

A Shrink Studies SCUBA



Obesity and Diving

Obesity is important in diving because of its relationship to fitness, the controversial risk of decompression illness, fit of wetsuit and weights, and co-existing diseases such as diabetes, hypertension and sleep apnea. So, how can the obese dive more safely? Let's start with buoyancy and weight distribution.

Bonaire tech diver Andy Owens* says, "It is harder to deal with buoyancy issues if you are overweight from a body fat standpoint, thereby more buoyant, thereby needing more lead, thereby needing more air in your BCD sometimes, which makes for higher risk of uncontrolled ascent, and voila, higher DCS risk. If you are fat, then you are probably going to need more air and are going to suck the tank down most of the time, so training for proper air consumption is imperative. But, if you need extra weight, then why not use heavier, higher capacity steel tanks? I would much rather carry steel than lead.

When I was at 375 pounds and used a normal design BCD, I needed 36 pounds of lead to be neutral. The benefit of a steel

tank versus aluminum for a fat diver is that there is not as huge a spread in buoyancy as the tank empties. A pressed LP steel 108 is 5 pounds negative when full and a HP aluminum 80 is 2 pounds negative when full." (See accompanying tank buoyancy chart – the range is wide)

So, if you are an average larger person needing 18 to 25 pounds of lead, then you have more than enough room in your weighting to have plenty of weight to drop. In fact, if you are large, then you are pretty buoyant, so dropping that much weight would be a disaster. The better the weight is distributed between droppable and undroppable weight, the better. Maybe a 50/50 split is reasonable."

Duke University Medical Center Hyperbaric Medicine and Environmental Physiology Research Associate Neal Pollock, PhD, comments:

"The problem with Andy's strategy is the increase in non-ditchable, negatively buoyant weight. This can be problematic. I encourage anyone who wishes to dive with a negatively buoyant tank to check out this effect in a swimming pool. Don't only the tank and buoyancy compensator and then



Andy Owens is a happy diver

* Andy Owens, MBA, is a musician and marketing consultant from Deep Gap, North Carolina, and an avid diver with two advanced trimix certifications, and can sometimes be seen above the water in Bonaire with his band, The Bonaire Bluegrass Band.

He's been diving for eight years and has 400 dives. Favorite dive spots are Truk Lagoon and Bonaire, at a max depth dive of 315 feet. □

empty the buoyancy compensator (as might be the case if the BCD failed during a dive). If kicking alone is not sufficient to comfortably keep the head above water, then it may be a good idea to consider a less negatively buoyant tank. Easily ditchable weight is much safer.

The reason I recommend the pool test is to make allowance for personal differences. Some individuals might very well be able to manage the negative buoyancy of the tank with little difficulty. If not, though, they should think carefully. The 50/50 rule can sound good in theory, but the most important thing to me is practical testing to really learn what you can and cannot handle before being in a situation when the outcome could be direr."

Thank you, Andy and Neal, for an excellent discussion of this "weighty subject." □ Story & photos by David Colvard, M.D.



David F. Colvard, M.D., is a private psychiatrist and clinical investigator in Raleigh NC, and a divemaster. He hosts the website www.DivePsych.com which provides evidence-based information for divers on psychological and stress factors in scuba divers. □

Cylinder	Service Pressure	True Capacity	Buoyancy* Full	Buoyancy* Half full	Buoyancy* @ 500 psi	Weight Empty
Luxfer 6	3,000 psi	6.1 c.f.	-1.4 lbs	-1.1 lbs	-1.0 lbs	2.5 lbs
Luxfer 13	3,000 psi	13.2 c.f.	-1.7 lbs	-1.2 lbs	-0.9 lbs	6.0 lbs
Luxfer 14	2,015 psi	13.7 c.f.	+0.8 lbs	+1.3 lbs	+1.6 lbs	4.9 lbs
Luxfer 20	3,000 psi	19.9 c.f.	-1.4 lbs	-0.6 lbs	-0.1 lbs	8.2 lbs
Luxfer 30	3,000 psi	30.0 c.f.	-1.0 lbs	+1.0 lbs	+0.8 lbs	11.6 lbs
Luxfer 40	3,000 psi	40.0 c.f.	-0.7 lbs	+0.8 lbs	+1.8 lbs	15.3 lbs
Luxfer 50	3,000 psi	48.4 c.f.	-2.3 lbs	-0.5 lbs	+0.8 lbs	21.2 lbs
Luxfer 63	3,000 psi	63.0 c.f.	-2.2 lbs	+2.2 lbs	+1.7 lbs	26.7 lbs
Luxfer 80	3,000 psi	77.4 c.f.	-1.4 lbs	+1.5 lbs	+3.4 lbs	31.4 lbs
Neutral 80	3,300 psi	77.4 c.f.	-5.7 lbs	-2.8 lbs	-0.9 lbs	35.4 lbs
Super 80	3,000 psi	80.0 c.f.	-5.3 lbs	-1.6 lbs	+0.4 lbs	35.0 lbs
Luxfer 100	3,300 psi	98.8 c.f.	-4.3 lbs	-0.6 lbs	+1.9 lbs	41.0 lbs
Limited 106	4,350 psi	105.2 c.f.	-4.8 lbs	-0.9 lbs	+2.1 lbs	33.8 lbs