

PAIN INTERFERENCE SCORING MANUAL

A brief guide to scoring the PROMIS® Pain Interference instruments:

ADULT	PEDIATRIC	PARENT PROXY
PROMIS Item Bank v1.1 – Pain Interference PROMIS Item Bank v1.1 – Pain Interference (recommended) PROMIS Item Bank v1.1 – Pain Interference (screen-to-CAT) PROMIS-Ca Item Bank v1.1 – Pain Interference PROMIS Short Form v1.1 – Pain Interference 4a PROMIS Short Form v1.1 – Pain Interference 6a PROMIS Short Form v1.1 – Pain Interference 6b PROMIS Short Form v1.1 – Pain Interference 8a PROMIS+OA-Knee Short Form v1.1 – Pain Interference 13a PROMIS Item Bank v1.0 – Pain Interference* PROMIS-Ca Item Bank v1.0 – Pain Interference* PROMIS Short Form v1.0 – Pain Interference 4a* PROMIS Short Form v1.0 – Pain Interference 6a* PROMIS Short Form v1.0 – Pain Interference 6b* PROMIS Short Form v1.0 – Pain Interference 8a*	PROMIS Pediatric Bank GenPop v3.0 – Pain Interference PROMIS Pediatric Bank GenPop v3.0 – Pain Interference (screen-to-CAT) PROMIS Pediatric Short Form GenPop v3.0 – Pain Interference 8a PROMIS Pediatric Item Bank v2.0 – Pain Interference* PROMIS Pediatric Item Bank v2.0 – Pain Interference (recommended)* PROMIS Pediatric Item Bank v2.0 – Pain Interference (screen-to-CAT)* PROMIS Pediatric Short Form v2.0 – Pain Interference 8a* PROMIS Pediatric Item Bank v1.0 – Pain Interference* PROMIS Pediatric Short Form v1.0 – Pain Interference 8a*	PROMIS Parent Proxy Bank GenPop v3.0 – Pain Interference PROMIS Parent Proxy Bank GenPop v3.0 – Pain Interference (screen-to-CAT) PROMIS Parent Proxy Short Form GenPop v3.0 – Pain Interference 8a PROMIS Parent Proxy Item Bank v2.0 – Pain Interference* PROMIS Parent Proxy Item Bank v2.0 – Pain Interference (recommended)* PROMIS Parent Proxy Item Bank v2.0 – Pain Interference (screen-to-CAT)* PROMIS Parent Proxy Short Form v2.0 – Pain Interference 8a* PROMIS Parent Proxy Item Bank v1.0 – Pain Interference* PROMIS Parent Proxy Short Form v1.0 – Pain Interference 8a*

*Retired Measure

Ca=Cancer, GenPop=general population, OA=osteoarthritis

COMPARING SCORES ACROSS VERSIONS

Some PROMIS domains have multiple versions of instruments (i.e., v1.0, v1.1, v2.0, v3.0). Generally, **it is recommended that you use the most recent version available which can be identified as the instrument with the highest version number.** In most cases, an instrument that has a decimal increase (v1.0 to v1.1) retains the same item-level parameters as well as instrument reliability and validity. In cases where a version number increases by a whole number (e.g., v1.0 to v2.0), the changes to the instrument are more substantial.

- For Adult Pain Interference, scores from the v1.0 and v1.1 measures can be compared with each other.
- For Pediatric and Parent Proxy Pain Interference, the calibrations between v1.0 and v2.0 are identical, as is the item content on short forms. Consequently, T-scores from v1.0 can be compared to T-scores from v2.0.
- Scores from Pediatric and Parent Proxy GenPop v3.0 Pain Interference measures are NOT comparable with v1.0 or v2.0 measure scores.

Transforming Scores between Versions:

To transform T-scores from Pediatric/Parent Proxy v1.0/v2.0 Pain Interference measures to the Pediatric/Parent Proxy GenPop v3.0 metric, rescore v1.0/v2.0 measures using the [HealthMeasures Scoring Service](#) or Assessment Center API. This is the preferred strategy as it produces precise scores.

