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Disease-nonspecific activity outcome measures for adult rehabilitation populations: a COSMIN-based systematic review of measurement properties

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Shoji Kinoshita[1], Ryo Momosaki[2], Shunsuke Taito[3], Shigeto Shiota[3], Naoto Ozaki[1], Masahiko Mukaino[4], Yukio Mikami[3], Yohei Ohtaka[5], Naoshi Ogata[6]

[1]Jikei University School of Medicine; [2]Mie University; [3]Hiroshima University; [4]Hokkaido Univers; [5]Fujita Health University; [6]Teikyo University

Shoji Kinoshita
Jikei University School of Medicine

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We are still developing and optimizing this protocol

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Disclaimer

This research has not received funding from any source.

Abstract

Rehabilitation medicine requires robust, disease-nonspecific measures of **activity** to monitor outcomes across diagnoses and care settings. Although many instruments exist, their measurement properties vary and have not been comprehensively appraised in a single COSMIN-based review focused on adult rehabilitation. This protocol describes a systematic review to evaluate the **validity and responsiveness** of generic, performance- or observer-based **activity measures**—covering **self-care, mobility**, **basic movements and domestic life.**

Attachments

DOCX

Search_strategy.docx

15KB

Guidelines

This study will be conducted in accordance with the PRISMA guidelines and COSMIN guidelines.

Materials

Databases: PubMed/MEDLINE, Embase (Ovid), CINAHL (EBSCO), PsycINFO, Cochrane CENTRAL, PEDro, OTseeker, Ichushi-Web.
Reference management / screening software: Rayyan.
Data extraction / analysis: Microsoft Excel, R (metafor package), RevMan (for meta-analysis).
Guidelines / checklists: COSMIN Risk of Bias checklist, PRISMA-P, PRISMA-S.

Troubleshooting

Background and Rationale

1 Rehabilitation medicine aims to restore and improve activity across diagnoses and care settings. Numerous disease-nonspecific activity outcome measures have been created since the 1960s (e.g. Katz Index, Barthel Index, Functional Independence Measure, Section GG), yet each instrument is known to have statistical and practical limitations. Despite their widespread clinical use, no comprehensive systematic review has compared the measurement properties of these generic activity scales across adult rehabilitation populations. The present review will therefore, for the first time, appraise the validity, reliability and responsiveness of disease-nonspecific activity measures using the COSMIN methodology.

Objectives

2 1. Primary objective – To synthesise evidence on measurement properties (content validity, structural validity, internal consistency, reliability, measurement error, cross-cultural validity, responsiveness) of generic activity instruments applied to adult rehabilitation populations, following the COSMIN guideline.
2. Secondary objective – To summarise instrument-level feasibility and cultural adaptability (licensing status, administration time, scoring complexity, training requirements, cultural / linguistic adaptations – e.g., metric vs imperial units as seen in Section GG).

Review Question (PCC Framework)

3 Element, Definition
Population: Adults (≥ 18 years) receiving any form of rehabilitation (in-patient, outpatient, community, home-based); any diagnosis.
Concept: Generic, disease-nonspecific, performance- or observer-based activity measures that operationalise any domain within practical activity (e.g. self-care, mobility, basic movements, domestic life), without restriction to specific sub-domains.
Context: Any healthcare or community setting worldwide; no language restrictions.

Review question: What are the measurement properties of generic, disease-nonspecific activity scales used in adult rehabilitation populations?

Eligibility Criteria

4 1. Study design
- Original validation studies (cross-sectional, longitudinal, methodological) reporting ≥ 1 COSMIN measurement property.

- Randomised or non-randomised trials are eligible only if they include a psychometric analysis of the target instrument.

2. Instrument criteria
- Generic (non-disease-specific) activity scale, e.g. Katz Index, Barthel Index, Functional Independence Measure (FIM), Section GG, Performance Assessment of Self-Care Skills (PASS), Lawton IADL, Ability for Basic Movement Scale-II (ABMS-II).
- ≥ 50 % of items must assess self-care, mobility or domestic life domain.
- Administered by clinician, trained observer, or via performance test. PROM-only tools are excluded.

