

## 40. SWACSM Abstract

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### Influence of Sleep Disturbances on Landing and Jumping Forces in Elite College Age Individuals

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#### ABSTRACT

**BACKGROUND:** Sleep has been demonstrated to influence sport-specific performance in college athletes with sleep deprivation decreasing sport-specific performance and possibly leading to greater risk of injury (Reyner & Horne, 2013). Jumping and landing are important movements in many sports, therefore, sleep disturbances could potentially increase the risk of injury in sports with jumping and landing movements.

**PURPOSE:** The intent of this study was to determine if sleep disturbances influence forces produced during jumping and landing in elite college age individuals. **METHODS:** Twenty-five UVU athletes (males=8, females=17) completed the Morningness-Eveningness Questionnaire (MEQ) and the Pittsburgh Sleep Quality Index Questionnaire (PSQI) before testing. A five-minute warm-up was performed by the athletes on a stationary bicycle (Monark 827E). Following the warm-up, three countermovement jumps were performed while force (Bertec) and video (Ninox, 120cc) data were collected. Data analysis was performed using Noraxon software (Noraxon MR3). **RESULTS:** A one-way between subjects ANOVA was conducted to compare the effect of sleep disturbances on jumping forces and power output. A 28% decrease in relative peak power produced was observed between those who reported having three or more sleep disturbances a week and those who reported not having any sleep disturbances in the last month ( $p=0.091$ ). Relative maximum peak braking force produced by athletes reporting three or more nights of late sleep onset (later than 30 minutes) per week was lower than those reporting fewer than one occurrence of late sleep onset per week ( $p=0.019$ ). Relative maximum peak propulsive force showed no such trend with little variance between those who reported multiple nights of later than 30-minute sleep onset and those who reported having less than one occurrence per week ( $p=0.291$ ). **CONCLUSION:** The relative peak power produced when jumping showed a decreasing trend as the number of sleep disturbances in the middle of the night increased. A similar trend was observed when comparing relative maximum peak braking force and late sleep onset. Future research should assess the connection between jumping and landing force variables and different aspects of athletes' sleep habits.