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after heat strain without rehydration. It was also characterized by highest number of errors in response to visual stimuli. **Conclusions:** Simulated preflight hot climate conditions lead to dehydration, that can cause changes in acceleration tolerance. It seem to mainly influence cardiovascular system. The importance of rehydration in hot climate should be stressed in aircrew briefings.

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AEROMEDICAL EVALUATION OF A COMPLEX (MEDICAL AND FLIGHT DATA) DATA RECORDING SYSTEM

¹A. GRÓSZ, ²J. HORNYIK, ²S. A. SZABÓ, ²E. TÓTH

¹*Department of Aerospace Medicine, Faculty of Medicine, University of Szeged, Hungary,*

²*Aeromedical Hospital Kecskemét, HDF, Hungary*

The increasing of flight safety necessitates the analysis of physiological reactions of air pilots and other flight personnel who work in the aviation system, the standardisation of selection requirements, the determination of acceptable emergency reaction levels in respect of tone changes in the nervous system associated to psychic stress, and ECG deviations.

Our objective was to test an in-service on-board flight technical data recording system (“technical black box”) as a combined on-board data recording system in-flight and in simulated earthly stress situations in which the biomedical parameters of the person on board and the technical parameters of the flight are recorded and processed simultaneously.

As a first step, the system, installed in a MI-24 combat helicopter, was tested with military pilots. We found that the unit was able to provide evaluable, real-time ECG records even in extreme flight situations (route flight, extreme circumstances of following the terrain, thermal stress).

In the second step, the device was tested in ground-based laboratory circumstances, in aeromedical stress situations (hypobaric hypoxia, rotating chair, weightlessness model using tilt table). We found that the flight physiological records taken provide a good signal/noise ratio and give high fidelity ECGs, with proper sampling speed. The two ECG channels can be analysed visually considerably well on a computer screen, and recording of data in tabular form and statistical processing of the same data enable us to perform further data analysis, frequency, trend and variability analyses. The recording of reactions specific to each person and the forming of standards for the given test tasks and stress situations contribute to building a selection database. During real flight, the device allows proper interpretation of the recorded psychophysiological values (against flight technical data), and a better description of the psychic stress accompanying the pilot’s actions in complex or emergency situations.

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SPATIAL DISORIENTATION TRAINING

M. SAZEL, J. PAVLIK, J. PETRICEK, Z. SEDLATY

Institute of Aviation Medicine – Prague, Czech Republic

SD is one of causes of military air mishaps. Czech AF mishaps reports (1991-2002) were evaluated. SD as a potential cause was found in 30% cases. No difference was between Cz and US AF incidence of SD.

Ability to solve pilot spatial disorientation problems during flight is trained in CzAF by different ways: IFC and simulator flying (at AB), aero medical training – initial and continuation courses (since 2001 under NATO STANAG 3114 AMD: Aeromedical Training of Flight Personnel - all pilots, max. 5 years period) before SD demonstration on a trainer (at IAM Prague).

SD trainer – GYRO IPT II (ETC USA) was installed in the Institute of Aviation Medicine last year. It is an interactive, multifunctional training system (Motion base (4 + 2 degrees of freedom); Cockpit: closed-loop interactive flight controls, forward out-the-window visual display, front panel instrumentation gauges, aircraft sounds; Modes: flight, profile, replay, manual; Flight characteristics: L-159, Z-142, MiG-21, single rotor generic helicopter with reversible blade). Till now it has only been used within preliminary work because of a lot of problems. It seems that some of original profiles of flight illusions have to be modified. Some of them are over performed, some have no influence etc. The whole system of the true SD aero medical training will be established.

Physiological limits for training of SD should also be found out (potentials unfavorable effects - vertigo, motion sickness). Vestibular after-effect has been searched by stabilometry. Recommendation of NATO RTO HFM-118/RTG-039 (Ground Based Spatial Disorientation Training) will also be taken into account.

This work summarizes our results of introducing CzAF SD training. An interesting change of postural stability after SD training is also presented.

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WORKLOAD OF FLIGHT CREW ON LONG-DISTANCE GOVERNMENT FLIGHTS

DUŠAN BARTOŠ, JIŘÍ ŠULC

Institute of Aviation Medicine, Generala Píky 1, 160 60 Prague 6, Czech Republic

The Czech Air Force Government Flying Service (CAFGFS) provides various forms of transport flights for superior governmental representatives. Until quite recently there was a lack of objective knowledge on actual occupational load of flight crew, mainly during