The Functional Rating Index

Description

The Functional Rating Index (FRI) (Feise and Michael Menke 2001) is a 10-item region-specific Patient Reported Outcome (PRO) measure developed by combining the Neck Disability Index (NDI) and Oswestry Disability Index (ODI). It is designed to reflect status for disorders that involve several or any spine area as a single kinetic chain. The 10 FRI items fall within four constructs – pain, sleep, work, and daily activity – that fit within the three domains of WHO-ICF: 1) Activity limitations daily activity with six items – personal care, travel, recreation, lifting, walking and standing; 2) Impairment with three items and two constructs of pain and sleep – pain frequency, pain intensity and sleep; and 3) Participation restriction with one construct and item – work. It has an approximate completion time of 1 minute and scoring at 20 seconds (Feise and Michael Menke 2001), however percentage conversion may require a computational aid, particularly with missing responses. Being copyright, either permission or a royalty payment is required for its use.

Instructions and scoring: The FRI is for ‘back and neck use only’ and patients must circle the number most closely describing their condition ‘right now’ on how they ‘manage everyday activities’. It uses descriptive anchors within a 5-point Likert scale ranging from 0 (Perfect / No pain / Can do) to 4 (Totally disturbed / Severe or Constant pain / Increased pain with any ‘activity’ / Cannot do). This provides a 40 FRI point raw score maximum that allows one missing response to be compensated for by the addition of the remaining item averages.

Psychometric properties: The test-retest reliability varies widely in general low back pain populations (ICCs: 0.63 to 0.99) (Feise and Michael Menke 2001, Childs and Piva 2005) with a similar range in patients with neck pain (Gabel 2004, Stewart et al 2007). Criterion validity ranges from r = 0.67 with the ODI (Childs and Piva 2005) and 0.66 with the Roland Morris Questionnaire (Bayar et al 2004). In the cervical region levels exceed 0.75 compared to the NDI and patient specific measures (Gabel 2004, Stewart et al 2007). Internal consistency alpha ranges from 0.88 (Gabel et al 2004) to 0.92 (Feise and Michael Menke 2001). These properties result in high levels of responsiveness as measured by effect sizes from 0.93 to 1.24. By contrast, error scores are weaker than most recognised spine PROs with the minimal detectable change ranging from 16% to 23% (Gabel 2004, Stewart et al 2007).

Commentary

The Functional Rating Index is one of four PROs that conceptualise the spine functioning as a single kinetic unit. Most other spine PROs are distinctly divided into back/low back and neck (Grotle et al 2005). Unfortunately the FRI development procedure and methodology is subjective and arbitrary (Feise and Michael Menke 2001). There is no item construct development or reduction methodology from the initial pool of 15 items. A final item ‘pain frequency’ is introduced without clarification. This simple method of existing tool item combination has no procedural basis for PRO development. Similarly, items are criticised as inadequately reflecting the WHO-ICF three domains, and not distinguishing between ‘remunerated’ or ‘at home’ work. Furthermore, no independent validation or analysis of factor structure has been made (Grotle et al 2005).

The FRI is effectively the ODI with two substituted items and a more practical format incorporating visual and descriptive response options. The ‘immediate’ reference time frame for patient status has been criticised as an erroneous impression can occur since spine symptoms fluctuate on a daily basis; ‘today’ or ‘recent days’ is a more commonly accepted period (Grotle et al 2005). These authors describe the FRI as ‘inadequate’ and not recommended. Rebbeck et al (2006) and Stewart et al (2007) have found the FRI less responsive than patient-specific measures, comparable to other spine-specific PROs and preferable to generic or summary measures such as the SF-36 Physical.

Physiotherapists using the FRI will find practicality its greatest attribute Physiotherapists must however be aware of the drawbacks; the score is immediate and may not reflect average daily status; a bias towards low back pain; inadequate structure and item width; and minimal comparative published research in combined spine and multi-site spine patients.

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References

The Brachial Plexus Provocation Test

Description

The Brachial Plexus Provocation Test (BPPT) (or Upper Limb Tension Test) is used by clinicians to assess mechanical sensitivity of peripheral nerve tissue in the upper quadrant. The BPPT as developed by Elvey (1979) is performed in the following sequence: gentle shoulder depression, glenohumeral abduction to 90° and external rotation in the coronal plane, forearm supination and wrist and finger extension. Elbow extension to pain threshold is then performed manually by the clinician. The BPPT biases the median nerve, and variations using different movements may bias the ulnar or radial branches of the brachial plexus (Butler 1991).

A positive response is indicated by reproduction of the patient’s pain which often correlates with reduced range of movement measured at the elbow suggested to be related to the onset of protective muscle activity (Hall et al 1999). Asymptomatic subjects also report varying levels of pain with the BPPT (Kenneally 1985), which should alert clinicians to the importance of bilateral comparison where possible. Although a bilateral loss of elbow extension occurs in some individuals with whiplash and may indicate central hyperexcitability as opposed to nerve tissue mechanosensitivity (Sterling & Pedler 2008).

Commentary

The benefit of a quick, practical and repeatable test of neural mechanosensitivity is clear, as it helps to guide the diagnosis, assessment and treatment of disorders such as carpal tunnel syndrome (CTS) (Coppieters et al 2006), cervical radiculopathy (Wainner et al 2003) and whiplash associated disorders (Sterling & Pedler 2008). However, the BPPT has at times come under scrutiny from reviewers. It attempts to quantify findings in the multi-factorial area of neural provocation, and it does so across the most intricate and mobile biomechanical chain in the human body. Anatomical studies support the validity of BPPT to move and/or tension nerve tissues of the upper quadrant. However, due to its complex, multi-joint nature, the BPPT can also cause the deformation of a number of other structures such as arteries, fascia and meningeal tissues (Walsh 2005).

Studies have examined the specificity of the BPPT, and its use in the diagnosis of suspected neuropathic conditions (eg, cervical radiculopathy (Rubenstein et al 2007)). These results generally suggest the BPPT has low specificity and high sensitivity for conditions with neurogenic association; however, one must remember that it is a test for neural mechanosensitivity along the entire peripheral nerve and nerve trunk. Therefore, while the BPPT may not be able to diagnose specifically a condition such as CTS or cervical radiculopathy, a negative BPPT may be used to help rule it out. This said, if neurogenic pain is thought to be the dominant feature of a painful condition, signs of mechanosensitivity should also be identified across other aspects of the patient’s assessment, for example active and passive range of movement and nerve trunk palpation (Hall et al 1999).

Recent data from individuals with whiplash indicate that the BPPT may also provide useful indication of the presence of central hyperexcitability. In this case the clinician would observe a bilateral loss of elbow extension in association with moderate reports of pain when testing is taken to pain threshold only (Sterling & Pedler 2008).

In summary, the BPPT is a valuable and valid clinical test of neural mechosensitivity in the upper limb. For best practice, every effort should be made to standardise its clinical use. When using the BPPT for diagnosis, the clinician should be aware of possible false positives and other physical signs or objective measures that may influence its result.

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References


Appraisal
Clinimetrics

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