JANUARY 2000

"Go pills" (Aircrew Health and Performance Division, U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL): "The efficacy of Dexedrine® for sustaining aviator performance despite 64 h of extended wakefulness was investigated. This study was conducted to extend the findings of earlier research that had proven the efficacy of Dexedrine during shorter periods (i.e., 40 h) of sleep deprivation … Dexedrine (10 mg) or placebo was given at midnight, 0400, and 0800 hours on two deprivation days in each of two 64-h cycles of continuous wakefulness. Test sessions consisting of simulator flights, electroencephalographic evaluations, mood questionnaires, and cognitive tasks were conducted at 0100, 0500, 0900, 1300, and 1700 hours on both deprivation days. Two nights of recovery sleep separated the first and second 64-h sleep-deprivation cycles … Simulator flight performance was maintained by Dexedrine throughout sleep deprivation. The most benefit occurred at 0500 and 0900 hours (around the circadian trough) on the first deprivation day, but continued throughout 1700 hours (after 58 h awake) on the second day. Dexedrine suppressed slow-wave EEG activity which occurred under placebo after 23 h awake and continued to exert this effect throughout 55 h (and sometimes 59 h) of deprivation. The drug sustained self-perceptions of vigor while reducing fatigue and confusion. Recovery sleep was slightly less restful under Dexedrine … Dexedrine sustained aviator performance and alertness during periods of extended wakefulness, but its use should be well controlled. Although effective, Dexedrine is no replacement for adequate crew rest management or restful sleep."[1]

JANUARY 1975

Human factors (Directorate of Flight Safety, Civil Aviation Authority, London, England): "The number of fatal accidents involving public transport aircraft has increased significantly in recent years and, because more and more 'wide-bodied' aircraft have been coming into service, this has resulted in a rapid increase in the number of fatalities. A combined attack on the problem by all concerned with flight safety is required to improve the situation. The collection and analysis of aircraft accident data can contribute to safety in two ways: by giving an indication of where to concentrate future effort and by showing how successful past efforts have been. An analysis of worldwide accident statistics by phase of flight and causal factor shows that the largest percentage of accidents occurs in the approach and landing phase and are caused by 'pilot error.' Further research is needed to find out why pilots make errors and how such errors can be eliminated …

"It is not suggested that when we know the answers to them all [human factors] we will have solved the problem of flight crew error. We may merely have proved that while there are humans on the flight deck of an aeroplane there will always be mistakes and that the ultimate solution lies in complete automation of the piloting function.

"In the meantime, it may be that only if the task of flying the modern airliner is greatly simplified will there be a hope of achieving a reduction in the number of accidents of this sort – that, and ensuring that aircraft and operating procedures are so designed that wherever possible no single error can result in disaster."[2]

JANUARY 1950

Antig-suit performance (Acceleration Laboratory of the Mayo Aeromedical Unit and Section on Physiology, Mayo Clinic and Mayo Foundation, Rochester, MN): "Assays of the protective value of the G-4 (Z-1) antiblackout suit were performed on thirteen subjects in an airplane and on the Mayo centrifuge. In both instances the tests were conducted according to procedures commonly used to determine the effectiveness of antiblackout suits on subjects on the centrifuge.

"With the antiblackout suit uninflated, the g tolerance of the subjects as measured by the occurrence of visual symptoms was on the average 0.7 g higher in the airplane than it was the centrifuge. Control pulse rates were on the average about 15 beats per minute faster in the airplane than they were on the centrifuge.

"The average increase in tolerance to positive acceleration afforded by the G-4 suit as appraised by the occurrence of visual symptoms, the decrease in blood content of the ear, the decrease in amplitude of the ear pulse and the increase in pulse rate was 1.1 g, 1.2 g, 1.6+ g, and 1.4 g, respectively, in the airplane and 1.0 g, 1.1 g, 1.5+ g and 1.4 g, respectively, on the centrifuge.

"Thus, despite the higher g tolerance of the subjects in the airplane, the increase in g tolerance afforded by the antiblackout suit was essentially the same in the airplane as it was on the centrifuge."[3]

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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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