° and 135°.

**Methods:** 10 healthy adult participants were recruited to take part in this study. All the participants were male; age range was 27.8±4.4 years, height-1.7±0.1 m and mass 66±7.2 kg. 3D motion lower limb biomechanics during cutting manoaeuvre at 90° and 135° was assessed.

**Results:** The test-retest reliability proved that all 3D variables in both tasks reported good to excellent between-day reliability, ranging in ICC values between 0.85 and 0.98. The SEM value in both tasks ranged between 1.11 to 3.47 degree for angles and 0.07 and 0.25 Nm-Kg for moments.

**Conclusions:** The result of this study has determined that all 3D kinematic and kinetic variables are reliable with low SEM values during cutting tasks.

## Biography

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