The Effect of Hydration Status on Sleep Quality: A Pilot Study

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ABSTRACT

Sleep improves muscle recovery and cognitive health and can be impaired by physiological and mental stress. Dehydration can induce stress which leads to sleep impairment and thus could affect the readiness for and recovery from exercise. However, no study has examined the effect of hydration on sleep before and after resistance exercise (RE). **PURPOSE**: To examine the effect of hydration status on sleep before and after RE. **METHODS**: 7 resistance-trained men completed two identical RE consisting of bilateral leg press and knee extensions (5 sets of 10 repetitions at 80% of 1 repetition maximum) in a euhydrated state (EU; urine specific gravity (USG) < 1.020) and in a dehydrated state (DE: USG ≥ 1.020). The two conditions were separated by 2 weeks in random order. During DE, participants underwent a 24-hr fluid restriction the day before RE and consumed only 1.5 L water following RE throughout the day. Participants wore a wearable sleep device, and sleep efficiency (SE), light sleep (LS), rapid eye movement (REM), and slow wave sleep (SWS) were measured the night before (PRE) and the night after (POST) RE. A 2X2 ANOVA and effect sizes (ES) were used to detect differences. **RESULTS**: No significant (p > 0.05) condition x time effect was observed for any sleep parameters. At PRE, a small ES was observed for SE (1.1%; η^2 = 0.05) where EU was more efficient than DE. Additionally, a medium ES was observed for LS (26.2%; η^2 = 0.09) and SWS (8%; η^2 = 0.08) where EU spent more time in these phases than DE, while EU spent less time in the REM phase (-16.4%; η^2 = 0.07) than DE. At POST, a small ES was observed for SE (1.3%; η^2 = 0.05) where EU was more efficient than DE. Additionally, a medium ES was observed for REM (-35.7%; η^2 = 0.07) and SWS (-8.4%; η^2 = 0.08) where EU spent less time in these phases than DE, while EU spent more time in the LS phase (18.7%; η^2 = 0.09) than DE. **CONCLUSION**: The pilot data suggests hydration status could influence sleep. Proper fluid intake could help with sleep efficiency and increase time spent in LS and SWS, which are beneficial for muscle and tissue recovery. Intriguingly, inadequate fluid intake could increase the time spent in REM, which might be due to the mental and physical stresses from dehydration and RE. Combined, these data suggest that hydration status could affect the readiness for and recovery from physical stress.