



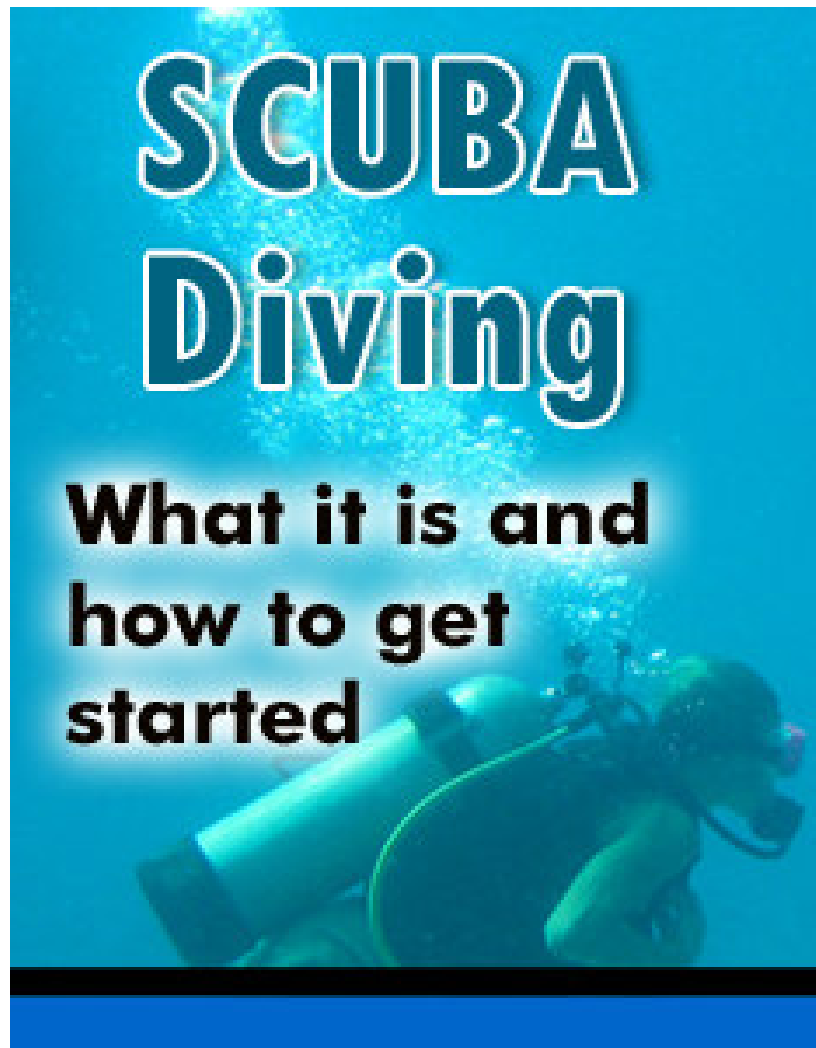
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## **Scuba Diving: What it is and how to get started**

SCUBA is an acronym that stand for “self contained underwater breathing apparatus”. The term scuba, however, no longer necessarily refers to the equipment itself, but also to anything which has significant relevance to scuba diving – the practice of using a self contained underwater breathing apparatus to stay underwater for long periods of time.

Scuba diving can get people to places they otherwise would never be able to make it. Not only will it enable you to see the amazing world under the surface of the ocean, but because scuba diving has become such a popular travel activity, scuba might also take you to corners of the globe you would otherwise never think of visiting. Or you might be a frequent traveler, looking for something new and fun to do at your favorite destinations. There are dive outfitters almost everywhere there is ocean, so it doesn't matter whether you are an experienced diver or looking to learn, you should be able to find someone who will help you get in the water. But before you go, check out this information on scuba diving: what it is and how to get started.

\*\*\*NOTE: Scuba diving is a potentially dangerous activity. If you don't know how to scuba dive, this article will not actually tell you all of the specifics about how to dive, so do not try scuba diving on your own based on the information contained here. In fact, it is a good idea never to scuba dive on your own – it is always good to have someone else along, just in case something should go wrong during your dive.

If you are a beginner, seek out certified scuba instructors of good reputation to help facilitate your first scuba experience.\*\*\*

## **Types of Diving**

Most scuba divers use flippers, or fins attached to their feet, to help propel themselves underwater easier but some use “scooters” which are propulsion devices that use propellers to pull divers through the water. This can allow divers to go farther or deeper under the water. Though scooters are sometimes used in rescue diving, they generally aren't used to help divers who aren't in good enough shape to propel themselves – it is important to maintain a certain level of fitness for diving.

Besides these two main ways of propelling oneself while diving, there are a number of specialized types of diving, most of which require training beyond that needed for open water, or recreational, diving.

## **Technical diving**

Tech diving refers to any dive where the diver goes deeper than 30 meters or any dive where the diver doesn't have direct access to an open water surface, such as in a cave or under the ice. Each of the types of diving listed directly below this are considered to be technical diving.

