

Abstract

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Exercise training improves the antioxidant enzyme activity with no changes of telomere length.

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OBJECTIVE: The purpose of this study was to determine the changes of both oxidant and antioxidant levels with exercise training in obese middle-aged women. The association between telomere length and oxidative stress with exercise was also examined.

METHODS: Sixteen obese middle-aged women participated in this study. The subjects were randomly divided into exercise group (EX) and control group (CON). EX performed aerobic exercise training for 6 months. DNA was extracted from leukocytes in peripheral blood and their telomere lengths were measured by real time PCR analysis.

RESULTS: Long-term exercise training decreased body weight and BMI, and increased VO₂ max. Resting levels of erythrocyte glutathione peroxidase activity were higher in EX compared to CON. Superoxide dismutase (SOD) activities were higher after the acute exercise test at mid-intensity in post-exercise training than in the pre-exercise training conditions. The telomere length did not change significantly after the acute exercise test in the pre-exercise training condition in spite of the increased level of malondialdehyde (MDA) as a marker of oxidative stress.

CONCLUSION: In conclusion, antioxidant enzyme activities were increased following long-term exercise training; however, the lengths of telomere in leukocytes were not influenced by both mid-intensity and high intensity of exercise stress.

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