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E-BABE-Kinematic comparison between single and double-leg jump landings in sagittal plane for male handball players

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Background: Double and Single Leg Jump (SL) landing activities are considered stressful tasks for handball players. Most of the previous researches focused on kinetic analysis of these activities rather than kinematic analysis.

Purpose: The main aim of this study is to perform lower extremity kinematic analysis to find the kinematic differences between single and Double-Leg Jump (DL) landings in the Sagittal Plane (SP).

Methods: The lower extremity kinematics were measured in 15 elite male handball players (while performing SL and DL landings), by using three-dimensional motion analysis system (VICON).

Results: The results revealed statistically significant difference between the lower limb kinematics of SPSL and SPDL. During the SPDL, the hip and knee flexion angles increased more than those in SPSL, while there was more knee adduction with internal rotation stress in SPSL than in SPDL ($P < 0.05$). The hip and knee flexion angles in the SPDL showed moderate association with those during the SPSL (R^2 , 0.49 and 0.44 respectively). In addition, the hip abduction in the SPDL showed moderate association with those during the SPSL (R^2 , 0.37). But, hip internal rotation, knee adduction, and knee internal rotation in the SPDL showed weak association with those during the SPSL ($R^2 = 0.02-0.041$; $P = 0.05$).

Conclusion: The DL landing maybe considered as a less stressful task for the lower limb joints than the single-leg jump landing activity. As a clinical benefit, the double-leg jump landing activity may be used to screen the ACL injury risk in certain planes of joint motion.

Biography

Mariam A Ameer has obtained her PhD in Biomechanics in 2013 from Cairo University, College of Physical Therapy, Biomechanics Department. After her graduation, she has worked in different fields in Egypt and Saudi Arabia, which include teaching, private clinic and sports field. Her main field of interest is sports injuries and motion analysis. She is also highly enthusiastic to enhance her research activities and improve her communication skills by interacting with researchers, experts and professionals around the globe.

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