Evaluation of Male and Female Subjective SANE Scores During Return to Sport Testing 6 months post ACL Reconstruction

Olivia Louise Lynch[1], Campbell Youngs Goldsmith[1], Polly De Mille[1], Ruth Hendry Jones[1], Theresa A Chiaia[1], Ryann Davie[1], Beth E Shubin Stein[1], Peter D Fabricant[2], Michelle Elizabeth Kew[1]
[1]Women's Sports Medicine Center, Hospital for Special Surgery, [2]Hospital For Special Surgery

INTRODUCTION: Factors affecting Psychological Readiness is an understudied, yet critical component when considering return to sport rates in patients' post-surgical intervention. Psychological readiness has been quantified using several Patient Reported Outcomes (PROMs), considering post-surgical symptoms and psychological limitations that may delay return to sport. Previous studies have suggested gender differences in subjective scoring, specifically for the International Knee Documentation Committee (IKDC) subjective score. However, it is unclear if this result is consistent in other PROMs, such as the Single Assessment Numeric Evaluation (SANE). The SANE is used as a validated patient self-scoring tool that measures confidence in the post-surgical limb at the time of the patient's first return to sport assessment, in relation to patient's readiness to return to play. Furthermore, the present study aimed to investigate the presence of gender differences in self-scoring outcomes of 114 patients, 6 months after ACL reconstruction using the SANE. More specifically, to compare the SANE scores between males and females at the time of their first Return to Sport (RTS) assessment, which included the Quality Movement Assessment (QMA), at 6 months post anterior cruciate ligament (ACL) reconstruction.

METHODS: This retrospective study analyzed clinical RTS visit data from the Quality of Movement Assessment (QMA), which includes training history, a musculoskeletal assessment, and a movement assessment for male and female patients who had undergone ACL reconstruction 6 months prior (n=114). Patient SANE scores from the 6-month QMA visit were analyzed across sex, age, and ACL graft type. SANE scores of patients who completed a 9-month QMA visit were also analyzed (n=47).

RESULTS:

114 patients completed a 6-month post-operative QMA visit and were analyzed. 61.4% (70) were female, with an age range between 13-55 years (mean age 22 + 8.9). There was no significant difference in mean SANE scores between males and females 6 months post ACL reconstruction (79. 7 + 10.9 vs. 79.8 + 13.2, p = 0.94, 95% CI [-4.5,4.9]. When stratified by ACL graft type, there was no significant difference between SANE scores in males and females (p>0.05). However, when stratified by age (<18 and >18), average SANE scores were significantly different within female patients, respectively (83.1 + 17.9 vs. 76 + 18.2, p=0.02, 95% CI [-0.3,12.6]). Additionally, 47 patients were analyzed during the second QMA visit at 9 months post-surgery. 55.3% (26) were female, with an age range between 13-38 years (mean age 19.5 + 5.3). There was no significant difference in mean SANE scores between males and females 9 months post ACL reconstruction, (89.4 + 7.7 vs. 90.2 + 6.5 p=0.70, 95% CI [-3.4,5.0]). When stratified by age and ACL graft type there was no significant difference between SANE scores in males and females at 9 months post operatively (p>0.05)

When comparing the average difference in SANE score between 6- and 9-months post-surgery, there was no significant difference between males and females (8.8 + 7.8 vs. 10.9 + 11.6, p= 0.44, 95% CI [-3.7,8.3]). However, from 6 to 9 months postoperative, SANE scores significantly increased for both males (80.9 + 7.5 vs. 89.4 + 7.7, P<0.001, 95% CI [-9.0,-8.13]) and females (79.3 + 11.6 vs. 90.2 + 6.5, P<0.001, 95% CI [-11.2,-10.6]).

DISCUSSION AND CONCLUSION: While previous studies have reported on the differences between males and females regarding psychological readiness of return to sport, we found no clinically significant difference in SANE scores between males and females at 6- & 9-months post ACL reconstruction. However, both male and female patients demonstrated significant improvements in SANE scores from 6 to 9 months postoperatively, supporting the current evidence that early RTP 6 months postoperative may be contraindicated in this young demographic.

Figure 1. Average SANE Score of Male and Female ACLR Patients 6 Months Post - Op

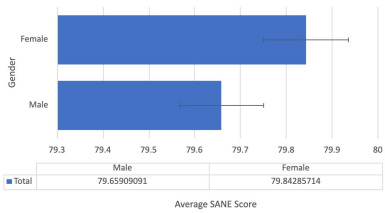

Table 1. Average SANE Scores 6 vs. 9 Months Post ACL Reconstruction.

QMA 1 (6 Month RTS)	Mean SANE Score	SD	Count	P value
Males	79.7	10.9	44	
Females	79.8	13.2	70	
				P = 0.94
QMA 2 (9 Month RTS)				
Males	89.4	7.7	21	
Females	90.2	6.5	26	
				P = 0.70

Table 2. Comparison of Average SANE Scores of Males & Females at 6- & 9-Months Post ACL Reconstruction.

QMA 1-2	Mean SANE Score	SD	Count (%)	P value
Male QMA 1	79.7	10.9	44	
Male QMA 2	89.4	7.7	21	
				P < 0.001
Female QMA 1	79.8	13.2	70	
Female QMA 2	90.2	6.5	26	
				P < 0.001