

**What does Hypoxic Training mean?** 

The word “HYPOXIC” means… Hypoxic definition, having or caused by a very low level of oxygen.

During swim practice there is a training technique called “Hypoxic Training”. The term 'hypoxic training' refers to adapting to a reduced level of oxygen, in swimming terms, it refers to swimming more strokes without breathing. It was thought that by depriving your oxygen consumption you would slow the flow of oxygen (O2) to the working muscles. ... Holding your breath increases Carbon dioxide (CO2) in your system. If you were to hold your breath right now, your blood’s oxygen level would start to decrease and its carbon dioxide level would go up. Our bodies release carbon dioxide when we exhale, so as we hold our breath, it builds up and causes us to feel the urge to take another breath. However, this increase in carbon dioxide doesn’t always happen underwater.

Hypoxic swim sets have been used for decades to help swimmers reduce excessive breathing and simulate the challenge of maintaining a breathing pattern during a tough race.

Hypoxic blackout, also known as 'shallow water blackout', happens when loss of consciousness occurs underwater due to a lack of oxygen. This is often due to breath holding or purposeful hyperventilation before going underwater.

**What is a Hypoxic Blackout?** 

Hypoxic blackout is a loss of consciousness caused by a reduced supply of oxygen to the brain. It is often related to hyperventilation, which is a series of long deep breaths designed to decrease the amount of carbon dioxide in the blood.

Hyperventilation is a dangerous technique often used by competitive swimmers and divers in order to hold their breath longer. Without the appropriate levels of carbon dioxide, the body fails to recognize the need for oxygen as it traditionally does. This condition is called hypocapnia. The table to the right illustrates how individuals who hyperventilate develop hypocapnia and reach the blackout zone before experiencing the normal urge to breathe.

Hypoxic blackouts are especially dangerous because an individual simply loses consciousness and can drown without any sign of a struggle. In some cases, an individual experiencing a hypoxic blackout will appear to be making coordinated movements because their body may continue to function temporarily. This phenomenon is particularly dangerous because a lifeguard may assume the individual is conscious.

**Who is Affected by Hypoxic Blackout?**

***Hypoxic blackouts can affect anyone at anytime.***

* Victims typically have no prior medical problems, are physically fit, and give no warning.
* It is usually associated with individuals who are either participating in breath holding contests or are performing underwater distance swimming.

**Hypoxic Training and Hypoxic Blackout — Safety and Prevention Strategies**

1. Train Coaches, swimmers and parents on the dangers of hyperventilation and hypoxic blackout. Athletes should not hyperventilate (e.g., take multiple, deep breaths) prior to any underwater or other hypoxic efforts.
2. If hypoxic training is utilized by coaches in the development of advanced competitive swimmers, it must be conducted only when following appropriate principles under the direct supervision of an experienced coach.
3. Train Coaches and swimmers that a swimmer MUST never ignore the urge to breathe.
4. Hypoxic training should involve progressive overload, in line with the athlete’s physical and skill development.
5. Coaches should ensure adequate rest between hypoxic efforts to ensure full recovery.
6. Inform parents and swimmers why teaching breathe control while swimming must be a supervised event.
7. Understand that any strenuous exercise performed underwater drastically decreases the amount of time a swimmer can stay submerged.
8. Never hesitate; if a swimmer is sitting motionless on the bottom of the pool pull them out immediately.
9. Hypoxic training should not involve competitive effort, maximum duration or distance covered.
10. Inform coaches that Hypoxic Training events have resulted in an athlete’s death.