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## Influence of Combined Physical Exercise on Cognition and Modulation of Epigenetic Markers in Institutionalized Elderly

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**Introduction:** The elderly population has increased exponentially in recent decades. With this, many elderly people unable to live independently start to live in long-term institutions. Evidence suggests that epigenetic factors, mainly reduced levels of histone acetylation and the Brain Derived Neurotrophic Factor (BDNF) in the hippocampus, are associated with the aging process and the emergence of neurodegenerative diseases. The practice of physical exercise is a non-pharmacological strategy capable of minimizing and preventing cognitive impairment, improving memory and learning processes. Studies demonstrate the benefits of this practice in institutionalized elderly people, but the molecular mechanisms involved are still unclear.

**Objective:** to evaluate the effect of a combined exercise protocol on cognition and epigenetic markers in peripheral blood of institutionalized elderly.

**Method:** This was a quasi-experimental interventional longitudinal clinical study, composed of 10 elderly people with a mean age of  $73.38 \pm 11.28$  years, both sexes. The volunteers were submitted to a combined physical exercise protocol for 8 weeks, 2 times a week, 1 hour session. The assessments were carried out before and after the intervention, and the assessment instruments were Mini Mental State Examination (cognition) and blood collection (epigenetic markers; global acetylation of histones H3 and H4 and BDNF levels).

**Results:** Preliminary results showed significant improvement in cognition after intervention with exercise; the global levels of histone H3 acetylation did not differ between the two moments evaluated.

**Conclusion:** A combined physical exercise protocol like this was able to improve cognition in institutionalized elderly. The acetylation of histone H3 did not show any differences, however the relationship between exercise specificity and modulation of histone acetylation is already elucidated in the literature. We hope that, as cognition has improved global levels of histone H4 and BDNF acetylation will have positive results.

**Biography:** Master's student at Federal University of Rio Grande do Sul –UFRGS Physiotherapy course students at IPA Methodist University Center Professor at IPA Methodist University Center