1. Download the v3.0 measure from [Search & View Measures](#) on HealthMeasures.net.
2. Revise your dataset as needed to match the v3.0 item IDs and response scores:
 - No items were revised between the v2.0 and GenPop v3.0 Pain Interference measures.

3. Follow the instructions for using the [HealthMeasures Scoring Service](https://www.healthmeasures.net). Contact help@HealthMeasures.net if using the Assessment Center API for rescoring.

The crosswalk tables in Appendix 3 may also be used as a reference to guide understanding of how scores have shifted from the older v1.0, v1.1, and v2.0 measures to the v3.0 measures. If these tables are used to convert older T-scores to GenPop v3.0, please note that the resulting T-scores are not as precise as those generated by using HealthMeasures Scoring Service or Assessment Center API.

WHICH CALIBRATION SAMPLE SHOULD I USE?

Some PROMIS Parent Proxy v1.0, v1.1, and v2.0 measures (Anxiety, Depressive Symptoms, Fatigue, Mobility, Pain Interference, Peer Relationships) had two calibration samples – “Parent Proxy” and “Parent Proxy Without Local Dependence.” The former (Parent Proxy) included calibrations for all items. This was the default calibration sample. The Parent Proxy Without Local Dependence did not include calibrations for some items. The items without calibrations are enemy items. That is, a dyad or triad of items was identified in which there are psychometric reasons to only administer one of those items to a given respondent. For example, item Pf2anxiety5 and Pf2anxiety4 are enemy items. A participant should only see one of these items in a CAT. The v3.0 GenPop measure have a single calibration sample and no enemy items.

SCORING THE INSTRUMENT

Short Forms: PROMIS instruments are scored using item-level calibrations. This means that the most accurate way to score a PROMIS instrument is to use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoring-service) or a data collection tool that automatically calculates scores (e.g., REDCap auto-score). This method of scoring uses responses to each item for each participant. We refer to this as “response pattern scoring.” Because response pattern scoring is more accurate than the use of raw score/scale score look up tables included in this manual, it is preferred. Response pattern scoring is especially useful when there is missing data (i.e., a respondent skipped an item), different groups of participants responded to different items, or you have created a new questionnaire using a subset of questions from a PROMIS item bank.

Instructions for the HealthMeasures Scoring Service

1. Download the Input Template from the [HealthMeasures Scoring Service](https://www.healthmeasures.net) home page.
2. Add your data (all respondents’ individual answers to questions) for one PROMIS measure to the template (multiple timepoints are okay).
3. Determine how much data is missing. In order to produce a precise score, a respondent must answer at least 4 items in measures that include 4 or more items. If a precise score is required, remove respondents who answered less than 4 items from the input template and do not calculate a T-score.
4. Upload your spreadsheet to the HealthMeasures Scoring Service. If this is your first time, register as a new user.
5. Access your email to receive a spreadsheet with calculated scores.

Instructions for Using Raw Sum Score to T-score Conversion Tables

Each question usually has five response options ranging in value from one to five. To find the total raw score for a short form with all questions answered, sum the values of the response to each question. For example, for the adult 6-item form, the lowest possible raw score is 6; the highest possible raw score is 30 (see all short form

scoring tables in Appendix 1). **All questions must be answered in order to produce a valid score using the scoring tables.** If a participant has skipped a question, use the HealthMeasures Scoring Service (https://www.assessmentcenter.net/ac_scoringervice) to generate a final score.

Locate the applicable score conversion table in Appendix 1 and use the appropriate table to translate the total summed raw score into a T-score for each participant. The T-score rescales the raw score into a standardized score with a mean of 50 and a standard deviation (SD) of 10. Therefore, a person with a T-score of 40 is one SD below the mean.

For the adult PROMIS Pain Interference 6b short form, a raw score of 10 converts to a T-score of 53.8 with a standard error (SE) of 1.8 (see scoring table for the 6b short form in Appendix 1).

