POSTER 27

Responsiveness of Q-TFA and Select PROMIS Domains After Osseointegration in Transfemoral Amputees

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Background:
Historically, long-form patient-reported outcomes measures (PROMs) have presented a significant administrative burden onto patients and researchers alike. Novel, computerized adaptive testing-based PROMs, such as PROMIS, may provide a solution. We previously established concurrent validity of Q-TFA and PROMIS in transfemoral amputees presenting for osseointegration at preoperative baseline.

Purpose:
We sought to evaluate the responsiveness of legacy (Q-TFA) and novel (PROMIS) patient-reported outcomes measures in patients undergoing osseointegration after transfemoral amputation.

Patients and Methods:
We prospectively collected preoperative baseline and postoperative follow-up Q-TFA and PROMIS Pain Interference, Pain Behavior, and Physical Function scores in transfemoral amputees undergoing osseointegration. We analyzed responsiveness via Cohen's *d*, calculating the effect size index (ESI) at 12- and 24-months postoperatively. ESI values of 0.5 or greater were designated as representative of a true change in patient status, as defined by previous authors. Statistical analysis was conducted in the R programming environment (R Core Team 2020).

Results:
We assessed 37 patients in total, 92% (34/37) of whom were male, with a mean age of 38 (SD 10) years at time of surgery. Mean PROMIS Pain Interference, Pain Behavior, and Physical Function scores for each timepoint are shown in Table 1, as are Q-TFA sub-domain and composite scores. PROMIS Pain Interference and Physical Function domains demonstrated responsiveness at 12 and 24 months postoperatively, while the Pain Behavior domain only demonstrated responsiveness at 12 months (Table 2). All Q-TFA sub-domains exhibited responsiveness at 24 months.

Conclusions:
Both PROMIS Pain Interference and Physical Function domains exhibited significant responsiveness at two years' follow-up after osseointegration in transfemoral amputees, similar to the Q-TFA. Given the comparable responsiveness of novel CAT-based and long-form legacy PROMs, future investigators may choose to forego the significant administrative burden of the Q-TFA and instead primarily use PROMIS to study outcomes in these patients.

Table 1. Mean PROMIS and Q-TFA scores, standard errors shown in parentheses.

	Pre-Operation	12 Months	24 Months
PROMIS – PI	57.22 (1.32)	52.32 (1.65)	51.31 (1.85)
PROMIS – PB	56.10 (1.12)	52.19 (1.55)	52.92 (1.62)
PROMIS – PF	38.67 (0.62)	41.89 (1.12)	42.86 (1.20)
Q-TFA – Use	40.44 (6.82)	64.15 (5.47)	71.01 (5.70)
Q-TFA – Mobility	61.76 (3.75)	68.46 (3.60)	74.48 (3.10)
Q-TFA – Problem	45.05 (2.72)	17.78 (2.47)	17.32 (3.18)
Q-TFA – Global	38.24 (2.86)	67.89 (3.76)	74.65 (3.14)
Q-TFA – Composite	53.18 (2.93)	60.53 (2.87)	65.84 (2.28)

Table 2. ESI values via Cohen's *d*, 95% confidence intervals in parentheses. Values > 0.5, representative of a true change in patient status, in bold.

	12 Months	24 Months
PROMIS		
Pain Interference	**0.55 (0.07, 1.02)**	**0.69 (0.16, 1.22)**
Pain Behavior	**0.50 (0.01, 0.96)**	0.43 (-0.09, 0.95)
Physical Function	**0.60 (0.12, 1.08)**	**0.88 (0.33, 1.41)**
Q-TFA		
Use	**0.66 (0.16, 1.14)**	**0.86 (0.31, 1.41)**
Mobility	0.31 (-0.17, 0.79)	**0.65 (0.11, 1.18)**
Problem	**1.78 (1.21, 2.33)**	**1.73 (1.11, 2.34)**
Global	**1.50 (0.96, 2.04)**	**2.22 (1.55, 2.88)**
Composite	0.43 (-0.06, 0.91)	**0.85 (0.29, 1.39)**