Influence of different types of exercise on the expression of haem oxygenase-1 in leukocytes

Haem-oxygenase-1 (HO-1) is an antioxidant stress protein that is mainly induced by reactive oxygen species, inflammatory cytokines and hyperthermia. We assessed the influence of different types of exercise on HO-1 expression in leukocytes of the peripheral blood in three groups of male participants: a short exhaustive run above the lactate steady state (n = 15), eccentric exercise (n = 12) and an intensive endurance run (half-marathon, n = 12). Blood samples were taken at rest and up to 24 h after exercise. Blood lactate concentration after exercise was 9.0 +/- 2.1, 3.8 +/- 1.6 and 5.1 +/- 2.2 mmol x l(-1) (mean +/- s) for the exhaustive run, eccentric exercise and half-marathon groups, respectively (P < 0.05). Creatine kinase concentration was highest 24 h after exercise: 133 +/- 91, 231 +/- 139 and 289 +/- 221 U x l(-1) for the exhaustive run, eccentric exercise and half-marathon groups, respectively (P < 0.05). The maximal increase in leukocyte counts after exercise was 11.5 +/- 19.2, 6.2 +/- 1.4 and 14.7 +/- 2.1 x 10(9) x l(-1). There was no change in HO-1 as a result of the short exhaustive run or the eccentric exercise, whereas the half-marathon had a significant stimulatory effect on HO-1-expression in lymphocytes, monocytes and granulocytes (P < 0.001) using flow cytometry analyses. In conclusion, eccentric exercise alone or short-term...
heavy exercise are not sufficient to stimulate the antioxidative stress protein HO-1 in peripheral leukocytes

Stichworte:  
Adult; Creatine Kinase/blood; Exercise/physiology; Heme Oxygenase (Decyclizing)/metabolism; Heme Oxygenase-1; Humans; Lactic Acid/blood; Leukocyte Count; Leukocytes/ enzymology; Male; Membrane Proteins; Physical Endurance/physiology; Running/physiology

Zeitschriftentitel:  
Journal of sports sciences

Jahr:  
2003

Band:  
21

Monat:  
May

Heft / Issue:  
5

Seiten:  
383-9

Volltext / DOI:  
http://doi.org/10.1080/0264041031000071164

Pubmed:  

Print-ISSN:  
0264-0414 (Print) 0264-0414 (Linking)de

TUM Einrichtung:  
Department of Biomechanics in Sports

Occurences:  
- Einrichtungen > Fakultäten > Fakultät für Sport- und Gesundheitswissenschaften > Lehrstühle und Fachgebiete > Professur für Biomechanik im Sport (Prof. Schwirtz) > Zeitschriftenaufsätze