

SWACSM Abstract

The Effect of Sleep Quality on Profile of Mood, Physiological Responses, and Athletic Performance

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ABSTRACT

While the extent of an athlete's physiological adaptations varies due to a range of external factors, sleep deprivation has been proven to negatively affect one's training and, ultimately, one's overall athletic success. Sleep deprivation, either for a short or prolonged period of time, also leads to adverse psychological effects, as measured by the alteration of genes in the brain. **PURPOSE:** This study investigates how both normal sleep and sleep deprivation affect an athlete's recovery, overall skeletal muscle performance, and mental state. **METHODS:** Using a randomized-crossover design, 7 healthy individuals, 3 males and 4 females, with at least 1 year of experience in resistance training participated in this study. Exercise testing sessions were identical in nature and took place in the morning following either 3 consecutive nights of 8 hours of sleep (normal) or 3 consecutive nights of 5 hours of sleep (deprivation). Pittsburgh sleep quality index (PSQI) and profile of mood state were collected each morning. Following warm-up, subjects performed the following tests in this order: 1 set of 15 repetitions of a maximal voluntary knee extension/flexion contraction at $300^{\circ}\cdot\text{s}^{-1}$, 4 repetitions of 4 seconds of isometric knee extension with EMG data collected, and 1 set of 50 repetitions of a maximal voluntary knee extension/flexion contraction at $60^{\circ}\cdot\text{s}^{-1}$. **RESULTS:** Although some variables in POMS and PSQI were statistically significantly ($P<0.05$), no statistically significant muscular performance differences were found in normal sleep trials compared with sleep deprivation trials. However, there were trends toward decreased performance during sleep deprivation protocols. In sleep deprivation protocols peak extension and flexion power at $300^{\circ}\cdot\text{s}^{-1}$ were decreased 6.8% and 5.5% respectively. Peak torque and average torque during isometric testing decreased 15% and 10% respectively. Similarly, during the 50 repetitions at $60^{\circ}\cdot\text{s}^{-1}$, peak torque flexion and extension dropped 4.3% and 4.6% respectively. **CONCLUSION:** Our hypothesis that sleep deprivation has adverse effects was partially supported in the limited number of subjects, indicating that in an athletic setting, decreased sleep time might be detrimental with various types of athletic performance and one's psychological well-being.