

Effects of Hypohydration on Muscular Performance in Females: An Ongoing Study

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ABSTRACT

Dehydration (~3%) has been shown to negatively affect anaerobic performance. A majority of this research has been conducted using male participants. Like males, females have been shown to underestimate sweat loss, which could lead to insufficient rehydration and thus hypohydration. Additionally, due to differences in thermoregulation, it is possible that females respond to hypohydration differently than males. To date, no research has examined the effects of previous night dehydration on muscular performance in females. **PURPOSE:** The purpose of this ongoing study was to determine the effects of previous night dehydration on muscular strength, muscular endurance, lower body power, and perceptual measures in resistance trained females. **METHODS:** Healthy, resistance trained females ($n = 7$) completed two bouts of resistance exercise, either dehydrated (~3% body weight) (DT) or heat exposed with fluid replacement (HT). Each exercise bout consisted of one rep maximum (1RM) for bench press followed by 5 sets to failure of 75% of 1RM, 1RM for leg press followed by 5 sets to failure of 75% of 1RM, and vertical jump assessment. Participants estimated ratings of perceived exertion (RPE) after each exercise. Session RPE (SRPE) was estimated 5 minutes following completion of the protocol and estimations for feelings of recovery (PRS), perceived readiness to exercise (PR), thirst, and sleep quality were estimated prior to workouts. **RESULTS:** Analysis revealed a bench press 1RM ($p = 0.05$) and leg press 1RM ($p = 0.03$) were significantly lower for DT (bench: 95.0 ± 34.0 ; leg press: 461.4 ± 141.7) compared to HT (bench: 97.9 ± 34.3 ; leg press: 500.0 ± 141.0). There was no difference in total reps completed for bench press ($p = 0.32$) or leg press ($p = 0.37$) for DT (bench press: 31.0 ± 6.7 ; leg press: 47.9 ± 21.6) compared to HT (bench press: 31.7 ± 5.0 ; leg press: 49.6 ± 22.8). There was no significant difference ($p = 0.15$) for vertical jump height (DT: 17.6 ± 2.2 , HT: 18.1 ± 2.6). RPE was not significantly different following bench press ($p = 0.5$) (DT: 7.1 ± 1.1 , HT: 7.1 ± 0.9) or leg press ($p = 0.41$) (DT: 6.7 ± 0.5 , HT: 6.9 ± 1.7). SRPE was significantly higher ($p = 0.05$) for DT (6.6 ± 0.5) vs HT (5.9 ± 0.7). Significant differences for PRS ($p = 0.03$) (DT: 5.4 ± 2.2 , HT: 7.05 ± 1.3) and PR ($p = 0.01$) (DT: 3.9 ± 0.9 , HT: 2.6 ± 0.5) indicate participants expected impaired performance during DT. Feelings of thirst were significantly higher ($p = 0.001$) for DT (6.5 ± 2.5) vs HT (2.1 ± 2.3). Estimations of sleep quality were significantly lower ($p = 0.05$) for DT (4.3 ± 3.3) vs HT (7.2 ± 2.1). **CONCLUSION:** Even though only preliminary data from a presently ongoing study, the current results suggest that previous night dehydration has a negative influence on both performance and perceptual measures in resistance trained females.