Effect of experience, equipment and fire actions in psychophysiological response and memory of soldiers in actual underground operations

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Abstract

The present study aimed to analyze the effect of underground operations on the psychophysiological and memory response of soldiers taking into consideration experience, the use of nocturne vision systems and previous combat actions on the psychophysiological response. Seventy participants were recruited and divided in four groups, three experimental groups with different experimental conditions, SNFV (Soldiers No-Fire Night-Vision), SFV (Soldiers Fire Night-Vision), SNFNV (Soldiers No-Fire No Night-Vision), and one control group, CNFV (Control No-Fire Night-Vision). We analyzed modifications in psychophysiological and memory response pre and post an underground operation. The underground operation produced a significant increase ($p < 0.05$) in blood lactate, blood oxygen saturation, rated perceived exertion, heart rate, cognitive and somatic anxiety and sympathetic modulation in all groups. Groups with higher stress values scored higher incorrect items in the memory post mission questionnaire. The higher psychophysiological activation correlated positively with cognitive impairment and lower memory. We concluded that an underground operation produced an increase in psychophysiological activation and a negative effect on memory, being modulated by previous training and experience. The lack of special equipment as night vision systems in underground operations induced similar stress response than prior combat actions, decreasing conciseness of time.

Keywords:

Stress, Experience, Training, Cortical arousal, Autonomic nervous system, Soldier