INPLASY PROTOCOL

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None declared.

Meta-analysis of intervention effect of Tai Chi exercise on fall prevention and motor function in patients with Parkinson's disease

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Review question / Objective: **Taijiquan is a widely used traditional fitness method in China. It can improve the motor dysfunction of Parkinson's patients through the mechanism of neuroprotective effect and neuroplasticity. This study except to select indicators for movement function in patients with Parkinson's disease, also selected a predictable fall of balance and walking ability index, system evaluation taijiquan fall prevention and motor function in patients with Parkinson's disease, the intervention effect of training and of course, the frequency and time for subgroup analysis, thought the clinical provide more powerful evidence.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 July 2021 and was last updated on 17 July 2021 (registration number INPLASY202170054).

INTRODUCTION

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Condition being studied: Parkinson's disease is a neurodegenerative disease characterized by the degeneration and loss of dopaminergic neurons and a decrease in dopamine levels. It is reported that the incidence of PD worldwide is 0.3%, while it accounts for 1%-2% in people over 65 years old. The number of PD patients over 50 years old in China is expected to reach 4.94 million in 2030. About half of PD patients will fall due to imbalance, abnormal gait, etc. In addition, PD patients also have motor dysfunction such as static tremor, which seriously affects the quality of life of patients. Taijiquan is a widely used traditional Chinese fitness method at present. It can improve the motor dysfunction of PD patients through the mechanism of neuroprotective effect and neuroplasticity. In addition to the motor function indexes of PD patients, this study also selected the indexes that can predict the balance ability and walking ability of falling, systematically evaluated the intervention effect of Tai Chi exercise on the prevention of falling and motor function of PD patients, and conducted subgroup analysis on the course of disease, training frequency and training time, so as to provide more powerful evidence for clinical use.

METHODS

Participant or population: Parkinson's patient.

Intervention: Tai Chi.

Comparator: The control group had no exercise intervention, conventional medicine or health education.

Study designs to be included: RCT.

Eligibility criteria: 1) Subjects (P) : ① Age ≥18 years old, gender unlimited; ② In line with the diagnostic criteria of PD formulated by Movement Disorders and Parkinson's Disease Group of Neurology Society of Chinese Medical Association in 2006; ③ In the English literature, he was diagnosed with Parkinson's disease, and he could practice Taijiquan 2) Intervention measures (I) : the experimental group was Tai Chi exercise or combined with other measures, such as: conventional medicine, health education, etc. 3) Intervention measures for comparison (C) : the control group did not have exercise intervention, conventional drugs, health promotion, etc. 4) Outcome indicator (O) : Balance indicator: BBS (Berg Balance Scale,BBS), the lower the score, the more serious the balance dysfunction, with a total score of 56; TUG (timed up and go test (TUG)). The patient sits on a backrest chair with armrests (sit 46cm high and armrests 21cm high), with the body close to the back of the chair and the hand on the armrests. A thick colored line is pasted on the ground 3 meters in front of the chair. Stand still and walk as fast as you can to the front of the color line. Then turn around and walk quickly back to the chair. Turn around and sit down in the chair. Walking ability: walking speed; Exercise energy index: UPDRS III, the higher the score, the more severe the motor disorders. 5) Study design (S) : Randomize Controlled Trial (RCT).

Information sources: Online computer retrieval of PubMed, Web of Science, The Cochrane Library, Embase, CNKI, Wan Fang Date and VIP databases on Tai Chi intervention of fall prevention and movement function of patients with Parkinson's disease (Randomize) Controlled Trial (RCT), and the retrieval time was from the beginning of each database to June 12, 2021. The retrieval strategy adopts the combination of subject words and free words, supplemented by manual retrieval to obtain relevant literature.

Main outcome(s): A total of 13 studies involving 627 patients with Parkinson's disease were included. The results of meta-analysis showed that tai chi exercise could improve BBS (MD=-4.16,95%CI (-6.19,

-2.13), P < 0.01) score, TUG (SMD=0.60,95%CI(0.36,0.85), P < 0.00001), walking speed (SMD=-0.60,95% CI(-1.07,-0.13),P < 0.05) and UPDRS III (MD=4.10,95%CI(1.32,6.87),P < 0.05).

Quality assessment / Risk of bias analysis: In this study, the methodological quality of the included literatures was evaluated using RevMan5.3 software and the Cochrane Collaboration Risk of Bias tool. By two independent researchers from "random sequence generation", "allocation concealment", "blindness" of researchers and subjects, "blind" to evaluate personnel, "selective report", "data is complete", "selective reports" seven aspects to "low risk", "high risk", "not clear" three levels of score, if encounter differences, A third researcher is discussed and decided.

Strategy of data synthesis: RevMan 5.3 software was used to combine effect sizes, and the source of heterogeneity was explored through subgroup analysis and sensitivity analysis. P value and I2 were used for heterogeneity test. If there was no statistical heterogeneity among the results (I2≤50%, P>0.10), a fixed-effect model was used for Meta-analysis; otherwise, a random-effect model was used. Processing data were continuous data, and effect size MD=95% confidence interval. Stata16.0 was used to test for publication bias.

Subgroup analysis: Patients with Parkinson's disease course, Taijiquan training frequency and training time were analyzed by subgroup.

Sensitivity analysis: RevMan 5.3 software was used to combine effect sizes, and the source of heterogeneity was explored through subgroup analysis and sensitivity analysis.

Country(ies) involved: China.

Keywords: Tai chi chuan; Parkinson's disease; Fall prevention; Motor function.

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