

INPLASY PROTOCOL

Effects of Taijiquan on glucose and lipid metabolism in middle-aged and elderly diabetic patients: A protocol for systematic review and meta-analysis

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Review Stage at time of this submission: Piloting of the study selection process.

Conflicts of interest:
None.

Review question / Objective: To study the effects of Taijiquan on the glucose and lipid metabolism in middle-aged and elderly diabetic patients, and to provide a basis for the clinical promotion of taijiquan to improve the glucose and lipid metabolism in diabetic patients.

Condition being studied: Diabetes mellitus is a group of metabolic diseases characterized by chronic blood glucose (blood glucose) increase, characterized by high disability rate, high fatality rate and high complications. In recent years, the number of cases of diabetes increasing trend, the international diabetes federation (IDF) according to a report in 2019 global 463 million 20-79 - year - old adults with diabetes, the number of elderly patients with diabetes is as high as 135.6 million, the prevalence was 19.3%, the number of elderly patients with diabetes are among the world's first in China based on diabetes serious morbidity, mortality, and brings to the society and family burden, to seek the effective method to treat diabetes is imminent. Some researchers use taijiquan exercise reduce glucolipid metabolism in diabetes patients, although there have been some scholars use the method of analysis for tai chi chuan the glucolipid metabolism in patients with type 2 diabetes, but remain divided the research conclusion, this study used taijiquan glucolipid metabolism in patients with senile diabetes system evaluation on the randomized controlled trials and meta-analysis, objective evaluation to the effect of taijiquan glucolipid metabolism in patients with senile diabetes effect.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 December 2020 and was last updated on 22 December 2020 (registration number INPLASY2020120107).

INTRODUCTION

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metabolism in middle-aged and elderly diabetic patients, and to provide a basis for the clinical promotion of taijiquan to

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METHODS

Search strategy: Literature retrieval was conducted in Electronic databases in Both Chinese and English, such as Web of Science, PubMed, Cochrane Library, SioMed, EMBASE, Google Scholar, China National Knowledge Infrastructure, Baidu Academic, CQVIP, and Wanfang. Keywords: Tai Chi, Tai Ji, Tai Chi Exercise, Tai Ji Chuan, Tai Ji Quan, Tai Chi Chuan, Tai Chi Quan, and Diabetes, Diabetes, Type 2 Diabetes, Type 1 Diabetes Mellitus. The search data is limited to the date of the establishment of the database to August 1, 2020.

Participant or population: Included population :(1) middle-aged and elderly people; (2) diabetic patients Exclusion groups :(1) children and adolescents;(3) Non-diabetic patients.

Intervention: Interventions are mainly tai chi (e.g., Chen Tai Chi, Yang tai Chi, etc.).

Comparator: The control group did not take exercise intervention, the control group members can maintain the original daily exercise habits.

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

Eligibility criteria: Inclusion criteria :(1) a randomized controlled trial (RCTS) must also explore the relationship between tai chi and diabetes;(2) The study included at least one outcome measure of a diabetes-related indicator;(3) The study population was middle-aged and elderly patients with confirmed diabetes. Literature screening: The inclusion of the literature in this study was completed independently by two researchers according to the inclusion and exclusion criteria of the literature. By gradually reading the title, abstract and full text, the literature irrelevant to this study was screened out. In the process of literature selection, if there is any disagreement, the three researchers will discuss and jointly decide whether to include the literature, and finally determine the qualified literature to be included in this study. The encoding of the included literature was independently completed by two researchers, and the basic information extracted included: first author's name, year of publication, characteristics of subjects, means of intervention, intervention cycle, frequency of intervention, type of outcome indicators, etc. If two researchers encounter differences in the process of extracting basic information, the three researchers discuss and resolve the differences together.

Information sources: Literature was searched in electronic databases of Chinese and English, such as Web of

Science, PubMed, Cochrane Library, SioMed, EMBASE, Google Scholar, China National Knowledge Infrastructure, baidu Academic, CQVIP, wanfang, etc. 761 articles were retrieved, delete after repeated literature of different database, 351 articles, further reading, the title and abstract out remaining 54 articles after 297 published papers, the reading of the literature of the rest of the full text after screen, eliminate 15 non randomized controlled trial study, research of the study design and 5 20 after the data is missing or cannot use research into 14 articles were finally.

