

The Impact of Mind-Body Exercises on Motor Function, Depressive Symptoms, and Quality of Life in Parkinson's Disease: A Systematic Review and Meta-Analysis

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Introduction:

- Individuals with Parkinson's disease (PD) have motor symptoms, such as walking and balance problems, resting tremor, slowness of movement, muscle stiffness, and other characteristic motor symptoms, and non-motor symptoms such as sleep disorders, cognitive decline, fatigue, anxiety, and depression.
- Treatment for PD has emphasized medication-based intervention, particularly levodopa, and other specific medications to address motor and non-motor symptoms with varying results.
 1. Long-term medication use can also cause side-effects for many patients.
- It is imperative to find other effective PD treatment programs.
 1. Exercise can be used to assist in rehabilitation of PD patients.
 2. Studies have reported that dance, resistance training, and stretching exercises are effective in improving the function of patients with PD.
 3. Mind-body exercise is a low-cost, easy-to-operate, low-impact, moderate-intensity aerobic exercise that emphasizes both skeletal muscle stretching and relaxation, physical coordination training, and emphasizes on breathing and movement control.
 4. The perfect combination of body and mind can have a positive effect on the body and mind, suitable for the rehabilitation of chronic diseases, especially for non-motor symptoms (depression, stress, pain, cardiovascular disease, and high blood pressure).
- The common forms of physical and mental exercises mainly include:
 1. Yoga:
 - Yoga combines physical postures, breathing techniques, and meditation or relaxation. It has a meditative and spiritual core.
 2. Tai chi:
 - A series of gentle physical exercises and stretches.
 3. Health Qigong:
 - A technique used to assist with coordinated body-posture and movement, breathing, and meditation. It involves moving meditation, coordinating slow-flowing movement, deep rhythmic breathing, and a calm meditative state of mind.
- Research interventions have focused on Tai Chi, Yoga, and Health Qigong and their influence on PD motor function, depressive symptoms, and quality of life.

Purpose of the study:

- This study, for the first time, combines these three forms of mind-body exercise and quantifies their effects to assess safety and potential benefits, in order to provide scientific evidence for their clinical use in improving motor function, depressive symptoms, and quality of life in patients with Parkinson's Disease.

Methods:

Procedures and Participants:

- A search of electronic databases was conducted to identify articles that incorporated Parkinson's Disease, physical and mental exercise, Tai Chi/Tai ji, Yoga, Qigong/Health Qigong.
- The inclusion criteria were as follows:
 1. randomized controlled trial (RCT) and controlled clinical trial (CCT);
 2. target population diagnosed as PD;
 3. type of intervention: experimental group included in the form of mind-body exercises (Tai Chi, Yoga, Health Qigong), compared with different types of control groups (i.e., no-intervention control group, placebo, waiting-list, routine care, and non-sports control group);
 4. outcome indicators include test data on motor function, depressive symptoms, and quality of life; (5) published in Chinese or English; (6) subject age over 40 years. Experimental intervention time was four weeks or more.

Results:

- The search strategy identified a total of 799 related references. After deleting duplicates and non-topic-related literature and after evaluating the full-text of the quality of the study, 22 clinical trials were included in the analyses.
- Significant effects on motor and non-motor symptoms were found:
 - The physical and mental movements of Tai Chi, Yoga, and Health Qigong had significant effects on the **improvement of PD motor function**.
 - Tai Chi, Yoga, and Health Qigong have a significant effect on the **improvement of PD functional walking ability**.
 - Tai Chi, Yoga, and Health Qigong significantly **improved PD balance function**.
 - Tai Chi, Yoga, and Health Qigong **improved PD depressive symptoms**.
 - Tai Chi, Yoga, and Health Qigong have a significant effect on the **improvement of PD quality of life**.

Conclusions:

- In addition to medication-based intervention for PD, non-medication-based intervention can have significant benefits to the well-being of individuals with PD.
- Mind-body exercises were found to have significant improvements in motor function, depressive symptoms, and quality of life in patients with Parkinson's disease, and can be used as an effective method for clinical exercise intervention in PD patients.

