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## Research Roundup from the Research Committee


Mary Insana Fisher

*University of Dayton*, [mary.fisher@udayton.edu](mailto:mary.fisher@udayton.edu)

Shana Harrington

*Creighton University*

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# Research Roundup from the Research Committee

Mary Insana Fisher, PT, PhD, OCS, CLT and Shana Harrington, PT, PhD, SCS, MTC

With the expectations of accountability by consumers and third party payors for the efficacy of physical therapy practice, there has been a significant increase in the push to develop outcome measures in rehabilitation. One type of these measures, patient-reported outcome measures (PROs), are becoming increasingly more common in clinical practice. The American Physical Therapy Association's *Guide to Physical Therapist Practice* 3rd edition includes outcomes assessment as an integral part of the Patient and Client Management model, and delineates that appropriate tests and measures depend upon established psychometric properties of the measurement.<sup>1</sup> The Section on Research formed the Evidence Database to Guide Effectiveness (EDGE) Task Force in 2006 to encourage the Sections to evaluate and catalog the best outcome measures related to their respective areas of clinical practice. The Oncology EDGE Task Force has been focusing on this call and during the past 3 years this information has been disseminated at the Combined Sections Meetings and has resulted in several journal publications. With this increased emphasis in PROs, it is important to understand the framework of psychometric evaluation and how to implement PROs appropriately in a clinical setting.

Psychometric testing is a method of statistical analysis that examines the key constructs of an instrument including its validity, reliability, and responsiveness. It is important that chosen PROs measure what they are intended to measure, can be used in the population of interest, are reliable in administration, and can detect change in performance. Validity testing must extend beyond face validity (it appears to measure what it is intended to measure) toward construct validity (that the measure is able to reflect the theoretical components of the construct) and content validity (that the items of the tool adequately measure the construct).<sup>2</sup> The test-retest reliability (consistency of scores between testing sessions), intrarater reliability (consistency of the individual measuring), and interrater reliability (consistency of measures between individuals) needs to be at a high enough level for acceptable use.<sup>2</sup> The error of the measure must be established, such that the responsiveness of a measure can be made by the minimal detectable change (MDC-the minimum amount of change reflecting a true difference), and more importantly, a minimally clinically important difference (MCID) should be established (that minimum value which signals a clinically meaningful change).<sup>2</sup> Although a full statistical explanation is beyond the scope of this column, the reader is encouraged to access other resources in physical therapy that can assist in this understanding.<sup>3-5</sup>

With the increased pressure to utilize PROs in practice, clinicians may find themselves tempted to take portions of different valid and reliable measures to use in the clinic in an attempt to find the perfect single measure that can capture the status of their

patients. If a PRO is altered, the measure becomes invalid, and the results cannot be interpreted. The psychometric analysis of a PRO in most cases, is completed on the full, entire measure. Generally, in creating a PRO, factor analysis has been completed. This process derives just the right amount of questions to measure a construct, and establishes the relationships between questions for different constructs. Then, validation and reliability testing is completed on this full tool. When clinicians deconstruct or alter a PRO taking some questions from one measure, and adding questions from another, they have created an entirely new measure. The relationships between the questions have not been studied, and whether the questions measure the construct of interest has not been analyzed. At this point, the newly created measure also lacks validation and reliability analysis, because these properties are assigned to the full PRO, not single items. Despite cost and time constraints, we should not use a portion of a measure to attempt to evaluate the status of a patient.

Rather than invalidate our outcomes through the use of measures lacking sound psychometric properties, we need to use those PROs currently available that have the qualities we seek for accurate assessment. We encourage you to read the work of the many EDGE Task Forces who have investigated and recommended the best outcome measures for specific constructs and patient populations. In the face of a lack of recommended measures, researchers are encouraged to take on these challenges and create PROs that are clinically useful and feasible, and that possess psychometric validation.

## REFERENCES

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