



## Exercise Biochemistry Review

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### Changes in serum indexes of obese adolescents induced by closed weight loss summer camp

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**Objective** A series of experiments were conducted to explore the changes of some serum indexes in obese adolescents induced by closed weight loss summer camp.

**Methods** The 12 to 18 year old obese adolescents (BMI  $\geq$  28), who volunteered to participate in the Haoqian summer camp, were selected for 4 weeks of closed summer camp. The main activities of the summer camp included compound exercise (aerobic exercise + resistance exercise, 3 times / day, 6 days / week), Dietary intervention, fun activities and health knowledge lectures. In order to explore the changes of serum indexes of obese adolescents, glycolipid metabolism index, fatty acid components, inflammatory factors and oxidative stress markers were analyzed before and after 4 weeks.

**Results** (1) The 4 week weight loss summer camp had no significant effect on blood sugar, but it can obviously reduce the level of serum total cholesterol, triglyceride and low density lipoprotein cholesterol, and significantly improve the abnormal lipid metabolism.

(2) The level of serum total saturated fatty acid ( $P < 0.05$ ), total monounsaturated fatty acid ( $P < 0.01$ ) and total polyunsaturated fatty acid ( $P < 0.05$ ) in obese adolescents were decreased significantly in the 4 week weight loss summer camp.

(3) The 4 week weight loss summer camp significantly reduced serum inflammatory factors IL-6 and TN F- alpha in obese adolescents, increased the level of adiponectin per body fat mass ( $P < 0.05$ ), and relieved the inflammatory state of the body.

(4) After 4 weeks weight loss summer camp, the serum total antioxidant capacity T-AOC, antioxidant enzyme catalase CAT, superoxide dismutase SOD and glutathione peroxidase GPx activity in obese adolescents were significantly enhanced ( $P < 0.05$ ); oxidative damage markers 8-iso-PGF $2\alpha$ , 8-OHdG, and MDA levels were not significantly changed ( $P > 0.05$ ), while protein oxidation product protein carbohydrate PC content decreased significantly ( $P < 0.05$ ).

**Conclusions** 4 weeks weight loss summer camp can significantly alleviate the body's lipid metabolism abnormalities, change the serum fatty acid components, reduce the body's inflammatory state, enhance the body's antioxidant capacity, and reduce the body's oxidative damage.