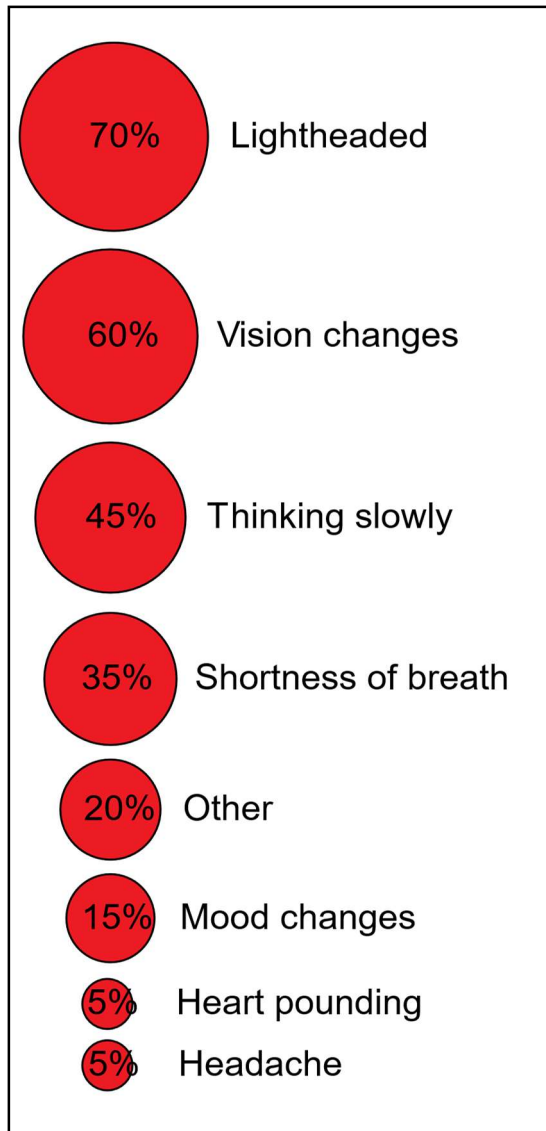


# Hypoxia symptoms in rebreather divers

You are participating in a study investigating your ability to recognize hypoxia. This logically requires that we make you aware of the symptoms. The air we breathe is approximately 21% oxygen. Our bodies constantly use oxygen to perform basic functions, such as turning nutrients into energy. Some body tissues, such as muscle, can use alternative methods to make energy when oxygen is not available. However, other body tissues like the brain and nervous system are almost completely dependent on oxygen for their energy needs. A lower-than-normal level of oxygen in the body is known as **hypoxia**. Even mild hypoxia can cause a large decrease in

brain function, and severe hypoxia for a long time can lead to brain damage or death.

**Hypoxia symptoms from most to least common**



## **Hypoxia is a well-known risk of rebreather diving.**

Equipment failure or human error can cause oxygen levels in the breathing gas to decrease below safe levels, which causes the diver to become hypoxic. Hypoxia is particularly dangerous to divers because it affects brain function, which can make it difficult or impossible for a diver to recognize the problem and rescue themselves.

The signs and symptoms of hypoxia have been scientifically studied. **The three most common symptoms of hypoxia are:** feeling lightheaded, vision changes (tunnel vision), and thinking slowly. Other common symptoms include feeling short of breath, changes in mood (agitation or euphoria), headaches, and feeling one's heart pounding. The diagram on the left side of this page summarizes the most common symptoms of hypoxia.

Although these symptoms are common, some of them can be subtle, and some divers only realize they had these symptoms in hindsight. Because of this, it is important to know which hypoxia symptoms are the most severe (and therefore most noticeable) during a dive. **The three most noticeable symptoms of hypoxia**, as reported by divers, are: thinking/reacting slowly, heart pounding, and difficulty concentrating. Other noticeable symptoms include nervousness,

dizziness, making mistakes, feeling lightheaded, and feeling short of breath.

References: Diving and Subaquatic Medicine (5<sup>th</sup> edition), "Hypoxia signatures in closed circuit rebreather divers" by Popa and others, and "Utility and safety of hypoxia experiences for rebreather divers" by Mitchell and others.