INPLASY PROTOCOL

To cite: Liu et al. Effects of different traditional Chinese exercises on pulmonary function in stable COPD patients: A Network Meta-analysis. Inplasy protocol 202330117. doi: 10.37766/inplasy2023.3.0117

Received: 29 March 2023

Published: 29 March 2023

Corresponding author:
Weitao Zheng

zhengweitao@whsu.edu.cn

Author Affiliation:
Wuhan Sports University.

Review Stage at time of this submission: **Completed but not published.**

Conflicts of interest:
None declared.

Effects of different traditional Chinese exercises on pulmonary function in stable COPD patients: A Network Meta-analysis

Liu, PR[1]; Li, YJ[2]; Xiao, YJ[3]; Liu, G[4]; Zou, Y[5]; Ma, Y[6]; Zheng, WT[7].

Review question / Objective: **Participants (P): patients with COPD diagnosed according to the 2011 revised version of the Global Initiative for Chronic Obstructive Pulmonary Disease and in the stable phase, without psychiatric disorders and cognitive impairment, aged 18-90 years, with no restriction on gender. (I): Received one of the traditional Chinese exercises which included Taichi, Wuqinxi, Liuzijue, and Baduanjin. Comparison (C): the conventional treatment group included breathing training, routine care, medication, and health guidance. Outcomes (O): Primary outcome measures in this study assessed the pulmonary function, including the forced expiratory volume in the first second (FEV1); the first second forced vital capacity percentage of expected value (FEV1%), and the ratio of the first second forced vital capacity of forced vital capacity (FEV1/FVC). FEV1, FEV1%, and FEV1/FVC are clinically used to measure pulmonary function. Study design (S): Randomized controlled trials (RCTs).**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 March 2023 and was last updated on 29 March 2023 (registration number INPLASY202330117).

INTRODUCTION

Review question / Objective: **Participants (P): patients with COPD diagnosed according to the 2011 revised version of the Global Initiative for Chronic Obstructive Pulmonary Disease and in the stable phase, without psychiatric disorders and cognitive impairment, aged 18-90 years, with no restriction on gender. (I): Received one of the traditional Chinese exercises which included Taichi, Wuqinxi, Liuzijue, and Baduanjin. Comparison (C): the conventional treatment group included breathing training, routine care, medication, and health guidance. Outcomes (O): Primary outcome measures in this study assessed the pulmonary**

function, including the forced expiratory volume in the first second (FEV1); the first second forced vital capacity percentage of expected value (FEV1%), and the ratio of the first second forced vital capacity of forced vital capacity (FEV1/FVC). FEV1, FEV1%, and FEV1/FVC are clinically used to measure pulmonary function. Study design (S): Randomized controlled trials (RCTs).

Rationale: Previous studies have confirmed that pulmonary rehabilitation programs effectively improve symptoms in the stable phase of COPD. Exercise training, an essential component of pulmonary rehabilitation, can enhance respiratory function, improve motor function, and reduce rehospitalization and mortality. However, traditional training exercises are heavy and monotonous, reducing COPD patients' compliance. Therefore, choosing an exercise modality that can stimulate patients' interest and participation initiative is crucial. Traditional Chinese health-preservation exercises are low to moderate-intensity aerobic exercises with flexible and versatile forms, widely used in the rehabilitation of chronic diseases, primarily based on Taichi, Wuqinxi, Liuzijue, and Baduanjin. Relevant studies have confirmed the efficacy of the above four traditional Chinese health-preservation exercises in rehabilitating stable COPD patients, and relevant Meta-analyses have been published successively. All the above evidence was obtained by comparing each exercise group with the control group (conventional treatment group), but valid comparisons between different exercise groups still need to be made. In contrast, Network Meta-analysis enables direct or indirect comparison of multiple interventions. Therefore, this study will use Network Meta-analysis to compare the effect of different traditional Chinese health-preservation exercises on the pulmonary function of stable COPD patients to provide practical, evidence-based clinical support.

Condition being studied: Chronic obstructive pulmonary disease (COPD) is a preventable chronic respiratory disease mainly characterized by incompletely reversible airflow limitation and impaired respiratory function. In addition, it is affected by systemic manifestations and co-morbidities, which may lead to extrapulmonary manifestations such as systemic inflammation, heart failure, depression, osteoporosis, and lung cancer, reducing patients' quality of life and increasing their probability of death. COPD has become a world public health problem due to the increased mortality of COPD caused by the aging of the global population. Some studies have shown that COPD will become the third leading cause of death worldwide by 2023. Therefore, it is essential to develop effective prevention and treatment measures.

METHODS

Search strategy: Randomized controlled trials on traditional Chinese health-preservation exercises of COPD patients in ProQuest, Scoups, PubMed, web of science, The Cochrane Library, CNKI, Wanfang, and CSTJ databases were systematically searched, and the search time was controlled from the time of library construction to September 2022. The search strategy was a combination of subject terms and free words.
The search terms include Taichi, Qigong, Baduanjin, Wuqinxi, Liuzijue, and Chronic Obstructive Pulmonary Disease. The specific search formula (using Pubmed as an example): (Tai Chi OR Taiji OR qigong OR Baduanjin OR Wuqinxi OR Liuzijue) AND (COPD OR Chronic Obstructive Pulmonary Disease OR Chronic Obstructive Lung Disease).

