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Circadian and gender differences in skin temperature in militaries by thermography

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Abstract

Aim: The purpose of this study was to determine gender differences in skin temperature (T_{sk}) for 21 regions of interest (ROIs) of the body throughout the day in a military sample using infrared thermography.

Methods: The T_{sk} of 20 male (23.2±2.9 yr) and 20 female (20.5±1.3 yr) Brazilian Air Force Military members were evaluated with four thermograms collected at 7:00 AM (T_{sk7}) and 7:00 PM (T_{sk19}) by a Fluke® thermal camera. The ROIs analyzed included the abdomen and bilateral anterior and posterior views of the hands, forearms, arms, thighs, and legs. Student's t-tests were performed on independent samples (α=0.05).

Results: With the exception of the hands, men's T_{sk7} was significantly higher than that of women ($p<0.05$). However, in the late evening (T_{sk19}), only the temperatures of the posterior side of the thigh and leg were significantly lower ($p<0.05$) in women.

Conclusions: In the early morning, men present a greater average T_{sk} than women across all evaluated ROIs; however, those differences disappear after 12 hours, except for the posterior thighs and legs. The hands were the sole areas showing similar temperatures at both time points.

Keywords: body temperature regulation; skin temperature; thermoregulation; thermography.