

INPLASY PROTOCOL

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Review Stage at time of this submission: Formal screening of search results against eligibility criteria.

Conflicts of interest:
None declared.

Validity and reliability of the Wolf Motor Function Test -WMFT in patients with Cerebrovascular disease: Scoping review

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Review question / Objective: This scoping review aimed to compile the studies that have examined the validity and reliability of the different versions of the Wolf Motor Function Test - WMFT in patients with Cerebrovascular disease.

Background: Numerous investigations in rehabilitation have used the WMFT as an instrument for the primary measurement of the results; however, to date, there are no known reviews that have compiled the reliability and validity of the wolf test in its different versions, which is considered of vital importance and constitutes critical information for decision making in the process of evaluation and follow-up of patients with stroke in clinical, academic and research environments.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 12 October 2022 and was last updated on 12 October 2022 (registration number INPLASY2022100044).

INTRODUCTION

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Rationale: Cerebrovascular disease (CVD) is responsible for most disability-adjusted life years and is one of the leading causes of mortality. In 2016, CVD was directly responsible for approximately 5.5 million deaths and the loss of 116.4 million years of quality of life, with a significant economic impact.

Due to its motor, sensory and cognitive neurological sequelae, CVD is the leading cause of chronic severe disability in adults worldwide. Some studies estimate that by 2030 CVD will lead to the global burden of disease from chronic non-communicable diseases. The number of CVD patients per year is projected to increase dramatically as the population ages, and it has been estimated that deaths due to ischemic heart disease and CVD in Latin America will triple by 2025. In Colombia, it is the second cause of lost years of life; there are around 250,000 people with a disability due to CVD, predominating motor disability in more than 80% of those affected.

In people with hemiplegia, alterations in motor control after the cerebrovascular event at the level of the upper limbs are correlated with deficits in the neuromotor processes of planning and executing adequate motor sequences, inability to carry out anticipation and feedback processes, dyschronometries, asymmetries and alterations in the execution of movement patterns, due to the presence of abnormal synergies, which usually occur as a consequence of spasticity, affecting the mechanisms of motor adjustments prior to the performance of specific tasks, in addition to the problems of the sensoriality. Likewise, the biomechanical and myoneural processes of motor control are affected, where soft tissue alterations appear, such as tendon and ligament shortening, with the consequent decrease

in the range of joint mobility and shortening.

Rehabilitation of the upper limb in patients who have suffered a stroke is a real challenge faced by rehabilitation teams, especially physiotherapists and occupational therapists, on the one hand, due to the increasing frequency, and on the other, due to the implications on independence, the autonomy of people and the quality of life of the patient.

In upper limb rehabilitation processes, it is essential to objectively quantify motor deficits and record the evolution or functional changes achieved over time with therapeutic interventions. Hence it is important to use valid and reliable instruments that obtain an objective measurement of the function of the upper limbs. These tools make it possible to establish the severity of the disease with greater precision, monitor its evolution, facilitate clinical and rehabilitation decision-making, guide the choice of the most appropriate therapeutic prescription, and even predict recovery. Furthermore, this information provides empirical evidence to assess the validity of the motor control theory itself.

The Wolf Motor Function Test (WMFT) is regularly used in clinical and research settings to measure the results of constraint-induced movement therapy and other task practice interventions, such as robot-assisted therapy, bilateral arm training, and electrical stimulation with task-focused practice.

METHODS

Strategy of data synthesis: The sources consulted were electronic databases and publication platforms. The references of the included studies were also reviewed to include all the relevant research. The descriptors used were: Wolf test, Wolf Motor Function Test, Validity, Reliability, and Psychometric Properties.

The search was performed with standardized terms available in the DeCS, MESH. All conceptual terms and descriptors were combined using the Boolean operators 'AND' and 'OR'.

The string of words selected was: (WMFT OR “Wolf test” OR “Wolf Motor Function Test”) AND (Validity OR Reliability OR “Psychometric Properties”) AND (“Cerebrovascular disease” OR stroke), although it had some variations depending on the characteristics of the search engine. The selected databases were: Science direct, Springer, Scopus, IEEE, Scholar Google, Sage, Pubmed, Proquest, Scielo, Oxford.

Eligibility criteria: Inclusion criteria: Articles with research results, articles published from the date of test construction (1989) to 2021, Articles that evaluate the validity and reliability data of the WMFT in any of its versions, applied to a population with stroke, publications in English, Spanish, French, or Portuguese.

Exclusion criteria: Short articles, summaries or letters to the editor; systematic reviews and meta-analyses, articles without open access, articles published outside the established time range, articles in languages other than those selected, articles that present reliability data from the Wolf test applied to alterations other than CVD.

Source of evidence screening and selection: The chain was run in July 2022, and a total of 2059 articles were retrieved across all databases and transferred to the Mendeley app. Once the duplicate articles are eliminated, the study selection process will proceed based on a review of the titles and abstracts of all the articles retrieved by reviewers #1 and #2. The first list of selected articles will be passed on to a third reviewer, who will confirm whether the titles and abstracts meet the eligibility criteria. Subsequently, an exhaustive reading of each article will be carried out by reviewers #1, #2, #3, and #4; From this reading, the articles that confirm the related inclusion criteria will be filtered, and the second list of articles will be reviewed in plenary by the group of reviewers.

Data management: The researchers designed a documentary matrix in which the following data extracted from the articles will be recorded: author, title,

language, year of publication, database, the country where the study was conducted, participating institutions, description of the sample (number of participants, age, gender, clinical condition), study objectives, methodology (type of study, research design, and cutoff), version of the Wolf test, validity measure (type of validity, Fleiss' kappa or Gwet's concordance coefficient, correlation coefficient, Analysis exploratory, and confirmatory factorial) and reliability measures (Kuder-Richardson coefficient, Cronbach's alpha coefficient, ICC intraclass correlation coefficient, reliability between evaluators, coefficient of variation), type of analysis performed, results, conclusions, and recommendations. Index H, Quatril of the journal, quality of the data provided, OXFORD level of evidence, OXFORD strength of recommendation.

Language restriction: English, Spanish, Portuguese and French.

Country(ies) involved: Colombia.

Keywords: WMFT, Wolf Test, Wolf Motor Function Test, Validity, Reliability, Psychometric Properties, Cerebrovascular Disease, Stroke.

Dissemination plans: An article with the research results is expected to be published in a high-impact journal.

Contributions of each author:

Author 1 - Elizabeth Roldán-González - Formulation of search strategy, literature review (review of titles and abstracts of all retrieved articles), exhaustive reading of each article, data extraction, qualitative analysis.

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