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Combat Capability Improvement Using Sleep Analysis

Authors : Gabriela Kloudova, Miloslav Stehlik, Peter Sos

Abstract : The quality of sleep can affect combat performance where the vigilance, accuracy and reaction time are a decisive factor. In the present study, airborne and special units are measured on duty using actigraphy fingerprint scoring algorithm and QEEG (quantitative EEG). Actigraphic variables of interest will be: mean nightly sleep duration, mean napping duration, mean 24-h sleep duration, mean sleep latency, mean sleep maintenance efficiency, mean sleep fragmentation index, mean sleep onset time, mean sleep offset time and mean midpoint time. In an attempt to determine the individual somnotype of each subject, the data like sleep pattern, chronotype (morning and evening lateness), biological need for sleep (daytime and anytime sleepability) and trototype (daytime and anytime wakeability) will be extracted. Subsequently, a series of recommendations will be included in the training plan based on daily routine, timing of the day and night activities, duration of sleep and the number of sleeping blocks in a defined time. The aim of these modifications in the training plan is to reduce day-time sleepiness, improve vigilance, attention, accuracy, speed of the conducted tasks and to optimize energy supplies. Regular improvement of the training supposed to have long-term neurobiological consequences including neuronal activity changes measured by QEEG. Subsequently, that should enhance cognitive functioning in subjects assessed by the digital cognitive test batteries and improve their overall performance.

Keywords : sleep quality, combat performance, actigraph, somnotype
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