

INPLASY

A Methodological and Reporting Quality Assessment of Systematic Reviews/Meta-Analyses on Exercise Interventions for Cognitive Function in Elderly with Mild Cognitive Impairment

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 October 2023 and was last updated on 19 October 2023.

INTRODUCTION

Review question / Objective To assess the methodological and reporting quality of systematic reviews and meta-analyses that investigate the impact of exercise interventions on cognitive function in elderly individuals with mild cognitive impairment.

Background Mild cognitive impairment (MCI) represents a stage between normal age-related cognitive decline and early dementia, viewed as a precursor to Alzheimer's disease (AD). Globally, approximately 15.56% of community members aged 50 and above are affected by MCI, with this percentage increasing as the world's population ages. While pharmacological treatments have their limitations, exercise is increasingly recognized as a non-pharmacological intervention for MCI, showing potential efficacy in improving cognitive function in elderly MCI patients.

Rationale The accurate evaluation of systematic reviews and meta-analyses regarding exercise interventions for cognitive function in elderly individuals with MCI is of paramount importance. An inconsistent or poor-quality assessment can mislead clinical decision-making and research direction. To ensure a rigorous and systematic evaluation, this study adopts a comprehensive approach. Firstly, the literature is meticulously screened and relevant data is extracted by two investigators, with a third investigator available for conflict resolution. This ensures that only pertinent studies are considered, reducing bias and enhancing the reliability of findings. The study then uses the recognized AMSTAR2 scale to methodically evaluate the methodological quality of the included reviews. To ascertain the certainty of evidence — a crucial aspect often overlooked in many works — the GRADE system is employed. This system allows for a granular analysis of evidence by considering multiple factors, including study limitations and publication bias. Through this structured and multi-layered approach, this study

seeks to provide a robust reassessment of previous meta-analyses, thus aiding in more informed clinical and research decisions.

METHODS

Strategy of data synthesis None.

Eligibility criteria

Inclusion Criteria:

Meta-analyses based on randomized controlled trials (RCTs) focusing on the effects of exercise interventions on cognitive function in MCI individuals.

Participants with clinically confirmed MCI or: Self-reported memory loss impacting daily life without third-party corroboration.

Memory performance scores below age and education norms [e.g., WMS: 60-79, MMSE: 24-27, MoCA: 14-25].

Preserved general cognition, barring memory, and capability for daily activities.

No dementia diagnosis and insufficient evidence for diagnosing AD or other dementia forms.

At least one group engaged in exercise, without specification restrictions.

Control groups restricted to non-exercise or minimal-intervention activities.

Exclusion Criteria:

Non-English publications.

Conference abstracts or presentations.

Duplicate studies.

Cochrane meta-analyses in early stages.

Studies focusing on AD patients.

Interventions combining exercise with cognitive training or other non-exercise therapies.

Unavailable full-text or non-extractable data.

Animal research.

Outcomes not directly assessing cognitive function.

Source of evidence screening and selection

Two independent investigators(WZ, NX) performed comprehensive literature searches in five pertinent databases: PubMed, Cochrane Library, Embase, Scopus, and Web of Science. The search time limit was set from the inception of each database to February 23, 2023. The search terms used included: (“exercise” OR “physical activity” OR “resistance training” OR “strength” OR “endurance” OR “walking” OR “yoga” OR “TaiChi”) AND (“mild cognitive impairment” OR “MCI”) AND (“systematic review” OR “meta-analysis”) NOT (“Alzheimer's disease” OR “AD”).

Data management A standardized data extraction form was developed and piloted on a small number of studies to ensure consistency and

comprehensiveness in data collection. This form included fields for study characteristics, methodologies, outcomes, and other relevant information.

Language restriction English.

Country(ies) involved China.

Keywords exercise; mild cognitive impairment; cognitive function; meta-analysis; AMSTAR2; GRADE.

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