

INPLASY PROTOCOL

To cite: Zhou et al. Effects of Different Physical Activity on Brain-Derived Neurotrophic Factor: A Systematic Review and Bayesian Network Meta-Analysis. Inplasy protocol 202250164. doi: 10.37766/inplasy2022.5.0164

Received: 29 May 2022

Published: 29 May 2022

Corresponding author:
Bojun Zhou

phdzhou@qq.com

Author Affiliation:
South China Normal
University.

Support: None.

Review Stage at time of this submission: Preliminary searches.

Conflicts of interest:
None declared.

Effects of Different Physical Activity on Brain-Derived Neurotrophic Factor: A Systematic Review and Bayesian Network Meta-Analysis

Zhou, BJ¹; Wang, ZS²; Liu, TCY³; Wei, Y⁴; Li, B⁵.

Review question / Objective: The purpose of this study was to examine the effects of five exercise modalities on brain neurotrophic factors in healthy and non-healthy populations, with the aim of identifying the best intervention modality to provide more comprehensive and valid evidence for research on exercise for brain health and rehabilitation of patients with neurological disorders, and also to provide input for clinical decision making and health policy development; the study method chosen was a randomized controlled trial.

Condition being studied: Cognitive decline and patients with degenerative neurological diseases. Brain neurotrophic factor can keep brain cells active and play a role in promoting the survival, differentiation and growth of brain neurons, and plays a key role in promoting brain development and plasticity in children and adolescents. The purpose of this study is to address the controversy of the effect of exercise on the neurotrophic factor of the brain.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 May 2022 and was last updated on 29 May 2022 (registration number INPLASY202250164).

INTRODUCTION

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METHODS

Participant or population: Mainly patients with cognitive decline and degenerative neurological diseases and a small percentage of healthy people.

Intervention: Aerobic exercise;Resistance Training;High Intensity Interval Training; Aerobic exercise AND Resistance Training.

Comparator: Aerobic exercise;Resistance Training;High Intensity Interval Training;Aerobic exercise AND Resistance Training; No intervention.

Study designs to be included: RCT.

Eligibility criteria: Study design: randomized controlled trial on exercise intervention for serum BDNF levels; Study subjects: all healthy and non-healthy populations; Interventions: aerobic training, resistance training, aerobic combined with resistance training, high-intensity interval training, combination training, and other exercise therapies; Outcome indicators: BDNF.

Information sources: CNKI、PubMed、Embase、Scopus、Medline、Web of Science 和Cochrane Library, We also retrieved American Clinical Trial Registry and Chinese Clinical Trial Register.

Main outcome(s): Changes in serum brain neurotrophic factor concentration.

Quality assessment / Risk of bias analysis: Following the Cochrane Collaboration tool, They were evaluated from random sequence generation、allocation concealment、blinding of participants personnel、blinding of outcome assessment、incomplete outcome data, selective report、other bias.

Strategy of data synthesis: Quantitative merging and plotting of data using Addis and R software.

Subgroup analysis: Not.

Sensitivity analysis: Not.

Language: English.

Country(ies) involved: China.

Keywords: Exercise intervention, Network meta-analysis, Brain-Derived Neurotrophic Factor, Brain health.

Contributions of each author:

Author 1 - Bojun Zhou.

Email: phdzhou@qq.com

Author 2 - Zhisheng Wang.

Email: zhisheng@m.scnu.edu.cn

Author 3 - Timon Chengyi Liu.

Author 4 - Yuan Wei.

Email: weiyuan0808@163.com

Author 5 - Bing Li.

Email: 1353880391@qq.com