

Flying after diving DAN Workshop 2002 - an overview

Drew Richardson

Key words

Flying (and diving), meetings, DAN - Divers Alert Network

Abstract

(Richardson D. Flying after diving DAN Workshop 2002 - an overview. *SPUMS J.* 2004; 34: 27.)

In May 2002, Divers Alert Network hosted a one-day workshop to review the state of knowledge on flying after diving, and to discuss whether there was a need for new flying-after-diving guidelines for recreational divers. After single no-decompression dives a minimum pre-flight surface interval of 12 hours is suggested. After multiple no-decompression dives per day or multiple days of diving a minimum pre-flight surface interval of 18 hours is suggested. For dives requiring decompression stops, there is little experimental or published evidence on which to base a recommendation. For decompression diving, a pre-flight surface interval substantially longer than 18 hours appears prudent.

In May 2002, Divers Alert Network, (DAN) hosted a one-day workshop in Durham, North Carolina, USA, to review the state of knowledge on flying after diving, and to discuss whether there was a need for new flying-after-diving (FAD) guidelines for recreational divers. Forty individuals representing the recreational diving industry, government agencies and DAN attended the workshop. Paul Sheffield, previous organiser of an Undersea Hyperbaric Medical Society workshop on FAD in 1989, served as Chair.

Discussions during the morning sessions began with a review and overview by Richard Vann and Paul Sheffield of the history of FAD guidelines and the development of FAD guidelines over time. These presentations were followed by Ed Flynn's review of the 1999 US Navy procedures for ascent to altitude after diving. Richard Vann presented 'Diving at the limits: chamber trials of flying after diving', the results of recent studies concerning the risk of decompression sickness in FAD. Data presented were derived from experiments conducted with dry and resting human subjects in a hyperbaric chamber environment. The study generated 802 FAD exposures and resulted in two main conclusions, and one relevant observation. It first concluded that decompression sickness (DCS) decreased significantly with increasing pre-flight surface interval (PFSI) ($p = 0.018$). The second conclusion was that repetitive dives required significantly longer PFSIs for low DCS ($p = 0.018$). The relevant observation was that no DCS occurred in 52 trials of a 17-hour PFSI.

Following Richard Vann, Jake Freiberger of DAN presented a retrospective analysis of flying after diving attempting to answer the question "Does the PFSI influence the risk of DCS after repetitive, multi-day, open-water recreational diving?" Dr Freiberger also presented an economic model for risk assessment in determining FAD intervals. His papers were followed by Ed Thalmann, who described project goals for a proposed test utilising existing data and new data to develop a decompression model capable of computing risk of DCS for altitude exposures following air

dives designed for the USN. Neal Pollock of Duke University, North Carolina, presented data from a study of military free-fall parachuting after diving for Special Forces applications. These trials examined flying at 25,000 feet after diving. Dr Pollock also reviewed NASA flying-after-diving procedures developed in preparation for the Hubble Mission in the 1990s.

In the afternoon, discussions centred on whether changes to the existing FAD guidelines were warranted by the data presented in the morning, and, if so, what those changes should be. The workshop concluded that changes were justified.

The consensus guidelines were as follows.

A. Dives within no-decompression limits:

- Single no-decompression dive: A minimum pre-flight surface interval of 12 hours is suggested.
- Multiple dives per day or multiple days of diving: A minimum pre-flight surface interval of 18 hours is suggested.

B. Dives requiring decompression stops:

There is little experimental or published evidence on which to base a recommendation for decompression diving. A pre-flight surface interval substantially longer than 18 hours appears prudent.

DAN expects to publish the workshop proceedings this year and to submit to the *Undersea and Hyperbaric Medicine Journal* a paper reporting on the experimental trials described briefly above.

Drew Richardson, AS, BSc(hons), MBA, DEd, is President, PADI Worldwide and President of Diving Science and Technology Corporation.

*30151 Tomas St, Rancho Margarita,
CA 92688, USA*

Phone: +1-(0)949-858-7234

Fax: +1-(0)949-858-9220

E-mail: <drewr@padi.com>