

## ***What are the benefits of Hyperbaric Oxygen (HBO)?***



- A single 2 hour exposure to HBO at 2 ATA doubles circulating CD34+ stem cells - primordial cells targeted to salvage and restore damaged structures. (Thom et al. American Journal of Physiology Nov, 2005)
- After 20 treatments, circulating CD34+ stem cells increase up to eightfold (800%). (Thom et al. American Journal of Physiology Nov, 2005)
- HBO stops Hypoxia Inducible Factor – 1 alpha (HIF-1a) and Hypoxia Inducible Factor – 1 beta (HIF-1B) from binding through the von Hippel-Lindau (VHL) process – the key proteins that create redness, swelling and pain. Carl Nathan Department of Microbiology and Immunology Weil Medical College, Cornell University, Oxygen and the inflammatory cell Nature, Vol. 422 April 17, 2003.
- HBO creates oxygenation in tissue up to 2,000% - this provides immediate help to ischemic and compromised tissue even with marginal blood flow.
- Bacteriocidal and Bacteriostatic – Hyperoxygenation of the tissues enhances killing of bacteria and is critical in curing deep-seated, resistant infection.
- Vasoconstriction – HBO vasoconstricts the small vessels in the body, especially in injured tissues. This decreases edema and is important in the treatment of burns, crush injuries and injured tissue in general.
- Angiogenesis – HBO creates collateral blood flow, critical to injured tissues. Collateral blood vessels are produced by increased fibroblasts leading to collagen. Therefore creating new vascularization in ischemic, injured tissues, these new collateral blood vessels are functional as opposed to the collateral blood vessels from hypoxic tissue, which are non-functional.
- Antibiotic Synergy – HBO creates synergy with the following antibiotics: Fluoroquinolones, aminoglycosides and amphotericin B. These antibiotics use oxygen to transport across cell membranes.
- Decreased Lactic Acid – HBO decreases lactate accumulation in ischemic tissue, which greatly aids healing.
- Decrease in Inflammation – Not only does HBO block the binding of HIF-1alpha and HIF-1beta, but decreases inflammation through several other mechanisms. Cytokine and other inflammatory chemical, including lactic acid, are cleared with HBO. Oxidative Stress Markers and C-Reactive Protein were reduced with HBO. HBO also stimulates the body's immune system to help clear inflammation. (Biomedcentral)