Neutral Buoyancy from the Start: The Case Against Kneeling

I was diving near Kona, Hawai'i, and I was buddied with a diver with hundreds of logged dives. As we dived, I could see that he was thoroughly comfortable in the water, and his reported dive total was probably not an exaggeration. At one point, he got some water in his mask. He settled down on the top of the coral in a kneeling position and cleared his mask, exactly as students typically do on their first confined water dive. As I watched in horror, I wondered—when are students taught to do skills any other way? It was at that moment that I determined that my students would not be like that. --John Adsit

This article is the result of the collaboration of a number of scuba professionals from around the world, people who have discussed this issue through online forums and other means of communication and who have field tested the strategies described below while conducting their courses. Most, but not all, are PADI instructors. We all use instructional approaches which, though not identical to one another, all have the same goal: at the end of an open water course, the student diver will be able to perform key diving skills in mid water while neutrally buoyant. The most common element in our instruction is the elimination, or near elimination, of the widespread practice of having students learn and perform skills while firmly planted on the bottom on their knees, whether in confined- or open-water training dives.

One of the reasons for our advocacy of neutrally-buoyant skills training is a key principle of learning, *the law of primacy*. This principle says that students retain information they learn for the first time longer than they retain information they must relearn. Remedial unlearning of incorrect procedures (or breaking bad habits) is always more difficult than learning the correct procedures (and forming good habits) from the start. When students learn to do skills on their knees early in their instruction and therefore form habits based on this training, it makes supplanting these habits in favor of more effective techniques more difficult later on in the diver's continuing development.

Another learning principle, the *law of recency*, should help when it comes to correcting poor technique, for it says that recent learning is also powerful. Unfortunately, in most instruction, there is no real focus on mid-water skills performance in an effort to unlearn the original knees-on-the bottom learning. All images of divers and instructors in the Open Water video show divers performing skills on their knees. New divemasters and instructors are usually required to demonstrate all open water skills while firmly planted on our knees. Many and perhaps most instructors carry this instruction over into their teaching, having students do all skills throughout the course, even in the open water, while on their knees. If students are taught all their skills for their open water certification while kneeling, when will they ever learn to undo that bad habit? If students see no images of divers performing skills in mid-water, what incentive do they have to change?

When our group has discussed these practices in online forums, we hear objections from people who have not experienced training done in this way -and are imagining what it must be like. They assume that it will take too long to get students ready to learn this way, students will be uncomfortable and unable to concentrate on skills, the skills are more difficult to perform, and the instructor will not be in a position to control the student in case of a problem.

Those of us who teach this way, however, know that none of these hypothetical concerns are realized in actual practice. Because we used to conduct our classes with our students on their knees, we are able to compare the processes and outcomes of training using both methods:, and we have made the following observations:

- Skills training takes about the same amount of time whether kneeling or neutrally buoyant.
- Students become comfortable quickly with a neutrally buoyant posture and do not need a long period of adjustment.
- Many skills are actually easier for students to perform while neutrally buoyant than from a kneeling position. In a recent IDC, one of the authors of this article taught Assistant Instructor students both approaches to skill instruction, and they all agreed that the skills were easier to perform in a neutral position.
- The instructor can be just as available for control purposes while neutrally buoyant as when kneeling. In fact, control is much easier, since students can more easily start an uncontrolled ascent in an upright posture on their knees than from a forward leaning, neutral posture.

So what does it look like?

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Although not all of us do the first confined water dive the same way, for many it begins with swimming on the surface over shallow water with the BCD inflated, as if the diver were snorkeling. Then, the students let out a little air at a time until they are swimming about in the shallow end of the pool while neutrally buoyant. Students are then shown instructional position, which is in a forward lean, with their knees lightly touching the pool bottom and their chests supported by the air in their BCDs. It roughly resembles a fin pivot. The instructor is in the same position. Students practice breathing underwater until they are comfortable and weighting problems are resolved.

Students adapt to this very quickly, much more quickly than those who have never done it might imagine. One of the authors of this article recently used this method to introduce scuba skills to eight 10-year old boys during a Discover Scuba birthday party, and all students were nearly immediately ready for instruction.

The benefits of this position become unmistakable when teaching regulator recovery. With the sweep method, the value of leaning to the right while neutrally buoyant is much more apparent than it is when kneeling. When in a kneeling position, the top of the tank tends to be pulled by gravity away from the diver's back, and the first stage with the second stage hose connection is angled away in a position it would never assume while diving. When leaning forward in a neutral position, the second stage hose is more likely to be forward of the diver rather than behind, and therefore much easier to recover. The difference is even more dramatic with the reach method. Students often struggle to reach the hose over their shoulder with the tank pulled away by gravity, but in a more natural swimming position, the hose is easily reached right behind the ear.

