

# Resisted and Endurance High Intensity Interval Training for Combat Preparedness

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## Abstract

**BACKGROUND:** Studies support the use of new training models based on low volume and high intensity in athletes, especially in soldier populations, showing greater physical improvements than conventional and classic approaches. We conducted this study to analyze the psychophysiological response of soldiers in two different high intensity interval training protocols (HIIT), resisted (RHIIT) and endurance (EHIIT), in order to determine which HIIT elicits a psychophysiological response similar to that in actual theaters of operation.

**METHODS:** We recruited 21 professional soldiers from the Spanish Army. HIIT protocols were conducted in accordance with actual military scenarios, performed at 36–38°C.

**RESULTS:** Both protocols, RHIIT and EHIIT, produced a significant increase in blood lactate ( $1.6 \pm 0.3$  to  $6.4 \pm 4.8$  and  $1.7 \pm 0.6$  to  $11.2 \pm 5.0$ , respectively), rate of perceived exertion, heart rate, and lower limb explosive strength; skin temperature and bodyweight presented significant decreases. Only EHIIT presented a significant increase on cortical arousal ( $35.9 \pm 2.1$  to  $37.3 \pm 2.8$ ) and isometric hand-grip strength, achieving similar psychophysiological response as in previous simulated combat studies.

**DISCUSSION:** Both endurance and resisted high interval intensity training protocols produced a significant increase in the psychophysiological response of soldiers. EHIIT presented more similarities with actual combat situations.

Keywords:

cortical arousal, interval training, HIIT, psychophysiological response, soldiers