CAT: A minimum number of items (e.g., 4) must be answered in order to receive a score for the Pain Interference CAT. The response to the first item will guide the system's choice of the next item for the participant. The participant's response to the second item will dictate the selection of the following question, and so on. As additional items are administered, the potential for error is reduced and confidence in the respondent's score increases. The CAT will continue until either the standard error drops below a specified level (e.g., on the T-score metric 3.0), or the participant has answered the maximum number of questions (e.g., 12), whichever occurs first. For some CATs, specifically "recommended" and "screen-to-CAT" there are additional stopping rules. These include stopping when the standard error isn't improving much or if a respondent is asymptomatic. For details on the exact stopping rules for Pain Interference CATs, view the Measure Differences summary.

SCORES

For most PROMIS instruments, a score of 50 is the average for the United States general population with a standard deviation of 10 because calibration testing was performed on a large sample of the general population. For the pediatric and parent proxy Pain Interference measures, a score of 50 is the mean for a general population + clinical sample. You can read more about the calibration and centering samples on HealthMeasures.net (<http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>). The T-score is provided with an error term (Standard Error or SE). The Standard Error is a statistical measure of variance and represents the "margin of error" for the T-score.

Important: *A higher PROMIS T-score represents more of the concept being measured.* For negatively-worded concepts like pain interference, a T-score of 60 is one SD worse than average. That is, a person has more problems with pain hindering activities. By comparison, a pain interference T-score of 40 is one SD better than average.

Standard Error (SE): A PROMIS score includes a T-score and a standard error (SE). The standard error is a measure of the variability for a given T-score across hypothetical repeated measurements. The standard error can be used to construct confidence intervals around a T-score. A 95% confidence interval is common. A 95% confidence interval means there is a 95% probability that the true T-score is within this range. The formula for a 95% confidence interval is $(T\text{-score} \pm (1.96 * SE))$. For example, if $T=52$ and $SE=2$, the lower boundary of the confidence interval is $(52 - (1.96 * 2)) = 48$ and the upper boundary is $(52 + (1.96 * 2)) = 56$.

FREQUENTLY ASKED QUESTIONS (FAQs)

Q: I am interested in learning more. Where can I do that?

Review the HealthMeasures website at www.healthmeasures.net.

Q: How do I handle multiple responses when administering a short form on paper?

Guidelines on how to deal with multiple responses have been established. Resolution depends on the responses noted by the research participant.

- If two or more responses are marked by the respondent, and they are next to one another, then a data entry specialist will be responsible for randomly selecting one of them to be entered and will write down on the form which answer was selected. Note: To randomly select one of two responses, the data entry specialist will flip a coin (heads - higher number will be entered; tails – lower number will be entered). To randomly select one of three (or more) responses, a table of random numbers should be used with a statistician's assistance.
- If two or more responses are marked, and they are NOT all next to one another, the response will be considered missing.

Q: What is the minimum change on a PROMIS instrument that represents a clinically meaningful difference?

To learn more about research on the meaning of a change in scores, we suggest conducting a literature review to identify the most current information. The HealthMeasures website (<http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis>) has additional information on interpreting scores.

APPENDIX 1 – SCORING TABLES

PROMIS Adult v1.0 and v1.1 – Pain Interference 4a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
4	41.6	6.1
5	49.6	2.5
6	52.0	2.0
7	53.9	1.9
8	55.6	1.9
9	57.1	1.9
10	58.5	1.8
11	59.9	1.8
12	61.2	1.8
13	62.5	1.8
14	63.8	1.8
15	65.2	1.8
16	66.6	1.8
17	68.0	1.8
18	69.7	1.9
19	71.6	2.1
20	75.6	3.7

