Crud - May 1999

1999 Committee: President - Roy Harrison; Chair - Stephen Archer; D.O. - Pierre Leon; Treasurer - Mark Crumplin; Secretary - Ian Winn; Membership - Steve Greenham; Premises - Peter Child; Equipment - Terry Smith and committee members: Howard Clowes, Nigel Dobinson, Sandy Ferdinand, Steve Gore, Hannah Greenham, and Rachel Wood.

The committee has big plans for the club house and whilst we value everyone's help and donations can we take this opportunity to remind you all that all work/donations on/for the club house should be coordinated via Peter. Any work requiring a cost to the club **must** come before committee before work starts. Any emergency work still requires Peter's, Mark's or Stephen's go ahead, we may have already organised the repair work.

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Diver Safety - Hydration

Dehydration is a subject that has is being mentioned ever more frequently in the media, but it poses an even greater risks to divers than it does to the rest of the public.

Normally the body uses about 2 Litres (3.8 pints) of water in its general day to day activities. Yet recent studies show that **2/3rds** of the population drink far too little and are to some degree dehydrated. The scary truth is that a 3 percent loss in total body-water will cause fatigue and could risk actual health problems, while a 10 percent loss of body-water is serious enough to be life threatening. There are several ways in which diving and the underwater environment contribute to dehydration. It is important to understand these factors and how to prevent or remedy them, since dehydration is thought to increase the risk for DCS.

Dehydration and Divers

When a person is dehydrated, there is a reduced volume of blood in the body. Less volume means less blood flow to the tissues. This in turn affects the body's ability to wash out waste, such as nitrogen. The result is that a diver surfaces without having off-gassed as efficiently as they would have if they had been well hydrated. The increased nitrogen remaining in the body translates into a higher risk of DCS.

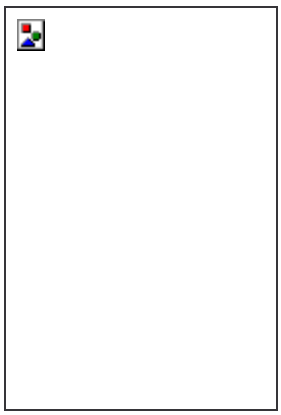
Blood flow to certain tissues is further compromised during dehydration by the body's own means of compensating for a low blood volume. To guarantee an adequate supply of blood to vital organs like the brain and kidneys, the body signals blood vessels supplying other parts, like skin and muscles, to clamp down, restricting flow even more.

In addition to the increased risk of DCS, dehydration can adversely affect divers in other ways. Since there is a reduced volume of blood circulating through the body, the heart has to work harder and pump faster in order to meet the body's demand. This leads to decreased endurance and increased fatigue, which diminishes diving performance. Clearly, it's important to be aware of those factors that can lead to dehydration.

How Dehydration Occurs

Dehydration results when fluid intake is not sufficient to replace the amount of fluid that is lost. Anything that reduces fluid intake or increases fluid loss increases the likelihood that a person will become dehydrated. There are five ways that the body loses fluid: through the skin, the lungs, urination, blood loss or via the gut. All of these can lead to dehydration in divers.

Looking at each of these in turn: 1) Through the Skin - Sweating, especially in a dry suit in summer. However, in cold, dry climates, we don't often think of dehydration as a potential problem. This is a mistake. Our muscles are working as much (if not more) as in warmer conditions, and are creating internal heat that must be transferred out of our body. In cold climates the air is usually less humid and we often wear many layers of clothes which absorb the moisture, so we don't realise how much we are sweating.



2) Through the Lungs - The lungs can also be a significant source of fluid loss for the diver. The air in our tanks is extremely dry. The lungs humidify each breath of dry air that we take, and that moisture is lost when we exhale. Over the course of a few days of diving, fluid loss through the lungs can be substantial.

3) Through Urination - Another way that diving causes the body to lose fluid is summed up in the old saying: "There are two types of divers: those who pee in their wetsuit, and those who lie about it!" Whether or not it is discussed in polite company, most of us have had the urge to go while diving, often soon after we've entered the water. This is an explainable physiological phenomenon, known as *immersion diuresis*.

