

Does 24-48 or 48-96 Promote Better REM Sleep Within Firefighters?

ERNESTO BALDERRAMA, RAQUEL CAVAZOS, CHEYENNE MARTINEZ, BRYAN G. MEEK, HUSSIEN JABAI, VIPA BERNHARDT, & MICHAEL D. OLDHAM

ROAR-HP Lab; Health and Human Performance; Texas A&M University-Commerce; Commerce, Texas

Category: Masters

Advisor: Oldham, D. Michael (Michael.oldham@tamuc.edu)

ABSTRACT

INTRODUCTION: A firefighter's work schedule can be very demanding regardless if they work 24 hours followed by a 48-hour time off schedule or a 48-hour on followed by a 96-hour time off. Rapid Eye Movement (REM) sleep could be the deciding factor of how well a firefighter can perform following a certain work schedule. REM sleep is associated with the mental activity of dreaming; an individual averages 20-25% REM sleep of their total sleep time (Carskadon & Dement, 2005). REM is important for recovery because it can impact cognitive functions such as impulse control and decision making (Brunet, et al, 2020). This study examined the influence shift type had on REM sleep after a day of rest within 24-48, compared to a rest day within a 48-96 work schedule. **PURPOSE:** The study was designed to measure REM sleep on the 24-48 and 48-96 shift schedules and determine which shift type had a more optimal level of REM sleep. **METHODS:** 54 firefighters participated and were split into two cohorts depending on the department's work schedule: 24-48 ($n = 28$) and 48-96 ($n = 26$). Data was collected through the use of WHOOP® (WHOOP, Inc.) wrist bands, which measures heart rate, HRV, strain, and sleep. A two-way ANOVA was utilized to determine the differences in shift type (24-48, 48-96) and day type, On Day 1 (OD1), On Day 2 (OD2), Rest Day 1 (RD1), Rest Day 2 (RD2), and Rest Day 3 (RD3). **RESULTS:** Participants exhibited $24.7 \pm 9.2\%$ of REM sleep. There was a significant difference between 24-48 OD1 REM (1.56 ± 0.66), and 48-96 OD1 REM (1.31 ± 0.63) ($p < 0.001$). Another significant difference existed between 48-96 RD1 REM (1.44 ± 0.71) and 48-96 RD2 REM (1.66 ± 0.78) ($p = 0.004$) as well as 48-96 RD3 REM (1.66 ± 0.68) ($p = 0.007$). No further significances were found when comparing shift days and rest days between the shift types. **CONCLUSION:** Therefore, shift type may have little effect on the amount of REM sleep a firefighter gets on a daily basis. Within the 48-96 shift type, significant differences in REM sleep amount do exist, indicating that recovery improves from the first and second rest day, with no further improvements after that.