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The Use of an Experimental, Topical Foam to Enhance Skin Cooling and Sodium Retention

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Integrity of the stratum corneum has important applications for maintaining skin pH levels and transepidermal water loss. Therefore, products that enhance stratum corneum integrity may have important applications for mitigating sodium (Na) loss and increasing body temperature during exercise. **PURPOSE**: To examine the effects of an experimental, topical foam on Na retention and skin temperature during exercise. **METHODS**: 6 men and 6 women (Age = 28.3 ± 5.0, Height (cm) = 172.7 ± 10.3, Mass (kg) = 73.3 ± 19.0) completed a thirty-five minute exercise protocol on a treadmill. The protocol included a 5-minute warm-up and 30 minutes of exercising at a moderate intensity. Subjects were weighed before and after exercise to determine total sweat loss. Before exercising, subjects were treated with the experimental foam on one side of the body on the forearm (FA), thigh (TH), chest and scapula. Sweat patches were applied to the same sites on both the treated (T) and untreated (UT) sides of the body. Skin temperature on UT and T sides was assessed every 10 minutes during and 5 minutes post exercise with an infrared thermometer at the FA and TH. After exercise, sweat patches were removed and analyzed for Na content using direct measurement by an ion selective electrode. Paired t-tests were used to compare sweat Na concentrations and repeated measures ANOVA (2 x 5) was used to compared skin temperature across time between T and UT sides ($\alpha < .05$) **RESULTS**: No significant differences in Na concentration were found between T (Mean Na (mmol) = 31.68 - 54.06) and UT (Mean Na (mmol) = 29.22 - 50.24) sites. A main effect of time on skin temperature was found for both the FA (Mean Temperature (ºC) = 32.13 ± .43) and TH (Mean Temperature (ºC) = 31.68 ± .29). This effect was quadratic in nature, whereby skin temperature dropped through the warm-up, and then rose steadily through recovery. However, no effect of treatment was found across any of the time points for the FA or TH. **CONCLUSIONS**: Although based on a small sample size, these results point towards the conclusion that the experimental foam did not have a statistically significant effect on skin temperature or sodium retention during exercise.

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