Outcome Measures and Risk Factors for Protracted Range of Motion Recovery Following Anterior Cruciate Ligament Reconstruction.

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Objective: To determine the incidence of postoperative stiffness, identify etiologic factors and estimate risk of development stiffness in a series of athlete who underwent anterior cruciate ligament reconstruction (ACLR). Design and Setting: This case-control study examined a 6-year period and was performed in a university-based sports medicine center. All athletes had the same surgeon and athletic trainer conducting their care. Chi-square risk estimates and stepwise regression analysis with ANOVA (p < .05) were performed. Stiffness as the dependent variable. Independent variables were etiologic factors associated with stiffness. Subjects: A total of 111 of 114 athletes who had full AROM prior to surgery and who were compliant with their postoperative care participated. There were 85 controls (39 males, age = 31.73 ± years, and 46 females, age = 23.15 ± 2.46 years), and 26 cases (7 males, age = 33.57 ± 2.65 years, and 19 females, age = 31.61 ± 5.67 years). Measurements: Those patients who recovered their active range of motion (AROM) by the 8th post-operative week were classified as the controls” and those who did not were “cases”. Group comparisons were then conducted one year after surgery analyzing age, gender, type of graft tissue used, concomitant procedures performed (i. e., meniscal repair, medial collateral ligament repair), pain perception, duration of immobilization and rehabilitation, and return to activity. Results: Overall stiffness incidence was 23.4%. Fifteen cases required a secondary surgery to recovery full AROM. Age was a significant risk factor (p = .017). Females (p = .087), allograft ACLR type (p = .054), and pain perception (p = .068) trended toward significance. Duration of rehabilitation was significant for cases requiring an average of 8 additional weeks to return to athletic activity (p < .001). All but one case and control returned to work, and three cases did not return to their prior athletic activity level. Though females had 2.3 the odds (95% CI, .876-6.046), and those with a meniscal repair 1.75 the odds (95% CI, .722-4.239) of developing stiffness, this was not statistically significant (p = .086). The significant predictor model for stiffness in this cohort incorporated age, gender and pain perception (p < .05). Conclusion: Recognition of known risk factors for postoperative stiffness is key to implement effective pain management techniques and early rehabilitation intervention to avoid arthrofibrosis and a secondary surgery to realize return to prior athletic activity level. Key Words: knee stiffness, arthrofibrosis, ACLR

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