

vs. nondominant limb comparison of strength parameters were not significantly different. Younger female athletes (14-19 years old) presented a greater decrease in mean and absolute peak HS eccentric strength than those in older female and overall male athletes.

Conclusions HS eccentric strength and work differ based on the athlete's sex, as measured by the NHE test. Mean peak, absolute peak, and total work showed greater reductions in females than in males. The 14- to 19-year-old female athletes subgroup experienced the highest reduction.

12 HAMSTRINGS ISOMETRIC STRENGTH VS. ECCENTRIC FUNCTION IN FEMALES WITH HISTORY OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH A SEMITENDINOSUS GRAFT

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Introduction Harvesting a graft from the semitendinosus for reconstruction of the anterior cruciate ligament (ACL) may negatively influence morphology and performance of the hamstrings. This study aimed to contrast maximal performance of knee flexors during an isometric, unilateral task and a dynamic task requiring bilateral lower limb effort after ACL reconstruction (ACLR) and return-to-sports (RTS).

Materials and Methods Female athletes with a history of ACLR (n=49) were recruited for the study. After a standardized 20-minute warm-up, isometric knee flexor strength of each lower limb was measured separately, after which participants performed the Nordic hamstrings (NH) task at maximal effort. The peak torque (Nm) for each task was used for statistical analysis using mixed model analysis of variance with 'limb' and 'task' serving as within-subjects factors. Time from surgery (months) was entered as a covariate.

Results A significant main effect of limb was found due to overall lower peak torque of the surgical side across both tasks ($p<0.001$). However, a significant interaction of limb by task ($p=0.027$) reflected greater asymmetry during the bilateral NH performance (lower peak torque of the surgical side ($p<0.001$)) compared to the isometric test (n.s.), with no influence of time from surgery.

Conclusion Strength testing of knee flexors in athletes who have undergone ACLR using a graft from the semitendinosus may indicate adequate limb symmetry for them to RTS but fail to identify athletes' tendencies to rely on the uninjured limb when possible. Throughout rehabilitation athletes should be challenged to activate and rely on their injured side.

13 SECONDARY COGNITIVE TASKS ALTER DROP VERTICAL JUMP LANDING MECHANICS AND REDUCE JUMP HEIGHT IN INDIVIDUALS WITH ANTERIOR CRUCIATE LIGAMENT INJURY

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Introduction Secondary cognitive tasks alter the mechanics of uninjured athletes when performing athletic movements.

Individuals with anterior cruciate ligament (ACL) injury similarly show deficits in postural control and gait for dual-task paradigms. It is however unclear if and how secondary cognitive tasks during athletic movements influence the mechanics of athletes with ACL injury.

Materials and Methods Thus far, 15 athletes with ACL reconstruction (33 ± 14 months post-surgery; age 26 ± 5 years) performed drop vertical jumps in a randomised order with and without added cognitive tasks targeting rapid decision-making, inhibitory control, and working memory. We assessed trunk, hip, knee, and ankle mechanics during the first 100 ms of the first landing and jump height using 3D motion capture and force platforms. We analysed the motion data as complete curves using functional paired t-tests and adjusted P-values.

Results The secondary cognitive tasks significantly reduced trunk (0-100 ms), hip (18-27 ms) and knee flexion (2-62 ms), increased ankle dorsiflexion (38-43 ms), knee abduction angle (4-72 ms) and moment (54-94 ms), and increased knee (53-75 ms) and ankle (14-28 ms) power. Jump height was also reduced by 8% (mean 3 cm; $P=.002$).

Conclusion Initial analyses from our ongoing study show that our secondary cognitive tasks altered drop vertical jump landing mechanics and reduced the jump height of athletes with ACL injury. Many of the observed alterations have been suggested to increase ACL injury risk. Interventions are required to better prepare athletes with ACL injury for a return to cognitively demanding sporting environments.

14 NORMATIVE HIP STRENGTH PROFILES IN HEALTHY FEMALE ATHLETES: A CROSS SECTIONAL PILOT STUDY EXPLORING ISOMETRIC STRENGTH, AGE AND INTERLIMB DOMINANCE

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Introduction Female athletes are underrepresented in sports-focused research, with majority of the training, pre-hab and rehabilitation plans based on male data. Female specific normative values would improve understandings of female athlete requirements, facilitating guideline design for this population. Hips and pelvises differ between sexes, affecting biomechanics and movement. Yet, training and rehabilitation methods for male and female athletes remains the same. We collected hip strength data in coronal and sagittal planes to investigate any differences between the dominant and non-dominant leg and agonist-antagonist ratios. Additionally, we explored how these measures change with age.

Materials and Methods Cross-sectional observational. We collected maximal isometric hip strength values from 21 female participants (engaging in sport/exercise ≥ 5 hours/week), using a handheld dynamometer (Mark-10 Series 3). Findings were normalised to body mass. Paired sample t-tests and linear regression were used to analyse data and address the study's research questions.

Results We found no strength differences between the dominant and non-dominant legs or agonist-antagonist ratios ($p>0.05$) in all measurements. Abduction movements were stronger in the coronal plane, and flexion in the sagittal. Interestingly, these two movements were most associated with decreased strength with age ($p<0.05$).