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The regular practice of running remarkably increases plasma BDNF levels in middle-aged and elderly amateur runners

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Brain-Derived Neurotrophic Factor (BDNF) is a member of the neurotrophins family known to promote synaptic plasticity, induces neurogenesis and neuronal survival. BDNF also exert a key role in learning and memory abilities. Furthermore, reduced levels of BDNF have been linked to depression, anxiety and the physiopathology of neuropsychiatric and neurodegenerative conditions such as Schizophrenia and Parkinson's disease, respectively. Importantly, peripheral BDNF levels have been used as a biomarker in several clinical studies, since this neurotrophin is able to cross the blood-brain barrier in a bi-directional manner and seems to present a strong correlation with the central nervous system fluid levels. Experimental and clinical studies have demonstrated that different exercise protocols remarkably increase BDNF levels in both healthy and patient populations. However, this response in well-trained individuals has been poorly explored. Among the various categories of physical activity available, running is probably the oldest performed by humans. Therefore, this study aimed to investigate the effect of regular running practice on BDNF levels in plasma of middle-aged (aged 30-50 years old) and elderly (aged ≥ 60 years old) healthy individuals. Then, amateur runners (EXE groups) and sedentary individuals (SED groups) were submitted to a basal blood collection (15 ml). Plasma BDNF levels were determined by the ELISA method, from Sigma–Aldrich commercial kit (catalog number RAB0026) according to the manufacturer's instructions. A significant increase in BDNF levels in EXE individuals compared to the SED group was observed in both groups, young and elderly (p=0.036, p=0.007, respectively). These findings might suggest that the increased levels of BDNF might be linked to runners' phenotype, regardless of age.

Biography

Maristela P. Souza completed her PhD in Cardiovascular Physiology at the Department of Physiology of the Federal University of Rio Grande do Sul, Brazil. Works as a professor and researcher in the field of exercise physiology at the Methodist University Center IPA, and a student of the music course at the same institution. Her research interest includes the influence of running on physiological aspects and the quality of life of different populations.

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