AUGUST 1996

Impact of spina bifida in aviation (U.S. Army Aeromedical Research Laboratory, Ft. Rucker, AL): "Spina bifida occulta (SBO) occurs in 18-34% of the normal U.S. population. Recently, 16.5% of normal, asymptomatic male soldier volunteer candidates in a U.S. Army Aeromedical Research Laboratory ride motion study were excluded from the study because they had SBO at one vertebral level. Disqualifying this percentage of screened research subject candidates threatened the timely completion of the schedule-intense protocol. Although one study suggests that SBO at spinal level S1 has a higher incidence of posterior disc herniation, the preponderance of clinical literature reports that spina bifida occulta is not a medical problem. The impact literature indicates that lumbosacral vertebral bodies fracture at 7.14 kN in static compression and 20+ G during dynamic vertical impacts. In this paper, we examined the human data observed in ejection seat incidents, the rationale for excluding volunteers with single level SBO and the path of axial load transmission through the lumboscral spine. Based on the findings, we concluded that research volunteers with single level SBO are not at increased risk for injury and recommended inclusion of these volunteers in future studies involving repeated axial impacts due to ride motion."[1]

AUGUST 1971

Significance of spatial disorientation (Directorate of Aerospace Safety, Norton AFB, CA): "This study indicates that spatial disorientation is still a significant flight safety problem… Until we effectively address this problem through operational analyses of training, the flight environment, and indoctrination programs, spatial disorientation will continue to be a significant cause of aircraft accidents…

"It has often been stated that the young, inexperienced pilot is more susceptible to spatial disorientation. Problems with aerial orientation, in student aviators, are well recognized. Early student indoctrination in the physiology and psychology of spatial disorientation is common as part of the accident prevention program in pilot training units. The amount of emphasis on this subject for the trained pilots 'waxes and wanes' following graduation; a brief lecture of varying quality given yearly in instrument ground school is the main reindoctrination [sic] that a pilot can expect for the rest of his career…

"Analysis of several factors concerning individuals involved in spatial disorientation accidents allows a prediction concerning the average pilot who will be involved in future similar accidents. He will be around 30 years of age, have 10 years in the cockpit, and have 1,500 hours of first pilot/instructor pilot time. He will be a fighter pilot and will have flown approximately 25 times in the three months prior to his accident."[2]

AUGUST 1946

Automatic rip cord for high-altitude bailout (University of California, Berkeley, CA): "The problems of bail-out and parachute dynamics are far better understood now than before the war, as a result of extensive research in this field by the Allies and Germany; but as yet, a practical solution of bail-out at high altitudes and at high speeds is still tentative and untried. The problem has lost none of its importance with the end of the war, however, since the need for satisfactory and reasonably fool-proof equipment and technique becomes constantly more pressing in view of the continued tendency toward greater speed and higher service altitudes in aviation…

"In principle, the device described here is a spring-actuated rip cord which can be pre-set to trigger automatically at any altitude between 1,000 and 18,000 feet, i.e., within the safe range of altitude for opening standard parachutes…

"Conceived initially for application to delay jumps from high altitudes and high speed planes, it might also be found generally useful as a safety device…. Test results… [indicate] considerable accuracy although subject to small temporary changes in calibration when exposed to extreme temperature and severe shock."[3]

Pharmacologic attack on motion sickness (School of Aviation Medicine, Randolph Field, TX): "This study was initiated as a consequence of earlier studies showing that hyoscine and other atropine-like drugs were moderately effective in the prevention of swing sickness and seasickness. At the time the experiment began there were three remedies, the Army Motion Sickness Preventive [0.32 mg atropine sulfate, 0.44 mg hyoscine hydrobromide, 130 mg sodium amytal], the Royal Canadian Seasickness Remedy [0.30 mg hyoscine hydobromide, 0.80 mg hyoscyamine hydrobromide, 100 mg nicotinamide] and hyoscine [hydrobromide] alone [0.75 mg] that were considered to be of value in some type of motion sickness…

"The Army Motion Sickness Preventive, Royal Canadian Seasickness Remedy and hyoscine were all moderately effective in preventing airsickness… Some evidence was obtained that hyoscine was more effective than Army Motion Sickness Preventive or the Royal Canadian Navy Seasickness Remedy… There was no evidence that the administration of placebos affected the incidence of airsickness."[4]

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