

INPLASY PROTOCOL

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None.

Effects of Isometric Resistance Exercise of Lower Limbs on Intraocular Pressure and Ocular Perfusion Pressure of Healthy Adults

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Review question / Objective: Increase in intraocular pressure and decrease in ocular perfusion pressure are the main risk factors for glaucoma. This review aimed to analyze the potential impact of lower limb isometric resistance exercise on intraocular pressure and intraocular pressure.

Condition being studied: Meta-analysis has shown that aerobic exercise can reduce intraocular pressure, but the physiological change mechanism between resistance exercise and aerobic exercise is very different. There is no Meta-analysis of the effect of resistance exercise on intraocular pressure.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 January 2021 and was last updated on 19 January 2021 (registration number INPLASY202110073).

INTRODUCTION

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effect of resistance exercise on intraocular pressure.

METHODS

Participant or population: Healthy people.

Intervention: Isometric resistance exercise.

Comparator: Single-arm.

Study designs to be included: According to the "Cochrane Handbook", we systematically searched the literature on the relationship between isometric resistance exercise and IOP in Pubmed, Web of Science, EBSCO and Scopus databases until December 31, 2020. The search terms used were "exercise", "train", "isometric", "intraocular pressure", "ocular perfusion pressure".

Eligibility criteria: 1. Research design: Including randomized controlled trials and non-randomized controlled trials. 2. Participants in the experiment: Health adults (over 18 years old). 3. Intervention: Experimental participants have a complete training process and receive isometric resistance exercise intervention, and can observe or detect the occurrence of the outcome. 4. Sample size: There is no definite requirement for sample size.

Information sources: Pubmed, Web of Science, EBSCO and Scopus.

Main outcome(s): Intraocular Pressure and ocular perfusion pressure.

Quality assessment / Risk of bias analysis: The evaluation method of cohort studies in the Newcastle-Ottawa Quality Assessment Scale was used to evaluate the methodological quality of each study. The scale assigns 4 points for experiment participants, 2 points for comparability, and 3 points for results. 9 points reflect the highest quality. If there are differences in data extraction, the original author will also be consulted.

Strategy of data synthesis: Two researchers used standard data extraction

tables to collect the following information: original data of the article, including the name of the first author, year of publication, sample size, gender, age, intervention measures and intervention time, intraocular pressure, ocular perfusion pressure (before and after intervention). If the required data is not given in the original text, contact the author or obtain it from the existing data.

Subgroup analysis: According to the subjects' gender and intervention time, subgroup analysis was performed. The results showed that the subjects were all male, and the increase in IOP was 0.77 (0.37, 1.18), and $I^2=91.4\%$. The subjects were both men and women, and the increase in IOP was 1.21 (0.40, 2.01), and $I^2 = 16.7\%$. After 1 minute, 2 minutes and 6 minutes of intervention, the IOP increases were 2.16 (1.03, 3.29), 2.71 (1.76, 3.65), and 0.43 (0.09, 0.76), respectively. The subjects were all male, OPP increased 2.17 (0.99, 3.36), $I^2=81.2\%$. The subjects were both men and women, OPP increased by 3.47 (1.37, 5.58), $I^2 = 91.6\%$.

Sensibility analysis: Sensitivity analysis was conducted by alteration of the analysis model, selection of effect size, and exclusion of individual studies. The meta-analysis results did not change significantly after sensitivity analysis; hence, the results were credible.

Language: English.

Country(ies) involved: China, Malaysia.

Keywords: Resistance exercise; Intraocular pressure; Ocular perfusion pressure.

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