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REVIEW PROTOCOL

Psychometric Properties of questionnaires for assessing musculoskeletal disorders in the ankle: a systematic review protocol

Propriedades Psicométricas de Questionários para Avaliação de Distúrbios Osteomusculares do Tornozelo: Protocolo de Revisão Sistemática

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Abstract

Introduction: Ankle musculoskeletal disorders are common among various populations, including athletes and the elderly. However, there's a lack of specific instruments in the literature that address factors influencing the progression of these disorders. Objective: This review aims to identify and describe questionnaires focusing on these factors, emphasizing their psychometric characteristics, feasibility, and applicability across different populations. Methods: This study is a systematic review protocol developed according to PRISMA-P recommendations. Searches were conducted in various databases, including Medline, Embase, LILACS, PEDro, SCOPUS, CENTRAL, CINAHL, and Web of Science, without time limitation. The results

will be analyzed using the Rayyan® software, where two researchers will conduct the identification and removal of duplicates, selection, and screening of studies, with discrepancies resolved by a third examiner. Results: The first phase will comprise reading titles and abstracts, followed by a full manuscript analysis. Methodological quality will be assessed using the COSMIN checklist. Psychometric evidence will follow Terwee et al. criteria. The overall synthesis score will combine the consistency of psychometric evidence with methodological quality, categorizing studies according to levels of evidence proposed by the Cochrane Musculoskeletal Group. The article eligibility process will be represented through the PRISMA flowchart, and results will be presented in tables and figures accompanied by descriptive and narrative analysis. Dissemination will include peer-reviewed publication and conferences in rehabilitation-specific contexts. Conclusion: This study aims to compile existing research to streamline the analysis and application of ankle joint assessment questionnaires recommended for clinical use. It will focus on identifying high-quality questionnaires and examining their ability to explore barriers and facilitators in rehabilitation processes.
Keywords: Ankle fractures; ankle injuries; patient-reported outcome measures; surveys and questionnaires.

Resumo

Introdução: Distúrbios musculoesqueléticos do tornozelo são comuns em diversas populações, incluindo atletas e idosos. No entanto, faltam instrumentos específicos na literatura que abordem os fatores que influenciam a progressão desses distúrbios. Objetivo: Esta revisão tem como objetivo identificar e descrever questionários com foco nesses fatores, enfatizando suas características psicométricas, viabilidade e aplicabilidade em diferentes populações. Métodos: Este estudo é um protocolo de revisão sistemática desenvolvido de acordo com as recomendações PRISMA-P. As buscas foram realizadas em diversas bases de dados, incluindo Medline, Embase, LILACS, PEDro, SCOPUS, CENTRAL, CINAHL e Web of Science, sem limitação de tempo. Os resultados serão analisados no software Rayyan®, onde dois pesquisadores realizarão a identificação e remoção de duplicatas, seleção e triagem dos estudos, sendo as discrepâncias resolvidas por um terceiro examinador. Resultados: A primeira fase compreenderá a leitura dos títulos e resumos, seguida da análise completa do manuscrito. A qualidade metodológica será avaliada por meio da lista de verificação COSMIN. A evidência psicométrica seguirá Terwee et al. critério. A pontuação geral da síntese combinará a consistência das evidências psicométricas com a qualidade metodológica, categorizando os estudos de acordo com os níveis de evidência propostos pelo Cochrane Musculoskeletal Group. O processo de elegibilidade dos artigos será representado através do fluxograma PRISMA, e os resultados serão apresentados em tabelas e figuras acompanhadas de análise descritiva e narrativa. A divulgação incluirá publicações revisadas por pares e conferências em contextos específicos de reabilitação. Conclusão: Esta pesquisa buscará organizar os estudos publicados até o momento para facilitar análises e operacionalizações quanto ao questionário de avaliação da articulação do tornozelo mais recomendado, bem como aqueles que sejam capazes de investigar barreiras e facilitadores no processo de reabilitação.
Palavras-chave: Fraturas do tornozelo; traumatismos do tornozelo; medidas de resultados relatadas pelo paciente; inquéritos e questionários.

Introduction

Musculoskeletal disorders of the ankle are commonly observed in emergency rooms and medical and physiotherapy offices, being one of the most prevalent traumatic conditions during sports practice, representing 10 to 30% of all professional and recreational sports injuries [1,2,3]. Consequently, populations most susceptible to ankle injuries include physically active individuals, such as those with high body mass indexes and elderly women [2,4].

For ankle evaluation, several questionnaires have been developed to assist clinical professionals in assessing different aspects, such as function, pain, and ankle joint instability. These questionnaires are important not only for the initial assessment of patients but also for their reassessment and monitoring during the proposed treatment [5].

Despite the numerous questionnaires developed for this population, there is a scarcity in the literature of questionnaires that aim to assess barriers and facilitators that may influence the progression of patients with musculoskeletal disorders in the ankle. Primarily, because the most affected population by this injury is athletes, who have limited time for rehabilitation due to training and competitions [1], as well as obese individuals who present low exercise adherence and a high risk of evolving into chronic pain [4].

