

Utility of Hypoxic preconditioning in the treatment of Dementia

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Abstract

Physical activity prevents and significantly reduces risks of dementia. Human brain is modifiable into late adulthood. Brain vasculature, neo-cortex, prefrontal lobes and hippocampus are most affected by dementia and might be especially sensitive to the multimodal interventions. Studies confirm efficacy of physical training in dementia prevention and treatment, whereas multiple obstacles remain unresolved. Overcoming a low compliance to physical exercising, particularly among senior and disabled patients, is crucially important. Benefits of physical exercising and even more, would be achieved without applying exercising routine "per se", but using instead a particular mode of controlled intermittent oxygenation: The Intermittent Hypoxic - Hyperoxic Training (IHHT) with the help of specialized breathing training equipment. IHHT employs the hypoxic preconditioning phenomenon, which provides alleviation of oxidative stress, suppression of neuroinflammation, as well as stimulation of neuroplasticity and brain tissue regeneration. IHHT induces mitochondrial rejuvenation and attenuates oxidative/ nitrosative stress, stimulates the endogenous coenzyme Q10, activates hypothalamic-pituitary-adrenocortical axis, activates Hsp 70 pathway, stimulates dopaminergic, norad-renergic, serotonergic neurotransmission, balances immune function and boosts production of neurotrophic factors. The initial improvements (behavior, emotional balance, sleep normalization) usually seen during the first three to five IHHT sessions. Improvement of cognitive and executive functions can take weeks to months. The parameters of morphological recovery of brain tissues can be evaluated approximately 12 months after the beginning of the program. To facilitate intrinsic repair pathways, an individualized supplementation and nutritional program is essential. The author published a case study of an elderly female patient diagnosed with Alzheimer's Dementia in 2007. The integrative IHHT-based treatment began in 2008, resulting in a stable remission of AD and brain recovery, (functional and morphological) achieved during eight months of continuous treatment. The patient continues a maintenance treatment program at home and shows stable cognitive and executive functionality and enjoys a high quality of life.

Biography

Arkadi F Prokopov is founder and Scientific Director of Athletic HighTech S.L. a private company providing education in use of the normobaric intermittent hypoxic-hyperoxic treatment (the IHHT), as well as conducting research and development of related technology. After graduating from the First Setchenov Medical Institute in Moscow, Russia in 1980 he practiced medicine and worked for 10 years in biomedical research on saturation divers and astronauts. Since 1994 he has practiced integrative medicine in Heidelberg, Germany. In 2000 - 2004 he worked in the USA as medical consultant for the IHHT. He has several patents in the field of the IHHT, publishes articles in scientific journals and conducts workshops and seminars for physicians in Germany, Spain and Russia.

Publications

1. Intermittent Hypoxia and Health: From Evolutionary Aspects to Mitochondria Rejuvenation
2. A Case of Recovery From Dementia Following Rejuvenative Treatment
3. Affordable Rejuvenation: A Prototype Facility In Action
4. Theoretical Paper: Exploring Overlooked Natural Mitochondria-Rejuvenative Intervention: The Puzzle of Bowhead Whales and Naked Mole Rats

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