3. Exclusion criteria
- Disease-specific scales (e.g. UPDRS for Parkinson's disease).
- PROM-only activity questionnaires.
- Single-task / single-domain performance tests that capture only one movement pattern or capacity (e.g., Five Times Sit-to-Stand, Timed Up & Go, 10-Meter Walk Test, Floor Transfer Test), unless they are part of a validated composite activity score meeting the inclusion breadth above.
- Paediatric (< 18 years) or animal studies.

Information Sources

5 We will use a **two-tier strategy**.

1. Core bibliographic databases (maximum coverage of validation studies)
- MEDLINE (PubMed) – biomedical core; all major psychometric reports indexed.
- CINAHL (EBSCO) – nursing & allied health; large share of OT/PT psychometric studies.
- PsycINFO (ProQuest) – psychology/psychometrics; frequently hosts instrument validation.

2. Supplementary sources (incremental yield ≥ 5 %)
- Cochrane CENTRAL – occasionally indexes validation sub-studies embedded in RCTs.
- Scopus or Web of Science – forward citation & conference proceedings.
- Ichushi-Web (Japan) – Japanese rehabilitation research.

Reference lists of included articles and key reviews will be screened manually.
Since we confirmed in advance that PEDro (method filters) and OTseeker (OT instruments), which are rehab-specific, did not include validation studies, they were excluded from the search.

Search Strategy (PubMed draft)

6

1 "activities of daily living"[MeSH Terms] OR "activit* of daily living"[Title/Abstract] OR "daily living activit*"[Title/Abstract] OR "ADL"[Title/Abstract] OR "IADL" [Title/Abstract] OR "activit* parallel to daily living"[Title/Abstract] OR "APDL" [Title/Abstract]
2 "self care Skill*"[Title/Abstract] OR "basic movement" [Title/Abstract] OR "functional activit*"[Title/Abstract] OR "functional mobilit*"[Title/Abstract] OR "domestic life"[Title/Abstract] OR "community life"[Title/Abstract] OR Barthel[Title/Abstract] OR "functional independence measure"[Title/Abstract] OR "Katz"[Title/Abstract] OR "Frenchay Activities Index"[Title/Abstract] OR "Lawton"[Title/Abstract] OR "communication"[Title/Abstract] OR "Abilit* for Basic Movement Scale" [Title/Abstract]
3 "Validation Study"[Publication Type] OR "validation"[Title/Abstract] OR "reliability" [Title/Abstract] OR "validity"[Title/Abstract]
4 #1 AND #2 AND #3
5 "Adult"[Mesh] OR "Adult"[Title/Abstract] OR "Aged"[Title/Abstract]
6 #4 AND #5

Study Selection

7 Two reviewers will independently screen titles/abstracts and full texts using a dedicated systematic-review management platform. Disagreements will be resolved by consensus or, if necessary, a third reviewer.

Data Extraction

8 The extraction form (piloted on five studies) will collect:

- bibliographic details (authors, year, country, language)
- participant characteristics (age, diagnosis mix, setting)
- instrument version/translation, administration mode, scoring
- measurement property evaluated, statistical indices, sample size
- contextual feasibility notes (time, licensing, cultural adaptation)

Meta-bias Assessment

9 Publication bias and small-study effects will be explored when ≥10 studies contribute to a meta-analysis using funnel plots and Egger's test (for ICC/z-transformed correlations) or Begg's rank test (for effect sizes). Selective reporting within studies will be judged via the COSMIN RoB "reporting adequacy" items.

Risk of Bias Assessment

10 Methodological quality will be appraised with the **COSMIN Risk-of-Bias Checklist (2019)** for each measurement property.

Data Synthesis

11
- Qualitative synthesis: summary tables of evidence per instrument × property; graded using the modified GRADE approach.
- Meta-analysis: random-effects pooling where ≥ 3 homogeneous studies report comparable statistics (e.g. ICC, Cronbach α).

Subgroup / Sensitivity Analyses

12 Not applicable.

Confidence in Cumulative Evidence

13 Quality of evidence per measurement property will be graded with the COSMIN–GRADE approach (risk of bias, inconsistency, imprecision, indirectness, publication bias).

Ethics and Dissemination

14 No primary data collection; ethical approval not required. The protocol will be registered on protocols.io and results submitted to a peer-reviewed journal and presented at national conferences.

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