

### 36. SWACSM Abstract

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## The Impact of Anterior Cruciate Ligament Injury Risk on Baseline Balance Assessment for Concussion in Collegiate Athletes

RYAN N. MORAN, & NICHOLAS G. MURRAY

Athletic Training Research Laboratory; Department of Health Science; The University of Alabama; Tuscaloosa, AL; Neuromechanics Laboratory; School of Community Health Sciences, University of Nevada, Reno; Reno, NV

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*Category: Professional*

#### ABSTRACT

**PURPOSE:** Recent literature has linked concussion and neuromuscular deficits in the lower extremity after injury. Neuromuscular control is frequently assessed using balance measures for concussion, but also dynamically to identify anterior cruciate ligament injury (ACL) risk via jump-landing movement screening. The purpose of this study was to examine the impact of ACL injury risk on baseline balance assessment for concussion. **METHODS:** Thirty-nine healthy, collegiate female soccer (n=22) and volleyball (n=17) athletes completed the modified-Clinical Test of Sensory Interaction of Balance (m-CTSIB) and the Landing Error Scoring System (LESS) test as part of routine concussion baseline testing and injury prevention screening, in a counterbalanced manner. Measures consisted of total m-CTSIB sway index scores on individual conditions (firm surface eyes open [condition 1] and eyes closed [condition 2], foam surface eyes open [condition 3] and eyes closed [condition 4]), m-CTSIB overall sway index composite score, and total LESS errors, with higher scores indicating worse performance on both tools. LESS scores were categorized into a low (0-4 errors; N=21) and high (5+ errors; N=18) risk. A series of Mann-Whitney *U* test were performed to determine differences between low and high LESS performance on m-CTSIB conditions and overall performance. **RESULTS:** There were no differences between the low and high risk LESS groups on sway index scores on conditions 1 ( $U = 158.5, p = 0.39$ ), 2 ( $U = 156.0, p = 0.36$ ), 3 ( $U = 165.5, p=0.51$ ), or 4 ( $U = 128.5, p= 0.08$ ), as well as overall m-CTSIB scores ( $U = 150.5, p = 0.28$ ). **CONCLUSION:** Athletes who may be more at risk for ACL injury due to abnormal jump-landing biomechanics, do not differ from low-risk athletes on baseline balance assessment. Postural stability may assess and comprise of different pathways of neurological function in the lower extremity than a jump-landing task.