INPLASY PROTOCOL

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

Conflicts of interest: None declared.

The effects of aerobic exercise on the prevention and recovery of COVID-19 and its variant strains: a protocol for systematic review and meta-analysis

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Review question / Objective: What effect does aerobic exercise has on physiological and psychological parameters of COVID-19 and its variant strains patients?

Condition being studied: Patients with COVID-19 and its variant strains are more physically and mentally restricted than the healthy population and need to implement medication and other interventions to enhance their physical and mental health. Aerobic exercise appears to have a better preventive and rehabilitative effect on COVID-19 and its variant strains patients. In order to incorporate aerobic exercise into the healthcare plan of patients with COVID-19 and its variant strains, it is necessary to clarify the parameters of its customized prescription.

INTRODUCTION

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COVID-19 and its variant strains, it is necessary to clarify the parameters of its customized prescription.

METHODS

Search strategy: COVID-19; Delta; Omicron; Aerobic exercise; China knowledge net work, Web of science, Scopus, Google scholar, PubMed database.

Participant or population: COVID-19 and its variant strains patients.

Intervention: The experimental group received Continuous supervised aerobic exercise after medical treatments, with a frequency of 3 times per week or more, and duration equal or more than a month.

Comparator: The control group take usual care (only received the medical treatments and no-exercise or other intervention).

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

Eligibility criteria: Only (a) randomized controlled trials (RCT s), which compare aerobic exercise with non-exercise, or other intervention in the control group, (b) studies with COVID-19 and its variant strains patients at all stages of the infection, with or without comorbidities, at the age of 18 or older, and (c) the application of aerobic exercise with a frequency of 3 times per week or more, and duration equal or more than a month, were considered eligible for inclusion.

Information sources: Web of science, Google scholar, PubMed database, Scopus, China knowledge net work have been searched. Not accessible study texts, were requested by the corresponding author via email.

Main outcome(s): Improvement of lung function through aerobic exercise leading to prevention of infection with COVID-19 and recovery after cure. Variables such as cardiopulmonary function parameters, immunology, hemodynamics and systolic blood pressure will be assessed. In addition, the patient's psychological state is also included in the assessment.

Quality assessment / Risk of bias analysis: The risk of bias was assessed using the Cochrane collaboration's tool for assessing the risk of bias. The following risk of bias components were assessed: (a) selection bias, (b) performance bias , (c) detection bias , (d) attrition bias , and (e) selective reporting bias.

Strategy of data synthesis: Use quantitative analysis to synthesize data from study results. Using Continuous, inverse variance, and random effects models with RevMan 5.4 software. Means and standard deviations will be used to test for mean differences between the aerobic exercise and control conditions. The mean difference between the control conditions. Confidence interval (CI) of 95%. The I2 statistic will be used to assess heterogeneity between studies. We will consider a statistically significant heterogeneity result when $p < 0.10$ and the significance level will be set at $p < 0.05$.

Subgroup analysis: Subgroup analyses were conducted between exercise and control conditions, including a) Maximal Oxygen Uptake, b) immunological and c) psychological evaluation scores. The effect size of the study will also take into account factors such as exercise modality, duration of intervention, age and region.

Sensitivity analysis: Sensitivity analysis is used to analyses study quality, intervention methods, publication type, etc. Sensitivity analysis should be performed if there is a large amount of heterogeneity. Sensitivity analysis uses a case-by-case approach to exclude literature.

Country(ies) involved: China.

Keywords: COVID-19, aerobic exercise, systematic review, protocol.

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