to 3000 psi. A 'hang' tank was located at 5 metres. I was down to 1500 psi at the start of the ascent, 730 psi at 5 metres and I surfaced with 180 psi left. I could have switched to my reserve tank, but was curious to see if I could complete the dive on one tank.

I suppose the moral of this story is that you can do reverse profile dives safely, but you pay for it with long decompression times and a high residual nitrogen level.

W F Brogan
City Beach, W A

Reference

1 Williams G. Reverse dive profiles. *SPUMS J* 2002; 32: 109-110

Reply

The presentation re reverse dive profiles related to the blanket prohibition of reverse dive profiles – reverse dive profiles may not be always the most efficient use of dive time. The recommendations relate to dives less than 40 metres and differentials less than 12 metres – divers need to plan repetitive dive profiles to make the most efficient use of dive time.

Guy Williams
Rosebud Medical Centre, Victoria

Editor's note:
The sequence of dives described by Dr Brogan is outside that usually associated with recreational scuba diving.

Neurological symptoms developing while diving

Dear Editor,

We were interested to read the article by Bateman and Sawyer[1] reprinted in this journal (*SPUMS J 2002; 32: 60).* In this brief case report, a single MRI film of the cervical spine of a young woman who suffered presumed decompression illness whilst diving in Egypt, is presented. The report notes that she had an unsustained improvement in her neurological symptoms and signs with recompression therapy. The report goes on to say that on the basis of this MRI, a diagnosis of transverse myelitis was made and the patient then treated with steroids.

There are a number of issues that this case raises.

First, the MRI appearances of cervical spine lesions in decompression illness are characteristically lenticular in appearance, as is the one demonstrated, and often occupy several dermatomes, as is also the case here. It has been our experience that where significant lesions like this are present, there are almost certainly other lesions within the central nervous system, either in the lower spinal column or within the cranium. It would be interesting to know whether such multiple lesions were present, since this would exclude a transverse myelitis of a non-diving aetiology. Without that additional information the diagnosis of a non-diving transverse myelitis cannot be made.

The second issue is the one of recompression therapy. We do not know whether this was a single treatment, what type of treatment was administered and whether there was any follow-up hyperbaric therapy. In our experience, it is not uncommon for signs and symptoms to relapse to some degree in severe cases, even following an extended Royal Navy Table 62 or other major initial hyperbaric treatment. A varying pattern of gradually diminishing neurology is one that would be familiar to all those who have treated this condition. Therefore, neither the relapse nor indeed the supposed response to steroids precludes the diagnosis remaining that of decompression illness.

We remain unconvinced by the data presented that this woman suffered from anything other than neurological decompression illness.

F Michael Davis
Medical Director

D Boon von Ochsee
Specialist Anaesthetist
Hyperbaric Medicine Unit, Christchurch Hospital, New Zealand

Reference

1 Bateman RM, Sawyer RN. Neurological symptoms developing while diving. *Brit Med J* 2001; 323: 242

Medical conditions and diving deaths

Dear Editor,

The strongly-worded statement regarding medical conditions, specifically asthma, and their contribution to scuba diving fatalities made by Davis et al[1] cannot be allowed to go unchallenged. The authors base their statement on the presence of medical conditions established by history or at autopsy that were "believed to have contributed to the death". No data are given in the paper, however, as to the basis of this belief and the authors could not supply me with any further details when I contacted them. These details are apparently simply not available.

The problem here is that the argument is a circular one. Suppose one believes that the human foreskin is an important route of nitrogen excretion. One then would

conclude that circumcision is an absolute contraindication to diving. A survey of post-mortem findings in dead scuba divers could well find that a significant proportion of the males had in fact been circumcised, confirming the original hypothesis. Unfortunately this is the logic that is applied to asthma and indeed other medical conditions such as pulmonary adhesions.

