

# **Blood lipid peroxides and muscle damage increased following intensive resistance training of female weightlifters**

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## **Abstract**

The aim of this study was to examine changes in muscle cell injury and antioxidant capacity of weightlifters following a 1-week intensive resistance-training regimen. Thirty-six female subjects participated in this study, and their ages ranged from 18 to 25 years. The sample group included 19 elite weightlifters with more than 3 years of weightlifting training experience, while the control group comprised 17 non-athletic individuals. Compared with non-athletes, weightlifters had significantly lower glutathione peroxidase activity and plasma vitamin C concentrations. Weightlifters also had significantly higher malondialdehyde + 4-hydroxy 2-(E)-nonenal (MDA+4-HNE) and thiobarbituric acid-reactive substance (TBARS) levels and creatine kinase (CK) activity. For weightlifters, the plasma vitamin E level and the activity of superoxide dismutase (SOD) decreased, and CK activity increased significantly ( $P < 0.05$ ) after a 1-week intensive resistance-training regimen. Both the TBARS levels and CK activity returned to values of pre-intensive training after a 2-day rest. The MDA+4-HNE level strongly correlated with CK activity in weightlifters ( $P < 0.05$ ). In conclusion, both long-term exercise training and 1 week of intensive resistance training resulted in increased oxidative stress and cell injury in female weightlifters. Furthermore, proper rest after intensive training was found to be important for recovery.