Objective: To determine the clinical correlates of joint stiffness in anterior cruciate reconstruction (ACLR) patients whose range of motion (ROM) recovery was protracted despite compliance with rehabilitation protocols. Design and Setting: A case-control study was conducted comprising a 3 (group: slow recovery > 8 weeks postoperatively, normal recovery < 8 weeks postoperatively, control: no history of knee injury) by 2 (gender) by 2 (involved, uninvolved limb) design. Participants were matched on age, gender and activity level. A 3 x 2 x 2 ANOVA was used to determine statistical significance (p < .05). Tukey’s Honestly Significant Difference test was used for post hoc comparisons. Pearson Product Moment Correlation coefficients were obtained. Participants: Five females (age = 29.40 ± 5.67 years) and five males (age = 31.4 ± 5.74 years) comprised the slow recovery group. Five females (age = 29.2 ± 6.01 years) and five males (age = 32.0 ± 6.03 years) comprised the normal recovery group. Five females (age = 29.0 ± 6.09 years) and five males (age = 31.8 ± 6.67 years) comprised the control group. Measurements: Documentation of postoperative pain ratings (visual analogue scale), normalized maximal Hoffman reflex latency and amplitude ratios (H/M) of the soleus musculature (Cadwell Sierra EMG/EP console), resistance to passive ROM (passive torque values obtained with a KinCom dynamometer @ 10°/sec throughout 10° to 80° ROM) and normalized surface electromyographic (EMG) readings (KinCom EMG) for the quadriceps and hamstrings musculature throughout passive movement were obtained for each participant. Results: Pain reported postoperatively was significantly and indirectly correlated with HR latency (R = -.466, p ≤ 0.05). H/M ratios for latency (p = .111) and amplitude (p = .088) were not significant. Females demonstrated a trend toward higher resistance to passive movement in both extension (.1089 ± .1065) (p = .076) and flexion (.1335± .1385) (p = .073), and produced greater EMG activity in both quadriceps (.2288 ± .2687) (p = .063) and hamstrings (.1566 ± .1785) (p = .181) musculature during passive ranges, but these were not statistically significant. Conclusion: The results of the study did not provide sufficient evidence to determine that those slow recovery subjects exclusively exhibited neuromuscular characteristics that could be identified clinically and which could reliably distinguish them as a cohort who may require early additional intervention (e. g., clinical, pharmacological) to minimize their protracted ROM recovery course and risk of arthrofibrosis development. Key Words: joint stiffness, pain, reflex sensitivity

Word Count: 398