Brain Performance Enhancement for Military Operators

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ABSTRACT

Performance of military operators depends on both physical and cognitive aspects. Enhancement of operator performance should therefore address both the body and the brain. This paper focuses on the latter. We provide an extended list of areas where neuroscientific knowledge may be important like training and mental healthcare. We zoom-in on the relevance of neuroergonomics and Brain Machine Interfaces (BMIs) and present recent data from our lab. Up till today, the majority of applied neuroscience research is aimed at assisting people with medical limitations, and not at performance enhancement for healthy users. Knowledge transfer from patient orientated applications to military brain performance enhancement offers major opportunities, for example in the design and evaluation of new systems. We foresee that the first applications of BMIs will be available for workstation operators in high-risk environments. Future research should be focussed on three transitions: 1) from clinical and patient apparatus to applications and equipment for healthy users, 2) from lab (or controlled) environments to the field, and 3) from fundamental knowledge to operational applications.