

REVIEW ARTICLE

Patient-Reported Mobility: A Systematic Review



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Abstract

Objectives: To identify the self-administered instruments to assess mobility in adults with disability, to link the mobility assessed by these instruments to the *International Classification of Functioning, Disability and Health* (ICF), and to evaluate their methodological quality.

Data Sources: Scopus, Science Direct, and Web of Science were systematically searched up to July 2015.

Study Selection: Studies on the development and validation of self-administered questionnaires in which at least half of the items were related to movement or mobility were included.

Data Extraction: The mobility assessed by the instruments was classified according to the ICF categories. The methodological quality was assessed according to the Consensus-based Standards for the Selection of Health Measurement Instruments checklist.

Data Synthesis: Of 5791 articles, 34 studies were eligible for inclusion. Only 10 of the instruments contained items that exclusively assessed mobility. The most frequently linked ICF categories were “changing basic body position” (19.4%), “walking” (14.8%), and “moving around” (13.5%). Measurement properties evaluated included internal consistency (5 studies), reliability (5 studies), measurement error (1 study), content validity (9 studies), structural validity (4 studies), hypotheses testing (6 studies), and responsiveness (1 study). Only content validity obtained the highest quality, probably because the studies included in the review reported the development and initial validation of the instruments.

Conclusions: Self-administered mobility questionnaires published in the scientific literature assess mobility activities rather than functions related to movement, and do so from the perspective of disability, frequently including self-care and domestic life as domains for assessment. The instruments that presented the highest methodological quality were the Outpatient Physical Therapy Improvement in Movement Assessment Log, the Movement Ability Measure, and the Mobility Activities Measure for Inpatient Rehabilitation Settings.

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The use of measurement instruments in rehabilitation and physical therapy is essential to ensure an adequate scientific basis and quality care.^{1,2} Of particular importance among existing instruments are those that collect information provided directly by patients—that is, patient-reported outcomes.³ These measures are useful in the areas of health care, management, and research in order to design plans of care, improve communication with patients,⁴ determine patients' perspectives on the benefits provided by an intervention,⁵ or evaluate the effect of an intervention in clinical trials.¹

One way to collect information on self-perceived health is through the administration of self-report questionnaires. In the field of functional outcomes, self-report measures have proven to be as valid as performance-based measures^{6,7} and present less administration bias.⁸

Movement is one of the constructs that must be assessed in rehabilitation by means of different measures. Movement is usually measured by objective and quantitative measurements, but can also be assessed from the perspective of the patient.⁹ Measuring movement from this perspective is of particular interest in rehabilitation, because movement can be conceptualized as a continuous construct that combines pathologic and physical aspects with social and psychological factors.¹⁰

Within the framework of the *International Classification of Functioning, Disability and Health* (ICF)¹¹ of the World Health Organization (WHO), movement can be considered both as a body function and as a domain within the activities and participation component, referred to here as “mobility.” As a body function, movement is included in the domain of “neuromusculoskeletal and movement-related functions” and refers to the functions of movement and mobility of joints, bones, reflexes, and muscles. As part of the activities and participation component, mobility is the domain

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that refers to certain life areas related to “moving by changing body position or location or by transferring from one place to another, by carrying, moving or manipulating objects, by walking, running or climbing, and by using various forms of transportation.”^{11(p138)} Movement, understood as a body function or as a task or activity of daily living, can determine whether individuals relate positively or negatively to their environment. When the outcome of an interaction between an individual’s movement and the environment is positive, this is classified in the ICF as “functioning.” Thus, functioning is a generic term that encompasses body functions and structures, activities, and participation. In contrast, when the outcome of an interaction between a person’s movement and the surroundings is negative, this is termed “disability.”