Mask clearing is also more effectively taught in a neutral position. When the student is kneeling, the head is already in a forward-facing position, so there is no need to tilt the head back. It is thus possible for the student to be successful in clearing the mask while kneeling and yet be unable to do so while diving in a neutral position because the students has never had to really learn the effect of tipping the head back. While in a neutral position, however, the student must use good technique to clear the mask.

When students learn to use alternate air sources in the kneeling position, they must kneel next to each other, chest to chest, to complete the skill. This is a situation that will never happen in actual diving. When they are in a neutral position, they can approach naturally with a gentle kick that brings them together, just as they would in an actual diving situation.

By learning and performing skills from a neutrally buoyant position throughout the first confined water dive, by the end of the dive students have become comfortable with the neutral instruction position and have completed their introductory skills in a more natural diving position. In compliance with the *law of primacy*, there will be no need to unlearn bad habits later on. In our experience, this has taken no more time than the traditional approach on the knees.

As students enter the deep section of the pool during the second confined water dive, we note that they are generally more comfortable and competent with their buoyancy then previous students were whom we taught on their knees. The advantage of the neutral position is also evident in that dive during the no mask breathing. When kneeling bolt upright, students are often troubled by the exhaled bubbles blasting their noses. In contrast, while in a neutral position, the bubbles flow comfortably past their cheeks.

What happens in the remaining confined water dives varies by instructor. Some do all demonstrations while fully neutral and off the bottom, while some continue in the near fin pivot position. Some will still do some skills negatively buoyant, such as the weight belt removal and scuba unit removal and replacement. Others will demonstrate even those skills in mid water, leaving it up to the student whether to do them neutrally or on the floor. Given that choice, those who elect to do the skills neutrally do not look as neat and orderly as those anchored firmly to the bottom with empty BCDs, but the degree of skill they are demonstrating surpasses that of students who perform the skill while kneeling.

One of the misconceptions many people have when first hearing of this approach is that we require students to perform skills while in a full hover throughout the class, thus raising the difficulty level of the class considerably. That is not true. Students are generally in contact with the floor of the pool, although lightly, while doing skills. The farther along they are in the class, the less contact they will make with the floor. The mask skills, including the no mask swim, are a good example. Students will complete the swimming portion neutrally. As they replace the mask, the buddies will hold them to assure they maintain a proper depth, and although they will try to be totally neutral, most students will let their legs drop down, often touching the floor a little.

Our approaches to the open water dives vary to some extent as well, mostly because of the varying conditions under which we must teach. Some are in the open ocean, and some are in lakes with poor visibility and a requirement to use some form of platform. In general, we have students demonstrate all skills neutrally in horizontal trim, even when using a platform. Our students have no trouble with this. Some of us have posted videos of our open water students on those dives, looking like highly experienced divers.

During online discussions people sometimes question whether these practices are within standards. Several of us have written to PADI independently and been assured that they are indeed teaching within prescribed standards. In fact, we have found that in some cases the people who object are themselves not in compliance with standards. For example, one skill that is very important to us is the use of the lungs to regulate buoyancy. We talk about it in the classroom and emphasize it repeatedly throughout the course. Some have argued that PADI open water instruction does not require this instruction, but it does not take a very careful reading to see that the standards very much do require this. The buoyancy exercise that was once the fin pivot has no other purpose than to teach this skill, and the hover cannot be performed any other way. PADI standards clearly call for students to learn to dive neutrally.

Many of us have wondered how the practice of instructing on the knees began. We consulted a number of people who have been instructing for decades, and we have so far been unable to get a firm answer. The best guesses seem to be related to the equipment that was available years ago. Using a horse collar BCD tended to put students in an upright position. Inflator buttons did not exist then. Given those limitations, instructing students in early skills while on their knees would probably be a natural thing to do, but with the modern BCD we can and should be able to get beyond these limitations.

This article was intended to be but a brief overview of our instructional practices. We have set up a web site that will provide much more detail. Go to XXXXXXXXXXX to see what we do more clearly.

> *I was conducting the open water dive one of my students. As we swam on dive three, I signaled to her to clear a flooded mask, and she did it effortlessly, without breaking horizontal trim. As she did, I could not help but recall that diver in Hawai'i, who, despite his many years of experience, or possibly because of it, had to kneel on the coral to clear his mask.*