In Response:

We appreciate and thank you for your comments.

The most important aspect is that we found high-grade bubbles during real flights after a 24-h preflight interval, independently of any other parameter. This aspect alone may justify a higher DCS risk even in respect of a correct PFSI after real recreational diving and during real flights. We are aware that real conditions could represent a limit in the standardization of ambient conditions, but on the other hand, real conditions are not always perfectly represented by simulated conditions.[2]

We apologize for the nonspecific reference about your paper[1] and we agree with you that our sentence is not clear in this regard. Thank you for having raised this point.

With regards to cabin pressure value our data reflect the mean of data recorded every 15 min from reaching cruising altitude and up to 4 h (echograph battery pack exhaustion). Our cabin altitude data were less than the "normal" equivalent altitude on commercial flights, but this is even more topical since this was a "real life" experiment. Equivalent Altitude data recorded with our device were always consistent with the cockpit ones for the 767/300 ER aircraft.

This is a "Wide Body" aircraft and reaches 28,000 ft altitude on the first part of the flight, which is the data we refer to. Only on the second part of the flight (after significant fuel consumption) can the aircraft reach 36,000 ft or more (2000/2400 m equivalent) altitude.

In all our trials, a maximum 2000 m equivalent altitude was only reached after 7 h beyond the 90-min interval, after which bubbles were not detected anymore. We checked cabin equivalent altitude on other aircraft (narrow body Boeing 737, Airbus A320) and cabin equivalents of 2400/2500 m were reached in only 30 min.

This is why we wrote, in discussion:

"Further investigation is ongoing to investigate and monitor possible different flight conditions (cabin pressures) and PFSI. Some flights can actually reach spikes of cabin pressure as low as 708 mbar (8005.3 ft/2440 m equivalent altitude) and the current guidelines suggesting 18-h PFSI may represent an increased risk in certain bubble-prone divers."

Concerning diving exposure: gradient factor is used to measure nitrogen pilot tissue supersaturation at end-dive, predicting theoretical M-value for all the Buhlmann ZH-l16 model C 16 tissues. All 16 tissues were analyzed at all times during the dive and Pilot Tissue Max GF attained was reported. We also tested diving exposure by Exposure Factor without finding any difference in the three groups.

Finally, our "Bubblers" showed bubbles every day after every dive, independently of dive depth and time, indicating a possible role of individual predisposing risk factors (genetic, endothelial, currently under investigation).

Regarding the use of mean or median for nonparametric data, we agree with you, even if we did not omit the median in our manuscript, but presented both of them. When using nonparametric tests, we took median into account.

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REFERENCES

1. Pollock NW, Fitzpatrick DT. NASA flying after diving procedures. In: Sheffield P, Vann RD, editors. DAN Flying After Recreational Diving Workshop Proceedings. Durham (NC): Divers Alert Network; 2004:59-64.
2. Vann RD. Diving at the no-stop limits: chamber trials of flying after diving. In: Vann RD, editor. Flying after diving workshop. Durham (NC): Divers Alert Network; 2004:32–37.

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