When we are above water, the greatest force upon our bodies is gravity. When we are sitting or standing, the force of gravity causes blood to collect or pool in the legs. When we enter the water, the most significant force acting upon the body is the pressure of the water, which serves to force the pooled blood out of the legs and into the body's general circulation. Another response of the body upon entering the water is to clamp down the blood vessels to the skin in order to minimise heat loss. This also serves to push more blood to the centre of the body.

Your body perceives this increased blood flow as a volume overload, and signals the kidneys to make more urine to reduced this. The result is that familiar urge.

It is important to mention that the increase in circulating blood does not offset the effects of dehydration. There is still less blood flowing through your body than there would be if you were well hydrated.

Other Diuretics play a significant part too: - Drinking an alcohol or caffeinated beverage (that includes tea &

Cokes, as well as coffee) and some medications can lead to increased fluid loss as well. So, unfortunately this means that the more alcohol you drink on a dive trip the more likely you are to get a bend. All medications should be cleared with a physician prior to diving, even over-the-counter medicines. In particular, some menstrual preparations contain diuretics - drugs that make you urinate - and should be strictly avoided while diving.

4) Through Blood Loss - Menstruation is of particular importance, since some women can become slightly dehydrated during their menses. This is thought to be caused by a fluid shift from the blood

vessels into the surrounding tissue rather than to actual blood loss. There has been much speculation and research into whether women are at increased risk of DCS if they dive while menstruating, but the results are inconclusive.

5) Through the Gut - Finally, it's worth mentioning that while uncomfortable and unpleasant, diarrhoea's greatest danger to divers is that it can result in massive dehydration in a very short period of time. The same applies to seasickness.

The Key to Hydration - What colour is your wee??

The real key to preventing dehydration is to stay ahead of the game. I know it sounds a lot but every day you should drink a minimum of 8 to 10 cups of water. With an additional 2 to 4 cups extra per hour of activity (depending on the intensity). If it's very hot or if you're doing frequent dives, you will require more. The drinks should be spaced out over the course of the day rather than consumed in a short period of time. Again, avoid caffeinated beverages. And bring a water bottle along on the boat. This will ensure that you have sufficient fluid to drink between dives.

Your hydration level will effect the colour of your urine. If dehydrated your urine will be dark yellow, while in someone who is properly hydrated it will be almost clear.

Remember, there is significant evidence that avoiding dehydration will reduce your chances of DCS and if you would like further information, this can be provided via the Diving Diseases Research Centre, Tamar Science Park, Derriford Road, Plymouth PL6 8BQ. Tel: 44(0)1752 209999

Sandy Ferdinand

Forthcoming Events

• **Dive Gear insurance due**	**1st May**	• Menorca Holiday	21st May
• St. Trinnian's Party	8th May	• Lizard Holiday	29th May
• Club Summer Diving	Program Lots	• Summer Barbecue	10th Jul
• Pool Cleaning	8/9 + 15/16th May	• It's a Knockout	7th Aug
• Sports Diver Lectures	Starts 12th May	• Panto - Jacques & the Shotline	late 99

Crud Sponsorship Step forward and use Crud to advertise your business. It costs the club - roughly £50 to send out the 200 odd copies of Crud to the membership. We are now in a position to apply small ads to Crud advertising costs would simply cover the costs of production and post. Anyone else interested should see Mark Crumplin, Stephen Archer or Howard Clowes.

It's May don't forget to renew your **Diving equipment insurance** - The club's insurance scheme is cheapest premium around, £1 per £100 of equipment. Covered for all loses - even at sea!! See Andy

Flowers for more details. This will be the 12th year of it's existence, support the club and save yourself money too!

Fishy feats... As many of you may be aware some fish, particularly wrasse and parrot fish begin there lives as dull coloured females. As they get older a number of dominant females will change sex to become male, some brilliantly coloured. The Goby is so slow moving that finding a mate can be hard, this fish handles this problem by having the ability to more or less instantly change sex on meeting another fellow Goby. However a flatworm from eastern Australia is even stranger. All start lives as males. On meeting the males fence each other with their penises, the loser becomes the female and is injected with the victors sperm!!

Photos this issue (200 Club Surface Comp) Winner - Chris Norris, 2nd - Raibeart MacDougall & Joint 3rd -Pete Ladell & Felicity Garner (not shown)