

## References

- 1 Lawrence CHD, Chen IYD. The effect of scuba diving on airflow obstruction in divers with asthma. *Diving Hyperb Med.* 2016;46:11-4.
- 2 Goel A, Goyal M, Singh R, Verma N, Tiwari S. Diurnal variation in peak expiratory flow and forced expiratory volume. *J Clin Diagn Res.* 2015;9:CC05-7.

*Chris Edge*

Consultant Anaesthetist, Royal Berkshire NHS Foundation Trust, Reading, and Honorary Senior Research Fellow, Imperial College, London

**E-mail:** <cjedge@diver.demon.co.uk>

## Key words

Lung function; statistics; letters (to the Editor)

---

## Reply:

We thank Dr Edge for his interest in the study and the points raised. We have had lengthy discussions and attempts at data reanalysis with a statistician colleague but a full reanalysis has not been possible.

1. As we acknowledge in the discussion, the time of peak flow readings was not recorded and PEF varies through the day. Dive timing may affect the magnitude of any change in PEF while scuba diving, although we do not have the data to support that theory. As we do not have the recorded dive times we cannot be sure that the mix of morning and afternoon dives is identical in each group. This would be an area we will look into in any future study.

2. Each diver was able to contribute up to five pairs of readings (from five separate dives). All of which for the avoidance of doubt are related paired readings, specific to

individual dives. Not all divers submitted the same number of paired readings.

As requested we have attempted a data reanalysis taking into account the unequal numbers of repeated measurements. However, this, as we understand, requires a mixed model ANOVA which does not have a non-parametric equivalent. The presence of negatives (an increase in peak flow following scuba) in certain pairs means we are unable to perform a log transformation to normalise the data. As a result we have been unable to complete this.

3. On the original dataset we have performed bootstrap sampling on the before and after groups, and we have performed the Wilcoxon signed ranks test on the bootstrap samples and determined whether the *P*-value is less than 0.05. This resampling process has been repeated 10,000 times and the quantity of test producing a *P*-value of less than 0.05 have been totalled. For asthma group 3 (on regular preventative inhalers), where we found a significant difference (*P* = 0.039) in peak flow the power was found to be 8,999/10,000.

We acknowledge the limitations of performing a study with small sample sizes but feel that those limitations were clearly expressed in the original study. We are open to advice as to alternative methods of statistical appraisal.

*Chris Lawrence<sup>1</sup> and Isobel Chen<sup>2</sup>*

<sup>1</sup> Department of Medicine, County Durham and Darlington NHS Trust, Bishop Auckland, UK

<sup>2</sup> Department of Radiology, Newcastle Hospitals NHS Trust, Newcastle, UK

**E-mail:** <christopher.lawrence2@nhs.net>

## Key words

Lung function; statistics; letters (to the Editor)

---

## HBOevidence website

The database of randomised controlled trials in hyperbaric medicine maintained by Michael Bennett and his colleagues at the Prince of Wales Hospital Diving and Hyperbaric Medicine Unit, Sydney is at:

<<http://hboevidence.unsw.wikispaces.net/>>

Assistance from interested physicians in preparing critical appraisals is welcomed, indeed needed, as there is a considerable backlog. Guidance on completing a CAT is provided.

Contact Professor Michael Bennett: <[m.bennett@unsw.edu.au](mailto:m.bennett@unsw.edu.au)>