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ASSESSING INTERPLAY BETWEEN BRAIN-DERIVED NEUROTROPHIC FACTOR AND IRISIN LEVELS DURING HIGH INTENSITY EXERCISE

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Background and aim. The aim of this study was to investigate the association between baseline pre-exercise Irisin levels and Brain-Derived Neurotrophic Factor (BDNF) concentrations one hour post high-intensity exercise, as the interplay between myokines during exercise is not well understood BDNF and Irisin are two essential myokines involved in neurotrophic and metabolic regulation. Examining the concentrations of these myokines before and after exercise provides valuable insight into the neurotrophic and metabolic profiles that individuals exhibit at the start of exercise and whether and how these responses influence subsequent exercise interventions.

Materials and methods. Fifteen participants were recruited for this study and all procedures conformed to ethical guidelines and informed consent was obtained from each individual. Pre-exercise blood samples were collected from participants who had not exercised for at least 48 hours prior to testing. These samples were analyzed for BDNF and Irisin levels using enzyme-linked immunosorbent assay (ELISA) kits. In addition, anthropometric measurements, comprehensive body composition analyses, the age of the participants and their self-assessed health status were documented to assess their baseline health condition.

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. Analysis of the data collected from the fifteen participants (n=15) showed a mean pre-exercise BDNF level of 17.034 ng/ml and an Irisin level of 135.08 ng/ml. Significant results were obtained in terms of pre-exercise Irisin levels and BDNF levels one hour after high-intensity exercise. Using a Wilcoxon signed-rank test, significant association between these variables were found in both BDNF and Irisin levels, with a p-value of 0.008362, indicating the presence of a true effect.

Conclusions. This study provides valuable insight into baseline Irisin and BDNF levels one hour after high-intensity exercise. The discrepancies found in the significantly elevated BDNF levels after high-intensity exercise compared to Irisin suggest an increased release of the myokines after exercise. Further studies are required to clarify the mechanisms underlying these differences and to investigate their implications for neurotrophic and metabolic health

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