

No Difference Between Mechanical Perturbation Training With Compliant Surface and Manual Perturbation Training on Knee Functional Performance After ACL Rupture

Authors: Zakariya Nawasreh, MSc, PhD; David Logerstedt, MPT, PhD; Mathew Failla, PT, PhD; Lynn Snyder-Mackler, PT, ScD, FAPTA

Abstract: ABSTRACT Manual perturbation training improves dynamic knee stability and functional performance after anterior cruciate ligament rupture (ACL-rupture). However, it is limited to static standing position and does not allow time-specific perturbations at different phase of functional activities. The purpose of this study was to investigate whether administering mechanical perturbation training including compliant surface provides effects similar to manual perturbation training on knee functional measures after an acute ACL-rupture. Sixteen level I/II athletes with ACL-ruptures participated in this preliminary study. Eight patients received mechanical (Mechanical) and eight subjects received manual perturbation training (Manual). All patients completed a functional testing (isometric quadriceps strength, single-legged hop tests) and patient-reported measures (Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS), Global Rating Score (GRS), International Knee Documentation Committee 2000 (IKDC 2000) at pre- and post-training. 2???2 ANOVA was used for data analysis. No significant group-by-time interactions were found for all measures ($p > 0.18$). Main effects of time were found for single hop (Pre-testing: 85.14%??21.07; Post-testing: 92.49%??17.55), triple hop (Pre-testing: 84.64%??14.17; Post-testing: 96.64%??11.14), KOS-ADLS (Pre-testing: 81.13%??11.12; Post-testing: 88.63%??12.63), GRS (Pre-testing: 68.63%??15.73; Post-testing: 78.81%??13.85), and IKDC 2000 (Pre-testing: 66.66%??9.85; Post-testing: 76.05%??14.62) (p ?