

Abstract:

Heart rate variability (HRV) measures the beat-to-beat changes in the time intervals between successive heartbeats and reflects autonomic nervous system activity. A lower resting HRV is associated with an increased risk for cardiometabolic diseases. Sleep regularity, defined as the consistency of daily sleep duration, is a novel and emerging factor that has also been linked to cardiometabolic disease risk. Research shows that a more optimal total sleep duration is associated with higher resting HRV; however, the relationship between sleep regularity and HRV remains unclear. This study investigated the association between sleep regularity and HRV in college-based young adults, a population that often reports poor sleep patterns. Forty-eight participants completed five minutes of quiet rest, during which RMSSD (root mean square of successive differences) and high-frequency (HF) HRV parameters were recorded via electrocardiography (MindWare Mobile). The validated SleepScore Max device was then used to objectively measure sleep regularity, defined as the standard deviation of sleep duration across seven days. In linear regression analyses adjusted for race, sex, and body mass index, no significant associations emerged between sleep regularity and RMSSD HRV ($\beta = -0.011$, $p = 0.946$) or HF HRV ($\beta = -0.034$, $p = 0.832$). These preliminary findings suggest that sleep regularity is not linked to HRV in college-based young adults. However, further research with a larger sample size and additional covariates is needed to confirm these findings.