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The Relationship Between Physical Activity and Anxiety and its Effect on Quality of Sleep

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PURPOSE: To investigate the relationship between anxiety symptoms, physical activity and sleep in a large diverse sample of college students. **METHODS:** N=246 college students (65% female, 17-23 y) were recruited into a two-year longitudinal study measuring the cardiovascular effects of college lifestyle behaviors. Participants completed the International Physical Activity Questionnaire (IPAQ), the Pittsburgh Sleep Quality Index (PSQI), and the Beck Anxiety Index (BAI). Questionnaires were scored using standard procedures to calculate IPAQ total MET-minutes/week and PSQI global scores. The BAI standard categorizations of 1=minimal, 2=mild, 3=moderate, and 4=severe were recategorized into a new variable which had two categories: not anxious (BAI scores 1 and 2) and anxious (BAI scores 3 and 4). T-tests were conducted to compare outcomes measures between BAI groups, and Pearson's correlation coefficients examined the relationship between anxiety symptom severity and sleep and physical activity. **RESULTS:** There was no significant difference in physical activity between participants who were anxious (3731.9 ± 2743.6 METs) and those who were not anxious (3530.1 ± 2479.0 METs) ($p > 0.05$), and BAI and IPAQ scores were not correlated ($p > 0.05$). Participants who were anxious exhibited significantly higher PSQI global scores (8.2174 ± 2.2202) compared to those who were not anxious (5.9610 ± 2.4519) ($t(121) = -5.11$, $p < 0.0001$), and there was a significant positive correlation between BAI and PSQI scores ($r(121) = 0.46$, $p < 0.0001$). **CONCLUSION:** Participants who were anxious exhibited poorer sleep compared to those who were not anxious, and greater anxiety symptoms were associated with poorer sleep. However, anxiety was not associated with physical activity, as measured in total MET-minutes/week. Future research is needed to determine if intensity or modality of physical activity is associated with anxiety symptoms in this population. **SIGNIFICANCE/NOVELTY:** The majority of college students report experiencing 'overwhelming anxiety'. The effects of anxiety are profound and often include feelings of nervousness, increased heart rate and the inability to relax. Physical activity and high-quality sleep are known to have a positive impact on easing symptoms of anxiety, and lower levels of anxiety are associated with improved sleep.

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