



iCAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	SA Brain Injury Rehab Services
JC Facilitator	Alex Lekis/Judith Hocking
JC Discipline	Physiotherapist

Question

Provided three most common lower-limb co-ordination tests on the unit (FORMAL: heel-to-shin, foot tapping; INFORMAL: Description of client's ability to perform a discrete functional task relevant to their level of ability) to assess for reliability and validity. The best tools to use to assess coordination in adults with an acquired brain injury.

Review Question/PICO/PACO

P: N/A

I: N/A

C: N/A

O: N/A

Article/Paper

Pinheiro MD, Menezes KK, Teixeira-Salmela LF. Review of the psychometric properties of lower limb motor coordination tests. *Fisioterapia em Movimento*. 2014 Dec;27(4):541-53.

Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the [DOHSA librarian](#).

Article Methodology: Systematic Review

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Ques No.	Yes	Can't Tell	No	Comments
1	✓			<p>Did the review address a clearly focused question?</p> <p>To investigate the psychometric properties and clinical utility of instruments used to assess lower limb MC, by means of a critical review of the literature</p>
2	✓			<p>Did the authors look for the appropriate sort of papers?</p> <p>Optimized and specific search strategies were used for all databases, using combination of keywords and subject headings, such as psychometric properties, clinical utility, motor coordination, dexterity, lower limb, and assessment tools.</p> <p>Inclusion criteria <i>Participants:</i> Studies that evaluated adults and elderly of both sexes, with or without disability were included. <i>Instruments:</i> All studies that investigated any test, specific or not, for the evaluation of LLMC were included. <i>Study design:</i> Methodological studies evaluating at least one of the following properties were included: Validity, test-retest, inter- or intra-rater reliabilities, internal consistency reliability, sensitivity to changes, and ceiling and floor effects.</p> <p>Exclusion criteria Studies were excluded if they did not clearly report the aims or the methods of evaluation of the psychometric property or if they did not explicitly stated that the instrument was being used to evaluate LLMC.</p> <p>Is it worth continuing? YES</p>
3	✓			<p>Do you think the important, relevant studies were included?</p> <p>Search was conducted in the following databases: AMED (OVID - 1985 to April 2012), CINAHL (EBSCO - 1982 to April 2012), LILACS (BIREME - 1982 to April 2012), MEDLINE (OVID - 1948 to April 2012), SciELO (BIREME - 1982 to April 2012) and Web of Science (Web of Knowledge - 1970 to April 2012). Hand search was also conducted in all articles included in this review. Studies that used other instruments that were not retrieved in the search, but that are well known and used within clinical practice and research were included. When the examiners identified some potentially useful article that the full text was not available, a copy was requested by e-mail to the main author. No restrictions were applied regarding language and year of publication.</p>
4			✓	<p>Did the review's authors do enough to assess the quality of the included studies?</p> <p>Quality assessment of included studies was not performed</p>
5		✓		<p>If the results of the review have been combined, was it reasonable to do so?</p> <p>Results of this review were not combined, however this was appropriate given what was found</p>

What are the overall results of the reviews?

The search returned 1361 studies, 1,325 were excluded after analyses. The hand search yielded four eligible articles, totaling nine included articles. The included studies evaluated the psychometric properties of eight tests, but only three were specific to assess lower limb MC and the others were sub-items of other scales, which assess other domains. None of the tests provided data for all of the basic psychometric properties. According to the results of this review, none of the tests had their basic psychometric properties reported, which is necessary to be investigated in future studies. This review may facilitate the search and selection of lower limb MC tests by researchers and clinicians.

Foot tapping:

- Inter-rater reliability: ICC = 0.87 (excellent)
- Intra-rater reliability: ICC = 0.84 (excellent)

Lower-extremity motor coordination test:

- Convergent construct validity
 - Fugl-Meyer assessment: r = 0.79 (excellent)
 - Berg balance scale: r = 0.67 (excellent)
 - 5-minute walk test: r = 0.67 (excellent)
 - Walking endurance: r = 0.66 (excellent)
 - Functional autonomy measurement system (mobility): r = 0.66 (excellent)
 - Functional autonomy measurement system (total score): r = 0.62 (excellent)
- Divergent Construct Validity
 - Modified mini-mental state examination: r = 0.11 (poor)*
 - Motor-free visual perceptual test: r = 0.15 (poor)*
- Test-retest reliability
 - Right lower limb: ICC = 0.88 (0.76 to 0.94) – excellent
 - Left lower limb: ICC = 0.83 (0.67 to 0.92) – excellent

Multi-joint lower-limb tracking-trajectory test:

- Test-retest reliability
 - Mean absolute error: ICC = 0.82 (excellent)
 - Standard deviation: ICC = 0.80 (excellent)

Auditory-paced ankle dorsi- and plantar-flexion task

- Test-retest reliability:
- Frequency of 1.6 to 3.2 Hz: ICC = 0.55 to 0.88 (adequate to excellent)

Fugl-Meyer scale

- Inter-rater reliability: ICC = 0.94 to 0.97 (excellent)
- Intra-rater reliability: ICC = 0.88 to 0.93 (excellent)

Standardized neurological examination

- Inter-rater reliability: kappa = 0.40 to 0.75 (adequate)

Rapid alternating movement patterns test

- Convergent construct validity:
 - Strength: Non-paretic limb – r = -0.35 (adequate)
 - Paretic limb – r = -0.61 (excellent)
- Predictive validity:
 - Function (transference, gait, stairs climbing):
 - Non-paretic limb – r = -0.14 (poor)
 - Paretic limb – r = -0.51 (adequate)
- Length of stay in hospital:
 - Non-paretic limb – r = 0.22 (poor)
 - Paretic limb – r = 0.23 (poor)
 - Scale of the assessment and rating of ataxia (SARA)
- Reliability – internal consistency: α = 0.41 to 0.66 (adequate)
- Reliability – internal consistency: α = 0.93 (excellent)
- Inter-rater reliability:
 - Right lower limb: ICC = 0.81 (excellent)
 - Left lower limb: ICC = 0.74 (adequate)

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7				<p>How precise are the results? 95% Confidence Intervals were not reported. Unable to comment on precision.</p>
8	Journal Club to discuss			<p>Can the results be applied to the local population? CONTEXT ASSESSMENT (please refer to attached document)</p> <ul style="list-style-type: none"> - Infrastructure - Available workforce (? Need for substitute workforce?) - Patient characteristics - Training and upskilling, accreditation, recognition - Ready access to information sources - Legislative, financial & systems support - Health service system, referral processes and decision-makers - Communication - Best ways of presenting information to different end-users - Availability of relevant equipment - Cultural acceptability of recommendations <p>Others</p>
9				<p>Were all important outcomes considered?</p>
10				<p>Are the benefits worth the harms and costs?</p>
11				<p>What do the study findings mean to practice (i.e. clinical practice, systems or processes)?</p>
12				<p>What are your next steps? ADOPT, CONTEXTUALISE, ADAPT And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)</p>
13			<p>What is required to implement these next steps?</p>	

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