INPLASY PROTOCOL

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

Conflicts of interest: None declared.

Effect of exercise training in multiple sclerosis: a protocol for systematic reviews and meta-analysis

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Review question / Objective: The main purpose of this scheme is to analyze and evaluate the effect on MS symptoms, quality of life, and improvement of mental state through strict literature aerobic training and the movement of resistance training, and to compare aerobic training, resistance training, and the combination of aerobic and resistance training through network meta-analysis, select the best scheme of intervention, and provide a reference for clinical and evidence-based guidelines.

Information sources: Randomized controlled trials of exercise therapy for MS were searched in the PubMed, Web of Science, Embase, Cochrane Library, CNKI, Wanfang Data Knowledge Service Platform, VIP, and CBM databases.

INTRODUCTION

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Condition being studied: Multiple sclerosis.

METHODS

Participant or population: Subjects: Patients with a clinical diagnosis of MS (McDonald criteria 2010 edition)28 who had a score of less than 6 on the Expanded Disability Status Scale (EDSS) (i.e. able to walk at least 100 m with or without crutches and with or without rest) and who were aged >18 years.

Intervention: Intervention group measures: both aerobic training (tai chi, yoga, swimming, cycling, jogging, brisk walking) and resistance training were used, including studies conducted on the same day and on different days. There are no restrictions on training time, frequency and intensity.

Comparator: Control group measures: no intervention or conventional treatment.

Study designs to be included: Limited to the RCT.

Eligibility criteria: Measures in the intervention group: aerobic training (taijiquan, Baduanjin, qigong, yoga, swimming, cycling, jogging, brisk walking, etc.) and resistance training were used simultaneously, including studies conducted on the same day and on different days. There are no restrictions on training time, frequency and intensity.Control group measures: no intervention or conventional treatment.

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Main outcome(s): 1. Dysfunction. Expanded Disability Status Scale (EDSS). 2. Quality of life. Multiple Sclerosis Impact Scale (MSIS-29), Multiple Sclerosis Quality of Life-54 (MSQOL-54) 3. Fatigue. Fatigue Severity Scale (FSS), Modified Fatigue Impact Scale (MFIS). 4. Aerobic capacity or muscle function. Six minute Walk Test (6MWT), Cardiopulmonary Exercise Testing (CPET).

Additional outcome(s): 1. Mood. Self-rating Depression Scale (SDS), Self-rating Anxiety Scale (SAS), Hamilton Depression Rating Scale (HAMD), Hamilton Anxiety Rating Scale (HAMA). 2. Cognitive function. Montreal Cognitive Assessment (MOCA), Mini-Mental State Examination (MMSE). 3. Safety of the intervention. The number of patients who experienced an adverse event (AE).

Quality assessment / Risk of bias analysis: Quality assessment: Two investigators used the Cochrane ROM risk assessment tool to conduct back-to-back reviews of the included studies and to produce risk bias maps, and the third investigator will assist in judging the differences. ROB entries will include selection bias (random-sequence generation and concealment), implementation bias (subject blindness), measurement bias (evaluator blindness), follow-up bias (data integrity), reporting bias (selective reporting), and other biases (balance of funding sources, intervention, and control baseline).

Strategy of data synthesis: The software used in this study included RevMan 5.3 and Stata 14. First, RevMan 5.3 was used to analyze the direct comparative results of the literature. Then, Stata 14 called the Network command for statistical analysis of the data, and the mesh diagram and anecdotal sequence diagram for various intervention measures were drawn. $P < 0.05\%$ and 95%CIs were used as the statistical significance standard, and the odds ratio (OR) value was used as the curative effect analysis and statistics. The measurement data were the weighted mean difference (MD) or standardized MD, and they showed that each effect size was expressed as 95%CI.

Subgroup analysis: No.

Sensitivity analysis: No.

Country(ies) involved: China.

Contributions of each author:
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Author 2 - Xihua Liu.
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