



The influence of the association between non-invasive cerebral stimulation and physical exercises with high cognitive demand in cognitive and functional variables of the elderly with light cognitive commitment

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To verify the effect of a non-invasive brain activity modulation technique associated with exercise with high cognitive demand on cognitive variables and brain activity in the elderly with mild cognitive impairment. n = 18 elderly people of both genders, aged 60 or over, associated with the Alzheimer's and Parkinson's Disease Center in the city of Campos dos Goytacazes / RJ and diagnosed with mild cognitive decline. Control Group (CG, n = 8); Experimental Group (EG, n = 10). The participants were evaluated with the Digit Spam and Motor Reaction Time tests and the relative power of the Teta, Delta and Alpha brain waves at points F7, F8, P3 and P4 through an electroencephalogram. The CG continued to attend the cognitive stimulation group meetings normally. The EG was conducted to an appropriate space where alpha brain waves were stimulated through a binaural beating protocol associated with motor activities that exercised different cognitive functions. The intervention was carried out in weekly 40-minute sessions (15 min of brain stimulation + 25 min of cognitive function training) for 7 weeks. After this period, the individuals in the CG and EG groups had the variables evaluated again. In the Digit Spam test, the experimental group improved 15.1% in the post-intervention assessment, while in the control group the improvement was 11.03%. Both groups registered an increase in the speed of motor reaction. However, unlike the working memory test, the difference between the groups was more pronounced (56.6%), with the worst performance being in the control group with an increase of 87.4%, while in the experimental group the increase was 37.9%. The participants in the control group registered an increase in theta power in the parietal areas (19.1%), and in the Delta wave power both in the parietal areas (75.6%) and in the frontal areas (26.6%). The experimental group had a decrease in the Theta wave power in the parietal areas (-1.8%), and also in the frontal areas (-7.6%), and the increases recorded in the Delta wave power were smaller than those recorded on the power of that same wave in the experimental group. In both groups the power of the Alpha wave decreased. However, the reduction in power in the control group in the parietal (-25.8%) and frontal (-14%) areas was greater than that recorded in the experimental group in the same areas, -4.2% and -7.3%, respectively. It is concluded that, although not conclusive and statistically insignificant, the results of the EG were descriptively better than those of the CG and corroborate with other studies that point to greater efficiency of the associated physical and cognitive stimulation.

Palavras-chave: Aging. Insanity. Combined Training.

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