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 VO₂max, 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.

**RESULTS**

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.

66% 67%

64% 72%

53% 48%

63% 44%

36% 85%

**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% VO₂max), but other sites (especially ventral wrist, lower back, thigh, and calf) require separate prediction equations accounting for workload.

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