*SE = Standard Error on T-Score metric

PROMIS Adult v1.0 and v1.1 – Pain Interference 6a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
6	41.1	6.0
7	48.6	2.4
8	50.7	1.8
9	52.2	1.6
10	53.4	1.6
11	54.5	1.6
12	55.6	1.5
13	56.6	1.5
14	57.6	1.5
15	58.6	1.5
16	59.5	1.5
17	60.4	1.4
18	61.2	1.4
19	62.1	1.4
20	63.0	1.5
21	63.8	1.5
22	64.8	1.5
23	65.7	1.5
24	66.7	1.5
25	67.6	1.5
26	68.7	1.5
27	69.8	1.5
28	71.0	1.6
29	72.6	2.0
30	76.3	3.6

*SE = Standard Error on T-Score metric

PROMIS Adult v1.0 and v1.1 – Pain Interference 6b		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
6	41.0	6.0
7	48.5	2.6
8	50.8	2.1
9	52.5	1.9
10	53.8	1.8
11	55.0	1.7
12	56.1	1.7
13	57.1	1.7
14	58.1	1.7
15	59.1	1.6
16	60.0	1.6
17	60.9	1.6
18	61.8	1.6
19	62.7	1.6
20	63.6	1.6
21	64.5	1.6
22	65.5	1.6
23	66.4	1.6
24	67.4	1.7
25	68.5	1.7
26	69.6	1.8
27	70.9	1.9
28	72.4	2.1
29	74.4	2.4
30	78.3	3.7

*SE = Standard Error of T-Score metric

PROMIS Adult v1.0 and v1.1 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
8	40.7	5.9
9	47.9	2.4
10	49.9	1.8
11	51.2	1.5
12	52.3	1.4
13	53.2	1.4
14	54.1	1.4
15	55.0	1.4
16	55.8	1.4
17	56.6	1.4
18	57.4	1.3
19	58.1	1.3
20	58.8	1.3
21	59.5	1.3
22	60.2	1.3
23	60.8	1.3
24	61.5	1.3
25	62.1	1.3
26	62.8	1.3
27	63.5	1.3
28	64.1	1.3
29	64.8	1.3
30	65.5	1.3
31	66.2	1.3
32	66.9	1.3
33	67.7	1.3
34	68.4	1.3
35	69.2	1.3
36	70.1	1.4
37	71.0	1.4
38	72.1	1.6
39	73.5	1.9
40	77.0	3.4

*SE = Standard Error on T-Score metric

PROMIS+OA-Knee Adult Short Form v1.1 – Pain Interference 13a					
Short Form Conversion Table					
Raw Summed Score	T-score	SE*	Raw Summed Score	T-score	SE*
13	39.1	5.7	40	62.3	1.3
14	45.3	2.9	41	62.7	1.3
15	47.4	2.3	42	63.2	1.3
16	48.7	2.0	43	63.6	1.3
17	49.8	1.8	44	64.0	1.3
18	50.7	1.6	45	64.5	1.2
19	51.5	1.5	46	64.9	1.2
20	52.2	1.4	47	65.3	1.2
21	52.8	1.4	48	65.8	1.2
22	53.5	1.4	49	66.2	1.3
23	54.1	1.4	50	66.7	1.3
24	54.7	1.4	51	67.1	1.3
25	55.2	1.4	52	67.6	1.3
26	55.8	1.4	53	68.0	1.3
27	56.3	1.4	54	68.5	1.3
28	56.8	1.4	55	69.0	1.3
29	57.3	1.3	56	69.6	1.3
30	57.8	1.3	57	70.1	1.4
31	58.3	1.3	58	70.7	1.4
32	58.8	1.3	59	71.4	1.5
33	59.2	1.3	60	72.1	1.6
34	59.7	1.3	61	72.9	1.7
35	60.1	1.3	62	73.8	1.9
36	60.6	1.3	63	75.0	2.2
37	61.0	1.3	64	76.6	2.6
38	61.4	1.3	65	79.6	3.4
39	61.9	1.3			

