

Responsiveness of pediatric v2.0 and v3.0 PROMIS Mobility and Pain Interference

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Objective



We aim to assess the responsiveness the self-report PROMIS® Item Banks v2.0 and v3.0 for Mobility and Pain Interference in the context of pediatric physical therapy (PPT).

Methods

Who: Children following PPT treatment, expecting progress in the following six months.

What: Pediatric PROMIS® v2.0 Mobility, Pain Interference, Upper Extremity full item banks.
Data from v2.0 were recalculated to v3.0 post-hoc.
Physical complaint of child and focus of PPT intervention were reported.

When: While following PPT treatment (baseline) and six months later (follow-up).
At follow-up, domain-specific rating of change questions were completed.

How: Responsiveness was evaluated by hypothesis testing.
Instruments were deemed sufficiently responsive if $\geq 75\%$ of hypotheses were met.
V2.0 and v3.0 were compared based on number of hypotheses met.

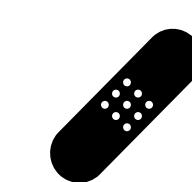
Results

63 children participated (mean age 11 years; 52% girls, 43% boys)



Mobility:

- At baseline, 34 children had mobility complaints, and 31 focused on mobility in PPT.
- At follow-up, 40 experienced improved mobility.



Pain Interference:

- At baseline, 31 children had pain complaints, and 21 focused on pain in PPT.
- At follow-up, 40 experienced improved pain interference.

Hypotheses

A) Legacy comparison

A1) The change score of PROMIS Mobility shows a moderate positive correlation ($\rho_s \geq 0.5$) with the PedsQL Physical Health change score.

A2) The change in PROMIS Pain Interference moderately positively correlates ($\rho_s \geq 0.4$) with the change in the PedsQL Physical Health pain item.

A3) The change score of PROMIS Pain Interference shows a positive moderate correlation ($\rho_s \geq 0.4$) with the NPRS change score.

B) Known-group responsiveness, based on physical complaint of the child (as reported by the parent)

B1) For participants reporting complaints on the measured domain, T-scores at follow-up compared to baseline show a Cohen's D > 0.3.

B2) Participants reporting complaints on the measured domain have a change score on the relevant PROMIS measure that is ≥ 2 T-score points greater than that of participants not reporting complaints on the measured domain.

B3) Participants reporting mobility complaints, but not upper extremity complaints, have a PROMIS Mobility change score ≥ 2 T-score points higher than their PROMIS Upper Extremity change score.

C) Known-group responsiveness, based on focus of PPT intervention (as reported by the pediatric physical therapist)

C1) For participants receiving a PPT intervention focused on the measured domain, T-scores at follow-up compared to baseline show a Cohen's D > 0.3.

C2) Participants receiving a PPT intervention focused on the measured domain have a change score on the relevant PROMIS measure that is ≥ 2 T-score points greater than that of participants not receiving an intervention targeting the measured domain.

C3) Participants receiving a mobility-focused PPT intervention have a PROMIS Mobility change score ≥ 2 T-score points higher than their PROMIS Upper Extremity change score.

D) Anchor-based method (as reported by child)

D1) The change score of PROMIS measure has a positive strong correlation ($\rho_s \geq 0.7$) with the related rating of change question.

D2) The PROMIS change score is ≥ 2 T-score points higher in participants reporting perceived improvement than in those who did not.

Number of hypotheses confirmed

Percentage of hypotheses confirmed

	Results			
	Mobility		Pain Interference	
	v2.0	v3.0	v2.0	v3.0
A1) The change score of PROMIS Mobility shows a moderate positive correlation ($\rho_s \geq 0.5$) with the PedsQL Physical Health change score.	0.65	0.66	-	-
A2) The change in PROMIS Pain Interference moderately positively correlates ($\rho_s \geq 0.4$) with the change in the PedsQL Physical Health pain item.	-	-	0.44	0.44
A3) The change score of PROMIS Pain Interference shows a positive moderate correlation ($\rho_s \geq 0.4$) with the NPRS change score.	-	-	-0.68	-0.71
B) Known-group responsiveness, based on physical complaint of the child (as reported by the parent)				
B1) For participants reporting complaints on the measured domain, T-scores at follow-up compared to baseline show a Cohen's D > 0.3.	-0.81	-0.79	0.57	0.78
B2) Participants reporting complaints on the measured domain have a change score on the relevant PROMIS measure that is ≥ 2 T-score points greater than that of participants not reporting complaints on the measured domain.	6.56	7.10	-2.73	-3.82
B3) Participants reporting mobility complaints, but not upper extremity complaints, have a PROMIS Mobility change score ≥ 2 T-score points higher than their PROMIS Upper Extremity change score.	5.21	6.06	-	-
C) Known-group responsiveness, based on focus of PPT intervention (as reported by the pediatric physical therapist)				
C1) For participants receiving a PPT intervention focused on the measured domain, T-scores at follow-up compared to baseline show a Cohen's D > 0.3.	-0.52	-0.51	_*	_*
C2) Participants receiving a PPT intervention focused on the measured domain have a change score on the relevant PROMIS measure that is ≥ 2 T-score points greater than that of participants not receiving an intervention targeting the measured domain.	0.82	0.62	_*	_*
C3) Participants receiving a mobility-focused PPT intervention have a PROMIS Mobility change score ≥ 2 T-score points higher than their PROMIS Upper Extremity change score.	4.30	4.72	-	-
D) Anchor-based method (as reported by child)				
D1) The change score of PROMIS measure has a positive strong correlation ($\rho_s \geq 0.7$) with the related rating of change question.	-0.55	-0.51	-0.26	-0.35
D2) The PROMIS change score is ≥ 2 T-score points higher in participants reporting perceived improvement than in those who did not.	7.97	8.20	-3.97	-5.85
Number of hypotheses confirmed	6/8	6/8	4/5	4/5
Percentage of hypotheses confirmed	75.0%	75.0%	80.0%	80.0%

*Hypothesis not applicable due to insufficiently sized sample (n<30)

Conclusion



PROMIS pediatric Mobility and Pain Interference are sufficiently responsive. These PROMs reliably capture change over time in clinical practice. No difference was found for v2.0 and v3.0.