



# PAIN INTENSITY MEASURE DIFFERENCES

A brief guide to differences between the PROMIS<sup>®</sup> Pain Intensity instruments:

ADULT	PEDIATRIC	PARENT PROXY
PROMIS Numeric Rating Scale v1.0 – Pain Intensity 1a	PROMIS Numeric Rating Scale v1.0 – Pediatric Pain Intensity 1a	PROMIS Numeric Rating Scale v1.0 – Parent Proxy Pain Intensity 1a
PROMIS Scale v1.0 - Pain Intensity 3a *		
PROMIS Scale v2.0 - Pain Intensity 3a		

\*Retired Measure

## ABOUT PAIN INTENSITY

The PROMIS Pain Intensity instruments assess how much a person hurts. Patients are usually able to provide quantitative pain intensity estimates relatively quickly, and most measures of pain intensity tend to be closely related to one another. This suggests that pain intensity is a fairly homogeneous dimension, and one that is relatively easy for adults to identify and gauge. The Pain Intensity short forms are universal rather than disease-specific. The first two items within the PROMIS Scale v1.0 - Pain Intensity 3a short form assesses pain intensity over the past seven days. The last item for asks patients to rate their pain intensity “right now”. The Numeric Rating Scale instruments ask about average pain in the past 7 days.

Pain Intensity instruments are available for adults (ages 18+), pediatric self-report (ages 8-17) and for parents serving as proxy reporters for their child (youth ages 5-17).

## INTRODUCTION TO ASSESSMENT OPTIONS

There is one administration options for assessing Pain Intensity: a scale. When administering the scale, instruct participants to answer all of the items (i.e., questions or statements) presented.

## DESCRIPTION OF SCALES

The Pain Intensity 3-item scale (3a) was constructed by the domain team with a focus on representing the full range of possible pain intensity. Domain experts reviewed the short form to give input on the relevance of each item. Psychometric properties and clinical input were both used to finalize the scale. The final measure includes three items rating pain from “Had no pain” = 1 to “Very severe” = 5. The measure produces an IRT-based T-score and Standard Error. The 3-item scale is scored using Item Response Theory (IRT), a family of statistical models that link individual questions to a presumed underlying trait or concept of pain intensity.

The Numeric Rating Scale measures (adult, pediatric, parent proxy) each consist of a single item rating pain on average over the past 7 days from 0 (no pain) to 10 (worst pain you can think of). The items are not calibrated and do not produce a T-score. Instead, raw response scores (0 to 10) should be used for analyses.

## VERSION DIFFERENCES

Some PROMIS domains have multiple versions of instruments (i.e. v1.0, v1.1, v2.0). 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.

There are multiple versions of the adult PROMIS Pain Intensity 3a scale. The v2.0 item scale is the most current scale and the preferred version. The v2.0 item scale includes the same items as the v1.0 scale, but uses revised item-level calibrations. This means that the T-scores in v2.0 are calculated differently from v1.0. Scores between the two versions cannot be directly compared. In v2.0, a T-score of 50 represents an estimate of average of the general population (with 10 an estimate of the SD in the general population). In v1.0, a T-score of 50 represents the average of people with at least mild pain. This means that a score of 50 on v2.0 reflects a lower level of pain compared to a 50 on v1.0. Because the items are identical, you can re-score the v1.0 scale either by a) using the scoring table at the end of this manual or b) using the HealthMeasures Scoring Service and selecting “PROMIS Scale v2.0 - Pain Intensity 3a.”

## SCORES

The final score for the PROMIS Pain Intensity 3a scale is a T-score, a standardized score with a mean of 50 and a standard deviation (SD) of 10. For most PROMIS instruments, a T-score of 50 is typically 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. 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 Intensity, a T-score of 60 is one SD worse than average. By comparison, a Pain Intensity T-score of 40 is one SD better than average.

### Scoring Numeric Rating Scales

The PROMIS Numeric Rating Scales for pain intensity do not produce a T-score or other summary score. Raw response scores (0 to 10) should be used for all analyses.

## STATISTICAL CHARACTERISTICS

There are four key features of the score for Pain Intensity:

- **Reliability:** The degree to which a measure is free of error. It can be estimated by the internal consistency of the responses to the measure, or by correlating total scores on the measure from two time points when there has been no true change in what is being measured (for z-scores, reliability =  $1 - SE^2$ ).
- **Precision:** The consistency of the estimated score (reciprocal of error variance).
- **Information:** The precision of an item or multiple items at different levels of the underlying continuum (for z-scores, information =  $1/SE^2$ ).
- **Standard Error (SE):** The possible range of the actual final score based upon the scaled T-score. For example, with a T-score of 52 and a SE of 2, the 95% confidence interval around the actual final score ranges from 48.1 to 55.9 (T-score  $\pm (1.96*SE) = 52 \pm 3.9 = 48.1$  to 55.9).



## PREVIEW OF SAMPLE ITEM

Figure 1 is an excerpt from the paper version of the adult three-item short form.

In the past 7 days...		Had no pain	Mild	Moderate	Severe	Very severe
PAINQ15	How intense was your pain at its worst?....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Figure 1

## FREQUENTLY ASKED QUESTIONS (FAQs)

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

Review the HealthMeasures website at [www.healthmeasures.net](http://www.healthmeasures.net).

Q: Are these instruments available in other languages?

Yes! Look at the HealthMeasures website (<http://www.healthmeasures.net/explore-measurement-systems/promis/intro-to-promis/available-translations>) for current information on PROMIS translations.