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Poster Presentation

Low-Intensity Aerobic Training for Along with Blood Flow Restriction on Amount of Protein BDNF in Soleus and EDL Muscles as well as the Sciatic Nerve in Aged Male Rats

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Abstract

Neurotrophins are a group of nerve growth factors with their protein structure. These proteins play an important role in the growth and metabolism of many cells and maintain nerve, muscle, synaptic potentials, and also helps reduce depression and apoptosis. The aim of this study was to evaluate the effect of 10 weeks low-intensity aerobic training and limited blood flow to the amount of protein neurotrophic factor derived from the brain (BDNF) in the soleus, extensor long fingers muscles (EDL) as well as sciatic nerve in rats the elderly. 60 elderly male Wistar rats (23-24 months) were chosen which their weigh were 355 to 481 grams. They were divided into 6 groups randomly, blood flow restriction (BFR), exercise with blood flow restriction (BFR + Ex), sham (Sh), sham with exercise (Sham + Ex), control (Ctl) and exercise (Ex). They were trained with a low aerobic exercise (15 m / min) for 1 hour, 5 days a week for 10 weeks then were sacrificed 48 hours after the last training session. The samples of muscle and the sciatic nerve were separated immediately and they were put in a solid nitrogen. and Then, they were preserved at -80 ° C. The protein samples were detected by Western Blotting method. The statistical analysis was conducted with SPSS software version 18. Data normal distribution determined by Shapiro – Wilk test. Comparisons were performed among different groups by one-way ANOVA and post hoc Tukey's test. P values less than 0.05 were considered as statis tically significant. The results have shown that BDNF protein just decreased in the EDL muscle for BFR + Ex group compared with Ctl and Sh groups ($P<0.05$) significantly. In addition, in soleus muscle BFR + Ex group decreased in compare with all groups (groups Ctl, Sh and BFR $P< 0.001$ and Ex and Sh + Ex ($p<0.05$) significantly. moreover, Ex, Sh + Ex groups in comparison with Ctl and Sh have decreased significantly ($P< 0.001$). On the other hand, the sciatic nerve of BFR + Ex group, in comparison with all groups, increased significant ($P< 0.001$). This study has indicated that this type of exercise can effect on the BDNF protein in slow and fast witch muscles. Furthermore, BFR+Ex, as a training method, can influence on nerve and muscle positively.

Keywords: Endurance Training, Neurotrophic Factors, Reduced Blood Flow- Aging

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