Davis et al state that there are no good data to support the view that it may be safe to allow asthmatics to dive. There are no data to suggest that this view is incorrect. What is clear is that out of the total number of scuba dives and snorkelling expeditions performed in New Zealand over a 20-year period, only a handful of cases could be found in which asthma *possibly* contributed to a fatality (and I would again emphasise that no evidence is presented that this interpretation is correct). The limited information we have suggests that the prevalence of asthma in scuba divers is much the same as in the general population, so what we can say is that the absolute risk of diving with asthma in New Zealand over this 20-year period was minute.

Authors must resist the temptation to over-interpret their data to support their own beliefs (for example I would interpret their data as demonstrating the relative safety of diving with asthma). Davis et al's paper unfortunately does not contain any information that contributes meaningfully towards the debate as to the safety or otherwise of diving with asthma or other medical conditions.

Graham Simpson
Director of Thoracic Medicine, Cairns Base Hospital
Adj. Associate Professor, James Cook University

Reference

1 Davis M, Warner M, Ward B. Snorkelling and SCUBA diving deaths in New Zealand, 1980–2000. *SPUMS J* 2002; 32: 70-80

Reply

In our analysis of 184 diving drownings, there were 10 divers with asthma.[1] In six of those, asthma was recorded as a contributory cause of death. We state "These preventable deaths would *seem* to support the views of Edmonds and others that take a prescriptive attitude to this disease" (the italics are mine), and "A fifth of scuba divers and a quarter of snorkellers drowning had an underlying contributory medical condition such as asthma." For these statements, one of which draws attention to a current controversy and the other is a statement of fact drawn from coroners' reports, Dr Simpson castigates us for making more of our data than it is worth. I would suggest that this is rather what Dr. Simpson is doing in his letter. We consider the analogy to circumcision to be facetious, contributing little to the constructive debate he wishes.

He has misunderstood what we meant by being unable to supply him with further details. The individual case files are in the confidential possession of Water Safety NZ, and only general descriptive data were extracted in an anonymous manner. Therefore, without re-examining every file in the series we cannot provide him with any further information than exists in our database. The beliefs he is concerned about are those stated in the Coroners' autopsies and the subsequent hearings into the deaths.

The fact that a sizeable minority of these divers had underlying medical conditions that constituted a relative or absolute contraindication to diving is cause for concern. The figures quoted are in line with those reported for chronic medication use in Australian and US divers in this issue by Taylor et al.[2] Taylor et al have recently reported similar rates of disease in Australian divers.[3] Where asthma is concerned, recent work from Buffalo demonstrates that asthmatics immersed post-exercise have reduced airflow and absence of Phase IV, indicative of air trapping.[4]

The simple fact is that some divers with serious medical conditions died from their disease whilst diving and might not have done so in other circumstances. Therefore, ipso facto, these were preventable deaths. Whether there is only one asthmatic or epileptic in the group or 20 is irrelevant. There are sound theoretical reasons to continue a cautious approach to asthma in scuba diving until such time as Dr Simpson and others provide practical epidemiological data to the converse. I look forward with great interest to publishing such data in the SPUMS Journal in the future.

F Michael Davis
Medical Director
Hyperbaric Medicine Unit, Christchurch Hospital.

References

1 Davis FM, Warner M, Ward B. Snorkelling and scuba deaths in New Zealand, 1980-2000. *SPUMS J* 2002; 32: 70-80
2 Taylor S, Taylor D McD, O'Toole KS, Ryan CM. Medications taken daily and prior to diving by experienced scuba divers. *SPUMS J* 2002; 32: 129-135
3 Taylor D McD, O'Toole KS, Ryan CM. Experienced, recreational scuba divers in Australia continue to dive despite medical contra-indications. *WEM* 2002; 13: 187-193
4 Leddy JJ, Roberts A, Moalem J, Curry T, Lundgren CEG. Effects of water immersion on pulmonary function in asthmatics. *Undersea Hyper Med* 2001; 28: 75-82