

INPLASY

Effectiveness of Exercise Interventions in Diabetic Patients: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202460003

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 02 June 2024 and was last updated on 02 June 2024.

INTRODUCTION

Review question / Objective To evaluate the effectiveness of exercise interventions on health outcomes in diabetic patients through a systematic review and meta-analysis.

Condition being studied Diabetes Mellitus.

METHODS

Participant or population Adults diagnosed with diabetes mellitus.

Intervention Various exercise interventions, including aerobic, resistance, and combined exercise programs.

Comparator Standard care or no exercise intervention.

Study designs to be included Randomized controlled trials (RCTs) and controlled clinical trials (CCTs).

Eligibility criteria Studies must involve adults diagnosed with diabetes mellitus, utilize exercise interventions as the primary treatment, include a comparator group (standard care or no exercise), and report on relevant health outcomes. Only studies published in peer-reviewed journals will be considered.

Information sources Databases to be searched include PubMed/Medline, Scopus, Embase, CENTRAL, SPORTdiscus, Global Health and ICTRP. Additional sources may include reference lists of relevant articles and trial registries.

Main outcome(s) Primary outcomes will include changes in glycemic control (HbA1c levels), body weight, and insulin sensitivity. Secondary outcomes may include cardiovascular fitness, quality of life, and incidence of diabetes-related complications.

Author 2 - Yanqi Xu.
Author 3 - Min Sun.

Quality assessment / Risk of bias analysis The quality of the included studies will be assessed using the Cochrane Risk of Bias tool for randomized controlled trials. This includes evaluating selection bias, performance bias, detection bias, attrition bias, reporting bias, and other potential sources of bias.

Strategy of data synthesis Data from the included studies will be synthesized using a meta-analytic approach. Effect sizes will be calculated for each outcome, and pooled using a random-effects model to account for variability between studies. Heterogeneity will be assessed using the I^2 statistic, and subgroup analyses will be performed to explore potential sources of heterogeneity. Sensitivity analyses will be conducted to evaluate the robustness of the findings. Results will be presented in forest plots and summarized narratively when meta-analysis is not feasible.

Subgroup analysis Subgroup analyses will be conducted based on the type of diabetes (Type 1 vs. Type 2), type of exercise intervention (aerobic, resistance, combined), duration and intensity of the exercise program, age, gender, baseline glycemic control, and duration of diabetes.

Sensitivity analysis Sensitivity analyses will be performed to assess the robustness of the meta-analysis results. This will involve excluding studies with high risk of bias, analyzing the impact of study quality on the findings, and testing the effects of different statistical models (e.g., fixed-effects vs. random-effects models). Additionally, sensitivity analyses may include the exclusion of outliers and re-running the analysis to ensure the stability and reliability of the results.

Language restriction English.

Country(ies) involved China.

Keywords Diabetes Mellitus, Exercise Interventions, Glycemic Control, Aerobic Exercise, Resistance Training, Physical Activity, Health Outcomes.

Contributions of each author

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