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MUSCLE AND BRAIN ACTIVITY OF A PERSON UNDER THE INFLUENCE OF DIETARY SUPPLEMENTS

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Abstract

Topicality

Modern living conditions are characterized by a high level of physical and psycho-emotional stress, insufficient intake of nutrients and low motor activity, which leads to a decrease in energy metabolism, weakening of muscle tone and cognitive functions. In this regard, of particular interest is the use of dietary supplements (BAA) containing proteins, amino acids, creatine, omega-3 fatty acids, vitamins and trace elements, which play a key role in the regulation of metabolism, energy balance and neural activity. Their study is important both for sports medicine and for the prevention of age-related changes in muscle and brain activity.

Material and methods

The study involved 60 volunteers aged 20 to 45 years without chronic diseases. All participants were divided into three groups: a control group without supplementation, group A - who received creatine and a protein shake, and group B - who took omega-3 fatty acids, B vitamins and magnesium. Cooper's test, assessment of recovery time after exercise, neuropsychological tests (Stroop test, Wechsler memory test, attention stability test), as well as biochemical blood parameters, including the concentration of creatine phosphate, lactate, glucose,

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vitamin B12 and folic acid levels. Statistical processing of the data was carried out by the method of variation analysis with a significance level of $p < 0.05$.

Results of the study

After eight weeks of supplementation, the following results were obtained: Group A showed an 11.8% increase in hand compression strength and a 17.4% reduction in recovery time after intense exercise. Lactate levels decreased by 9.2% after exercise, indicating an improvement in aerobic endurance. Group B showed an improvement in cognitive function: reaction speed in the Stroop test increased by 14.6%, short-term memory indicators - by 12.3%. Vitamin B12 levels increased by 28% and homocysteine levels decreased by 15%, reflecting normalized metabolism and improved nerve conduction. In both experimental groups, participants noted a decrease in fatigue and an increase in concentration, which correlated with a 23% increase in subjective energy potential. No side effects have been recorded.

Findings

The results of the study confirm that the rational use of dietary supplements has a positive effect on both muscle and brain activity. Creatine and protein supplements increase muscle strength and accelerate recovery after exercise, and omega-3 fatty acids and B vitamins help improve cognitive function, memory and concentration. an effective tool for the prevention of fatigue, loss of muscle mass and cognitive impairment. Further studies with larger samples and long-term follow-up are needed to refine the optimal dosages and regimens of supplementation based on gender, age, and physical activity level.