

## TEXAS AMERICAN COLLEGE OF SPORTS MEDICINE 2009 CONFERENCE

**Exercise-Associated Hyponatremia: The Effects of Carbohydrate and Hydration Status on IL-6, ADH, and Sodium Concentrations**

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*Int J Exerc Sci* 2(1): S24, 2009. Exercise-associated hyponatremia (serum sodium < 135 mmol/L) is a rare, but serious condition that has been identified in those engaging in prolonged, physical activity conducted in the heat. **PURPOSE:** The purpose of this study was to evaluate the effect of hydration status and glycogen level on plasma IL-6, ADH, and sodium concentrations during and after prolonged exercise in the heat. **METHODS:** Ten male participants completed four trials: a glycogen depleted, euhydrated condition (DE); a glycogen depleted, dehydrated condition (DD); a glycogen loaded, euhydrated condition (LE); and a glycogen loaded, dehydrated condition (LD) consisting of cycling 90 minutes at 60% VO<sub>2</sub> max in a 35°C environment followed by a 3-h rehydration (RH) period. During RH, subjects received either 150% of fluid lost (DD & LD) or an additional 50% of fluid lost (DE & LE). Exercise and RH blood samples were analyzed for glucose, IL-6, ADH, and Na<sup>+</sup>. Sweat and urine samples were analyzed for [Na<sup>+</sup>]. **RESULTS:** Post-exercise to post-rehydration [Na<sup>+</sup>] changes for LD, DD, DE and LE were -6.85, -6.7, -1.45 and 0.10 mM, respectively. Post-exercise [IL-6] for DD, LD, DE, and LE were 5.4, 4.0, 3.7, and 3.49 pg/mL, respectively. Post-exercise [ADH] for LD, DD, DE, and LE were 21.5, 12.8, 7.6, and 1.9 pg/mL, respectively. The number of hyponatremic measurements for all RH samples was 5, 5, 20, and 10 for LD, DD, DE, and LE, respectively. **CONCLUSION:** Despite our glycogen and hydration manipulations, no regulatory effects of IL-6 and ADH on plasma sodium were observed. The timing of fluid intake did alter plasma sodium since euhydration during exercise combined with an additional 50% intake during RH, and a post-exercise RH volume of 150% of fluid lost both resulted in sodium concentrations below initial levels. Supported by a grant from the Gatorade Sports Science Institute.

