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Association Between Physical Activity and Sleep Duration Among Young Adults of UiTM Seremban 3

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Abstract | Sleep and physical activity have been shown to be correlated in research, but this association is only correlational and does not show relationships over time. This study aimed to investigate the correlation between physical activity and sleep duration. A total of 26 healthy young adults (age 21.0 ± 2.2 years) participated in this study. The amount of exercise and sleep duration were assessed using a uniaxial accelerometer. There was no significant correlation between total sleep time and calories burned (B = -0.312, p = 0.077), moderate to vigorous physical activity (B = -2.22, p = 0.087), while there is a significant correlation between total sleep time with steps count (B = -0.0267, p = 0.013). The results suggest that there is evidence that physical activity can help in promoting healthier sleep. Other factors that may influence sleep among young adults include diet, daily lifestyle, and sleep routine

Keywords: *Sleep duration, physical activity, accelerometer, young adults.*

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I. INTRODUCTION

Regular physical activity has been consistently linked to enhanced sleep quality and duration. While the precise relationship between the intensity and frequency of exercise and sleep is complex, moderate-intensity physical activity is generally associated with improved sleep outcomes. This is particularly relevant for young adults, who frequently experience sleep problems such as insomnia, sleep apnea, restless leg syndrome, and narcolepsy. These sleep disorders can disrupt sleep patterns and negatively impact overall health and well-being. By engaging in regular physical activity, individuals can potentially mitigate these issues and promote healthier sleep habits.

II. METHODS

Sample of students will be recruited via purposive sampling, aiming for a size that ensures statistical power, utilizing accelerometer to collect data on participants' physical activity levels and sleep duration. Instrumentation that is used is Actigraph GTX3+ as for the accelerometer. The accelerometer was worn by participants for a period of approximately seven days.

III. RESULTS AND DISCUSSION

Preliminary findings indicate a weak yet significant positive correlation between physical activity and sleep duration among the participants. This suggests that individuals who engage in higher levels of physical activity tend to experience longer sleep durations. However, the correlation was not strong enough to draw definitive conclusions, highlighting the need for further investigation. The more time one spends sleeping, the less time is available during the day to be physically active [1].

There is a negative relationship between steps and total sleep time, with individuals taking more steps having slightly less sleep time. This relationship is statistically significant with an R^2 value of 0.230. A negative correlation exists between calorie burn and sleep time, where higher calorie burn is associated with slightly less sleep. This correlation is marginally significant with an R^2 value of 0.125. Similarly, a negative correlation is found between MVPA and sleep time, with higher MVPA levels linked to slightly less sleep. The correlation is marginally significant with an R^2 value of 0.117.

TABLE I
REGRESSION RESULTS OF SLEEP DURATION AND PHYSICAL ACTIVITY

Dependent Variable	Independent Variable	*B*	*t*	*p*	Results
Total Sleep Time	Steps	-0.0267	-2.68	0.013	$R = 0.480$ $R^2 = 0.230$ $F = 7019$ $*p < 0.05$
	Calorie burn	-0.312	-1.85	0.077	$R = 0.353$ $R^2 = 0.125$ $F = 3.42$ $p > 0.05$
	MVPA	-2.22	-1.79	0.087	$R = 0.343$ $R^2 = 0.117$ $F = 3.19$ $p > 0.05$

$p < 0.05$

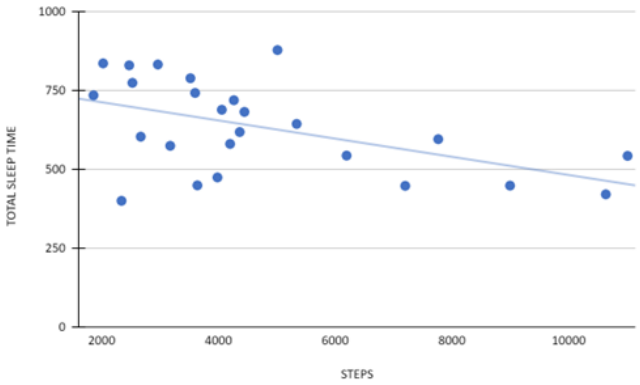

Fig. 1 Scatter plot graph for total sleep time towards steps count

The study findings show there is a positive correlation between physical activity and sleep duration. When total sleep time was longer than participants' average night, next day steps, calories burned, and minutes active were fewer [1]. The average amount of sleep among the subjects of the current study was 633 minutes (10.55 hours). An average of 7-8 hours a day is spent sleeping by adults, while teenagers spend an average of 11–12 hours per day sleeping [2]. That means most of the students in UITM Seremban 3 are sedentary.

IV. CONCLUSIONS

A study on young adults found a surprising link between physical activity and sleep duration. While more steps were associated with less sleep, this didn't significantly impact overall sleep quality. Calorie burn and intense exercise also had no effect on sleep duration. These results suggest a complex relationship between physical activity and sleep, though exercise remains beneficial for overall health.

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REFERENCES

[1] M. P. Mead, K. Baron, M. Sorby, et al., "Daily Associations Between Sleep and Physical Activity," International Journal of Behavioral Medicine, vol. 26, no. 6, pp. 562-568, 2019. Doi: 10.1007/s12529-019-09810-6.

[2] M. Hirshkowitz, K. Whiton, S. M. Albert, C. Alessi, O. Bruni, L. DonCarlos, N. Hazen, J. Herman, E. S. Katz, L. Kheirandish-Gozal, et al., "National Sleep Foundation's sleep time duration recommendations: methodology and results summary," Sleep Health, vol. 1, no. 1, pp. 40-43, 2015. Doi: 10.1016/j.sleh.2014.12.010.