Previous reviews on functional status assessment measures have been oriented toward the analysis of generic outcome measures,^{12,13} measures specific to a particular health condition,¹⁴⁻¹⁹ and measures specific to a particular body area.²⁰⁻²⁵ In the field of mobility assessment, Dawson et al²⁶ conducted a review of outcome measures of function or mobility in patients with spinal cord injury that included all measures, not only self-report ones. Also in connection with mobility assessment in neurologic patients, Mudge and Stott²⁷ conducted a review on outcome measures in patients with stroke, but did not focus on self-report measures, and the concept measured was just related to walking ability. De Morton et al²⁸ conducted a review of mobility measures in hospitalized, older acute medical patients, but their study only included measures based on examiner observation. In the field of rehabilitation, it is essential to study the mobility of patients from their own perspective, but no reviews were identified on rehabilitation functional outcome instruments that specifically assessed self-reported mobility or movement.

The objectives of this study were to (1) identify and describe the self-report measures published in the scientific literature that assess movement or mobility-related activities in adults with disability; (2) link the mobility assessed by these instruments to the ICF; and (3) assess the methodological quality of the studies related to mobility assessment measures.

Methods

Data sources and searches

Up to July 2015, electronic searches were conducted in the following databases: Scopus, Science Direct, and Web of Science (which includes Medline, Current Contents Connect, Derwent Innovations Index, SciELO Citation Index, and the main Web of Science collection). The search terms were *self-report instrument, outcome measures, questionnaires, measures, index, scale, physical therapy, physiotherapy, activity limitations, mobility assessment, disability evaluation, functional, mobility, and rehabilitation*, using the search strategy shown in [table 1](#). Manual searchers were also

conducted to identify studies cited in the articles detected in previous searches. RefWorks reference management software^a was used to detect duplicates.

Study selection

The main eligibility criteria were that the studies should concern the development, validation, or both, of self-administered questionnaires or instruments in which the main construct assessed was related to movement or mobility. Thus, we only included studies in which at least half (50%) of the instrument’s items were related to this construct. The included studies were further restricted to those on adults that analyzed psychometric properties and were written in English. No restrictions were imposed regarding date of publication.

The review process was conducted in 3 stages and involved 2 independent researchers. Once duplicates had been removed, the first stage consisted of reading the titles and abstracts in order to eliminate experimental, analytical, descriptive and/or review studies. Studies on validation of questionnaires or scales in which the main construct assessed was not related to disability, activity limitation, or movement-related functions were excluded. Those studies related to performance-based measures, questionnaires, or scales specifically intended for children or adolescents, or both, and item banks constructed from other existing questionnaires or ICF core sets were also eliminated.

The second stage consisted of reading the complete texts to further eliminate studies on questionnaires or instruments that had already been validated (abbreviated formats or new versions of already validated questionnaires). We analyzed a single validation study for each of the mobility instruments identified, selecting studies that reported the initial instrument development process, since we considered this an objective criterion that would yield the most relevant information for our study.

In the third and final stage, we eliminated all those studies that did not meet the criterion whereby at least 50% of the items should be related to mobility or movement.

Data extraction and synthesis

For data extraction, a form was drawn up for use by 2 independent researchers, in which they recorded data on the year of publication, author, study sample, measurement instrument name, number of items, concepts measured by the instrument, response options, health condition for intended use, theoretical model on which the instrument was based, and the ICF domains explored.

For each of the instruments, the ICF domains explored were quantified as percentages. We analyzed the domains identified in the ICF, according to the one-level classification,¹¹ for each of the components. By way of example, within the component of activities and participation, we analyzed the following domains: learning and applying knowledge, general tasks and demands, communication, mobility, self-care, domestic life, interpersonal interactions and relationships, major life areas, and community, social, and civic life. Mobility-related items were coded according to the ICF two-level classification system, applying the rules reported by Cieza et al^{29,30} for linking health status measures to the ICF.

Quality assessment

Quality assessment was only performed on those studies concerning instruments in which all the items were related to

List of abbreviations:

ICF	<i>International Classification of Functioning, Disability and Health</i>
MAM	<i>Movement Ability Measure</i>
Mobam-in	<i>Mobility Activities Measure for Inpatient Rehabilitation Settings</i>
OPTIMAL	<i>Outpatient Physical Therapy Improvement in Movement Assessment Log</i>
WHO	<i>World Health Organization</i>

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