
ORIGINAL RESEARCH

FUNCTIONAL HOP TESTS AND TUCK JUMP ASSESSMENT SCORES BETWEEN FEMALE DIVISION I COLLEGIATE ATHLETES PARTICIPATING IN HIGH VERSUS LOW ACL INJURY PRONE SPORTS: A CROSS SECTIONAL ANALYSIS

Philipp Hoog, PT, DPT, CSCS¹
Meghan Warren, PT, MPH, PhD¹
Craig A. Smith, PT, DPT^{1,2}
Nicole J. Chimera, PhD, ATC, CSCS³

ABSTRACT

Background: Although functional tests including the single leg hop (SLH), triple hop (TH), cross over hop (COH) for distance, and the tuck jump assessment (TJA) are used for return to play (RTP) criteria for post anterior cruciate ligament (ACL) injury, sport-specific baseline measurements are limited.

Purpose: The purpose of this study was to examine differences in SLH, TH, and COH distance and limb symmetry index (LSI), as well as total scores, number of jumps, and individual flaws of the TJA in 97 injury-free Division I (DI) collegiate female student athletes participating in ACL injury prone vs. non ACL injury prone sports. The hypothesis was that significant mean differences and asymmetries (LSI) would exist between the two groups in SLH, TH, COH and TJA.

Study Design: Cross sectional.

Methods: Due to research suggesting inherent ACL injury risk associated with specific sport involvement, participants were grouped into high (HR, n=57) and low (LR, n=40) ACL injury risk based on participating in a sport with high or low ACL injury rates. The HR group was composed of athletes participating in soccer, basketball, and volleyball, while the LR group athletes participated in diving, cross country, and track and field. Participants performed all standard functional tests (SFT) and side-to-side differences for each participant as well as between group differences were assessed for the hop tests. The LSI, a ratio frequently used to gauge athletes' readiness for RTP post injury, was also assessed for between group differences. The TJA was compared between the groups on individual flaws, overall scores, and number of jumps performed.

Results: No between group differences for hop distances were found, with medium to large effect sizes for SLH, TH, and COH. The HR group had a higher TJA score, number of jumps, and higher proportion of the flaw of 'foot placement not shoulder width apart'.

Conclusion: Although most SFT's showed no significant differences between athlete groups, some differences were seen in the TJA; the HR group showed an increase in 'foot placement not shoulder width apart' flaw, higher overall flaw scores, and overall jumped more times compared to the LR group. These results may warrant caution in relying solely on SFT for RTP decisions, due to potential asymmetries seen in an uninjured population with baseline testing.

Level of Evidence: 4

Key Words: Asymmetry, knee, return to play

CORRESPONDING AUTHOR

Nicole J. Chimera
Department of Athletic Training
Daemen College
4380 Main Street
Amherst, NY 14226
Phone: (716) 839-8413 Fax: (716) 839-8314
E-mail: nchimera@daemen.edu

¹ Department of Physical Therapy and Athletic Training, Northern Arizona University

² Smith Performance Center, Tucson AZ

³ Athletic Department, Daemen College