Main outcome(s): Fasting blood glucose, glycosylated hemoglobin, total cholesterol, triglycerides, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, Experiment intervention before and after the intervention drew blood from the experimental group and control group members immediately after extraction of frozen processing, with high-speed refrigerated centrifuge separation serum, with professional equipment (for example, Olymplus Au400, Japan) on fasting blood sugar, triglyceride, total cholesterol, high-density lipoprotein cholesterol, low density lipoprotein cholesterol were analyzed.

Additional outcome(s): None.

Data management: Inclusion criteria :(1) a randomized controlled trial (RCTS) must also explore the relationship between tai chi and diabetes;(2) The study included at least one outcome measure of a diabetes-related indicator;(3) The study population was middle-aged and elderly patients with confirmed diabetes.Literature screening: The inclusion of the literature in this study was completed independently by two researchers according to the inclusion and exclusion criteria of the literature. By gradually reading the title, abstract and full text, the literature irrelevant to this study was screened out.In the process of literature selection, if there is any disagreement, the three researchers will discuss and jointly decide whether to include the literature, and finally determine

the qualified literature to be included in this study. The encoding of the included literature was independently completed by two researchers, and the basic information extracted included: first author's name, year of publication, characteristics of subjects, means of intervention, intervention cycle, frequency of intervention, type of outcome indicators, etc.If two researchers encounter differences in the process of extracting basic information, the three researchers discuss and resolve the differences together.

Quality assessment / Risk of bias analysis: The quality of the included qualified literature is assessed according to the PEDro scale. The PEDro scale has 11 dimensions: assessment of eligibility criteria, randomization, allocation concealment, similar baselines, participant blindness, instructor blindness, evaluator blindness, 85% + retention, analysis of treatment intentions, intergroup comparison, point measurement, and variability measurement.The first score of the scale is not included in the total score. The total score of the scale is 10. The total score ≥ 7 is high quality, 5-6 is medium quality, and ≤ 4 is low quality.

Strategy of data synthesis: It is planned to use Stata14.0 software for Meta analysis.The analysis module mainly includes: combination effect size, publication bias analysis, heterogeneity analysis, sensitivity analysis, and subgroup analysis.As the outcome indicators included in this paper are all continuous variables, and the measurement units of outcomes measured in each study are different, standardized mean difference (WMD) is adopted for measurement data.Heterogeneity test was required for all the included studies before the combined effect size, and χ^2 test was used for inter-study heterogeneity test. When there was statistical homogeneity between the included studies ($I^2 < 50\%$), the fixed effect model was used for meta-analysis;When the statistical heterogeneity between the included studies was large ($I^2 \geq 50\%$), the random-effects model was used for Meta

analysis. When I^2 is greater than 75%, it is considered to have high heterogeneity. The source and control of heterogeneity were subgroup analysis and publication bias were funnel plot and Egger's test.

Subgroup analysis: According to the characteristics of research intervention that may cause heterogeneity differences, the included study's exercise cycle, exercise frequency, single exercise time, exercise items and gender were subgroup analyzed to explore the best exercise program to improve glucose and lipid metabolism in middle-aged and elderly diabetic patients. The motion period was divided into two groups (> 12 weeks and less than or equal to 12 weeks). The motion frequency was divided into two groups (> 3 or less). The individual exercise time was divided into two subgroups (> 30 min and ≤ 30 min). The interventions were divided into three groups (Yang's Tai Chi group, Chen's Tai Chi group and mixed Tai Chi group). Meta analysis of stata14.0 will complete the subgroup analysis.

Sensitivity analysis: The sensitivity analysis was carried out by removing individual studies one by one to evaluate the stability of the overall effect size

Language: English.

Country(ies) involved: China.

Keywords: Taijiquan; Diabetes; Glycolipid metabolism.

Contributions of each author:

Author 1 - Yanv Liu - The author contributed to the conception and design of the review. Author 1 applied the search strategy. Author 1 applied the selection criteria and completed study quality assessment of all randomized controlled trials. Author 1 analyzed and interpreted data. Author 1 wrote this manuscript and edited this manuscript.

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