What Is HBOT?

Hyperbaric Oxygen Therapy (HBOT) is a medical treatment that delivers healing through pressurized oxygen.

100% Pure Oxygen

Patients breathe pure oxygen inside a specialized pressurized chamber, enabling higher oxygen absorption than normal breathing.

Controlled Pressure

Treatment occurs at 1.3 to 3.0 atmospheres absolute (ATA), exceeding normal atmospheric pressure.

Enhanced Blood Oxygen

The increased pressure allows more oxygen to dissolve in the bloodstream, delivering higher oxygen levels to all body tissues.

Medical Applications

Treats various conditions including decompression sickness, severe infections, non-healing wounds, and carbon monoxide poisoning.

Tissue Healing and Recovery

1

Enhanced Blood Vessel Growth

HBOT stimulates angiogenesis, promoting the growth of new blood vessels in healthy tissue. This foundational process enables improved healing outcomes.

2

Collagen Production

The therapy increases collagen deposition, which is essential for tissue repair and wound healing. This makes HBOT effective for chronic wounds that are otherwise slow to heal.

3

Radiation Injury Recovery

Cancer survivors benefit from HBOT for radiation-induced conditions like proctitis, osteoradionecrosis, and soft tissue necrosis. The improved oxygenation in affected areas accelerates recovery from radiation injuries.

4

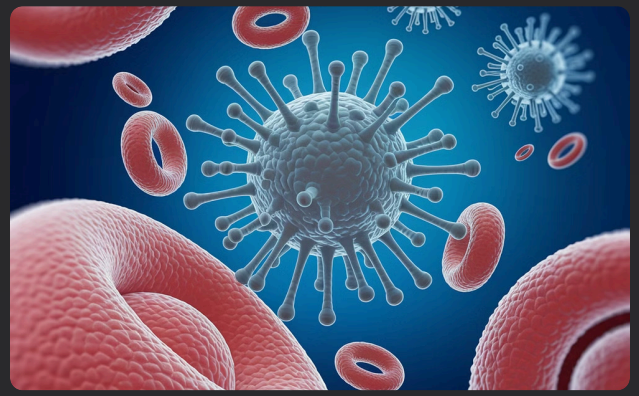
Tissue Regeneration

By supporting tissue repair through enhanced oxygenation, HBOT serves as a valuable supportive therapy for patients experiencing treatment-related tissue damage.

Potential Synergy with Cancer Treatments

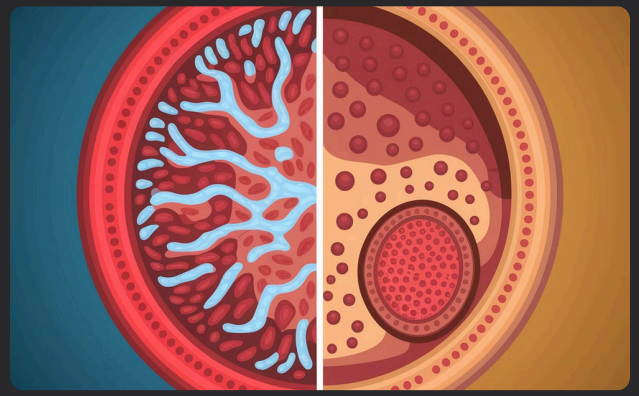
Preclinical studies suggest that increased oxygen levels in the tumor microenvironment can enhance the efficacy of radiation therapy. Radiation often requires oxygen to generate free radicals that damage cancer cells, so the increased oxygen delivered by HBOT can improve the effectiveness of radiation treatment in certain cancers. Additionally, tumor hypoxia (low oxygen levels in tumor tissues) is linked to aggressive disease and resistance to therapy. HBOT may transiently reduce hypoxia in select cases, potentially improving responsiveness to standard treatments like chemotherapy and radiation.

Immunomodulation and Anti-Inflammatory Effects



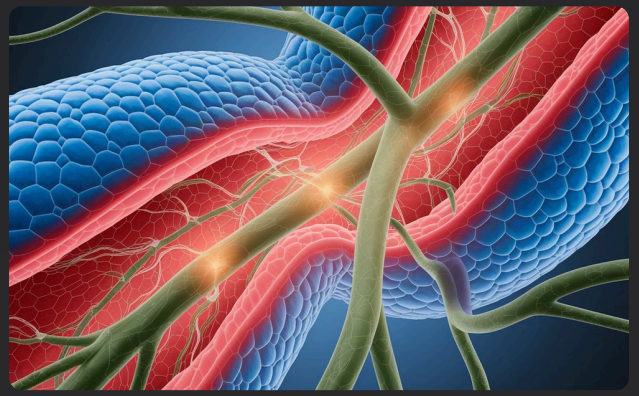
Enhanced Immune Response

Adequate tissue oxygenation helps bolster immune responses, making the immune system more effective at fighting infections and diseases.



Inflammation Regulation

HBOT helps regulate inflammatory processes within the body, potentially reducing chronic inflammation and promoting overall health.



Reduced Tissue Swelling

Higher oxygen levels help mitigate localized swelling and edema in tissues, providing relief from discomfort and supporting better tissue function during cancer treatments.

Quality of Life Improvements

Patients undergoing or recovering from cancer treatments often experience fatigue and pain. By improving oxygen delivery to tissues, HBOT can help alleviate these symptoms, leading to reduced fatigue and pain. This improvement in overall comfort and vitality can significantly enhance a patient's quality of life during and after cancer treatments. Many patients report feeling more energetic and experiencing less discomfort, which can positively impact their ability to engage in daily activities and maintain a sense of well-being.

Mechanisms of Action: The Science Behind HBOT

1

Initial Oxygen Saturation

HBOT increases the partial pressure of oxygen, allowing more oxygen to dissolve in the plasma. This boosts overall oxygen delivery to tissues beyond what hemoglobin can carry.

2

Growth Factor Activation

Elevated oxygen levels stimulate the release of growth factors like VEGF, which promote new vessel growth in healthy tissue.

3

Collagen Production

Oxygen is critical for collagen synthesis and cross-linking, both essential for wound healing and tissue repair.

4

Hypoxia Regulation

By temporarily decreasing tissue hypoxia, HBOT can lower HIF levels, potentially preventing or slowing certain aggressive tumor behaviors.

5

Cellular Response

Short-term bursts of elevated ROS during HBOT sessions stimulate beneficial cellular responses, including antioxidant enzyme production in healthy cells.

6

Vascular Regeneration

HBOT increases the circulation of endothelial progenitor cells, potentially aiding in tissue regeneration and repair of vascular damage.