FEBRUARY 2000

Importance of decompression sickness (Editor in Chief, "Blue Journal"): "This topic was chosen as the February 2000 theme because of its critical importance in aerospace medicine research and operations, as well as undersea activities. It must be taken into account during flight above 12,000 feet; hyperbaric chamber operations; submarine and submersible activities; commercial, military and recreational SCUBA/helmet diving; and compression research, to name a few. Very few members of the Aerospace Medical Association are not concerned to some degree about this topic, both in their personal and professional lives. Selected papers in this issue deal with clinical and operational aspects of this respected disorder, decompression sickness."[1]

Decompression sickness in shallow dives (Naval Medical Research Institute, Bethesda, MD): "The USN93 probabilistic model of decompression sickness (DCS) predicts a DCS risk of 3.9% after a 40 ft of seawater (fsw) for 200 min no-stop air dive, although little data is available to evaluate the accuracy of this prediction. Based on an analysis of Navy Safety Center data from diving on U.S. Navy standard air decompression tables, the observed incidence of DCS for this type of dive is 0.11%… Of 30 military divers who completed 91 [study] dives, there were 2 cases of DCS (2.2%, 95% CI: 0.27-7.7%). The study was terminated early after the second DCS case because of the presence of neurological symptoms and signs… [The] incidence of DCS in a laboratory setting is higher than observed in fleet diving. Use of the 40 fsw for 200 min schedule in a decompression computer is likely to result in DCS incidence 2.5- to 70-fold greater than that observed in U.S. Navy diving using table-based procedures."[2]

FEBRUARY 1975

Personality and pilot error (U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL): "The consistently high frequency of pilot-error accidents in both military and civilian aviation programs does much to support exploratory research which might help alleviate the problem. Cattell's Sixteen Personality Factor Questionnaire (16 PF), Mehrabian Achievement Scale, and a dynamic decision making task (under risk) were given to 51 Army aviators. Accident files were then examined in order to classify the aviators as to their prior pilot-error accident involvement. Stepwise discriminant analyses revealed that the decision-making task scores and the achievement scores were unrelated to the pilot error accident groupings while the 16 PF scores were able to correctly classify 86% of the aviators as to whether or not they had been previously listed as a cause factor in a military aviation accident."[3]

Health maintenance counseling (U.S. Air Force School of Aerospace Medicine, Brooks Air Force Base, TX): "Current medical practice requires us to be able to educate and alter an individual's approach to health maintenance. The objective is to prevent illness–not only to treat illness. This approach should result in keeping people out of hospitals and clinics. Diet should be thought of as a noun, not a verb … In keeping with this approach, USAF medical team members should be able to do dietary counseling …

"[B]efore making changes in a subject's diet, the counselor must have a clear, unbiased picture of the subject's present dietary habits. He should be able to show the subject the food availability within the Air Force food system. He must provide dietary education to motivate the subject to change his present dietary habits. This includes prescribing diets that are compatible with flight. Also aircrew members should be educated regarding the potential harmful effects of 'fad' diets in their flying performance. Flying at 20,000 ft is no time for an aircrew member to experience diminished G tolerance or hypoglycemic episodes secondary to poor dietary habits."[4]

FEBRUARY 1950

Cockpit lighting (Aeronautical Medical Equipment Laboratory, Naval Air Experimental Station, Philadelphia, PA): "Indirect lighting systems for aircraft cockpits are intended to foster optimal visual functioning by the pilot. Included among the visual problems associated with the design of such systems are the selection of the spectral quality of the light, the distribution of tile illumination, and the provision of adequate controls so that the lighting will conform to the changing operational requirements of the pilot. Current developments of improved red lighting systems for cockpits are concerned with instrument illumination control panel lighting, and general cockpit lighting … For the improvement of control panel lighting, edge-lit plastic plates are being developed. The visual problems of brightness, contrast, and form of marking for such panels [are being researched] …

"Of course, much still remains for study. The effect of high-contrast markings on performance over extended periods is being experimentally studied in this laboratory at the present time. With respect to optimal marking forms for transillumination use, the studies are being extended to cover critical letter sizes, letter-height-to-width ratios, and form of numerals. Also being investigated are the forms for nonverbal markings such as those indicating direction and magnitude.

"From what has been accomplished thus far in the field of indirect cockpit lighting, it can be said that such methods offer a most promising avenue toward improving pilot performance."[5]

REFERENCES

1. Holt GR. February 2000: decompression sickness. Aviat Space Environ Med. 2000; 71(2):101.
2. Ball R, Parker EC. A trial to determine the risk of decompression sickness after a 40 feet of sea water for 200 minute no-stop air dive. Aviat Space Environ Med. 2000; 71(2):102–108.
3. Sanders MG, Hoffman MA. Personality aspects of involvement in pilot-error accidents. Aviat Space Environ Med. 1975; 46(2):186–190.
4. O'Brien MS. Prejudice and dietary counseling. Aviat Space Environ Med. 1975; 46(2):208–209.
5. Brown FR, Poppen JR. Visual problems in designing improved indirect lighting for aircraft cockpits. J Aviat Med. 1950; 21(1):3–13, 47.

This column is prepared each month by Walter Dalitsch III, M.D., M.P.H. Most of the articles mentioned here were printed over the years in the official journal of the Aerospace Medical Association. These and other articles are available for download through the link found on https://www.asma.org/journal/read-the-journal.

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