letters published in SPUMS journal prevents me quoting them all.*

Incomplete literature review also means that Dr Langton has failed to mention publications[4-6] which challenge the validity of the paper[7] and refute the letter[8] by Cross and colleagues which he quoted. Langton suggests that small numbers and subgroup analysis limit the validity of observation by me and colleagues in our Lancet paper.[9] At the time, our paper was the largest investigation of the role of shunts in the aetiology of decompression illness and was the only one which was controlled; in distinction from earlier observational studies. We have since extended and confirmed the number of observations in over 300 divers reported in a further 6 publications. Our subgroup analysis was entirely valid, because it was predetermined, as mentioned in the paper, for the reasons described. We required significance to be established at the 1% level (rather than at 5%) to allow for the 4 subgroups, and in most cases of significance we found $p<0.001$.

Dr Bove expressed the opinion that if PFOs are going to cause trouble it would be in the situation of multiple days of repeat diving. Like much in his article this opinion is contrary to the scientific data.[10] Most of Dr Bove's article on "Cardiovascular problems and diving" is personal opinion unsupported by references.

Peter Wilmshurst
Consultant Cardiologist

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Key Words
Cardiovascular, decompression sickness, letter.

* *The Instructions to Authors allows four references for letters which should be of 400 words only. Dr Wilmshurst's first version of his letter contained 22 references, 2 more than are considered a reasonable number for an original article. He was asked to reduce his letter to under 800 words and ten references.*

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27/1/97

Dear Editor

Thank you for the opportunity to reply to Dr Wilmshurst's comments. For your readers' convenience I have used the same numbers as Dr Wilmshurst has used for references common to our two letters. The one reference not used by Dr Wilmshurst is numbered 11 to stay in the same sequence.

The "incomplete literature review" refers to three Letters to the Editor by Dr Wilmshurst,[4-6] commenting on the publications of Cross et al.[7,8] The letters themselves do not contain additional information and hence were not referenced. The two included references from Cross et al. contained observational information which is relevant to the discussion, namely the incidence of patent foramen ovale (PFO) in a small control group of divers,[7] and a further uncontrolled series of the incidence of PFO in divers with neurological DCI.[8] I have paraphrased one of the omitted references in discussing relative and absolute risks of DCI, and have referenced this to another of Wilmshurst's articles.[11] Interestingly, this editorial makes no reference to the work of Cross et al.[11]

My comments regarding "subgroup analysis ... validity" is in reference to the historically based division of patients into those with "risk factors for decompression sickness" versus "safe" dives. I have not questioned Wilmshurst et al.'s predetermined clinical sub-groupings. The numbers of patients with joint pain alone (6) or rash alone (2) are small, and meaningful statistical comparison is not possible.

I do not dispute the major findings of Wilmshurst's study,[9] that PFO may predispose to early onset neurological DCI, as indicated in my summary and abstract. Indeed my overall conclusions are similar to that published by Wilmshurst and de Belder.[11] PFO is a common incidental finding in the population; the absolute risk of DCI remains low regardless of the presence of PFO.

Paul Langton

References

4-9 as per Wilmshurst's letter

11 Wilmshurst PT and de Belder MA. Patent foramen ovale in adult life. (editorial) *Brit Heart J* 1994; 71: 209-212

Key Words

Cardiovascular, decompression sickness, letter.

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Dear Editor

I appreciate the comments of Dr Wilmshurst and have recalculated the metanalysis after removing Moon's non-diver controls. The recalculated odds ratio for all DCS is 1.96 (CI 1.33-2.89) and for serious DCS is 2.63 (CI 1.64-4.23). These ratios are significant at $p < 0.001$. The original ratios were 5.45 ((CI 3.88- 7.67) for all DCS and 5.48 (CI 3.64- 8.24) for serious DCS. Both analyses show an increased risk of DCS when a PFO is present.

The comment regarding personal opinion on cardiac problems in diving is noted. There is little information available on cardiovascular problems in diving from the published literature. For diving one must extrapolate information from the sports environment to the diving environment, with some exceptions specific to diving. I would not expect to find clinical studies of cardiovascular disorders in divers, thus most decision making comes from clinical experience with other sports, and from diving and exercise physiology.

Use of individual T tests without the Bonferroni correction has been criticised in other studies with multiple T tests. This comment has been made regarding the Wilmshurst findings in unpublished commentaries. I did not suggest that the data are analysed incorrectly rather that the results are valid because of the statistical analysis.

Studies by DAN (Divers Alert Network) and by PADI on multi-day repetitive diving show that multi-day repetitive diving increases the risk for bubble formation. Dunsford's review of the PADI data indicated that multi-day repetitive diving exposures demonstrated a high incidence of asymptomatic bubbles. Absence of bubbles in the right atrium eliminates concern for shunting across the PFO. Since multi-day repetitive diving is likely to produce asymptomatic bubbling, a PFO may become more important under these circumstances.

I hope these comments provide clarification of my paper.

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Key Words

Cardiovascular, decompression illness, letter.

DIVING HISTORICAL SOCIETY AUSTRALIA, SE ASIA

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25/5/97

Dear Editor

The objective of the Diving Historical Society (DHS), which is a Non Profit Body registered in South Australia, is to establish contact with others interested in diving history, older diving equipment, written and photographic material identified with diving. Also the Society will provide an avenue for the collection and exchange of information. Our diving heritage needs to be preserved and others educated in the fascinating past of diving. We invite you and your readers to become part of the procedure and enjoy the history of diving.

While, for most, the major advantage in joining the DHS will be to access the Historical Diving Society USA (HDS USA) magazine the *Historical Diver* at the same cost as domestic HDS USA members, it is hoped that membership will mean more than just receiving the award winning magazine (excellent that it is) and that informal regional groups may form and meet. These activities when they happen, will be covered in the regional newsletter that will be enclosed with the quarterly mail out of the *Historical Diver*. Regional members will receive their first issue of the four issue annual membership in July. Our thanks go to the HDS USA for their encouragement and support of our new regional Society.