# Analysis of Antioxidative System Markers' Changes Under the Influence of High Physical Load

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**Background.** The control and management of physical load level during military exercises is an important element of the study process. The high physical load reduces capacity of the inner reserve that manifests as physiological stress with accumulation of oxidative products, which increases risk of trauma and pathological condition. The function of the antioxidative system is essential for improving resistance to oxidative stress.

**Aim.** The aim of the current study was to determine changes of oxidative and antioxidative system elements, as well as to assess possible muscle damage during high intensity physical load.

**Methods.** Participants of study were from 23 to 30 years of age, both genders (male (n=50), female (n=6)). They were tested before physical load and immediately after physical load. We determined the myoglobin concentration level, the antioxidative system activity (catalase activity (CAT), superoxide dismutase activity (SOD), and total antioxidant capacity (TAC) in blood plasma.

**Results.** The high physical load during military exercises did not provoke muscle damage that would be expressed by increasing concentration of myoglobin. We found that concentration of DNA damage marker 8-OHdG diminished, as well as accumulation of $H_2O_2$. The fact pointed out that study group participants adapted to the high level of physical load. Positive finding is the stability of antioxidative system's function. The TAC and SOD markers of the antioxidative system did not decline. The slight diminishing of oxidant level MDA, $H_2O_2$ indicated the active functioning of the antioxidative system. The reserves of the antioxidative system increase that are represented by oxidative stress index diminishes.

**Conclusion.** Comparative analysis of physical fitness level and stress parameters showed that participants with higher physical fitness level have lower-level oxidative stress markers. The analysis of antioxidative system marker changes indicated the coordinated body reaction to high physical load effects.

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