Therefore, it is necessary to understand these elements (barriers and facilitators) that can exert both positive and negative influences on patients' performance as members of society, in their capacities to perform actions or tasks, or in their body function or structure [6].

The increasing availability of Patient-reported Outcome Measures (PROMs) applied in ankle questionnaires in recent years highlights the importance of carefully selecting these measures [7]. It is essential that the choice of a PROM as an outcome measure is based on solid evidence and appropriate psychometric properties, including validity, reliability, responsiveness, and measurement error [8]. However, despite studies presenting PROMs for questionnaires aimed at evaluating the ankle [9, 10], it is not clear in the literature about questionnaires that assess barriers and facilitators in the progression of patients with musculoskeletal disorders of the ankle. In light of the above, the purpose of this review is to identify questionnaires that address factors that drive or hinder the progress of individuals affected by dysfunctions, pain, and/or instability in the ankle joint, and to describe the psychometric characteristics, feasibility, and suitability for use with athletes and non-athlete patients.

Objective

Our general aim is to identify questionnaires addressing the factors that either promote or hinder the progress of individuals affected by dysfunctions, pain, and/or instability in the ankle joint. With the specific objectives: (1) to describe the psychometric characteristics, feasibility, and suitability for use with athletes and non-athlete patients; (2) to identify the facilitators and barriers perceived by patients in ankle rehabilitation.

Methods

Type of study

This study is a systematic review protocol developed following the recommendations proposed by the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P).

Ethical aspects and research location

The review protocol has been registered on the PROSPERO platform (CRD42024538363). This study will be conducted at the Federal University of Amapá (UNIFAP) within the undergraduate Physiotherapy program, Department of Biological and Health Sciences.

Eligibility criteria

Types of included studies

Studies that used questionnaires assessing barriers and facilitators as constructs, used during any intervention for ankle musculoskeletal disorders;

Studies that used questionnaires that were adapted or reported to assess barriers and facilitators as constructs, used during any intervention for ankle musculoskeletal disorders;

Studies that used validated questionnaires, with analysis of psychometric properties;

Evaluated Outcomes

- **Barriers and Facilitators:** Defined as external factors to individuals that can have a positive or negative influence on their performance as members of society, on their ability to perform tasks, or on the function or structure of the body.
- **Patient-Reported Outcomes Measures (PROMs):** Defined as questionnaires that collect health outcomes directly from the people who experience them.

Collection procedure

Literature search strategy

The search strategy will be tailored for each data- base and conducted in the following sources: Medical Literature Analysis and Retrieval System Online (Medline) via PubMed, Cochrane Central Register of Controlled Trials (CENTRAL, Latin American and Caribbean Health Sciences Literature (LILACS) via Virtual Health Library, Physiotherapy Evidence Database (PEDro), Web Of Science, Sciverse Scopus and Excerpta Medica dataBASE (Embase) via Elsevier. Grey literature searches will also be performed to ensure the inclusion of potentially relevant studies. No language or date restrictions will be applied in our eligibility criteria.

Study selection

The study inclusion will be conducted by two in- dependent authors (CMC; INLA). Title screening, removal of duplicates, abstract assessment, and when necessary, full-text reading will be performed. To optimize the screening and selection process, the Rayyan app (https://www.rayyan.ai/) will be utilized. Disagreements will be resolved by a third author (NCRI).

