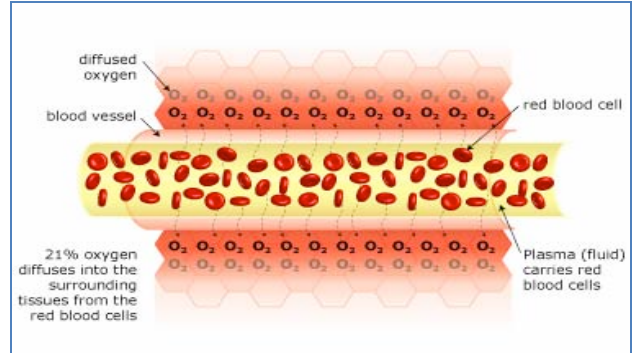
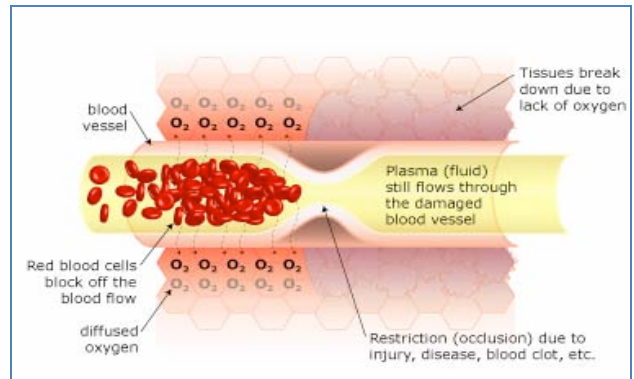


## How Does Hyperbaric Oxygen Work?

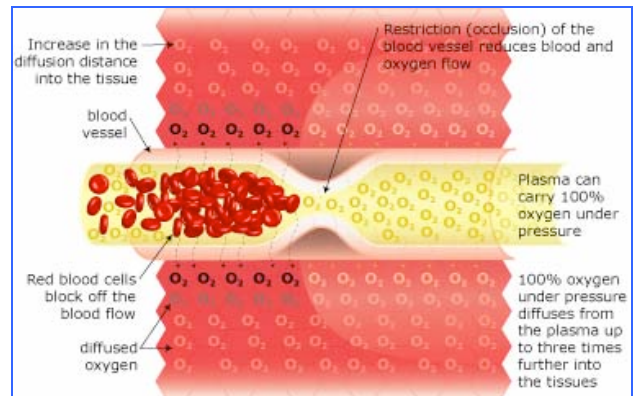
**Normal Blood Flow:** There is 21% oxygen in the air that we breathe, and our lungs transfer this oxygen to our red blood cells (via hemoglobin). These oxygen-filled red blood cells are carried around the body by the plasma (fluid), which travels through the blood vessels. The oxygen diffuses into the surrounding tissue ensuring that it is delivered to where it is needed most.



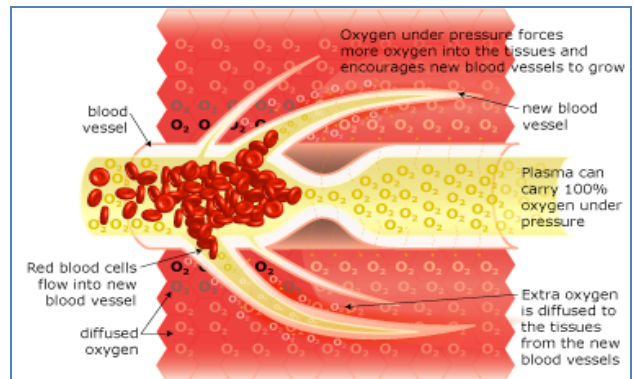
**Restricted Blood Flow:** When there is a restriction (occlusion) in blood flow due to surgery, illness, or injury, the red blood cells block the blood vessel and are unable to transfer oxygen to the cells on the other side of the occlusion. This causes swelling and starves the area of oxygen, causing hypoxia (a lack of oxygen); when this occurs the tissue begins to break down.



**Hyperbaric Oxygenation:** Breathing 100% oxygen under pressure causes the oxygen to diffuse into the blood plasma. This oxygen-rich plasma is able to travel past the restriction, diffusing up to 3 times further into the tissue. The pressurized environment helps to reduce swelling and discomfort, while providing the body with at least 10-15 times its normal supply of oxygen to help repair tissue damaged by the original occlusion or subsequent hypoxic condition. Hyperbaric Oxygenation (HBOT) directly increases the saturative effects of tissue oxygenation slowing and reversing hypoxic induced apoptosis - restoring blood supply to the compromised region by the development of new capillary networks (angiogenesis) enabling the body to alter the course and impact of the disease process.



**Neurovascular Regeneration:** HBOT mobilizes the body's circulating stem cells. American Journal Physiology - Heart and Circulatory Physiology (Nov 05) reports a **single 2-hour exposure to HBOT at 2 ATA doubles circulating CD34+ progenitor stem cells (primordial cells targeted to salvage and restore damaged structures); and at approx. 20-hours of HBOT; circulating CD34+ cells increases eight fold (800%).**



## **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-1) 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 cells that are compromised by poor blood flow.**
- **Bacteriocidal and Bacteriostatic – Hyperoxygenation of the tissues enhances killing of bacteria and is critical in curing deep-seated, resistant infections.**
- **Vasoconstriction – HBO constricts the small vessels in the body, especially in injured tissues. This decreases swelling (edema) and is important in the treatment of burns, crush injuries and injured tissue in general.**
- **Angiogenesis – HBO creates collateral blood flow, critical to the repair of injured tissues. Collateral blood vessels are produced by increased fibroblasts leading to new collagen production. Therefore new vessels created in injured tissues are functional in contrast to the collateral blood vessels formed in oxygen starved tissue, that are non functional.**
- **Antibiotic Synergy – HBO potentiates and synergizes with the following antibiotics: Flouroquinolones, aminoglycosides and amphotericin B. These antibiotics require oxygen for transport across cell membranes.**
- **Decreased Lactic Acid – HBO decreases lactate accumulation in ischemic tissue, which greatly aids healing and helps reduce pain.**
- **Decrease in Inflammation – Not only does HBO block the binding of HIF-1alpha and HIF-1beta, but decreases inflammation through several other mechanisms. Cytokines and other inflammatory chemicals, including lactic acid, are cleared better with HBO. Oxidative Stress Markers and C-Reactive Protein are reduced with HBO. HBO also stimulates the body's immune system to help clear infection and inflammation.** (Biomedcentral)

*Please Note: A prescription is required for Hyperbaric Oxygen*