Participant or population: Patients with COPD diagnosed according to the 2011 revised version of the Global Initiative for Chronic Obstructive Pulmonary Disease and in the stable phase, without psychiatric disorders and cognitive impairment, aged 18-90 years, with no restriction on gender.

Intervention: Received one of the traditional Chinese exercises which included Taichi, Wuqinxi, Liuzijue, and Baduanjin.

Comparator: The conventional treatment group included breathing training, routine care, medication, and health guidance.

Study designs to be included: Randomized controlled trials (RCTs).

Eligibility criteria: Eligibility CriteriaInclusion CriteriaThe inclusion criteria were set based on participants, intervention, comparison, outcomes, and study design (PICOS) strategy. Participants (P): patients with COPD diagnosed according to the 2011 revised version of the Global Initiative for Chronic Obstructive Pulmonary Disease and in the stable phase, without psychiatric disorders and cognitive impairment, aged 18-90 years, with no restriction on gender. (I): Received one of the traditional Chinese exercises which included Taichi, Wuqinxi, Liuzijue, and Baduanjin. Comparison (C): the conventional treatment group included breathing training, routine care, medication, and health guidance. Outcomes (O): Primary outcome measures in this study assessed the pulmonary function, including the forced expiratory volume in the first second (FEV1); the first second forced vital capacity percentage of expected value (FEV1%), and the ratio of the first second forced vital capacity of forced vital capacity (FEV1/FVC). FEV1, FEV1%, and FEV1/FVC are clinically used to measure pulmonary function. Study design (S): Randomized controlled trials (RCTs).Exclusion criteria The exclusion criteria adopted in the present study are as follows: (1) reviews, abstracts, and conference reports;(2) lack of outcome measures; (3) multiple publications of the literature; (4) unavailability of full text; (5) concurrent medication therapy during the intervention.

Information sources: The search was performed in the following databases: ProQuest, Scoups, PubMed, web of science, The Cochrane Library, CNKI, Wanfang, and CSTJ databases, without using a filter for publication date or language. Two clinical trial registry databases were consulted (clinicaltrials.gov and https:// www. who. int) to identify any potential unpublished studies. The searches took place in September 2022.

Main outcome(s): Primary outcome measures in this study assessed the pulmonary function, including the forced expiratory volume in the first second (FEV1); the first second forced vital capacity percentage of expected value (FEV1%), and the ratio of the first second forced vital capacity of forced vital capacity (FEV1/FVC). FEV1, FEV1%, and FEV1/FVC are clinically used to measure pulmonary function.

Quality assessment / Risk of bias analysis: The methodological quality of the included literature was evaluated by two reviewers independently according to the risk bias assessment criteria established by the Cochrane Handbook. If disagreements were encountered, they were resolved through collective discussion by the study team.

Strategy of data synthesis: Stata 14.0 and GeMTC 0.14.3 were used for statistical analysis and graphical plotting. The outcome measures were continuous variables and assessed by the same instrument, so the weighted mean difference (WMD) and 95% confidence interval (CI) were taken as effect sizes. Statistical analysis was performed by GeMTC 0.14.3, using four chains for simulation and setting the number of iterations to 50,000, with the first 20,000 used for annealing; the inconsistency between direct and indirect evidence was tested using the nodal partitioning method, and P>0.05 indicated that the inconsistency was not significant; the convergence between included studies was indicated by the Potential Scale Reduced Factor (PSRF), and when the PSRF was close to 1, it indicates good convergence. A high confidence level can be obtained by using the consistency model analysis. Cumulative ranking probability plots were drawn to rank the efficacy of each intervention. Stata 14.0 were used to draw the Network evidence diagram. Comparison-corrected funnel plots were

used to assess whether there was a small sample effect or publication bias in the included studies.

Subgroup analysis: No.

Sensitivity analysis: No.

Country(ies) involved: China.

Keywords: traditional Chinese exercises; chronic obstructive pulmonary disease; pulmonary function; Network Meta-analysis.

Contributions of each author:

Author 1 - Peirong Liu.
Email: 2022420020@whsu.edu.cn
Author 2 - Yongjie Li.
Email: yjl20210201@163.com
Author 3 - Yajun Xiao.
Email: 2022420021@whsu.edu.cn
Author 4 - Gan Liu.
Email: liugan@whsu.edu.cn
Author 5 - Yao Zou.
Email: 2011020@whsu.edu.cn
Author 6 - Yong Ma.
Email: mayong@whsu.edu.cn
Author 7 - Weitao Zheng.
Email: zhengweitao@whsu.edu.cn

Support: This study was supported by the East Lake Scholars Sponsorship Program of Wuhan Sports University in China (2017), Science and Technology Team Foundation of Wuhan Sports University (21KT02), the 14th Five-Year-Plan Advantageous and Characteristic Disciplines (Groups) of Colleges and Universities in Hubei Province [(2021)05].