The effects of whole body vibration on dynamic stability in individuals with anterior cruciate ligament reconstruction

Patrick Smith

Anterior Cruciate Ligament Reconstruction (ACLR) leads to quadriceps dysfunction (e.g. deficits in strength and activation) and reduced dynamic knee stabilization that increase risk for secondary ACL injury by putting higher stress on the ACL. Whole body vibration (WBV) has been associated with an increase in quadriceps neuromuscular function in those with ACLR individuals and improvements in postural control in healthy individuals. Time to stabilization (TTS), the time it takes for ground reaction forces to become stable following a jump, has been utilized to identify deficits in postural control during single-leg landing tasks in individuals with ACLR and may be related to secondary ACL injury risk. The purpose of this study was to determine the influence of WBV on TTS during single-leg landing tasks in those with ACLR. In this crossover study, subjects performed a single-leg landing task onto a forceplate before and after a control or WBV intervention on each limb separately (control and WBV sessions separated by at least 1-week). A condition*time repeated measures ANOCOVA controlling for time post-ACLR revealed no significant interaction effects for TTS on either limb ($P=0.134 – 0.953$). Future research should explore the effects of longitudinal or repeated WBV on TTS.