Introducing Clinimetrics

Mary P Galea
Rehabilitation Sciences Research Centre, School of Physiotherapy, The University of Melbourne

In this issue of the Journal we introduce a new feature—Clinimetrics.

A characteristic of good clinical practice is that it uses measurement instruments that are reliable, valid, and responsive to intervention. The role of measurement in physiotherapy practice cannot be overstated. Indeed the APA Position Statement on Clinical Justification and Outcome Measures (2003) has as its first sentence: ‘The progressive evaluation of physiotherapy treatment outcomes is an integral part of professional accountability and is a requirement of the Australian Physiotherapy Competency Standards 1994–2003.’ Our profession has, on the whole, moved away from a tendency to use assessment procedures simply because they are available; now assessment procedures are more often chosen because they are reliable and valid. Using valid and reliable measures greatly increases the likelihood of being able to measure accurately the impact of an intervention or change over time.

Physiotherapy intervention is directed towards changing symptoms that have complex constructs (for example, pain or spasticity), and these constructs must be defined operationally before they can be measured. Pain, for example, has sensory, cognitive and emotional dimensions (Melzack et al, 1982) that are not represented in many of the measurement tools used to assess pain in routine clinical practice. Spasticity can be defined operationally as a velocity-dependent increase in the stretch reflex (Lance, 1980) or as resistance to passive movement (Bohannon and Smith, 1987). The operational definition will determine how this construct is measured: the Tardieu scale (Fosang et al, 2003) is based on Lance’s definition, whereas the Modified Ashworth Scale is based on the latter definition.

It is also important to understand the assumptions of measurement theory and its limitations. Many instruments used in physiotherapy practice involve the use of a scale for scoring purposes. Scaling is the assignment of objects to numbers according to a rule and development of a scale involves assumptions about whether the underlying construct is unidimensional or multidimensional. While many scales are similar in that they each measure the concept of interest on a line, they may differ considerably in how scale values are derived for different items. For example, both the Likert and Guttman scales involve the respondent indicating agreement with certain statements, but the method of computing the score is quite different in each case. Practically all measurement of human behaviours involves errors. Understanding the nature and source of these errors can help in reducing their impact and may in some instances prevent the drawing of incorrect conclusions. Understanding how a measurement tool was developed, including the study population and the size of the sample used, is important as this will influence its generalisability.

As we become more sophisticated in understanding mechanisms underlying movement dysfunction it may be possible to classify subgroups of patients, and therefore diagnostic scales will be used (Petersen et al, 2004). The sensitivity and specificity of these scales need to be understood in order draw meaningful conclusions about their utility as highlighted in Critically Appraised Papers in this Journal (Cumming 2000, Riddle 2001).

The purpose of Clinimetrics is to alert clinicians to the psychometric properties of instruments that have clinical utility in current physiotherapy practice. To achieve this purpose the Editorial Board has adopted procedures to identify instruments used to measure prognosis, diagnosis, outcome, and economics of health problems managed by physiotherapists. These instruments are then summarised in a structured format that describes the instrument, the method of scoring or deriving the variable used, the target population(s), its validity, its reliability (or major sources of error or potential bias), its sensitivity/specificity (for prognosis or diagnosis), and clinically relevant change (for measuring outcome). A commentary on the selected instrument is provided by individuals with both clinical and research expertise in the clinical problem addressed by the instrument and a sound grasp of measurement theory. The commentary will include an interpretation of how the test should be used. Each issue of the journal will henceforth contain Clinimetrics contributions. Because it is impossible to evaluate all acceptable instruments, the Clinimetrics Editors will endeavour to provide a mix of instruments relevant to a range of sub-disciplines of physiotherapy.

Of course the idea of examining measurement instruments in this way is not new. The Canadian Physiotherapy Association first published a guide to physical rehabilitation outcome measures in 1994 and recently published an updated version (Finch et al, 2002). The Victorian Neurology Special Interest Group has also developed a manual of outcome measures with annotations about the strengths and limitations of each instrument (Hill et al, 2002). These documents are of enormous value to both clinicians and researchers, and it is not the intention of the Editorial Board to duplicate them. Rather, the intention is to present examples of measurement tools used for different purposes across the spectrum of physiotherapy practice and to highlight aspects of the instruments that have considerable bearing on their clinical utility.

Clinimetrics has been modelled on a similar feature in the Dutch Physiotherapy journal Nederlands Tijdschrift voor Fysiotherapie. Albere Koke developed the concept of Clinimetrics, which appears in the Dutch journal as Meten in...
He and Els van den Ende, Editor of Nederlands Tijdschrift voor Fysiotherapie, were supportive of our desire to replicate this concept in the Australian Journal of Physiotherapy. Jennifer Keating and Megan Davidson were also involved in discussions about the format of this feature. We extend our sincere thanks to all these people for their contribution to the final product.

References


