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STUDENTŲ MOKSLINĖS VEIKLOS TINKLO LXXVI KONFERENCIJA



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PRE-EXERCISE IRISIN LEVELS WITH POST-TRAINING BDNF LEVELS: INSIGHTS INTO MYOKINE RELEASE DYNAMICS

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Background and aim. This research paper takes an in-depth look at the intricate relationship between pre-exercise myokine irisin and brain-derived neurotrophic factor (BDNF) baseline levels measured 24 hours after a short, intense 25-minute exercise session. Both irisin and BDNF are critical components in the regulation of neurotrophic and metabolic processes in the human body. Understanding the behaviour of these myokines, in particular investigating the correlation between pre-exercise irisin levels and post-exercise BDNF levels, provides deep insights into the complexity of the human neurotrophic and metabolic system.

Materials and methods. Fifteen participants were recruited for this study, who strictly adhered to ethical protocols, including informed consent. Blood samples were taken before and after training and analysed using enzyme-linked immunosorbent assay (ELISA) kits to determine irisin and BDNF levels. In addition, basic health parameters such as anthropometric measurements, a comprehensive body composition analysis, age and self-reported health values were collected to provide contextual information.

Results. The study included a total of 15 participants ($n=15$) with an average age of 25.467 years and an average BMI of 23.993. The subjective self-assessment of health values resulted in a mean value of 8.133, which indicates that the participants were in good health overall.

The analysis of the data provided significant results. The mean irisin level was determined to be 135.08 ng/ml, while the mean BDNF level was 15.812 ng/ml. Statistical analysis using the Wilcoxon signed-rank test revealed a significant association in both irisin and BDNF levels ($p = 0.004272$), indicating a recognisable training effect.

Conclusions. The results of this study show significantly higher pre-exercise irisin levels than post-exercise BDNF levels, indicating inherent differences in baseline neurotrophic and metabolic profiles. Despite the relatively small sample size of the study, the results provide a basic understanding of the relationship between irisin and BDNF in response to exercise and warrant further investigation into the underlying mechanisms and broader implications for neurotrophic and metabolic health.

Keywords. Irisin; Brain-derived neurotrophic factor (BDNF); pre-exercise levels; neurotrophic factors; metabolic health.