Effects of hydrogen bathing on exercise-induced oxidative stress and delayed-onset muscle soreness

白话标题: 運動後の酸化ストレスおよび遅発性筋痛に及ぼす水素入浴剤を用いた入浴の効果

作者: Takuji Kawamura ; Yuko Gando ; Masaki Takahashi ; Reira Hara ; Katsuhiko Suzuki ; Isao Muraoka

出版类型: Journal Article

关键字: hydrogen (H_2); bathing; oxidative stress; delayed-onset muscle soreness; downhill running

来源: Japanese Journal of Physical Fitness and Sports Medicine 2016;65(3):297-305

国家 Japan

语言: Japanese

摘要: Several studies have reported that molecular hydrogen (H_2) acts as a therapeutic medical gas owing to scavenging reactive oxygen species (ROS). However, little is known about effects of H_2 on exercise-induced oxidative stress. The purpose of this study was to investigate the effects of weekly hydrogen bathing on exercise-induced oxidative stress and delayed-onset muscle soreness (DOMS). Nine healthy and active young men participated in this study, and each subject performed hydrogen bathing trial and placebo bathing trial in a crossover design. The subjects performed downhill running (8 % decline) at 75 % peak oxygen uptake (VO_2peak) for 30 min, and each subjects conducted hydrogen or placebo bathing for 20 min, respectively, 1-6 days after downhill running. Before and after exercise, we measured visual analogue scale (VAS) and collected blood samples (Pre- and 5 min, 60 min after the end of bathing, 1day, 2days, 3days, 7days after downhill running). Blood sample analyses include creatine kinase (CK), myoglobin (Mb), malondialdehyde (MDA), reactive oxygen metabolites (d-ROMs), biological antioxidant potential (BAP), myeloperoxidase (MPO), interleukin-6 (IL-6), interleukin-17a (IL-17a) and lactate concentrations. Weekly hydrogen bathing had no effects of exercise-induced oxidative stress and muscle damage. On the other hand, hydrogen bathing significantly reduced DOMS (VAS) 1 and 2days after downhill running (p=0.033). These findings suggest that hydrogen bath after downhill exercise can be effective for reduction of DOMS.