INPLASY

Intervention of muscle endurance training on patients with muscle tone deficiency： A protocol for systematic review and meta analysis

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INTRODUCTION

Review question / Objective The document outlines a systematic review and meta-analysis protocol for assessing the effects of muscle endurance training on patients with muscle tone deficiency. It includes an introduction to the significance of muscle endurance and the need for such training in patients with insufficient muscle tone. The method section describes the inclusion and exclusion criteria for studies, data sources, and the approach for data collection and analysis. Primary and secondary outcome measures are identified. The discussion highlights the focus on evaluating the recovery effect of muscle endurance training from the perspective of exercise training and acknowledges certain limitations, such as the exclusion of non-English literature.

Condition being studied The condition being studied in the document is muscle tone deficiency. This condition refers to a reduction in the normal tension or firmness in muscles, which can impact muscle strength, endurance, and functionality. Patients with muscle tone deficiency may experience challenges in performing daily activities and maintaining physical health. The study aims to assess the effectiveness of muscle endurance training in improving muscle tone and overall physical function in these patients. This kind of training is particularly significant for individuals who have weakened muscle tone due to various health conditions.

METHODS

Participant or population The people who were confirmed to muscle tone deficiency.

Intervention The experimental group received medical treatments and muscle endurance training intervention scheme after medical treatments. The control group only received the medical treatments.

Comparator In the study, the comparator or comparative intervention being applied to the target population consists of a control group that only receives medical treatments, as opposed to the experimental group which receives both medical treatments and a muscle endurance training intervention. This comparison aims to evaluate the additional effects of muscle endurance training on patients with muscle tone deficiency beyond the effects of medical treatments alone.

Study designs to be included The study designs to be included in the systematic review and meta-analysis are Randomized Controlled Trials (RCTs). The initial screening of literature involves excluding studies that are obviously irrelevant to the research topic by reviewing titles, abstracts, and full texts to confirm if the articles are RCTs. This also includes assessing the completeness of the data reported in the literature.

Eligibility criteria The eligibility criteria for the study include the following:Inclusion Criteria:Participants: Individuals confirmed to have muscle tone deficiency.Intervention Measures: The experimental group should receive medical treatments along with a muscle endurance training intervention scheme following medical treatments. The control group will only receive the medical treatments.Exclusion Criteria:Types of Studies: Review and commentary research or non-Chinese and English literature are excluded.Study Structure: Studies where only the experimental group is present without a control group are excluded.

Information sources The intended information sources for the systematic review and meta-analysis include: Electronic Databases: PsycINFO, Science Direct, PubMed, Eric Willey, and China Knowledge Network (CNKI). Specific Resources: Academic Journal Online Publishing General Library and China Knowledge Network (CNKI) excellent doctoral thesis full-text database. Additional Methods: Tracing the references of retrieved literature to supplement the relevant literature. The search strategy involves a combination of subject words and free words, focusing on keywords such as "muscle endurance training," "strength," and "recovery." The time limit for the retrieval of literature extends from the establishment of each database to October 2023.

Main outcome(s) The main outcomes of the review are as follows:
Primary Outcomes: Posture Retention Time: This measures the duration for which a patient can maintain a certain posture. Load Capacity (Number): This assesses the ability of a patient to handle physical loads, quantified numerically.
Secondary Outcomes: Sensitivity: Evaluating the patient's sensitivity level. Physical Stability: Assessing the stability of the patient's physical state. Endurance and Strength of Muscle: Measuring the endurance capacity and strength of the patient's muscles.
These outcomes are designed to provide a comprehensive assessment of the recovery effect of muscle endurance training on patients with muscle tone deficiency.

Quality assessment / Risk of bias analysis The quality assessment and risk of bias analysis in primary studies are conducted using the Cochrane manual 5.1.0 bias risk assessment tool. This assessment is independently evaluated by two researchers. The process involves systematically analyzing various aspects such as the prevention and recovery of patients with muscle tone deficiency, including literature download, screening, inclusion criteria, data collection and analysis, heterogeneity analysis, sensitivity analysis, and subgroup analysis.

Strategy of data synthesis The strategy for data synthesis in the study involves several key steps:
Initial Screening of Literature: The main method is to exclude studies that are obviously irrelevant to the research topic by reading the title and then further reviewing the abstract and full text to understand whether the article is a Randomized Controlled Trial (RCT) and if the data reported in the literature is complete.
Data Extraction: This includes extracting data such as the first author, publication time, intervention mode, and utility; key elements of bias risk assessment; and the result indicators and data.
Analysis of Included Literature: The basic characteristics of included literature will be analyzed, including the number of cases (Treatment/Control), training history, average age, intervention methods, intervention time, and outcome indicators.

Subgroup analysis The subgroup analysis in the study will be conducted using a random effect model. This model will be applied to investigate the role of three regulatory variables: Treatment Mode; Treatment Time; Disease Cycle. These variables will be analyzed to understand their impact on the recovery effect of muscle endurance training on patients with muscle tone deficiency.

Sensitivity analysis The sensitivity analysis in the study will be conducted in cases of large

heterogeneity. The method involves eliminating the literature one by one to assess the robustness of the meta-analysis results. This process is a crucial part of ensuring the reliability and validity of the study's findings, particularly when there is significant variability in the research quality, intervention methods, and publication types among the included studies.

Country(ies) involved China.

Keywords muscle endurance training;muscle tone deficiency;Meta analysis; System evaluation.

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