Abstracts

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Summary:
Clinicians should be aware of both modifiable and non-modifiable risk factors for not achieving a MIC after ACL-R and thus, should adjust treatment and establish realistic expectations for the patient.

Data
Objectives: To determine factors associated with not achieving a minimal important change (MIC) in the Knee and Osteoarthritis Outcome Score (KOOS) Function, Sports, and Recreational Activities (Sport/Rec), and Knee-Related Quality of Life (QoL) subscales 1 year after anterior cruciate ligament reconstruction (ACL-R). Methods: This study utilized data from the Swedish National Knee Ligament Registry. Multivariable logistic regression models were used to identify factors associated with not achieving a MIC. The KOOS subscales Sport/Rec and QoL were dichotomized (not achieving/achieving MIC; the MICs for the Sport/Rec and QoL subscales were 12.1 and 18.3 respectively) and combined into one single variable (Sport & QoL). Results: Of 16,131 included patients 44% did not achieve the MIC for the combined Sport/Rec and QoL subscales 1 year after ACL-R. Older patients (OR 0.91, 0.88-0.94; p<0.0001), males (OR 0.93, 0.87-0.99; p<0.034) and patients receiving hamstring tendon autograft ACL-R (OR 0.76, 0.60-0.81; p<0.0001) had increased odds of not achieving the MIC 1 year after ACL-R compared to younger patients, females and patients receiving patellar tendon autograft. Furthermore, patients with cartilage injuries (OR 1.17, 1.09-1.27; p<0.0001) and higher pre-operative KOOS Sport/Rec and QoL scores (OR 1.34, 1.31-1.36; p<0.0001) had increased odds of not achieving the MIC. Conclusion: Females, younger patients, and patients with higher pre-operative Sport/Rec and QoL KOOS scores, and cartilage injuries, are less likely to benefit from ACL-R and subsequently, have a lower probability for improved Sport/Rec and QoL scores after ACL-R. Furthermore, graft choice may also affect the risk of not achieving the MIC.

Category: Knee - ACL Post-Surgery

Return to Sports Bridge Program Improves Outcomes, Decreases Ipsilateral Knee Re-injury and Contralateral Knee Injury Rates Post-ACL Reconstruction: 2022 Update

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Summary:
Supplementing primary ACL reconstruction and standard physical therapy with a return to sports bridge program prior to release to unrestricted sports performance was effective at improving patient QWoutcomes and decreasing ipsilateral knee re-injury and contralateral knee injury rates.

Data
Purpose To present the results of a return to sports bridge program designed to reduce knee injuries following ACL reconstruction and physical therapy. Methods Two hundred and twelve (male = 111, female = 101) patients participated in an 8-week duration whole body neuromuscular control, progressive resistance strength and agility training program. Post-program testing included functional movement form, dynamic knee stability, lower extremity power, agility, and sports skill assessments. Participants completed the Knee Outcome Survey—Sports Activity Scale (KOS-SAS) before and after program initiation. Subjects were estimated their pre-participation scores following program completion. Results Global KOS-SAS scores at program entry were 75.8 ± 14. Post-program global rating and calculated KOS-SAS scores were 91.0 ± 9.8 and 90.9 ± 9.7, respectively (p < 0.0001). Pre-participation KOS-SAS score re-estimates at program completion were 54.8 ± 23 (global) and 58.2 ± 20 (calculated). The approximately 30% lower pre-program global KOS-SAS score re-estimate (46.7 ± 32 vs. 75.8 ± 14), and 20% calculated KOS-SAS score re-estimate (56.2 ± 27 vs. 75.0 ± 15)(p = 0.04) observed at program completion suggests that subjects had inaccurately high sports readiness perceptions at program entry. Perceived overall sports activity knee function ratings improved from 2.9 ± 0.6 (abnormal) at program entry to 1.2 ± 0.5 (normal) at completion (p < 0.001). Most subjects returned back to sports at or above their pre-injury performance skill/performance level (84%, 179/212). By 7.7 ± 4.0 years (range = 2-15 years) post-surgery, 14 subjects had sustained an ipsilateral knee re-injury or contralateral knee injury (6.6%). The 2.8% non-contact contralateral and 1.9% non-contact ipsilateral knee injury rates observed were significantly lower than those cited in previous reports. Conclusion Supplementing primary ACL reconstruction and standard physical therapy with a return to sports bridge program prior to release to unrestricted sports performance was effective at improving patient outcomes and decreasing ipsilateral knee re-injury and contralateral knee injury rates.

Category: Knee - ACL Post-Surgery

Early Use of Blood Flow Restriction Training with Low-Intensity Exercises following Anterior Cruciate Ligament Reconstruction Improves Quadriceps Strength and Post-Operative Pain: A Randomized Controlled Trial

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Summary:
Compared to a traditional rehabilitation program, early use of blood flow restriction training coupled with low intensity exercises improves knee extension strength, range of motion, and pain in the acute post-operative phase (weeks 0-12) following ACL reconstruction.

Data:
Background: Blood flow restriction therapy (BFRT) has been proposed as a way to enhance rehabilitation following anterior cruciate ligament reconstruction (ACL-R). However, a paucity of data exists to support the use of BFRT in clinical practice. The purpose of this study is to determine if early application of BFRT, used with low-load (LL) therapy exercises, increases quadriceps strength, and functional outcomes following ACLR compared to a traditional rehabilitation protocol without BFRT. Methods: Forty-five patients undergoing ACLR were randomized to receive either: (1) a traditional rehabilitation program (n=23), or (2) a modified program using BFRT with LL (20-50% of 1-repetition maximum) exercises (n=22). Two patients crossed over from the control to BFRT groups at postoperative weeks 2 and 4, respectively. An as-treated analysis was performed for biweekly measurements in the early postoperative period of range of motion (ROM), thigh circumference, and terminal knee extension (TKE) strength. Circumference and TKE strength were measured as a percentage of the contra-lateral side. VAS and IKDC scores were assessed preoperatively and during the first 12 weeks postoperatively. Results: Compared to the control group, the BFRT patients demonstrated significantly greater TKE strength at week 8 (72.9% vs. 79.4%, p = 0.043) and week 12 (73.0% vs. 85.5%, p = 0.030), as well as greater overall change in TKE strength from week 3 to 12 (9.2% vs 24.2%, p = 0.011). The BFRT group reported significantly lower VAS scores at week 12 (1.2 vs. 0.3, p = 0.013) and significantly higher IKDC scores at week 12 (52.9 vs 61.8, p = 0.027). The BFRT group also reported significantly greater flexion than control for week 4 (91.8 vs 102.6, p = 0.025), week 6 (112.7 vs 121.1, p = 0.036), and week 12 (130.5 vs 137.2, p = 0.028). Conclusions: In comparison to a traditional rehabilitation protocol following ACLR, BFRT used in conjunction with LL exercises during the early postoperative period was associated with significantly lower VAS scores as well as significantly greater quadriceps strength and knee flexion. These results suggest that BFRT may help resist muscle atrophy and/or promote muscle hypertrophy during rehabilitation after ACLR, though future studies are needed to assess long-term outcomes.

Category: Knee - ACL Post-Surgery

Short Forms of the Knee injury and Osteoarthritis Outcome Score (KOOS) Following Anterior Cruciate Ligament Reconstruction: Are They of Use and Which Short Form to Choose?

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S52