## **Deep diving**

The label “deep diving” refers to different depths depending on what type of diving you are doing. In recreational diving, a depth of 30m is considered a deep dive; in general technical diving, a dive of 60m is considered to be a deep dive; and in surface supplied diving, anything below 100m is considered to be a deep dive. Surface supplied diving is where the diver is supplied with a gas mixture for breathing through an “umbilical cord”, or tube, coming from a support boat on the surface.

There are many dangers involved with deep diving, and for this reason, there are a number of other necessary protocols involved. Divers need to use different gas mixes for different depths. Because of the way gases compress under high pressure, breathing regular air at depths greater than 40m can rapidly cause nitrogen narcosis (though breathing air at any depth underwater will begin to cause nitrogen narcosis). Nitrogen narcosis is a state similar to alcohol intoxication where a diver may begin to feel a little goofy, judgment might be impaired, there might be a loss of focus, and if it becomes severe enough there might be more significant and permanent effects. Normally, however, nitrogen narcosis is reversible and causes no long term effects.

When doing deep diving, it is also necessary to use more decompression stops. Again, because of the way that gas behaves under pressure, the nitrogen in the diver's bloodstream forms

bubbles, and it is necessary to stop and wait at different depths to allow the bubbles to leave through the lungs – more on decompression later.

## **Wreck diving**

Wreck diving involves diving down to wrecked boats and ships – or sometimes airplanes or other things that somehow end up underwater. There are a number of reasons why wreck diving is especially cool: Some people are attracted to the history of a wreck, and there might be a certain element of mystery involved as well. Wrecks also create a good habitat for marine life by acting like an artificial reef. Wreck diving also adds an extra challenge to a dive, a trait which more experienced divers often look for.

Wreck diving also adds an element of danger, and it is important to never do wreck diving on your own. Most wrecks aren't entirely stable, and so if something were to shift and you were injured or trapped, it would be important to have a partner to help.

## **Archaeological diving**

Some archaeologists train as divers – and vice-versa – so that they can recover artifacts and evidence from undersea sites. Sometimes this means exploring a wreck, however, due to the changes in water levels, both in the oceans and other large bodies of water, there are often archaeological sites that are now submerged that were not

originally. For example, there are villages that were on the shore of the Black Sea 2000 years ago that are now entirely under water.

To work on an underwater archaeological project, one would need advanced training in both scuba and archaeology. However, if you wanted to dig at a normal archaeological site, you would really only need a little bit of informal training.

### **Cave diving**

Diving in cave systems presents a great amount of challenge, but for some, the inherent dangers are worth the experience of exploring a place where few or no humans have ever dared to go before. While there injuries and deaths reported of cave divers frequently, expert underwater spelunkers would say that most of those come from folks who are inexperienced with cave diving. In fact, they would argue, cave diving is probably one of the safer recreational pursuits simply because you must possess such a high level of expertise to be successful at it.

That said, the main challenges of cave diving are the existence of a ceiling, sometimes preventing a diver from quickly surfacing in an emergency; the increasing darkness as one penetrates deeper into the cave; the sometimes narrow squeezes in tunnels or entrances; potentially strong currents due to the direction of flow in the cave (many caves lead to natural springs or come from siphons – where above ground streams or rivers flow underground); and the potential

of sand or silt to be stirred up and make visibility negligible – besides the normal challenges presented by diving for long periods of time or by diving deep. Divers use rope of some sort to keep track of where they have come from, and other special techniques to keep themselves oriented – it can be very easy to become disoriented when underwater, in a cave, in the dark.

Because of the very specific skill and information needed for cave diving, it should only be done by expert divers, under the direction of experienced cave divers, and with the local beta information from the area cave diving association.

## **Ice diving**

Ice diving can be very cool – actually very cold – and that is one of the main challenges. Ice diving might be the only time when you don't want to have more than one diver in the water, but only because anytime a diver is under the ice he or she should be attached to a line running to the surface – and the other divers need to be ready to go in to help or pull him or her out should he or she succumb to the cold. Which brings about the point that you should have a rescue diver on standby, suited and roped up, anytime you have a diver under ice.

There is a bunch of specialized equipment that is necessary for ice diving. This obviously includes specialized cold water dry suits, hoods, gloves, and sometimes a full face mask. Necessary equipment also includes a special regulator that won't freeze up in

cold conditions. Use a snow shovel to keep the area clear of snow and a chain saw to get through the ice.

## **Equipment**

There are some essential pieces of equipment for scuba diving, specifically the Self Contained Underwater Breathing Apparatus. There are two main types of scuba sets:

**Open circuit** sets are simpler. The diver breathes in from the set and then his breath out simply leaves the system. This means that the gas supply doesn't last as long as with a rebreather set, and to carry enough gas for a dive of long duration can become quite bulky. Open circuit sets often have a demand regulator as opposed to a **constant flow regulator**. Constant flow regulators keep a constant stream of gas flowing whether the diver is inhaling or not, which, again means that dive duration will be shortened. More common is the **demand regulator**. A demand regulator requires the diver to inhale for gas to be issued.

