

Anaerobic gymnastics exercises evoke systemic brain-derived neurotrophic factor in obese and normal-weight children

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Abstract

Background

Studies have shown that lactate injections increase brain-derived neurotrophic factor (BDNF) levels. Therefore, it can be assumed that exercises that are anaerobic and produce lactate affect the level of BDNF. Accordingly, this study aimed to evaluate and compare the effects of anaerobic gymnastics exercise on salivary BDNF levels in obese and normal-weight boys.

Materials and Methods

Sixty 8 to 12 years old boys who enrolled in the elementary level of gymnastics participated in this study and were randomly divided into Four groups ((obese experimental group, n=15), (obese control group, n= 15), (normal weight experimental group, n= 15) and (normal weight control group, n=15)). Experimental groups performed 45 minutes anaerobic gymnastics exercise including 10-minute warming up, 30-minute main exercises, and 5 minutes cool down, 3 times per week for 8 weeks. Body composition characteristics and the levels of salivary BDNF were measured before and after 8 weeks of training.

Results

According to the results we found the Significant changes ($P<0.05$) following AGE in obese group (BDNF = +33.80%, $p=0.002$, weight= -8.09%, $p=0.001$, body fat%= -12.81, $p=0.001$, body fat weight= -19.38, $p=0.001$, lean body weight= -3.20, $p=0.001$) and in normal-weight group just (BDNF= +31.36%, $p=0.003$). Significant differences were found among obese and normal-weight groups in weight, body fat%, body fat weight, and BDNF ($p<0.05$).

Conclusion

Eight weeks anaerobic gymnastic training induces an increase in salivary BDNF levels in obese and normal-weight groups. Moreover, we demonstrated that weight decreased after our training protocol in obese children.

Keywords

Pediatric obesity ; growth factors ; weight loss



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