*SE = Standard Error on T-score metric

PROMIS Pediatric GenPop v3.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-score	SE*
8	43.8	7.1
9	52.1	4.2
10	53.9	4.1
11	56.2	3.5
12	57.6	3.3
13	59.0	2.8
14	60.1	2.6
15	61.2	2.5
16	62.1	2.4
17	62.9	2.3
18	63.7	2.3
19	64.5	2.2
20	65.3	2.2
21	66.0	2.2
22	66.7	2.2
23	67.4	2.2
24	68.1	2.2
25	68.8	2.2
26	69.6	2.2
27	70.3	2.2
28	71.0	2.2
29	71.7	2.2
30	72.4	2.2
31	73.2	2.2
32	74.0	2.2
33	74.8	2.3
34	75.6	2.3
35	76.5	2.4
36	77.5	2.5
37	78.5	2.5
38	79.8	2.7
39	81.2	2.8
40	83.5	3.0
*SE = Standard Error on T-score metric		

PROMIS Parent Proxy GenPop v3.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-score	SE*
8	45.4	7.5
9	55.2	4.0
10	57.6	3.7
11	59.8	3.0
12	61.3	2.8
13	62.7	2.5
14	63.8	2.3
15	64.8	2.3
16	65.8	2.2
17	66.7	2.2
18	67.6	2.2
19	68.4	2.2
20	69.3	2.2
21	70.1	2.2
22	71.0	2.2
23	71.8	2.2
24	72.6	2.2
25	73.4	2.2
26	74.3	2.2
27	75.1	2.2
28	75.9	2.2
29	76.7	2.1
30	77.5	2.1
31	78.4	2.1
32	79.2	2.1
33	80.0	2.1
34	80.9	2.1
35	81.8	2.2
36	82.8	2.2
37	83.8	2.3
38	84.9	2.3
39	85.9	2.2
40	87.1	1.9
*SE = Standard Error on T-score metric		

APPENDIX 2 – SCORING TABLES FOR RETIRED MEASURES

PROMIS Pediatric v1.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
0	34.0	5.6
1	38.7	4.4
2	40.6	4.2
3	42.7	3.8
4	44.3	3.7
5	45.8	3.4
6	47.1	3.3
7	48.4	3.2
8	49.5	3.2
9	50.6	3.1
10	51.7	3.1
11	52.7	3.1
12	53.7	3.0
13	54.7	3.0
14	55.7	3.0
15	56.6	3.0
16	57.6	3.0
17	58.5	3.0
18	59.5	3.0
19	60.4	3.0
20	61.4	3.0
21	62.4	3.0
22	63.4	3.0
23	64.4	3.0
24	65.4	3.1
25	66.5	3.1
26	67.6	3.2
27	68.8	3.2
28	70.1	3.3
29	71.5	3.4
30	73.2	3.7
31	75.0	3.8
32	78.0	4.3

*SE = Standard Error on T-Score metric

PROMIS Parent Proxy v1.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
0	38.0	6.0
1	44.0	3.0
2	46.0	3.0
3	48.0	3.0
4	49.0	2.0
5	50.0	2.0
6	51.0	2.0
7	52.0	2.0
8	53.0	2.0
9	54.0	2.0
10	55.0	2.0
11	56.0	2.0
12	57.0	2.0
13	58.0	2.0
14	58.0	2.0
15	59.0	2.0
16	60.0	2.0
17	61.0	2.0
18	62.0	2.0
19	62.0	2.0
20	63.0	2.0
21	64.0	2.0
22	65.0	2.0
23	66.0	2.0
24	67.0	2.0
25	67.0	2.0
26	68.0	2.0
27	69.0	2.0
28	70.0	2.0
29	71.0	3.0
30	73.0	3.0
31	74.0	3.0
32	78.0	4.0

*SE = Standard Error on T-Score metric

PROMIS Pediatric v2.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
8	34.0	5.6
9	38.7	4.4
10	40.6	4.2
11	42.7	3.8
12	44.3	3.7
13	45.8	3.4
14	47.1	3.3
15	48.4	3.2
16	49.5	3.2
17	50.6	3.1
18	51.7	3.1
19	52.7	3.1
20	53.7	3.0
21	54.7	3.0
22	55.7	3.0
23	56.6	3.0
24	57.6	3.0
25	58.5	3.0
26	59.5	3.0
27	60.4	3.0
28	61.4	3.0
29	62.4	3.0
30	63.4	3.0
31	64.4	3.0
32	65.4	3.1
33	66.5	3.1
34	67.6	3.2
35	68.8	3.2
36	70.1	3.3
37	71.5	3.4
38	73.2	3.7
39	75.0	3.8
40	78.0	4.3

