

REGULAR EXERCISE DOES NOT CHANGE LIPID PEROXIDATION LEVELS AND ANTIOXIDANT ENZYME ACTIVITIES IN RAT HIPPOCAMPUS AFTER OCCLUDING CAROTID

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Introduction: The beneficial effects of exercise on the brain have been reported in recent studies. Physical exercise is known to lessen vulnerability to brain damage under different pathologic conditions. The aim of this study was to investigate the protective role of regular exercise on hippocampus in hypoperfusion condition.

Material and Methods: The wistar rats were randomly divided to one four groups, sham (surgery without occlusion), exercise, hypoperfusion, and exercise – hypoperfusion groups. Animals of the exercise groups were made to run on treadmill for one hour once a day for two months. The right common carotid of animals in the exercise – hypoperfusion group was occluded 16 hours after the cessation of exercise. Then the animals were sacrificed at 1 and 24 hour after the occlusion and the hippocampal enzyme activities (catalase and superoxide dismutase) and lipid peroxidation level were measured by ELISA method.

Results: Exercise didn't change significantly the enzyme activities and lipid peroxidation levels in hippocampus of exercise group in comparison with sham ($p>0.05$). The results of hypoperfusion and exercise-hypoperfusion groups were the same. Although exercise reduced lipid peroxidation levels in both right and left hippocampus in compare with hypoperfusion groups, this effect wasn't significant ($p>0.05$). This study showed that hypoperfusion of right hemisphere didn't lead to oxidative stress in hippocampus; it seems that more reduction of blood is needed to investigate the protective role of exercise on antioxidant system.