INPLASY

INPLASY202590022

doi: 10.37766/inplasy2025.9.0022

Received: 7 September 2025

Published: 7 September 2025

Effect of Liuzijue exercise in stable patients with chronic obstructive pulmonary disease: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - The funding organizations played no role in the design of the study and data collection, analysis, or interpretation.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590022

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 September 2025 and was last updated on 7 September 2025.

INTRODUCTION

Review question / Objective The influence of Liuzijue on the quality of life and lung function for the stable chronic obstructive pulmonary disease patients.

Condition being studied Chronic obstructive pulmonary disease (COPD) is a progressive respiratory illness that is characterized by aggravating respiratory symptoms and airflow obstruction with high morbidity and mortality. Dyspnea is experienced by COPD patients to varying degrees, resulting in low exercise tolerance and significant influence on patients' quality of life. COPD treatment has become an enormous social and economic burden on individuals, families and society, placing significant pressures on healthcare systems. Therefore, how to further treat COPD so as to improve the quality of life of patients has been widely concerned by society and the medical community. Pulmonary rehabilitation is recommended by the Global Initiative for Chronic Obstructive Lung Disease (GOLD) as a valuable non-pharmacological intervention for COPD patients. It is a comprehensive intervention, which includes but not limited to exercise training, education, self-management, and psychological support. As an essential component of this program, breathing exercises are defined as any breathing technique that can allow deeper inspiration or expiration, or otherwise alter the rate, pattern, or rhythm of respiration. Liuzijue, as a traditional Chinese exercise, have been widely used in elderly patients with moderate-to-severe COPD. It consists of a combination of respiratory patterns that involves abdominal breathing and pursed lip breathing. As one of low to moderate intensity mind-body exercises, Liuzijue may have similar health benefits with common pulmonary rehabilitation, but experience lower energy metabolism for middle-aged and elderly patients with COPD patients. However, there was still insufficient evidence to identified or evaluated the effects of Liuzijue exercise in pulmonary function, clinic symptoms and life quality of stable COPD

patients. The evidence of Liuzijue exercise for COPD maintains controversial.

METHODS

Search strategy A computerized literature search was conducted to identify the potential eligible studies from six electronic databases, including PubMed, EMBASE, Chinese Scientific Journal Database, Chinese Biomedical Database, China National Knowledge Infrastructure and Wanfang Database (from their inceptions to August 2025) without restriction to regions, publication, or languages. The search strategies searches were employed using a combination of Medical Subject Heading (MeSH):
#1 (((((Lung Diseases, Obstructive[MeSH Terms]) OR (Lung Disease, Obstructive)) OR (COPD)) OR (Obstructive Lung Disease)) OR (Obstructive Pulmonary Disease)) OR (Pulmonary Disease, Obstructive)
#2 (((Liuzijue) OR (Qigong)) OR (traditional Chinese exercises)) OR (Chinese exercise)
#3 #1 And #2.

Participant or population 1.the disease was diagnosed with stable phase of chronic obstructive pulmonary disease using the Global Initiative for Chronic Obstructive Lung Disease (GOLD).
2.elderly under the age of 80.

Intervention Liuzijue exercise was used as a primary intervention component with other treatment.

Comparator A control condition in other treatment was administered, including drug therapy, routine activities and health education.

Study designs to be included Randomized controlled trials.

Eligibility criteria To be included in this review, study evaluation was based on the following inclusion criteria: (1) randomized controlled trials. (2) the disease was diagnosed with stable phase of chronic obstructive pulmonary disease using the Global Initiative for Chronic Obstructive Lung Disease (GOLD). (3) Liuzijue exercise used as a primary intervention component with other treatment, as well as a control condition in other treatment was administered, including drug therapy, routine activities and health education. (4) The outcome measures targeted in our study were pulmonary function, including forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), the forced expiratory volume in one second/predicted value ratio (FEV1%pred) and the ratio of forced expiratory volume in the first second to forced vital capacity (FEV1/FVC), cardio-respiratory assessment (such as 6-minute walk distance) and quality of life (such as St. George respiratory questionnaire and chronic obstructive pulmonary disease assessment test).
Trials that met any of the following criteria were excluded: (1) the studies without specific data or statistical data; (2) duplicated publications; (3) unavailable full text or missing data. The literature selection was performed by two reviewers independently. Any disagreements were resolved by discussion between two reviewers.

Information sources A computerized literature search was conducted to identify the potential eligible studies from six electronic databases, including PubMed, EMBASE, Chinese Scientific Journal Database, Chinese Biomedical Database, China National Knowledge Infrastructure and Wanfang Database (from their inceptions to August 2025) without restriction to regions, publication, or languages.

Main outcome(s) The outcome measures targeted in our study were pulmonary function, including forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), the forced expiratory volume in one second/predicted value ratio (FEV1%pred) and the ratio of forced expiratory volume in the first second to forced vital capacity (FEV1/FVC), cardio-respiratory assessment (such as 6-minute walk distance) and quality of life (such as St. George respiratory questionnaire and chronic obstructive pulmonary disease assessment test).

Quality assessment / Risk of bias analysis The methodological quality of studies were assessed using the Cochrane Collaboration's tool. Selection bias were were assessed, including sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting, and other sources of bias. Two researchers independently assigned risk of bias as high, low or unclear of each domains according to information provided by the protocol. Inconsistency were resolved through discussion between the two reviewers or arbitrated by a third reviewer.

Strategy of data synthesis Statistical analysis was conducted by Review Manager version 5.3 (RevMan 5.3). For the continuous outcomes, the between-groups mean differences of the studies were converted to the the standardized mean difference (MD) with 95% confidence intervals (CIs)

in the meta-analysis. Heterogeneity was mainly wielded to judge whether study components came from the same entity, which was determined by using the I2 statistic. The random model was applied to estimate the effect size in the presence of heterogeneity (I2≥50%). Otherwise, the fixed model was utilized (I2<50%). Funnel plots were generated to detect the potential publication bias if more than 10 studies were included for a meta-analysis. Stata 12.0 software was further applied to test publication bias by Egger test.

Subgroup analysis Due to the significant heterogeneity, a subgroup analysis was conducted.

Sensitivity analysis For further verification, we implemented a sensitivity analysis by Stata14.0 to assess the stability and reliability.

Language restriction Language limits will not be imposed on the search.

Country(ies) involved China.

Keywords Liuzijue exercise; Efficacy; Chronic obstructive pulmonary disease ; Meta-analysis.

Contributions of each author

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