EVALUATION OF THE IMPACT OF PHYSICAL-OPERATIONAL TRAINING ON EXERTIONAL RHABDOMYOLYSIS AND ITS RELATIONSHIP WITH OXIDATIVE STRESS IN MILITARY PERSONNEL ON SPECIAL COURSES

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INTRODUCTION: Intense and/or prolonged physical training can result in adverse effects such as oxidative stress, cell damage and exertional rhabdomyolysis. Myoglobin is a nephrotoxic substance released due to muscle breakdown, contributing to the formation of reactive oxygen species and oxidative stress. This redox imbalance can lead to damage to DNA, proteins and lipids, culminating in cell death. Exertional rhabdomyolysis (ER), characterized by the rupture of muscle fibres and the release of intracellular content such as myoglobin, can aggravate this condition. For diagnosis, we can cite intense muscle symptoms and a significant rise in creatine kinase (CK). In more severe cases, RE can progress to acute kidney injury. **MATERIAL AND METHODS:** Volunteer soldiers from the Brazilian Navy's Special Amphibious Commando Course took part in the study. The mission studied consisted of a 40 km march on sandy terrain (beach) in Rio de Janeiro, the object of our study. The samples (22) were collected in four phases: the first before the start of the activities, the second immediately at the end of the march, the third 24 hours after the end, and the fourth 48 hours. CK was used to assess muscle damage and rhabdomyolysis and malondialdehyde (MDA), carbonylated proteins (CP), and total antioxidant capacity (TAC) were used as biomarkers of oxidative stress. **RESULTS AND CONCLUSION:** 18 individuals developed RE after training, with a significant increase in CK. These values remained high, only returning to baseline values after 48 hours. MDA increased significantly comparing before and post, remaining high after 24 hours. 48 hours later, the averages returned to baseline values. CP levels increased after exercise and fell to levels lower than baseline within 48 hours. TAC showed a significant drop immediately after the activity and remained low until 48 hours later. The data obtained indicate that operational training triggered rhabdomyolysis due to exertion and an immediate increase in oxidative stress levels, but recovery occurred quickly, indicating a good capacity of the homeostatic response and the antioxidant defense system in the group studied.

Palavras-chave: Rhabdomyolysis; Oxidative Stress; Biomarkers; Physical effort; Millitary Health.

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