

Visual feedback of PROMIS scores in the consultation room

Dutch-Flemish PROMIS National Center
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- The Dutch-Flemish PROMIS National Center developed visual feedback options for PROMIS scores on item level and domain level
- De feedback options were developed based on literature review, focus groups with health care workers using the KLIK portal¹, and discussions among PROMIS researchers, and with help from an expert in graphical design².

Feedback option

- PROMIS scores will be displayed on item level and domain level
- Responses to individual items will only be presented for the last visit, in a table
- Only responses to items that are completed will be displayed
- T-scores on domain level (based on US parameters) will be presented for all visits, in a figure

Item-level feedback

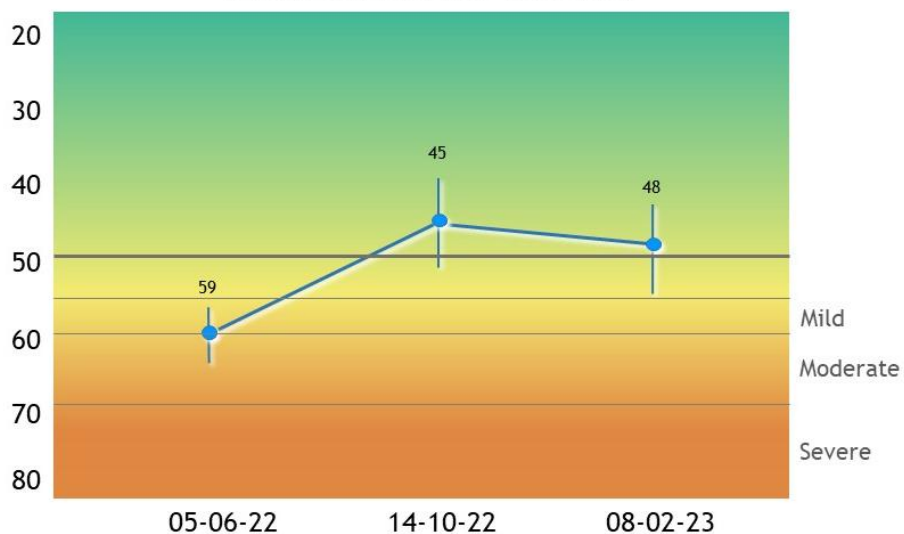
- Responses to completed items will be displayed in traffic light colors
- Colors will be based on item threshold parameters

General principles

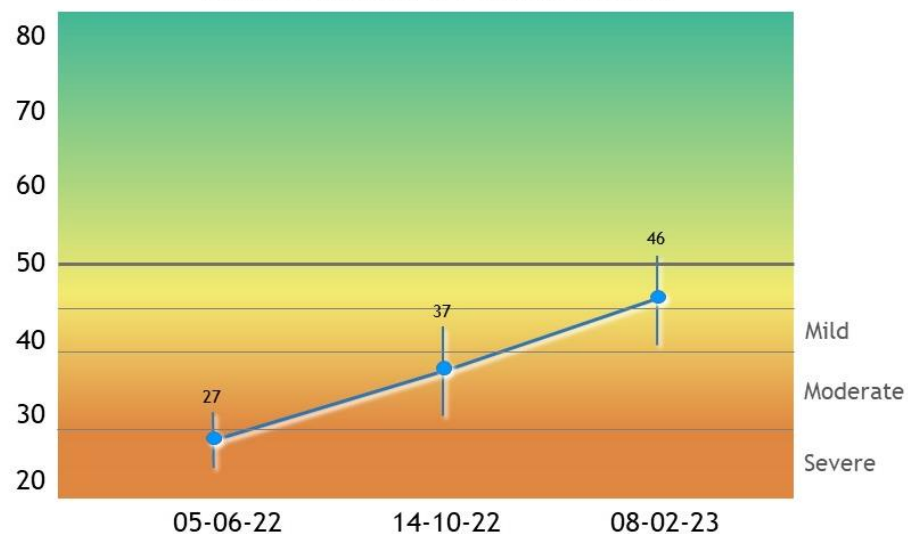
- The presentation of scores is standardized based on color
- Colors always have the same meaning, values (Y-axis, reference lines) can be different across domains

Example graphs

PROMIS Depression
(PROMIS Item Bank v1.0 - Depression)



PROMIS Physical Function
(PROMIS Item Bank v1.2 - Physical Function)



Scores and their interpretation (higher is better: an upward trend indicates less symptoms or better functioning)

- = average score of the Dutch population
- = precision of the score (95% confidence interval)

- Graphs show all available T-scores over time, connected with lines
- Y-axes have different scales, but with the same meaning: higher= better (sometimes 0-100, sometimes 100-0)
- Scores are provided with 95% confidence intervals ($1.96 * SE(T\text{-score})$)
- Scores are presented as dots, confidence intervals as thin lines
- Reference line represents the mean score of the Dutch general population per item bank
- In addition, cut-off lines for mild, moderate, and severe problems per item bank are shown (currently $0.5 * SD$, $1 * SD$, $2 * SD$ of the Dutch general population)
- Background color runs from red to green, a color-blind friendly palette has been used)³
- Background is the same in all graphs(reference line is always in the middle), values on the Y-axis shift per domain
- The official name and version of the PROMIS CAT or short form is presented as subtitle to ensure correct reporting in publications

1. van Muilekom MM, Luijten MAJ, van Oers HA, Terwee CB, van Litsenburg RLR, Roorda LD, Grootenhuis MA, Haverman L. From statistics to clinics: The visual feedback of PROMIS® CATs. J Patient Rep Outcomes 2021;5:55.
2. Boers M. Designing effective graphs to get your message across. Ann Rheum Dis 2018 Jun;77(6):833-839.
3. OkabeM, Ito K. Color Universal Design (CUD): How to make figures and presentations that are friendly to colorblind people. 2008. <http://jfly.uni-koeln.de/color/>.