

Does the Patient Acceptable Symptomatic State (PASS) Questionnaire Pass the Test? A Retrospective Review Assessing the Utility of PASS as an Indicator of Patient Satisfaction in Anterior Cruciate Ligament Reconstruction

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INTRODUCTION:

Patient Acceptable Symptomatic State (PASS) is a “Yes” or “No” measure that assesses a patient’s satisfaction with their current symptoms. Before surgery, the majority of patients undergoing ACL reconstruction (ACLR) should unlikely be satisfied with their functional state. Postoperatively, correlating Patient-Reported Outcomes Measures (PROM) with PASS may assist with monitoring success of recovery after ACLR. Therefore, the purpose of this study was to determine preoperative PASS scores in ACLR and secondarily determine thresholds for achieving PASS using Patient-Reported Outcome Measurement Information System (PROMIS) metrics. We hypothesized that nearly 100% of patients would not achieve PASS preoperatively.

METHODS:

A retrospective cohort study was performed to identify patients undergoing primary ACLR at a large healthcare system from December 2020 to September 2022. Patients were excluded if undergoing revision knee surgery or presence of multi-ligament knee injury. Demographics and PROMs such as PASS, PROMIS-Physical Function (PF), and PROMIS-Pain Interference (PI) were collected by chart review. Patients with a recorded PASS before surgery were included for analysis. Patients were divided into 2 groups, those who responded “Yes” to PASS preoperatively and those who answered “No.” Demographics and outcomes were compared between the 2 groups at the preoperative, 6-week postoperative, 3-month, 3 to 6-month, and 6 to 9-month time intervals. Descriptive statistics and independent samples t-tests were utilized to assess patient responses. Receiver operating characteristic curves (ROC) and area under the curve (AUC) analysis were performed to determine threshold values for PROMIS-PI and PROMIS-PF correlating with PASS achievement.

RESULTS:

A total of 256 patients completed preoperative PASS, with 27% (69/256) achieving PASS compared to 73% (187/256) who did not. After excluding patients with incomplete PROM’s up to 6 months after surgery, 95 patients remained with 21% (20/95) achieving PASS versus 79% who did not (75/95) preoperatively. No significant demographic differences were found between the groups (Table 1). Before surgery, those who responded “Yes” to PASS reported significantly higher PROMIS-PF and lower PROMIS PI scores (P<0.01). Postoperatively, the only differences observed were higher 6 week PROMIS-PF (p<0.01 and p=0.02, respectively, Table 2), but no other differences were found up to 9 months between groups. The threshold for achieving PASS for PROMIS-PI and PROMIS-PF were <58 and >44 (p=<0.01, AUC 0.76 and 0.77, respectively) preoperatively and <53 and >48 (p=<0.01, AUC 0.78 and 0.83, respectively) at 6-9 months postoperatively.

DISCUSSION AND CONCLUSION:

Despite having an ACL tear, 27% of patients reported satisfaction with pain and function before ACLR. Theoretically, patients should not be satisfied prior to surgery, which may result from patients misunderstanding the PASS questionnaire preoperatively. Furthermore, PROMIS-PI and -PF exhibit good discriminatory ability to predict achievement of PASS at 6-9 months after ACLR. These results highlight the limitation of PASS preoperatively and suggest its use may be better suited to monitor progress after surgery.

Figure 1. PROMIS PI and PROMIS PF ROC Curves Preoperatively

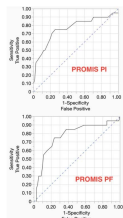


Figure 2. PROMIS PI and PROMIS PF ROC Curves 6-9 Months Postoperatively

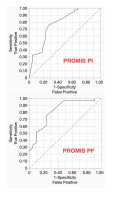


Table 1. Demographic Characteristics of patients completing PASS

Characteristic	Yes (n=69)	No (n=187)	P-value
Age (Mean ± SD)	32.2 ± 11.6	31.1 ± 11.7	0.11
Sex, %			0.92
Male	61.4%	57.8%	
Female	38.6%	42.2%	
Body Mass Index (Mean ± SD)	28.1 ± 5.8	28.5 ± 6.0	0.50
Race, %			0.53
White	53.6%	52.4%	
Black	23.2%	23.5%	
Asian	17.3%	17.1%	
Hispanic/Latino	2.9%	2.9%	
Other	3.0%	3.0%	
Insurance, %			0.58
Medicaid	21.0%	21.4%	
Medicare	21.7%	21.9%	
Private	57.3%	56.7%	
None/Other	0.0%	0.0%	
Uninsured	0.0%	0.0%	
Other	0.0%	0.0%	

*P-values are for the variables listed in the table.

