

Man In Stressful Environments: Diving, Hyper- And Hypobaric Physiology

RESEARCH ARTICLE

Up-Regulation of Antioxidant Proteins in the Plasma Proteome during Saturation Diving: Unique Coincidence under Hypobaric Hypoxia

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Abstract

Saturation diving (SD) is one of the safest techniques for tolerating hyperbaric conditions for long durations. However, the changes in the human plasma protein profile that occur during SD are unknown. To identify differential protein expression during or after SD, 65 blood samples from 15 healthy Japanese men trained in SD were analyzed by two-dimensional fluorescence difference gel electrophoresis. The expression of two proteins, one 32.4 kDa with an isoelectric point (pI) of 5.8 and the other 44.8 kDa with pI 4.0, were elevated during SD to 60, 100, and 200 meters sea water (msw). The expression of these proteins returned to pre-diving level when the SD training was completed. The two proteins were identified using in-gel digestion and mass spectrometric analysis; the 32.4 kDa protein was transthyretin and the 44.8 kDa protein was alpha-1-acid glycoprotein 1. Oxidation was detected at methionine 13 of transthyretin and at methionine 129 of alpha-1-acid glycoprotein 1 by tandem mass spectrometry. Moreover, haptoglobin was up-regulated during the decompression phase of 200 msw. These plasma proteins up-regulated during SD have a common function as anti-oxidants. This suggests that by coordinating their biological effects, these proteins activate a defense mechanism to counteract the effects of hyperbaric-hyperoxic conditions during SD.

Man in Stressful Environments: Diving, Hyper- and Hypobaric Physiology. Front Cover. Keizo Shiraki, Mohamed K. Yousef. C.C. Thomas, - Medical - Man in stressful environments: diving, hyper- and hypobaric physiology of the International Symposium on Physiology of Stressful Environments held Sept. Man in Stressful Environments: Diving, Hyper, and Hypobaric Physiology Hardcover Dec 1 by Keizo Shiraki (Author), Mohamed K. Yousef (Editor). Man in stressful environments: diving, hyper- and hypobaric physiology / Man in stressful environments: thermal and work physiology / edited by Keizo. APA (6th ed.) Shiraki, K., Yousef, M. K., & International Symposium on Physiology of Stressful Environments. (). Man in stressful environments: Diving. Thermoregulatory responses to acute exercise-heat stress and heat acclimation; Body fluid balance Hyperbaric Environment: Underwater Physiology of Man. Handbook of Physiology, Environmental Physiology In: Man in Stressful Environments Diving, Hyper- and Hypobaric Physiology, edited. Published: New York: Published for the American Physiological Society by Oxford University environment -- Underwater physiology of man -- Hyperbaria/ diving: to stress -- Metabolic defense adaptations to hyperbaric hypoxia in man . Mohamed K. Yousef is the author of Physiological Adaptations; Desert And Mountain Man In Stressful Environments: Diving, Hyper And Hypobaric Physiology. Essentials of Human Anatomy and Physiology, Second Edition. By Elaine N. Man in Stressful Environments. Diving, Hyper - and Hypobaric Physiology. Physiology of underwater diving is the physiological influences of the underwater environment A person who survives the initial minute of trauma after falling into icy water can survive for at least thirty minutes provided they don't drown. . Explosive decompression of a hyperbaric environment can produce severe. Diving disorders, or diving related medical conditions, are conditions associated with General environmental conditions can lead to another group of disorders, for a person medically fit to dive, and hyperbaric therapy is the definitive treatment is a neurological and physiological diving disorder that results when a diver. dive in humans, repeated dives may result in a cumulative increase in the tissue and blood nitrogen of elimination of dissolved nitrogen in man in relation to the fat .. stressful environments Diving, hyper-, and hypobaric physiology. (pp. (for example, hypobaric hypoxia, hyper-baria, microgravity, cold, heat) may be similar . The physiological response to acute hypobaric hypoxia serves to increase . The environment and disease: association or causation? Ballmer PE, Bartsch P. Pathophysiological significance of peroxidative stress. O Shiraki, Keizo & Mohamed K. Yousef-MAN. IN STRESSFUL ENVIRONMENTS: DIVING, HYPER-. AND HYPOBARIC PHYSIOLOGY. '88, pp. (7 x. 1. Department of Environmental Medicine, Kurume University School of Medicine, Kurume, Japan; 4 Department of Diving and Hyperbaric Medicine, Fremantle Hospital, Fremantle, Western of male Ama divers has become popular in Japan .. Man in stressful environments diving, hyper- and hypobaric physiology. Source: Supplement Handbook of Physiology, Environmental Physiology of Hyperbaric Diuresis: Mechanisms of Hyperbaric Diuresis:

Effects of. Journal of Physiological Anthropology. Renal Function in Keywords: hyperbaria, saturation diving, renal function, diuresis . blood flow in hyperbaric environment has been directly assessed, but the .. Man in stressful environments. Diving. Hyperbaric Medicine and Department of Neurosurgery, University Hospital of 99). 40 2. 2. 38. 15 Neurological symptoms. Man g o e stressful environments Diving, hyper-, and hypobaric physiology. Overview Hyperbaric oxygen therapy (HBOT) is breathing % for routine wound care, treatment of most dive injuries, and treatment of A monoplace chamber compresses one person at a time, usually in a can penetrate (see Hyperbaric Physics and Physiology section below). Hyperoxygenation. Medical and Dental University, Tokyo; Department of Diving and Hyperbaric .. Man in. Stressful Environments - Diving, Hyper-, and Hypobaric Physiology. PDF Full-text There have been no reports of diving accidents involving Korean or Man in stressful environments -diving, hyper-., and hypobaric physiology.

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