

Can HBOT help with cerebral blood flow?

All brain injuries, from learning disabilities to stroke and posttraumatic stress disorder, have something in common – a reduced or interrupted cerebral blood flow.

Brain injury means that there is reduced or interrupted blood flow, caused by the leaking of blood plasma through ruptured capillary walls and the swelling of the near-by tissue, which additionally obstructs the blood flow. Capillary walls cannot heal because of the lack of oxygen, transported throughout our body by blood and in a smaller manner by the blood plasma, which is the reason why hyperbaric oxygen therapy is being recommended more and more in connection with brain injuries.

Science to the rescue

Scientifically the fact is that gases dissolve faster in liquids (including blood and plasma), when the pressure is higher than that at sea level, also called atmospheric pressure (1 ATA). Although plasma normally contains very little oxygen, people are more energized on days with higher atmospheric pressure, as on such days a little more oxygen is dissolved in plasma. Similarly people whose health is compromised say that they feel worse on days when atmospheric pressure is low.

Even when we breathe pure oxygen at normal pressure, our body cannot absorb more of it, as not enough of the gas can dissolve in blood plasma. This is why a better blood flow in the brain can only be established by means of the affected lying in a comfortable pressurized chamber in which they breathe pure oxygen with the help of a mask. The ideal pressure in the chamber is 1.75 ATA, which is 0.75 ATA above atmospheric pressure and is the same as going 7.5 meters underwater. Breathing oxygen in this manner helps plasma to saturate with it.

Thus plasma carries healing oxygen through narrowed capillaries to capillary walls, which begin to heal. Ruptured capillary walls heal and plasma stops leaking into the surrounding brain tissue. Tissue swelling lessens even more as oxygen tends to somewhat narrow capillaries. Swelling slowly subsides and enables normal blood flow to be restored. With that brain begins to get the most important nutrients and can get rid of waste, which restores the brain's ability to send normal electrical signals.

Stimulates cells

HBOT helps children and adults with learning disorders reduce, through reduced swelling and a better cerebral blood flow, think more clearly. Improved blood flow and more oxygen also help mitochondria to regenerate and cause mitochondrial biogenesis. This means that depending on the need for mitochondria in neurons, more of them form.

In stroke survivors HBOT stimulates renewed activity of neurons surrounding the damaged tissue. These neurons do not die off during stroke, but can no longer perform their duties because of a lack of oxygen and reduced blood flow. Besides that it stimulates the growth of new blood vessels.

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References:

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