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### Hydration Status Response to Bolus Frequency and Volume Intake During Exercise in Heat

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Workplace hydration recommendations suggest consuming 237mL fluid every 15-20 min during physical work in the heat. It is unknown if these recommendations promote hydration during work and if consuming larger boluses of water less frequently maintains hydration better than smaller boluses of water consumed more frequently. **PURPOSE:** Examine if consuming 500mL water every 40 min maintains hydration better than 237mL water every 20 min during work in the heat. **METHODS:** Five healthy adults (age:  $27\pm 6$  y, height:  $177\pm 11$  cm, weight:  $76.1\pm 18.0$  kg) completed 2 trials while fasted, either consuming 237mL water every 20 min (Trial A) or 500mL water every 40 min (Trial B). Subjects performed 2 h treadmill exercise at 6.4kph, 1.0% grade in 34°C, 30% relative humidity wearing shorts and a t-shirt, followed by 2 h rest in a temperate room. Heart rate (HR), rectal temperature ( $T_{rec}$ ), and gastrointestinal (GI) symptoms were measured pre- and post-exercise and after recovery. Nude body mass was measured pre- and post-exercise. Blood and urine samples were collected pre- and post-exercise, and after recovery. **RESULTS:**  $T_{rec}$  increased from pre- ( $36.8\pm 0.2$ ,  $36.7\pm 0.3^\circ\text{C}$ ) to post- ( $37.9\pm 0.2$ ,  $37.8\pm 0.3^\circ\text{C}$   $p<0.01$ ) exercise and returned to baseline ( $36.6\pm 0.2$ ,  $36.6\pm 0.2^\circ\text{C}$ ,  $p=0.61$ ) following recovery, in Trials A and B, respectively. HR increased from pre- ( $58\pm 9$ ,  $56\pm 10$  bpm) to post- ( $120\pm 16$ ,  $130\pm 22$  bpm  $p<0.01$ ) exercise and returned to baseline ( $59\pm 7$ ,  $63\pm 10$  bpm,  $p=0.44$ ) following recovery, in Trials A and B, respectively. GI symptoms were similar among trials and times ( $p=0.63$ ). In Trial B, urine specific gravity was lowest following recovery ( $1.005\pm 0.003$ ) compared to pre- ( $1.015\pm 0.003$ ,  $p=0.02$ ) and post- ( $1.013\pm 0.005$ ,  $p=0.02$ ) exercise. Plasma osmolality was maintained post-exercise ( $282\pm 3$ ,  $285\pm 4$  mOsm/L) and following recovery ( $283\pm 1$ ,  $284\pm 2$  mOsm/L) compared to pre-exercise ( $287\pm 6$ ,  $286\pm 3$  mOsm/L,  $p=0.96$ ) in Trials A and B, respectively. Change in plasma volume was similar among trials and times ( $p=0.12$ ). Post-exercise body mass loss ( $0.1\pm 0.5$ ,  $0.1\pm 0.6$  kg,  $p=0.50$ ) and sweat rate ( $0.8\pm 0.3$ ,  $0.8\pm 0.3$  L/h,  $p=0.97$ ) were similar, in Trials A and B, respectively. **Conclusion:** Hydration status was similar between drinking larger, less frequent water boluses and smaller, more frequent boluses.