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EXAMINING IMPACT OF INTENSE EXERCISE ON BRAIN DERIVED NEUROTROPHIC FACTOR (BDNF) AND IRISIN LEVELS IN YOUNG ADULTS

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Background and Aim. This study aims to delve into the effects of intense exercise on Brain–Derived Neurotrophic Factor (BDNF) and Irisin concentrations, two key myokines implicated in mediating exercise–induced physiological changes. Understanding the alterations in these markers following intense physical activity is crucial for elucidating their roles in modulating cognitive function and metabolic health. By elucidating the intricate relationship between intense exercise and BDNF/Irisin levels, this study seeks to provide valuable insights for the development of targeted exercise interventions aimed at enhancing overall well–being.

Materials and Methods. Fifteen participants were recruited for this study following approval from the relevant ethics committee, with each participant providing informed consent. Anthropometric measurements were obtained using an ACCUNIQ BC300 scale, capturing vital parameters such as height, weight, and body mass index (BMI). Participants engaged in controlled intense exercise sessions using a SPARTAN Sports Magnetic 400 bike–ergometer, with blood samples collected one hour post–exercise. These blood samples were processed using standard venipuncture techniques and analyzed for BDNF and Irisin levels using enzyme-linked immunosorbent assay (ELISA) detection kits.

Results. Upon analyzing the data obtained from the fifteen participants (n=15), significant findings were observed. The mean BDNF level measured 1 hour after intense exercise was determined to be 15.806 ng/ml, while the mean Irisin level in the same sample was recorded at 145.19 ng/ml. Wilcoxon signed–rank test revealed significant association between BDNF and Irisin levels, with a p-value of 0.01245 indicating the presence of a true effect.

Conclusions. This study provides valuable insights into the effects of intense exercise on BDNF and Irisin levels, suggesting their potential roles in modulating cognitive function and metabolic health. The observed alterations in these neurotrophic factors following intense physical activity underscore the importance of exercise as a modifiable lifestyle factor for enhancing overall well–being. Further research is warranted to elucidate the mechanisms underlying these changes and to explore the potential therapeutic applications of targeted exercise interventions in promoting neurotrophic and metabolic health.

Keywords. Brain–Derived Neurotrophic Factor (BDNF); Irisin; Intense Exercise; Neurotrophic Factors; Metabolic Health.