Growing Pains: Long-Term Effects of Physical Activity and Sleep Patterns on Adolescent Health

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Background: This study examines how physical activity and sleep patterns change over time, and how those changes affect physical/mental health among adolescents. Methods: A 3-section survey designed to collect student's experiences for a 7-day period was administered. In addition to age, gender, grade, and height/weight, students were asked to record their physical activity (participation in athletic program, duration, intensity), sleep patterns (time in bed, onset latency, disruption), and mental health (stress, anxiety, depression) for the past 2-3 days. Four years of collected data were combined to conduct a baseline/one year follow-up study using multivariate logistic regressions. Results: After 4 years of data collection, a total of 1,596 students completed all 3 sections of survey. Descriptive analyses show that physical activity participation and intensity decrease from 9th to 12th grades. Sleep quality and duration decline from 9th-11th and increase in 12th. Stress and anxiety increase from 9th-12th and depression peaks in 10th. Among 1,596 samples, 671 students answered surveys in 2 consecutive years and selected for a baseline/follow-up analysis. Multivariate logistic regressions show that non-athletes at follow-up are more likely to be overweight/obese in the follow-up year than athletes. For mental health, students in higher grades, non-athletes at follow-up, and those who persist/develop poor sleep quality are more likely to report high levels of stress, anxiety, and depression at follow-up. Conclusions: This study provides evidence that as the quality of physical activity and sleep patterns decreases from baseline to follow-up, there is an increase in the chance of being overweight/obese and heightened levels of stress, anxiety, and depression.

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