**Closed circuit/semi-closed circuit (rebreather)** sets recycle the exhaled air, taking advantage of the fact that only a small percentage of the oxygen is actually taken up by our lungs. The “dead” air is cycled back through a carbon dioxide “scrubber”, generally a canister of soda lime, which “renews” the air so that it is ready to be breathed in again. Rebreathers conserve gas quite efficiently, unfortunately, they are much less effective at greater depths, and for this reason are

mostly used for surface diving (diving to a depth not greater than 6 or 10 meters).

**Buoyancy compensator** or **dive weighting systems** are used to keep the diver underwater at the depth that he or she so desires. Buoyancy compensator devices are packets, usually attached to the scuba set, which can inflate or deflate to cause the diver to float or sink. Most buoyancy systems also have easily accessible spots for divers to load or dump weights, to help offset the natural buoyancy of the diving set.

Most modern scuba sets include **electronics** that help remind divers when to do what, or help regulate the flow of gases. Additionally, divers may carry more than one scuba set with them in case their original set fails or they need to stay underwater longer than anticipated. You might want to arm yourself with some sort of **harpoon** in you are anticipating meeting any hungry sharks or angry and dangerous people underwater. More than likely, however, unless you are James Bond, you would probably prefer to carry a **waterproof camera** with so you can take pictures and record your underwater experience. You should probably take the camera with, even if you are James Bond, because then you can have proof that you really did fight the 60 foot long squid and the school of deadly eels.

## **Safety**

There are a few particular safety concerns when one is thinking about scuba. The best way to learn scuba safety is from a scuba expert. Make sure that you dive with more experienced divers until you feel entirely comfortable with the entire scuba safety process, starting from when you leave your house to go to the boat dock all the way to bringing the boat back to dock.

**The bends**, formally known as **decompression sickness**, was mentioned briefly above in talking about deep diving. The bends occur when the higher amounts of nitrogen dissolved in the bloodstream at higher pressure, begin to come out of solution too fast and form bubbles causing a whole host of problems, including in the worst cases death. Avoiding decompression sickness means ascending slowly and breaking for adequate decompression stops. Timing your decompression stops can be aided using either a dive computer or a decompression chart.

Treatment of the bends is usually done by administering high concentration oxygen in some sort of recompression chamber, which is usually simply a mask of some sort. **Nitrogen narcosis**, also mentioned above, can cause significant problems for divers, and most divers who are affected by it cannot tell that they are affected. Nitrogen narcosis might be “the rapture of the deep” as Jacques Cousteau called it, but it can also lead to problems if a diver loses his or her sensibility.

**Body heat loss** can also have a considerable effect on divers.

Because water carries heat away from human bodies very effectively, it is necessary to wear a wet suit in all but the warmest of waters. **Wet suits** keep warm by providing a layer between the skin and outside water, but also by trapping a thin layer of water between the skin and the suit. This water then warms up and helps to keep the diver warm. **Dry suits**, on the other hand, keep the skin dry and are usually used in the coldest of conditions. Membrane dry suits are thinner, and thus require thicker undergarments to be worn underneath, but they also allow for greater mobility for the diver. Neoprene dry suits are thicker and thus provide less mobility, but they do provide a greater amount of insulation.

Diving suits are also important because they help protect the diver from **cuts and scrapes**, which can be dangerous in different open water situations. Divers should always have a good first aid kit with them in the boat just in case something should happen and you need to do some bandaging of some sort.

**Fitness.** It is a good idea for divers to keep fit. This is beneficial for diving for a number of reasons. The more cardiovascular fitness one has, the easier the adjustment diving will be on your lungs. Better fitness means more energy, which means longer dives – and all of your dives will be more enjoyable because you won't be struggling with your flippers; you'll be manhandling them with your brute strength. Better fitness also means that you will look darned good in

your wet suit.

### **Dive with friends, dive with family, dive for yourself**

Diving is a great activity to do with friends, or to do to make friends. The diving community is pretty close in many areas, and one always feels a special kindred when meeting fellow divers, even if you happen to live in a land locked locale.

Diving is also a great activity to get into if you want to do something that will inspire and improve your relationship with a family member. For example, you might want to take dive lessons with your spouse with the aim of eventually going on a dive trip. The struggle of learning something new, coupled with the excitement of learning something new could help you to bond in a new and wonderful way. Or if you want to get more involved with a son or daughter, take dive lessons with him or her. You get to spend quality time with him or her, and he or she gets to learn how to do something cool.

Finally, diving is also a good activity for your own person. Many people report therapeutic effects from spending time underwater. Perhaps it is the peaceful nature of the underwater world, or maybe it is the wonderful feeling of being completely underwater, but there is something special about the experience that can be quite staying.

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