



OPEN WATER SCUBA DIVER

Course Review

1. YMCA SCUBA was the first national certifying agency, beginning in 1959. NAUI (National Association of Underwater Instructors) was second, beginning in 1960.
2. The most important factors in choosing dive gear are *FIT & FUNCTIONALITY*.
3. Swim goggles can not be used for skin or SCUBA diving because the air space can not be equalized.
4. Divers carry a snorkel to breathe at the surface, conserving air and neck muscles.
5. A dive knife or tool is used primarily to cut line underwater.
6. Rinse all equipment in fresh water after use.
7. SCUBA cylinders must be *hydrostaticly retested* every five years and *visually inspected* every year.
8. SCUBA tanks should be stored with some (300-500psi) air in them to prevent moisture and contaminants from entering the tank.
9. SCUBA cylinders must never be filled with NITROX or pure oxygen because of the danger of *oxygen toxicity*.
10. To break down a SCUBA rig, you first close the cylinder valve, then purge pressure from the regulator, and finally loosen the yoke screw.
11. A descending diver will become heavier as increasing pressure compresses tiny air bubbles in wet suit neoprene. Air is added to the *Buoyancy Compensator* at depth to compensate for this loss of buoyancy.
12. One cubic foot of *seawater* weighs 64 pounds. One cubic foot of *fresh water* weighs 62.4 pounds.
13. Pressure changes one atmosphere for every 33' of depth in seawater (34' in fresh water).

14. Using the same equipment, a diver neutrally buoyant in *seawater* will need to remove some weight when diving in *fresh water*.
15. An interface between layers of water of significantly different temperatures is a *thermocline*.
16. Objects underwater will appear larger and closer than they actually are.
17. Underwater, a diver can not tell the direction of sound, due to its speed in water (4X faster than in air).
18. Wind generates waves. An offshore reef or sandbar will cause waves to break, reform, roll in and then break again.
19. The type and amount of suspended particles in the water primarily determine underwater visibility.
20. When diving in water below 80 degrees thermal protection is recommended. Proper exposure protection is required to avoid *Hypothermia*.
21. An entangled diver should stop, breath, think, and then slowly work his way clear.
22. The greatest rate of pressure change occurs between the surface and 33 feet of depth.
23. Thumb up means go up, NOT A-OK.
24. A clenched fist, against the chest, means "low on air"
25. Drawing the hand, flat palm down across the throat, means "out of air"
26. When diving in current, divers should always begin the dive swimming against (into) the current.
27. Before entering the water, divers should always know how they will exit.
28. A beach entry through surf should be made with a fully deflated *BCD*, by walking out backward until waist deep, then turning and swimming beneath the waves.
29. *Hyperventilation* can be dangerous to Breath-Hold Divers due to the danger of *Shallow Water Blackout*.
30. If pain is felt in the ears while descending, the diver should ascend until the pain stops and begin equalizing again.
31. *Hemoglobin* in *Red Blood Cells* transports oxygen throughout the body.
32. In performing *rescue breathing (pulmonary resuscitation)* it is most important to begin as soon as possible.

33. *CPR (Cardio-Pulmonary Resuscitation)* is used when both breathing and pulse have ceased.
34. Diving overweighted (carrying too much weight) is one cause of overexertion.
35. *Air* is composed of approximately 79% Nitrogen and 21% Oxygen.
36. *Squeezes* may occur in air spaces in and around the body.
37. An *ear drum* rupture may occur if pressure is not equalized between the middle and outer ear.
38. *Alveoli* are tiny, grape-like, air sacks in the lungs.
39. *Boyle's Law* deals with the pressure and volume inverse relationship.
40. *Charles' Law* deals with the volume and temperature relationship.
41. *Henry's Law* deals with gas solubility in liquids.
42. *Dalton's Law* deals with partial pressure of mixed gases.
43. *Barotrauma* is any pressure related injury.
44. Holding your breath (not exhaling on ascent) can cause *Arterial Gas Embolism*, *Subcutaneous Emphysema* or *Pneumothorax*.
45. The best First Aid for any *Barotrauma* is to administer Oxygen.
46. To relieve *Nitrogen Narcosis* (rapture of the deep) simply ascend to a shallower depth.
47. *Decompression Sickness (DCS)*, or the *Bends*, is caused by the formation of Nitrogen bubbles in the blood and tissues due to too rapid decompression. Maximum ascent rate is 30' per minute.
48. Localized joint pain, itching, and paralysis are common symptoms of *DCS*. *Precautionary Decompression Stops (Safety Stops)* help reduce bubble formation and incidence of *DCS*.
49. The maximum recommended sport diving depth is 100', in order to provide a safety margin to prevent occurrence of *DCS* and *Nitrogen Narcosis*. **ABSOLUTE MAXIMUM DEPTH IS 130'. PLAN YOUR DIVE AND DIVE YOUR PLAN.**
50. To calculate your air consumption at depth, divide your *Surface Air Consumption* in minutes (with a given size tank) by the pressure at depth in Atmospheres Absolute (ATA). So if an 80 cu ft tank gives you 120 minutes at the surface (*SAC*), it will last you 40 minutes at 66' (3ATA) where $120\text{SAC}/3\text{ATA}=40$ minutes at depth.