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## Comparing the effects of mechanical perturbation training with a compliant surface and manual perturbation training on joints kinematics after ACL-rupture

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**Abstract:** Mechanical perturbation with a compliant surface decreases the knee flexion angles. Abstract Introduction: Performing physical activities on a compliant surface alters joint kinematics and increases joints stiffness . However, the effect of compliant surface on joint kinematics after ACL-rupture is yet unknown. Aim: To compare the effects of mechanical perturbation training with a compliant surface to manual perturbation training on joint kinematics after ACL-rupture. Methods: Sixteen level I/II athletes with ACL-rupture participated in this preliminary study. Eight patients received mechanical perturbation with compliant surface (Mechanical) and 8 patients received manual perturbation training (Manual). Patients completed standard gait analysis before (Pre) and after (Post) training. Results: Significant group-by-time interactions were found for knee flexion angle at initial contact (IC) and peak knee flexion (PKF) ( $p < 0.004$ ), with manual group significantly increased knee flexion angle at IC and PKF ( $p < 0.03$ ). Main effects of group were found for hip flexion angle at IC (Manual:  $34.34 \pm 3.51^\circ$ , Mechanical:  $27.68 \pm 4.08^\circ$ ,  $p = 0.011$ ), hip rotation angle at PKE (Manual:  $-3.40 \pm 4.78^\circ$ , Mechanical:  $5.43 \pm 4.78^\circ$ ,  $p = ?$ ).