

APRIL 1993

Alcohol and pilots (Brooks AFB, TX; United Airlines, Denver, CO, and Chicago, IL): "Airline transport pilots are at risk for alcoholism... [T]he development and implementation of this job-based, peer-oriented alcohol treatment can be an asset to pilot career progression and airline pilot retention. According to a retrospective analysis of identified aviators, 87% of alcoholic pilots of this major airline returned to flight duties after substance abuse treatment. Relapse occurred in 13% of those accepting treatment. Early identification and treatment of the substance-abusing aviator can be enhanced by encouraging teamwork between pilots, union, airline management, flight surgeons, and employee assistance program professionals."²

APRIL 1968

Human Systems Integration (First annual William Randolph Lovelace Memorial Lecture delivered September 29, 1967, in Albuquerque, NM, by Deputy Administrator, NASA): "[T]he theme of the first [lecture] should be concerned with man's role in space – for this was truly an area where Randy's vision, talent, and leadership were brought to bear in a special way upon our national goals and scientific progress in manned space flight..."

"One fact that grows increasingly clear is that we can no longer allow ourselves to be bound by barriers that traditionally have separated the various disciplines. Manned and unmanned missions can no longer be compartmentalized. What we are learning in biology, medicine, and biophysics must be shared with researchers in other fields such as instrumentation, communications, and data processing. Each of us, no matter what our field of specialization, must strive to be broadly familiar with the scientific and technological advances and needs in many disciplines and be willing to share our capabilities across these disciplinary boundaries."³

Space leotard (Webb Associates, Inc., Yellow Springs, OH): "To provide virtually unrestricted movements in all kinds of extra-vehicular activities in space, a Space Activity Suit is proposed, consisting of a powerful elastic leotard to counter the circulatory effects of breathing oxygen at a pressure of 170 mm.Hg..."

"A prototype garment has been worn in the laboratory for up to 90 minutes while breathing at pressures of 30, 60, and 100 mm.Hg [Fig. 1]. Mobility and dexterity were excellent; no circulatory embarrassment appeared. When an arm protected with an elastic gauntlet was exposed to less than 8 mm.Hg absolute for 20 minutes, there was no sign of gaseous swelling, dexterity was unimpeded, and circulation was maintained.

"[A]dvantages over gas-filled pressure suits: complete mobility at small metabolic cost; simplicity and greater reliability; low risk if the garment is torn; and physiological temperature regulation without cooling equipment."⁴

APRIL 1943

Effects of hypoxia: "The pilot's reaction to anoxia is admittedly only one of the responses to high altitude that determine his fitness to fly. Superior physical and mental equipment and

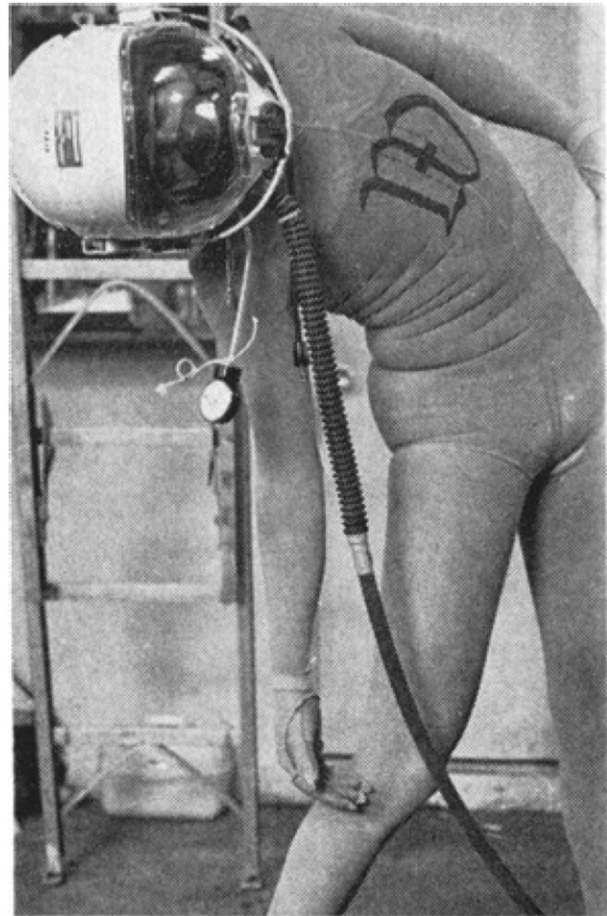


Fig. 1. Lateral trunk flexion in the 60-mmHg assembly.

character traits such as fortitude are of prime importance. Other determining factors are susceptibility to decompression sickness, intolerance for extreme temperatures, vestibular abnormalities, visual defects, neuro-muscular incoordination, ear and accessory sinus pathology, cardio-respiratory insufficiency, susceptibility to black-out or syncope and to abdominal distention. The presence of some of these is determinable without difficulty. There remains, however, a portion of the population within the required age limits which presumably could not be as efficient in the air as the remainder. Our experience with apparently healthy young male students convinces us that there is a notable difference in the emotional response to anoxic conditions between any two individuals. The response of some of the subjects was

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AEROSPACE MEDICINE HISTORY, *continued*

severe enough to raise considerable doubt as to their dependability as pilot officers....”¹

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