*SE = Standard Error on T-Score metric

PROMIS Parent Proxy v2.0 – Pain Interference 8a		
<i>Short Form Conversion Table</i>		
Raw Summed Score	T-Score	SE*
8	38.0	6.0
9	44.0	3.0
10	46.0	3.0
11	48.0	3.0
12	49.0	2.0
13	50.0	2.0
14	51.0	2.0
15	52.0	2.0
16	53.0	2.0
17	54.0	2.0
18	55.0	2.0
19	56.0	2.0
20	57.0	2.0
21	58.0	2.0
22	58.0	2.0
23	59.0	2.0
24	60.0	2.0
25	61.0	2.0
26	62.0	2.0
27	62.0	2.0
28	63.0	2.0
29	64.0	2.0
30	65.0	2.0
31	66.0	2.0
32	67.0	2.0
33	67.0	2.0
34	68.0	2.0
35	69.0	2.0
36	70.0	2.0
37	71.0	3.0
38	73.0	3.0
39	74.0	3.0
40	78.0	4.0

*SE = Standard Error on T-Score metric.

All scoring tables based on default Parent Proxy calibrations.

APPENDIX 3 – CROSSWALK BETWEEN PEDIATRIC AND PARENT PROXY V2.0 T-SCORES AND PEDIATRIC AND PARENT PROXY GENPOP V3.0 T-SCORES

Table 1. PROMIS Pediatric Pain Interference: Crosswalk between v2.0 T-scores and GenPop v3.0 T-scores

PROMIS Pediatric Pain Interference T-Score		PROMIS Pediatric Pain Interference T-Score	
v2.0	v3.0 GenPop	v2.0	v3.0 GenPop
33	43.0	71	79.5
34	48.9	72	80.0
35	48.9	73	81.5
36	49.5	74	83.0
37	51.1	75	85.5
38	52.2	76	85.5
39	53.3	77	85.5
40	54.6	78	85.5
41	55.8	79	85.5
42	56.9	80	85.5
43	57.9	81	85.5
44	59.1	82	85.5
45	60.0	83	88.0
46	60.5		
47	61.1		
48	62.1		
49	63.5		
50	64.4		
51	64.7		
52	65.2		
53	65.8		
54	66.5		
55	67.7		
56	68.5		
57	69.1		
58	69.9		
59	70.9		
60	71.8		
61	72.5		
62	73.0		
63	73.3		
64	73.5		
65	74.5		
66	75.2		
67	75.5		
68	76.5		
69	78.0		
70	79.0		

Table 2. PROMIS Parent Proxy Pain Interference: Crosswalk between v2.0 T-scores and GenPop v3.0 T-scores

PROMIS Parent Proxy Pain Interference T-Score	
v2.0	v3.0 GenPop
37	45.0
38	50.5
39	50.5
40	50.5
41	51.0
42	53.6
43	54.6
44	56.0
45	57.0
46	58.5
47	59.4
48	60.4
49	61.7
50	62.8
51	64.0
52	64.8
53	65.6
54	66.9
55	67.7
56	68.8
57	69.7
58	70.8
59	71.8
60	72.8
61	73.8
62	75.0
63	75.8
64	76.5
65	77.5
66	79.0
67	79.0
68	80.5
69	83.0
70	83.0
71	83.0
72	85.0
73	87.0
74	87.0

PROMIS Parent Proxy Pain Interference T-Score	
v2.0	v3.0 GenPop
75	87.0
76	87.0
77	87.0
78	87.0
79	87.0
80	87.0
81	89.0