

**PATENT FORAMEN OVALE**

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27/10/94

Dear Editor,

Nowadays many hospitals are using transcranial doppler equipment during carotid endarterectomy to demonstrate air or debris emboli.

I have recently had my transcranial Doppler performed at the Austin Hospital during a forced Valsalva manoeuvre and injection of well shaken saline solution and the results were negative. In view of the increased awareness of the potential for diving injuries secondary to paradoxical air embolus through a patent foramen ovale (PFO) this technique could perhaps be listed as one increasingly available technique of detecting patent foramen ovale. Perhaps it could be used to establish whether in fact PFO is as common as a number of recent papers have indicated.

Mark J. Sullivan

**BOOK REVIEWS**

**The DSAT Recreational Dive Planner. Development and validation of no-stop decompression procedures for recreational diving.**

RW Hamilton, Raymond E Rogers, Michael R Powell and Richard D Vann.

Diving Science and Technology Corporation and Hamilton Research Limited. 1994

Available from PADI at no charge.

The PADI Wheel and Recreational Dive Planner (RDP) are based on Haldanian decompression theories with the 60 minute half time controlling repetitive diving and allow multi-level dives. This book discusses the development of this decompression table and its testing.

The perceived inadequacy of the USN tables for recreational diving provided the impetus for the development of the RDP. Unfortunately the idea that uptake and elimination of gas are mirror images survived into the RDP when this has long been known to be untrue, but it does simplify the mathematics.

Basic facts about decompression sickness and bubble detection, statistics and testing are covered before coming to the story of the development of the RDP. The mechanics of constructing a Haldane based table are discussed and the methods by which the various values used in the RDP table were arrived at. This discussion should be read by all intelligent divers for it shows how arbitrary the figures are, being based on mathematical models rather than the (unknown) physiological facts. The reader is taken through the ideas that govern the RDP repetitive dives and multi-level diving and The Wheel.

Most of the book is devoted to the test programs, conclusions and references. The first test program, testing single day multi-level and repetitive dives, included chamber runs and open water diving in Puget Sound where the water is very cold. Most of the latter dives were

terminated when the diver became cold well before the time allowed by the table. All 911 dives, whether in the chamber or at sea, were monitored for venous bubbles. These were found in 10 to 12% of the divers almost all of which were the harmless grades 1 and 2.

One set of chamber trials of 6 multiple dives over six days was abandoned after a diver developed mild decompression sickness (DCS). There were 54 dives in this series. The test program was then reduced to four dives a day for six days, to simulate an overseas diving holiday. Twenty divers did 475 dives, all Doppler monitored. There were no cases of DCS but some subjects were fatigued and 7 had grade 3 bubbles at some time

There is a very fair discussion and analysis of results which point out the difficulties of amassing enough dives to make accurate statistical predictions. In all, the authors of this book consider that the testing validated "a new mode of decompression management for recreational diving". Apparently twice as many individual dives were used to validate the RDP as were used for the DCIEM tables. Even so 8 of the profiles for repetitive dives were tested on less than 10 dives. But DSAT, which is a subsidiary of PADI, is to be congratulated on its efforts at testing. Maybe the numbers are inadequate, but most of the schedules tested were stressful, being to the RPD limits. In the reviewer's opinion the exactness of figures in a table are less important in avoiding DCS than the way the diver dives. Many make little effort to dive a sensible plan or to stay at the planned depth or watch their air consumption or time underwater. However good the table, these people will put themselves at risk.

Anyone who is interested in decompression theory and table testing should write to PADI for a copy of this book and hope that the stock is not exhausted.

John Knight