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Aquatic physical activity alters plasmatic BDNF levels in individuals with Parkinson's disease

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Increasing evidence suggests that physical exercise have beneficial effects on the progression of Parkinson's disease (PD), alleviating the main symptoms and improving the performance in activities of daily living. Moreover, it was reported recently that different exercise protocols are able to increase the peripheral levels of brain-derived neurotrophic factor (BDNF), improving the health status of PD individuals. In this sense, aquatic physical exercise emerges as a proposal able of improving the quality of life of individuals with PD, since besides the physical activity by itself, the heated water eventually produces a feeling of relaxation, lightness and well-being during the performance of physical activities. However, the molecular mechanisms related to these beneficial outcomes are not elucidated. Thus, we investigated the short and long term effects of a program of aquatic physical activity on plasmatic BDNF levels of individuals with PD. The physical activity protocol was carried out during a month with two sessions per week (1 hour/session). Temporal BDNF levels were evaluated in plasma at different times: pre-intervention, immediately after the first session, 48 hours after the first session and one month after the first session. The data of all individuals analyzed together (n=9) demonstrated a significant decrease in BDNF levels 48 h after pre-intervention period ($p<0.05$). When data were divided by gender, we observed a significant decrease in BDNF levels evaluated at 48 h in comparison with the time immediately after the first session for both gender ($p<0.05$). In addition, our results showed that BDNF levels observed in female group (n=4) were significantly increased when compared to male group (n=5) at the time point of 48 h ($p<0.05$). No significant changes were observed on BDNF levels immediately after the first session (acute) or after one month (chronic). Our results demonstrated that the program of aquatic physical activity altered plasmatic BDNF levels in a time dependent and gender specific manner.

Biography

Silvia da Silva is currently pursuing her Post Graduation in the field of Biosciences and Rehabilitation at Centro Universitário Metodista-IPA, Porto Alegre, RS, Brazil.

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