Table 2. PROMIS Scores (Mean ± SD) at Various Time Points

Measure	Preoperative	6 Weeks	3 Months	3-6 Months	6-9 Months
Pain Interference	58.1 ± 11.1	58.0 ± 11.0	57.8 ± 10.9	57.6 ± 10.8	57.4 ± 10.7
Physical Function	44.1 ± 10.0	44.2 ± 10.1	44.3 ± 10.2	44.4 ± 10.3	44.5 ± 10.4
Health Status	48.5 ± 10.5	48.6 ± 10.6	48.7 ± 10.7	48.8 ± 10.8	48.9 ± 10.9
Role Function	45.2 ± 10.2	45.3 ± 10.3	45.4 ± 10.4	45.5 ± 10.5	45.6 ± 10.6
Walking	46.8 ± 10.3	46.9 ± 10.4	47.0 ± 10.5	47.1 ± 10.6	47.2 ± 10.7
Stair Use	47.5 ± 10.4	47.6 ± 10.5	47.7 ± 10.6	47.8 ± 10.7	47.9 ± 10.8
Running	48.2 ± 10.5	48.3 ± 10.6	48.4 ± 10.7	48.5 ± 10.8	48.6 ± 10.9
Swimming	48.9 ± 10.6	49.0 ± 10.7	49.1 ± 10.8	49.2 ± 10.9	49.3 ± 11.0
Recreation	49.6 ± 10.7	49.7 ± 10.8	49.8 ± 10.9	49.9 ± 11.0	50.0 ± 11.1
Work	50.3 ± 10.8	50.4 ± 10.9	50.5 ± 11.0	50.6 ± 11.1	50.7 ± 11.2
Overall	51.0 ± 10.9	51.1 ± 11.0	51.2 ± 11.1	51.3 ± 11.2	51.4 ± 11.3

*P-values are for the variables listed in the table.

Table 3. PROMIS Scores (Mean ± SD) at Various Time Points

Measure	Preoperative	6 Weeks	3 Months	3-6 Months	6-9 Months
Pain Interference	58.1 ± 11.1	58.0 ± 11.0	57.8 ± 10.9	57.6 ± 10.8	57.4 ± 10.7
Physical Function	44.1 ± 10.0	44.2 ± 10.1	44.3 ± 10.2	44.4 ± 10.3	44.5 ± 10.4
Health Status	48.5 ± 10.5	48.6 ± 10.6	48.7 ± 10.7	48.8 ± 10.8	48.9 ± 10.9
Role Function	45.2 ± 10.2	45.3 ± 10.3	45.4 ± 10.4	45.5 ± 10.5	45.6 ± 10.6
Walking	46.8 ± 10.3	46.9 ± 10.4	47.0 ± 10.5	47.1 ± 10.6	47.2 ± 10.7
Stair Use	47.5 ± 10.4	47.6 ± 10.5	47.7 ± 10.6	47.8 ± 10.7	47.9 ± 10.8
Running	48.2 ± 10.5	48.3 ± 10.6	48.4 ± 10.7	48.5 ± 10.8	48.6 ± 10.9
Swimming	48.9 ± 10.6	49.0 ± 10.7	49.1 ± 10.8	49.2 ± 10.9	49.3 ± 11.0
Recreation	49.6 ± 10.7	49.7 ± 10.8	49.8 ± 10.9	49.9 ± 11.0	50.0 ± 11.1
Work	50.3 ± 10.8	50.4 ± 10.9	50.5 ± 11.0	50.6 ± 11.1	50.7 ± 11.2
Overall	51.0 ± 10.9	51.1 ± 11.0	51.2 ± 11.1	51.3 ± 11.2	51.4 ± 11.3

*P-values are for the variables listed in the table.