Changes in markers of oxidative stress after different modalities of physical training in muscle obese mice

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Introduction: Obesity has been associated with alterations in cellular redox state by imbalance between oxidant production and antioxidant defense system. Evidences had shown the association between obesity and chronic oxidative stress. The aim of the study was to examine the effect of three programs of physical training (swimming, running and strength) on parameters of oxidative stress in skeletal muscle of obese mice. Material and methods: Twenty-four mice were used and divided into 4 groups (n=6): control; run; swim; and strength. All animals received the high-fat diet (HFD) and were exposed to tree exercise protocols. The animals were euthanized 48 h after the last session of exercise and the quadriceps was removed for measurement of oxidative stress (superoxide, lipid peroxidation, protein carbonylation, total thiol content, superoxide dismutase-SOD, glutathione peroxidase-GPX and catalase-CAT). Results and Discussion: In the present study, we have demonstrated that the diet-induced animal obesity is closely correlated with muscle oxidative stress markers and that physical training prevents oxidative damage. Production superoxide, lipid peroxidation, and protein carbonylation increased after training run and decreasing swim and strength in relation to untrained animals. The total thiol content decreased run and increasing swim and strength. The in SOD decreased on run and increased swim and strength. The in GPX increased swim and strength. In CAT increased in run and decreased swim and strength. Conclusion: The results suggest that exercise has an important role in reducing oxidative damage in animals exposed to HFD, but this reduction is different according to the type of exercise performed.

Key Words: Obesity., Stress oxidative., Run., Swim., Strength.

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