



Research Week 2022

Comparing Quantity and Quality of Sleep in Orthopedic Surgery Residents as They Ascend in PGY-Level

Colin Lipps BS, Michelle Lawson MD, Karalynn Lancaster BS, Jacqueline Brady MD, Zachary Working MD

lipps@ohsu.edu

Oregon Health & Science University

Keywords

Sleep, Sleep Deprivation, Sleep Debt, Deep Sleep Percentage

Abstract

Introduction: Our objective was to compare quantity and quality of sleep in orthopedic surgery residents as they begin a new post graduate year (PGY) level. On the first day of July each year, residents ascend one level in PGY status, which is accompanied by increased responsibilities and workload. We hypothesized that in these new roles, residents will have temporarily worse sleep outcomes as compared to the final month of their prior PGY level.

Methods: WHOOP Bands 3.0 are wearable fitness trackers validated to measure sleep, heart rate, and heart rate variability (HRV). Residents wore the straps from June to July 2021. The bands passively recorded sleep and activity measures.

Results: 22 orthopedic surgery residents (10 female, 12 male) (average age: 30.1yrs) from Oregon Health & Science University agreed to participate. Data from June and July 2021 was retrospectively analyzed using paired t-tests. Residents had higher sleep need (June avg: 8.43 hr, July avg: 8.64 hr; $p=0.007$), higher sleep debt (June avg: 0.99 hr, July avg: 1.12 hr; $p = 0.006$), and lower slow wave sleep percentage (June avg: 20.5%, July avg: 19.5%; $p = 0.003$). There were no significance differences in HRV or resting HR.

Conclusions: When ascending to a higher PGY level, orthopedic surgery residents needed more sleep, had a higher sleep debt, and decreased deep sleep. These results indicate that an increased responsibility and work load at higher residency levels may result in worse quantity and quality of sleep. These findings suggest a need to further explore whether poor sleep outcomes may negatively impact the duties of orthopedic surgery residents, such as cognitive performance or surgical skill. Additionally, further investigation could reveal whether the apparent sleep deprivation is a transient or permanent change, and at what point during the academic year the sleep parameters return to baseline.