APRIL 1999

General aviation crash characteristics (The Johns Hopkins University, Baltimore, MD): "We analyzed the National Transportation Safety Board's Factual Reports for all airplane and helicopter crashes of general aviation flights that occurred in North Carolina and Maryland during 1985 through 1994 … A total of 667 crashes resulted in 276 deaths and 368 injuries during the 10-yr period in the two states. Of the pilots-in-command involved in these crashes, 146 (22%) died. The case fatality rate for pilots was significantly higher in crashes that occurred between 6 p.m. and 5 a.m. (34%), away from airports (36%), with aircraft fire (69%), or in instrument meteorological weather conditions (IMC) (71%) … Significant correlates of pilot fatality were aircraft fire [odds ratio (OR) 13.7, 95% confidence interval (CI) 6.9-27.2], off-airport location (OR 9.9, 95% CI 5.0-19.6), IMC (OR 9.1, 95% CI 4.3-19.6), nighttime (OR 2.2, 95% CI 1.3-3.7), and pilot age ≥50 yr (OR 1.7, 95% CI 1.0-3.0). Pilot gender, flight experience, principal profession, and type of aircraft (airplane vs. helicopter) were not significantly associated with the likelihood of survival."[1]

APRIL 1974

Crew rest calculator (Federal Aviation Administration, Washington, DC): "A device is described for calculating the rest periods necessary for the physical and mental well-being of an air traveler after long-distance flights. The device is basically a pocket-sized calculator consisting of two concentric discs and a pointer. The larger disc is subdivided in an outer and an inner ring. The outer ring is marked in 10° and 5° intervals, which indicate the travel time in hours and half-hours respectively. The center ring is marked in 10° intervals, which indicate the duration of the rest period in hours. The smaller disc, which is transparent in its center to allow for reading the rest-period times, bears the scales of the additional five factors which determine the duration of the rest period. The overlaying transparent pointer, which can be rotated about the center of the device, provides for the reference setting of each factor, for their addition, and for the reading of the final result" (see **Fig. 1**).[2]

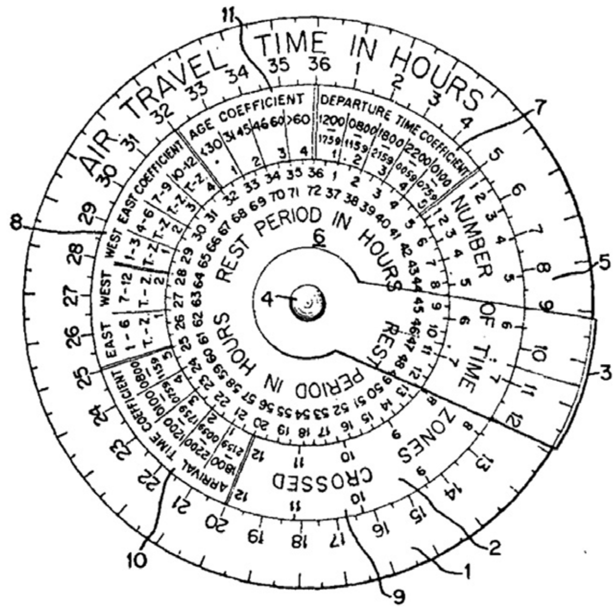

Fig. 1. Physiological rest period calculator.

APRIL 1949

Perceptions of reality (San Jose State College, San Jose, CA, and U.S. Naval School of Aviation Medicine and Research, Pensacola, FL): "Visual cues form the basis for proper orientation during flight, and if they are meager, disorientation may result. This disorientation usually has both visual and nonvisual components. The visual components can be divided into two categories, namely, those which result from deficient stimuli and those which are illusory …

"The observations were made in the rear cockpit of an SNJ-6 aircraft during flight. All visual cues to orientation were eliminated by having the observer close his eyes and cover his head with a heavy, black, sateen cloth. Head movements were minimized by means of a biting board which was held in the mouth throughout each series of trials. In half of the trials the subjects faced straight ahead in the cockpit, and in the remaining half, they twisted the head and body 85 degrees to the left of the line of forward motion of the aircraft …

"These results show that the perception of position in space is a function of the resultant of the force of gravity and the accelerative force acting on the body. The subjects reported clear perceptions of being tilted, which would be interpreted as climbing or diving as far as the behavior of the aircraft is concerned. This is an added source of confusion in orientation resulting from accelerative forces acting on the body during normal flight. These confusions result in disorientation in space and therefore have important implications for flying, particularly when visual cues are lacking and the pilot must rely on the secondary cues presented by the instruments."[3]

REFERENCES

1. Li G, Baker SP. Correlates of pilot fatality in general aviation crashes. Aviat Space Environ Med. 1999; 70(4):305–309.
2. Gerathewohl SJ. Simple calculator for determining the physiological rest period after jet flights involving time zone shifts. Aerosp Med. 1974; 45(4):449–450.
3. Clark B, Graybiel A. Linear acceleration and deceleration as factors influencing non-visual orientation during flight. J Aviat Med. 1949; 20(2):92–101.

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 from Mira LibrarySmart via https://submissions.miracd.com/asmaarchive/Login.aspx.

DOI: https://doi.org/10.3357/AMHP.6446.2024