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**Influence of increasing knee flexion angle on knee-ankle varus stress during single leg jump landing**Mariam A Ameer<sup>1,2</sup> and Qassim I Muaidi<sup>1</sup><sup>1</sup>Imam Abdulrahman Bin Faisal University, Saudi Arabia<sup>2</sup>Cairo University, Egypt

**Background & Aim:** Knee and ankle joints are often stressed in the landing phase of single leg-jump with increasing of the knee flexion angle, causing several injuries. The main aim of this study is to identify the relationship between the peak knee flexion angle and knee-ankle varus stress in the landing phase of single-leg jump from running.

**Methodology:** 15 male handball players from the first Saudi Arabian handball team have been engaged in this study. Each player performed a single leg-jump-land after running a fixed distance of 450 cm. The data was measured using a 3D motion analysis system. The maximum knee flexion angle, knee varus angle, center of pressure pathway in the medio-lateral direction and ankle varus moment were detected.

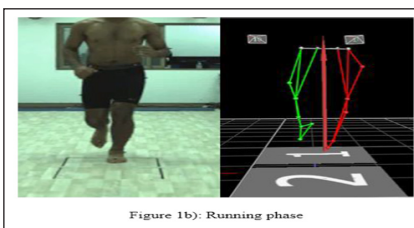


Figure 1b) Running phase

**Results:** Person product moment correlation reveal that greater knee flexion angle is related to greater lateral displacement of the center of pressure ( $r=0.794$ ,  $P<0.01$ ), greater ankle varus moment ( $r=0.707$ ,  $P<0.01$ ) and greater knee varus angle ( $r=0.753$ ,  $P<0.01$ ). In addition, more ankle varus moment is also related to the greater lateral displacement of the center of pressure ( $r=0.734$ ,  $P<0.01$ ).

**Conclusion:** These findings may help physical therapists and conditioning professionals to know the impact of increasing knee flexion angle on the lower limb joints and to develop training protocols to enhance the lateral body reaction during landing phase to protect the knee and ankle joints from excessive varus stresses.

**Recent Publications**

1. Mariam A Ameer, Mohamed E Khallaf (2017) Effect of treadmill gait training on diplegic children swing phase gait parameters. *International Journal of Physiotherapy and Research*; 5(1): 1829-35.
2. Mohamed E Khallaf, Mariam A Ameer (2017) Effect of wrist-fingers extension splint and task specific training on hand joints range of motion and function after stroke. *Journal of NeuroRehabilitation*; 41(2):437-444.

**Biography**

Mariam A Ameer has completed her PhD in Biomechanics in 2013 from Cairo University, College of Physical Therapy, Biomechanics Department. After her graduation, she had worked in different fields in Egypt and Saudi Arabia, which includes 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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**Notes:**