Vilniaus universitetas
Medicinos fakultetas

STUDENTŲ MOKSLINĖS VEIKLOS TINKLO *LXXVI* KONFERENCIJA

Vilnius, 2024 m. gegužės 13–17 d.

PRANEŠIMŲ TEZĖS

Leidinį sudarė
VU MF Mokslo ir inovacijų skyriaus
inovacijų specialistas Kristijonas PUTEIKIS ir
administratorė Rima DAUNORAVIČIENĖ

VILNIAUS
UNIVERSITETO
LEIDYKLA

2024

ISSN 2783-7831 (skaitmeninis PDF)

INVESTIGATING THE EFFECTS OF MODERATE EXERCISE ON BDNF AND IRISIN LEVELS IN HEALTHY YOUNG PEOPLE

Author. Philipp Juergen Dieter KALKA, V year; Damian Luka MIALKOWSKYJ, V year; Julija Elena KOEHNKE, VI year; Niklas–Immanuel HAUSTEIN, V year.

Supervisor. Prof. dr. Vaiva HENDRIXSON, VU MF Institute of Biomedical Sciences, Department of Physiology, Biochemistry, Microbiology and Laboratory Medicine.

Background and Aim. The aim of this study is to investigate the alterations in Brain-Derived Neurotrophic Factor (BDNF) and Irisin levels following moderate exercise. We seek to discover the relationship between these myokines and exercise-induced physiological responses, understanding their potential roles in mediating exercise benefits on cognitive and metabolic health. Endeavoring the association between BDNF, Irisin, and exercise could provide valuable insights for developing targeted interventions aimed at enhancing brain function and metabolic health through exercise.

Materials and Methods. Fifteen volunteers were investigated after obtaining approval from the Vilnius Regional Bioethics Committee Nr. 2021/11-1393-866, with written informed consent provided by all participants. Anthropometric measurements were collected using an ACCUNIQ BC300 scale, and participants engaged in controlled exercise sessions utilizing a SPARTAN Sports Magnetic 400 bike-ergometer. Blood samples were procured from the participants at three specific time points: prior to the exercise regimen, as well as at 60 minutes and 24 hours post–exercise session. Cytokine levels were measured using appropriate Elabsciense ELISA detection kits, with assays performed at the Research Laboratory of the Centre for Laboratory Medicine of VUL Santaros Klinikos.

Results. The study comprised 15 participants (n=15), with a mean age of 25.467 years and a mean BMI of 23.993. Self-assessed health scores indicated a mean of 8.133, reflecting generally good health among the participants. The mean BDNF level in the sample collected 1 hour after moderate exercise was found to be 13.935 ng/ml, while the mean Irisin level in the same sample was 129.10 ng/ml. A Wilcoxon signed–rank test revealed a significant association between these variables (p-value = 0.00116).

Conclusions. This study investigated the alterations in Brain–Derived Neurotrophic Factor (BDNF) and Irisin levels following moderate exercise in a cohort of 15 participants. Significant differences were observed in both BDNF and Irisin levels, indicating potential associations between exercise intensity and the secretion of these myokines. Further research is needed to fully understand the implications of these findings on cognitive and metabolic health. Nonetheless, our study contributes to the growing body of literature exploring the intricate relationship between exercise and neurotrophic factors, offering insights that may inform targeted interventions aimed at enhancing overall health and well–being through exercise.

Keywords. Cytokines; Irisin; BDNF; Exercise; Myokines.