

OCTOBER 1999

To run or to not to run? (Department of Aerospace Physiology, The Fourth Military Medical University, Xi'an, People's Republic of China): "This study was performed to investigate the effects of aerobic training on orthostatic tolerance and to quantify the post-training changes in cardiovascular response and heart rate variability (HRV) ... Tolerance and circulatory responses to two types of lower body negative pressure (LBNP) were examined and compared in a group of healthy male students before and after 6 mo of aerobic training, and the results were further compared with a group of athletes (runners). Changes in HRV associated with training were analyzed by conventional and time-varying autoregressive spectral analysis, as well as by approximate entropy measurement (ApEn)—a statistic quantifying heart rate 'complexity' derived from non-linear dynamics ... After aerobic training, there was an initial transient hypotension during the supine -50 mmHg LBNP testing and a significant decrease in tolerance to upright graded LBNP in most of the student-subjects. Moreover, after training, there was a significant decrease in ApEn value of the HRV time series during both supine control and LBNP testing, and the rate of cardiac vagal withdrawal and sympathetic activation during the onset of LBNP was faster than that before training ... The present study has provided further evidence that certain types of aerobic training may affect orthostatic tolerance and may be associated with a loss of complexity of HRV during supine resting and orthostatic stress."¹

OCTOBER 1974

Alcohol-induced performance decrement (USAF School of Aerospace Medicine, Brooks Air Force Base, TX): "The degrading effects of ethanol (ETOH) on performance of two separate tasks developed around the Link GAT-1 trainer were studied in 12 USAF instructor pilots. The subjects were tested at three alcohol dose-levels (0.3, 0.6, and 0.9 g ethyl alcohol/kg body weight), which resulted in indirectly measured blood alcohol levels of approximately 30, 60, and 100 mg%, respectively. Statistically significant performance decrements were found for only the moderate and high alcohol doses. The magnitudes of the decrements corresponded closely to those we have reported for previous experiments using the same test conditions but with subjects who had no previous flying experience. An assessment of the operational significance of the performance measuring scales was also attempted through the use of special questionnaires and by concurrent rating of performance by flight examiners. Limits were established for decrement scores indicative of an operationally significant hazard. Only with the low alcohol dose could one be 95% confident that not over 5% of the population would exceed the established limits."²

OCTOBER 1949

Aeromedical issues in World War II aircrew (Chief, Department of Biometrics, USAF School of Aviation Medicine, Randolph Field, TX): "The United States Eighth Air Force in World War II (ETO) kept especially thorough records of its medical experiences during combat in the form of various medical reports. Statistical summaries of these experiences are worth examining by the medical profession for chronological trends, differences among occupational groups, and differences in risks based on differences in criteria of exposure ...

"Incidence statistics of barotitis media, hypoxia, airsickness, and bends are given for the U.S. Eighth Air Force (ETO) from January, 1943, to June, 1945, according to chronological trend, type of aircraft, and position in aircraft. Rationalizations of the results are conjectured ...

"The incidence and rate of incidence of 'altitude diseases' reflect the magnitude and intensity of aerial combat effort in the ETO, with a general decline after the Normandy invasion, after the Allies had achieved air supremacy ...

"Barotitis media occurred more often among the bomber crew than among fighter pilots, and more often among crew of B-24's than among the crew of B-17's. Pilots, navigators, and bombardiers of B-17's incurred barotitis media more often than did engineers, radio operators, and gunners ...

"Hypoxia and airsickness among bomber aircrew occurred most frequently among gunners ...

"Bends among bomber aircrew occurred most frequently among the most active members of the crew."³

REFERENCES

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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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