Knee Strength Recovery And Factors Affecting Knee Strength After Anterior Cruciate Ligament Reconstruction


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(No relationships reported)

PURPOSE: To evaluate the recovery of knee extension and flexion strength after anterior cruciate ligament reconstruction (ACLR) and to identify the factors affecting knee strength at 6 months after ACLR.

METHODS: Thirty-seven patients [31 male, 6 female; age: 22.8±8.0 years, body mass index (BMI): 22.4±4.1 kg/m²] who underwent ACLR with hamstring tendon autograft were included in this study. The patients attended a standardized rehabilitation program after surgery. Isokinetic concentric strength of the quadriceps and hamstring muscles at 60°/s were performed pre-operatively and at 3, and 6 months post-operatively. The quadriceps strength index (QSI) and hamstring strength index (HSI) were calculated by normalizing the peak torque of the involved leg with the uninvolved leg. Repeated-measures ANOVA was used to evaluate strength changes over time. The multiple linear regression analysis was used to identify independent predictors (age, BMI, preoperative knee muscle strength) of QSI and HSI at 6 months after surgery.

RESULTS: For the QSI, significant differences were identified among the time points (F(2,44)=9.72, p<0.001). Quadriceps strength was greater at 6 months when compared with pre-operatively and (p<0.001) and at 3 months post-operatively (p<0.001). For the HSI, significant differences were identified among the time points (F(2,44)=4.27, p=0.03). Hamstring muscle strength was significantly lower at 3 months post-operatively when compared with pre-operatively (p<0.001) and it was greater at 6 months when compared with 3 months post-operatively (p<0.001). At 6 months after ACLR, 40.5% of participants demonstrated greater than 90% for QSI, 48.6% demonstrated greater than 90% for HSI. The multiple linear regression analysis showed that the age and BMI were associated with the QSI (p<0.001, R²=0.47) but not associated with HSI at 6 months after surgery.

CONCLUSION: This study showed that there was a gradual increase in quadriceps strength from preoperative to 6 months after ACLR. However, hamstring strength decreased at 3 months post-operatively and reached preoperative level at 6 months after ACLR. The most important finding of this study was that younger age and lower body mass index were related with better reported outcomes at three month post-ACLR.

Sex Differences In Patient Reported Outcomes 6 Months Following Ac Reconstruction

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(No relationships reported)

Evidence indicating the important role psychological factors contribute to patient reported outcome (PROs) post anterior cruciate ligament reconstruction (ACLR) has been growing over the last decade. However, it is unclear whether sex-specific differences in psychological profile exist in ACLR recovery. Determining the potential psychological differences between sexes has important implications on the development of targeted intervention strategies post ACLR.

PURPOSE: To determine whether sex differences in PROs exist at six months following ACLR.

METHODS: Forty-one subjects (23 F; BMI 24.0 ± 3.5, Age 19.2 ± 3.9, Tegner 8.8 ± 1.2) six months post ACLR completed PRO questionnaires. Subjects were administered the ACL-Return to Sport after Injury Scale (ACL-RSI), the Knee Self-Efficacy Scale (K-SES), and the Psychological Readiness to Return to Sport Scale (1-PRSS). Independent samples t-tests were used to compare PRO responses between males and females.

RESULTS: No significant differences were observed between male and female demographic information (p > 0.05). Significant differences were observed between male and female responses. Males reported higher scores on the ACL-RSI (M: 7.63 ± 1.43, F: 5.46 ± 2.17; p = 0.004, Cohen’s d = 1.21), K-SES (M: 8.88 ± 0.85, F: 7.53 ± 2.11; p = 0.001, Cohen’s d = 0.88), and 1-PRSS (M: 51.58 ± 6.22, F: 36.17 ± 13.37; p < 0.001, Cohen’s d = 1.54) when compared to females.

CONCLUSIONS: These results show that, six months following ACLR, males have significantly higher knee-function self-efficacy, as assessed by K-SES. 1-PRRS and ACL-RSI responses show that males are more psychologically ready to resume sports participation. These results show a discrepancy between male and female psychological response following ACLR, which should be a consideration for re-injury risk. While most patients are cleared to return to activity six to nine months post ACLR, there is a lack of consideration for patient’s psychological readiness at the time, for both sexes. If females are returning to sports before being psychologically ready, they are likely to be hesitant and less confident in game situations, contributing to injury risk. Future work is needed to determine if psychologically-focused rehabilitation programs are needed to potentially reverse the reported sex differences.

Standardized PRP Preparation And Associated Outcomes For Knee Oa

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Reported Relationships: M. Baria: Other (please describe); Educational grant received from Arthrex for research.

PURPOSE: To describe a standard preparation method and clinical outcomes using the Angel concentration system (Arthrex; Naples, FL) for knee OA and develop a regression model to determine which clinical variables influence outcome.

METHODS: A review of the medical record was performed on 134 cases of patients who underwent PRP injections for knee OA. Ninety knees (65 patients) were included. All patients had blood processed at 0% hematocrit using the concentration system. International knee documentation committee (IKDC) subjective scores completed at baseline and 3 months were collected and analyzed.

RESULTS: Overall, IKDC score improved from 42.3 ± 14.1 pre-injection to 59.7 ± 17.5 at 3 months post-injection (p < 0.001). Of the 90 knees injected, 57% met criteria for a positive response at 3 months with an average final IKDC score of 66.5 ± 15.0 (Δ 24.7±10.9). Increased patient age (p = 0.008) and body mass index (p = 0.008) were associated with lower three month IKDC scores.

CONCLUSIONS: A single PRP injection created at the 0% hematocrit setting yielded a positive response exceeding the minimum clinically important difference in 57% patients with knee OA. Increased patient age and BMI are associated with lower patient-reported outcomes at three month post-injection.