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# Functional Performance Deficits Exist in Female NAIA Collegiate Athletes with History of Anterior Cruciate Ligament Reconstruction

Jason Brumitt

*George Fox University*, [jbrumitt@georgefox.edu](mailto:jbrumitt@georgefox.edu)

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## FUNCTIONAL PERFORMANCE DEFICITS EXIST IN FEMALE NAIA COLLEGIATE ATHLETES WITH HISTORY OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

*Brumitt J*

**PURPOSE/HYPOTHESIS:** Functional performance tests (FPT) are used to assess athletic readiness to return to sport after anterior cruciate ligament reconstruction (ACLR). Current recommendations suggest that females should be able to jump for distance at least 80% of one's height and hop for distance at least 70% of one's height. There is evidence that after ACLR some patients demonstrate deficits in strength. The purpose of this study was to assess FPT measures in female athletes with prior history of ACLR.

**NUMBER OF SUBJECTS:** Forty-five NAIA collegiate female athletes (mean  $\pm$  SD age, 20.6  $\pm$  2.2 years) volunteered to participate in this study.

**MATERIALS/METHODS:** Each athlete performed the standing long jump (SLJ) and the single-leg hop (SLH) for distance during the preseason. The athletes reported their training habits for the prior 6 weeks and prior history of sports-related injuries.

**RESULTS:** SLJ and SLH measures were normalized to height. Mean SLJ distance was 0.79  $\pm$  0.09. Mean SLH distance for the (R) lower extremity (LE) was 0.71  $\pm$  0.11 and for the (L) LE was 0.70  $\pm$  0.11. Thirty female athletes (66.7%) reported prior history of a LQ sports injury. There were no statistical differences in SLJ or SLH distances between those with prior history of LQ injury and those with no history of LQ injury. Athletes with a prior ACLR jumped a significantly shorter distance (0.71  $\pm$  0.07) than those with no history of ACLR (0.80  $\pm$  0.08) ( $P = .02$ ). Athletes with prior ACLR hopped a significantly shorter distance with the (L) LE (0.53  $\pm$  0.16) than those with no history of ACLR (0.72  $\pm$  0.08,  $P = .03$ ). Athletes with prior ACLR also hopped a shorter distance with the (R) LE (0.62  $\pm$  0.19) when compared with those with no history of ACLR (0.73  $\pm$  0.09); however, the difference was not significant ( $P = .03$ ). Those with no history of ACLR reported spending more time per week weightlifting, scrimmaging, and performing cardiovascular exercises than those with history of ACLR; however, only the difference in time spent scrimmaging was significant ( $P = .002$ ). Those with history of ACLR reported performing more plyometric exercises per week than those with no history of ACLR; however, this difference was not significant ( $P = .2$ ).

**CONCLUSION:** Healthy, female collegiate athletes with prior ACLR demonstrated significantly shorter jump and hop distances when compared with female athletes with no history of ACLR (but who may have had prior history of other LQ injury). Athletes with no history of ACLR reported greater levels of exercise during the preseason than their counterparts with prior history of ACLR.

**CLINICAL RELEVANCE:** Female athletes with prior history of ACLR demonstrated clinically significant deficits in jump and hop distances. Sports medicine professionals and strength coaches should assess FPT measures in athletes with prior ACLR before the athlete returns to sport. Off-season training habits of athletes with prior ACLR differ from their counterparts. Future investigations should assess the adherence and efficacy of training programs for this population.