Journal Scan


The direction of future SD research and training is shaped primarily by the outcome of formal investigation of aircraft accidents and incidents.

The authors conducted a short postal SD survey, which was distributed to 5 Naval Air Squadrons, 22 Joint Helicopter Command Units and 7 RAF Stations in the UK. There were 752 questionnaires, including responses from 562 pilots and 149 navigators.

The results showed most frequently experienced SD episodes were ‘the leans’ (92%), loss of horizon due to atmospheric conditions (82%), misleading altitude cues (79%), sloping horizon (75%) & arising from distraction (66%).

The authors concluded that SD is still a significant hazard of military flying. Overall, this study showed that the postal questionnaire is a useful tool for assessing how SD training and experience may benefit the recognition of situation that may cause SD.


This is the first study to analyse variation in time estimation during 60 hr of sleep deprivation and the relation between time estimation performance and the activation measures of skin resistance level, body temperature and Stanford Sleepiness Scale (SSS) scores.

The authors studied 30 healthy participants in age group 18-24 years of age, for a 10s interval using the production method. The authors found lengthening in the time estimation that was modulated by circadian oscillations. No difference in gender were found in the time estimation task during sleep deprivation. The variations in time estimation correlated significantly with body temperature, skin resistance level and SSS throughout sleep deprivation period.


HBOT has been used for several years as a therapy for Meniere’s disease. In this study continuous variations in pressure from 1.7 to 2.2 ATA,(Alternobaric O₂ therapy: ABOT) were used to decrease endolymphatic hydrops, the typical histopathological substrate of Meniere’s disease, by increasing hydrostatic pressure and mechanical stimulation of the endolymphatic flow towards the duct and the endolymphatic sac, which produces a consequent increase in the dissolved O₂ content in the labyrinth liquids, which should contribute to recovering cell metabolism and restoring cochlear electrophysiological functions to normal.

The author studied an experimental group of 20 patients suffering from unilateral Meniere’s disease. They received a total of 15 ABOT treatment sessions during the acute episodes. A control group of 18 patients suffering from Meniere’s disease was treated with 10% glycerol IV (during the acute episodes) and with betahistine (8mg x 3/day) in the periods in between.

At the end of the follow-up period, patients treated with ABOT had significantly fewer vertiginous episodes, had improved PTAs and tinnitus compared to the controls. The results support the use of ABOT as a valid alternative to drugs in the long term treatment of Meniere’s disease.


This paper describes an experiment examining the relative effectiveness of two display technologies: A liquid crystal display (LCD) and a conventional cathode-ray tube (CRT) of similar resolution and size.

Visual search performance for tactical symbols was examined using LCD and CRT displays. The authors studied 24 adult participants including 19 males and 5 females (mean age=41 years). The participants searched
for navy tactical display symbols on a map background. LCD and CRT displays of similar size & resolution were used.

The results indicated participants showing reduced sensitivity for red & blue symbols viewed 60 degree off axis with the LCD relative to on-axis LCD, or to the CRT on or off axis. Coloured symbols viewed off axis on the LCD produced longer response time in feature search & lower search efficiency in conjunction search.

The results argue against the use of current LCD technology when off-axis viewing is likely and colour-coding is used.

Compiled By Surg Lt Cdr VP Baburaj


With the advent of aircrafts with the capability of long duration flying the issue of fatigue and decreased performance comes up in sustained operations. Methods like naps and drugs like amphetamines have been tried by USAF. In this article the authors have brought forward not only the benefits of modafinil over other commonly used stimulants but also the potential side effects that have been observed by many investigators.

Modafinil originally developed to counter narcolepsy, acts by inhibiting sleep mechanisms originating from anterior hypothalamic area. It is noneuphoric and non addictive.

Effects on cognitive performance and sleep after administration of modafinil were much better than after amphetamines and the subjects were less fatigued in a situation of 64 hrs of sleep deprivation. With this drug there were fewer disturbances than with amphetamine and the length of recovery sleep was shorter.

Ergogenic and thermogenic effects: Modafinil increases the core temperature of the body but studies conducted have shown that despite the core temperature reaching 39°C, no one became ataxic or exhibited any symptoms of exertional heat illness.

The side effect of Modafinil is a dose dependent effect on anxiety, insomnia, headaches, palpitations and blood pressure at doses of 200-800 mg/d in healthy males. The authors feel that a dosage of 3x 100mg per 24 hours provides a relatively safe and effective counter measure to the development of cognitive fatigue under a combination of SD, thermal and physical stresses.

The authors have recommended that it can be used effectively to counteract the performance decrements that occur in individuals working under sustained operations without sleep. A dose of 100mg, 8 hourly to a max dose of 300mg/d is recommended. In cases of sustained operations upto 24 hour without sleep modafinil 100mg administered in evening and then again 8 hours is more effective counter measure than nap in maintaining performance over a sleepless night. For sustained operations longer than 24 hours, a 2 hour nap taken at the circadian nadir of the second night has been shown to be more effective than drug treatment. However a nap following the administration of modafinil may maintain performance at a higher level than taken alone. Modafinil can be administered to military personnel even when napping is allowed or in the event when taken 30 min before sleep. Troops using modafinil under hot operational conditions should be made aware of the potential risks of heat exertion injury. Individual susceptibility to the potential adverse side effects should be identified prior to any operational mission especially in combat aircrew.

Compiled By Sqn Ldr Piush Renjhen