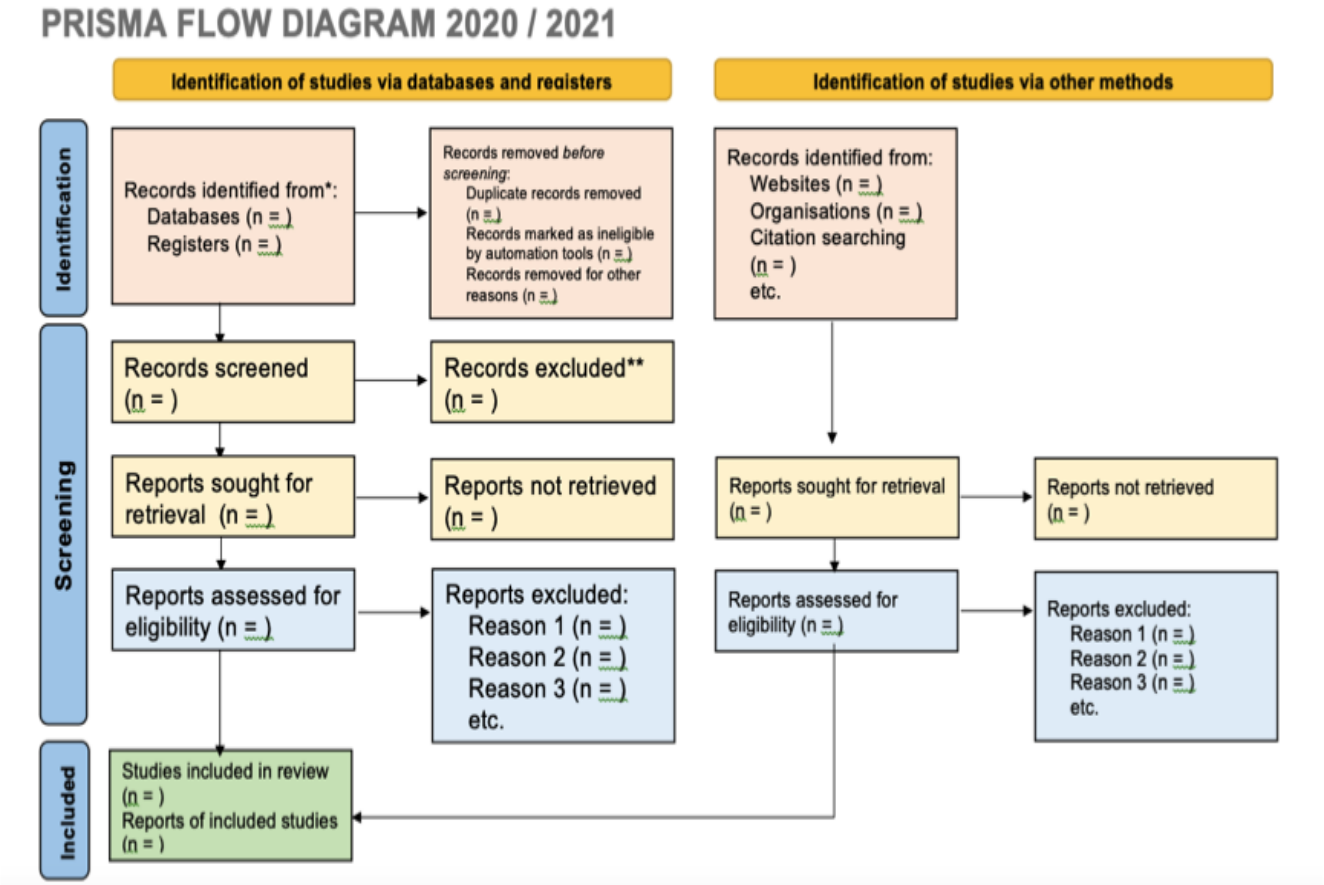

Figure 1 - *Systematic Review Flowchart*

Evaluation of Study Bias and Evidence Certainly

The methodological quality will be assessed using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) checklist [11]. The methodological quality of the articles that evaluated the following measurement properties will be assessed: internal consistency, reliability, content validity, construct validity (including structural validity and hypothesis testing), criterion validity, and responsiveness.

The psychometric evidence of the investigated measurement properties in the included articles will be assessed using the quality criteria established by Terwee et al [12].) The rating scale includes quality criteria for internal consistency, reliability, content validity, criterion validity, structural validity, hypothesis testing (including convergent validity, discriminant validity, and responsiveness). Interpretability, according to the COSMIN manual, is a characteristic of an instrument that relates to the ability to assign qualitative meaning to the quantitative scores of an instrument or changes in scores. To assess interpretability, the presence of ceiling/floor effects will be evaluated, and the minimally important change (MIC) and minimally detectable change (MDC) will be extracted.

Data Synthesis and Analysis

The overall synthesis score combines the consistency of psychometric evidence with the

methodological quality of the included studies and the level of evidence proposed by the Cochrane Musculoskeletal Group [13]. Using this method, when studies are combined, the levels of evidence are as follows: strong (representing consistent findings in multiple studies of good methodological quality OR in one study of excellent methodological quality), moderate (representing consistent findings in multiple studies of acceptable methodological quality OR in one study of good methodological quality), limited (representing one study of acceptable methodological quality), conflicting (representing conflicting findings), and unknown (representing only studies of low methodological quality).

Expected outcomes

This study will seek to organize the studies published to date to facilitate analyses and operationalizations regarding the most recommended ankle joint assessment questionnaire, as well as those that are able to investigate barriers and facilitators in the rehabilitation process. With the emergence of new ankle assessment questionnaires, it is relevant to identify those that have the highest level of methodological quality in their construction. The survey will produce data on the psychometric properties of existing questionnaires for clinical use in ankle assessment, considering the need for the most effective form of evaluation and, consequently, treatment of these patients

Impacts and expected results

This study aims to compile existing research to streamline the analysis and application of ankle joint assessment questionnaires recommended for clinical use. It will focus on identifying high-quality questionnaires and examining their ability to explore barriers and facilitators in rehabilitation processes. Given the continual development of new assessment tools, the research will prioritize those with robust methodological foundations. Ultimately, the goal is to provide data on the psychometric properties of these questionnaires to enhance the effectiveness of ankle assessment and subsequent patient treatment strategies.

Conflicts of interest

We declare no conflicts of interest.

Funding sources

No funding sources was received.

Authors contribution

Conception and design of the research: Iosimuta NCR, Costa CM; Data collection: Costa, CM; Data analysis and interpretation: Costa CM, Alves INL; Statistical analysis: Iosimuta NCR, Pinto ACPN; Manuscript writing: Costa CM, Alves INL; Critical revision of the manuscript for important intellectual content: Alves INL, Iosimuta NCR, Pinto ACPN, Matos A.

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