The Impact of Physical Activity on Sleep Quality

Cassidy Haase, Weiyun Chen, Ph.D.
School of Kinesiology, University of Michigan, Ann Arbor

Abstract

The purpose of this research is to investigate the impact of different durations of moderate-to-vigorous physical activity participation on the sleep quality of college students. Hypothesis: Greater levels of moderate-to-vigorous physical activity (MVPA) will increase sleep efficiency (the percentage of time spent asleep to the time spent lying in bed) and total sleep time (TST) (the number of minutes one is asleep).

Methods: 100 students who were recruited from Fudan University voluntarily participated in the study. Students’ PA and sleep data were objectively collected through the Actigraph Activity Monitor (wBT3x-BT) which each participant wore for 7 consecutive days. To investigate the relationships between levels of physical activity participation and quality of sleep, data were analyzed by means of descriptive statistics, an independent t-test, bivariate correlation, and multiple R-squared linear regression.

Results: The independent t-test indicated that Group 1 (n = 59) exhibited significantly higher levels of sleep efficiency and total sleep time than did Group 2 (n = 41). The independent t-test indicated that Group 1 exhibited significantly higher levels of sleep efficiency and total sleep time than did Group 2 (t = 4.064, p < .01; t = 4.074, p < .01).

Conclusion: The independent t-test indicated that Group 1 exhibited significantly higher levels of sleep efficiency and total sleep time than did Group 2 (t = 4.064, p < .01; t = 4.074, p < .01). The independent t-test indicated that Group 1 exhibited significantly higher levels of sleep efficiency and total sleep time than did Group 2 (t = 4.064, p < .01; t = 4.074, p < .01). Furthermore, the results of the multiple linear regression indicated that sleep efficiency and total sleep time were significantly associated with daily MVPA (F = 23.104, p < .01).

Discussion

In other studies, participants’ levels of physical activity are often manipulated through interventions (Kalek, et al, 2012; Flausino, et. al, 2011; Buckwalt, et al. 2011). Furthermore, the majority of studies take an all-or-nothing approach, in which a control group engages in little-to-no exercise. However, our study took a more naturalistic approach, as all of the students continued their own exercise routines as well as their regular physical activity classes. To investigate the data, the students were sorted into 2 groups according to their levels of MVPA in minutes. This study suggests that moderate levels (>60 min. per day) should be carried out for optimal sleep quality.