EXERCISE INTENSITY EFFECTS ON TOTAL SWEAT ELECTROLYTE LOSSES AND REGIONAL VS. WHOLE-BODY SWEAT [Na^+], [Cl^-], AND [K^+]

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To quantify total sweat electrolyte losses at two relative exercise intensities and determine the effect of workload on the relation between regional (REG) and whole body (WB) sweat electrolyte concentrations.

METHODS

7 male 4 female | 71.6 ± 8.4 kg | **90 MINUTES** 45% (LOW) and 65% (MOD) of VO_{2max} 30°C/40%rh

The whole body wash down technique was used to determine WB sweat [Na^+] and [Cl^-].

REG sweat [Na^+] and [Cl^-] were measured at 11 sites using absorbent patches.

Total sweat electrolyte losses were the product of WB sweat loss (WBSL) and WB sweat electrolyte concentrations.

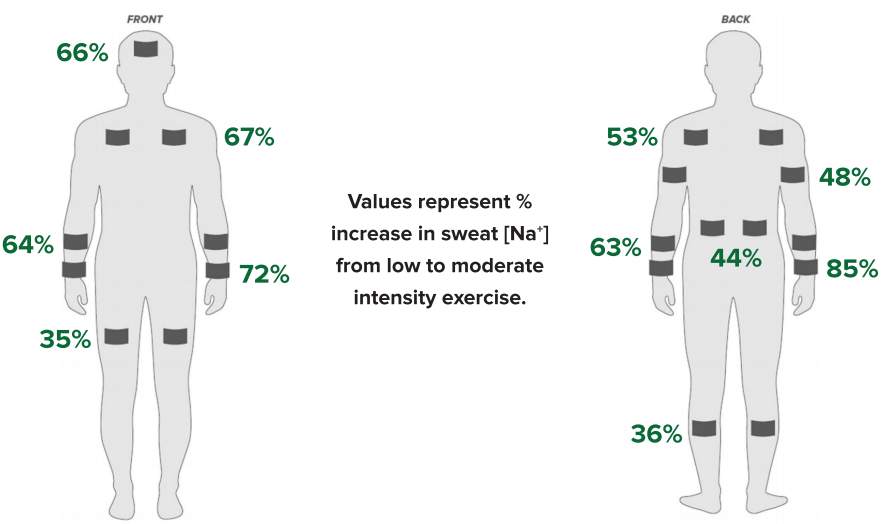
Whole body washdown

62% increase

VS.

Regional patches on 11 sites

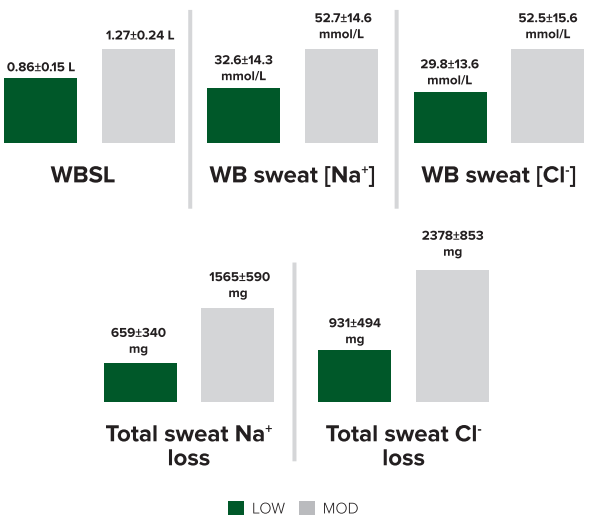
56% increase



Values represent % increase in sweat [Na^+] from low to moderate intensity exercise.

RESULTS

Significant increases from LOW to MOD



CONCLUSION

REG sweat [Na^+] and [Cl^-] increased from LOW to MOD at all sites except thigh and calf. Intensity had a significant effect on the regression model predicting WB from REG at the ventral wrist, lower back, thigh, and calf for sweat [Na^+] and [Cl^-].

Total sweat Na^+ and Cl^- losses increased by ~150% with increased exercise intensity. Regression equations can be used to predict WB sweat [Na^+] and [Cl^-] from some REG sites (e.g., dorsal forearm) irrespective of intensity (between 45 and 65% VO_{2max}), but other sites (especially ventral wrist, lower back, thigh, and calf) require separate prediction equations accounting for workload.

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