

## **“EARLY AND OFTEN - WHEN?”**

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One of the basic skills that each scuba student must learn early in an open water basic certification course is equalization of pressure on decent. The process of equalization is necessary every time we go diving, since air spaces in the middle ear are of particular importance because even a minor pressure imbalance can result in an injury. The technique involved in preventing ear squeeze is easy to learn, and instructions are very simple - “equalize early and often”. But what does early and often really mean?

While teaching hundreds of scuba divers trained and certified by various organizations gave me an opportunity to observe that the majority of newly and many “experienced” divers have a problem deciding when it is early enough, and how often they should equalize. To prevent ear squeeze, a diver must begin the equalization process prior to any sensation of discomfort or pain. Pain is a symptom of tissue damage and swelling taking place in the air passages, further restricting comfortable equalization. Therefore, using pain as an indicator to begin equalization means it is already too late. Tissue damage within the ear also renders itself to ear infections due to the already injured tissue being exposed to the surrounding environment and having little resistance against the soup of microscopic creatures. Often a dive vacation turns out to be a bust caused by external otitis.

While diving, there is absolutely no reason to continue with decent if equalization was not successful at a shallower depth. Often peer pressure and lack of buoyancy control are major contributors in equalization difficulties. We all have those days with equalization difficulties, however there is no shame in signaling your buddy to wait and give you time to equalize, providing you can see him/her. If you can't, it simply means that they are not worth chasing and risking an ear injury. Buoyancy control is imperative. A diver must be able to stop decent at will anywhere in the water column to allow time for effective equalization. If uncontrolled decent is continued even a few feet, stuffy ears after the dive, or possible rupture of the tympanic membrane may occur. If equalization is difficult, reducing depth is a must, we all know that, right? Stop, breathe, ascent, then attempt to equalize. However, rapid ascents up the anchor line to find the ideal depth while performing the Valsalva maneuver can result in possible lung overpressurization, since this method of equalizing requires the diver to momentarily hold his/her breath.

Stop reading for a moment, and try to perform the Valsalva maneuver yourself right now. Did you hold your breath at any time? Of course you did.

All it may take is a three foot ascent on a full lung to cause lung overexpansion resulting in possible air embolism, and we all know what that is! Although the Valsalva maneuver is the most popular method of equalizing, it is an aggressive method and if not performed correctly and gently, it may cause an injury. Therefore, it is the least preferred method of equalization. Alternative and safer equalizing procedures must be emphasized in detail and practiced during the basic certification course and after, until it becomes a second nature to the diver and an automatic action on decent. Safer methods of equalizing may involve rotating the jaw, swallowing, the Frenzel maneuver, or tilting the head backward and side to side.

**WHEN IS IT EARLY ENOUGH?** On the surface prior to decent. If a diver is not able to equalize before entry in to the water, safe and effective equalization cannot be expected while exposed to increased pressure. Also equalizing on the surface exercises the Eustachian tube and flexes the surrounding muscles to make them more flexible allowing more comfortable passage of air into the middle ear. **HOW OFTEN?** On every breath. Breathe in - equalize - exhale/descent, breathe in - equalize - exhale/descent. Continue this process or as needed until planned depth is reached. Valsalva maneuver should neither be forceful nor performed while ascending. First, ambient pressure must be reduced by a slow ascent, then equalization attempted again. Remember, slow ascent is not only at the end of the dive while returning back to the surface, it's any time during the dive whenever depth is reduced. Cold water diving may require additional considerations. A hood may act as an ear plug. Water may have to be allowed to enter the hood by pulling it away from the face. Also, it may aid the stubborn ear by tilting your head with the affected ear toward the surface. This act stretches the Eustachian tube and allows the air to pass through it, which helps equalization. Stress and even mild hypothermia causes the muscles to become less flexible, also reducing the ability of comfortable equalization. Eventually those divers that don't get deterred from diving do learn how to equalize effectively, but at what cost? Some will experience discomfort, pain, stuffy ears, infections, and perhaps an injury. We instructors must give them the critical pieces sooner, during the certification course. Teach equalizing on the surface prior to descent, and if necessary, on every breath. Practice safe techniques, and do not yield to peer pressure. If effective and

comfortable equalization is not possible, don't push it! The dive is not worth it and should be aborted. After all, a safe dive is an enjoyable dive.