SWACSM Abstract

Chronotypical and Habitual Exercise Timing Effects on Physical Activity and Sleep Quality

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ABSTRACT

An individual's circadian rhythm and chronotype, or circadian preference, influence physical activity (PA) and sleep patterns during the 24-hour period with people who prefer later exercise exhibiting poorer sleep patterns and reduced physical activity (PA) levels. Previous work comparing exercise timing's relationship with chronotype examined single bouts of exercise, indicating the need to examine habitual exercise trends on a longer-term basis. **PURPOSE:** To analyze the interaction between chronotype and long-term exercise timing preference on physical activity and sleep quality. **METHODS:** Secondary analysis of data was completed from an open-source data set collected by Cunningham et al. from 05/2020 – 11/2021. Chronotype was determined using the reduced Morningness-Eveningness Questionnaire (rMEQ) along with daily questionnaires throughout 2020 and 2021 where participants self-reported exercise timing and step count. PA was reported as a percent of exercise days to total days responded. Habitual exercise timing (time of day, TOD) was categorized as >33% of their reported exercise completed in the morning, afternoon, or evening. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) and the Insomnia Severity Index (ISI). Two-way ANOVA was used to determine the interaction between TOD of exercise and chronotype. **RESULTS:** From 05/2020 – 11/2021, participants averaged 67 daily questionnaire responses. PA and step count was higher among earlier chronotypes (main effect [ME] Chronotype; $p<0.001$, $p<0.05$) and PA was higher among morning and afternoon exercisers (ME TOD; $p<0.05$). Sleep quality was higher among earlier chronotypes ($p<0.05$) with no difference across exercise timing. Insomnia severity exhibited no interaction effect or main effects. **CONCLUSION:** The 67 average responses allowed us to create robust exercise timing groups and analyze patterns larger than a single bout of exercise. In support of previous literature, later chronotypes are less physically active and exhibit worse sleep quality, regardless of the individual's habitual exercise timing. Further investigation is necessary to determine cardiovascular or wellness consequences of later chronotypes performing reduced physical activity.