What Does a PROMIS T-score Mean for Physical Function?

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Patient Reported Outcomes Instrumentation System (PROMIS)

**Physical Function Scale**  (v1.0 = 124 items, v2.0 > 124 items)

**Item Response Theory**
- Used to model responses to questions
- Responses on ALL items are determined in 4-8 questions

**2010 US Census for Physical Function**
- T-Score normalized to the US population
  - 50 = average for the US population
  - 10 points = 1 standard deviation of the US population

**Advantages**
- Takes less than a minute to complete
- Model estimates score on ALL items
- Accuracy for individual patients is +/- 1-2 SD units

**Disadvantage**
- No tools exist to convert T-Scores into meaningful values for patients and clinical decisions
Purpose

The purpose of this research was to link PROMIS PF T-scores with physical function activities and provide a visual map of this linkage to aid in treatment assessment and address concrete patient education.

Empower clinicians to use PROMIS PF t-scores to answer concrete questions like:

- “When will I be able to run again?”
Methods

**Link each item response to a specific PROMIS PF t-score**

- *Obtained model parameters* used to generate PROMIS t-scores based on patient responses from developers (Micheal Bass/Chris Dasilva).
  - e.g. Version 1.0 = 124 items with a total of 4 possible model parameters per item yielding 5 Likert scale estimates

- Model parameters were used to assign an estimated Likert scale response for each item the patient actually did not answer for any t-score
Methods (cont)

*Items were clustered into categories that are meaningful to clinicians*

- The World Health Organization *International Classification of Function (ICF)* is widely used in models of disability.
- 36 PROMIS PF items were grouped into 9 distinct ICF categories including:
  - Self care
  - Hand arm use
  - Transferring
  - Walking
  - Lift and Carry
  - House Work
  - Climbing Stairs
  - Fitness, Running.

*Display the visual map of items in ways that are useful to clinicians*
Results

Simple Visual Map (Snapshot)
Includes only 3 ICF categories
Colors match patients expected ability
Tasks ordered based on difficulty

PROMIS PF ITEMS
Results

Simple Visual Map (Snapshot)
Includes 9 ICF categories
Colors match patients expected ability
Tasks ordered based on difficulty
36 PROMIS PF items

PROMIS PF ITEMS
Conclusions

PROs provide real time assessments and a road map to follow patients throughout a treatment course.

Understanding the translation of the outcome score (T-score) to patient physical activity allows the patient and physician to have realistic expectations of recovery.

Applying this PF and activity linkage data to cohorts of patients with common surgeries will allow patients to gain a better understanding of the recovery duration and return to activity timing.

Providing this patient friendly knowledge will help enhance patient engagement and patient satisfaction.


