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Lifestyle among Sports Students: Correlations of Physical Activity, Smoking, Coffee, Screen Time, and Sleep Quality

Hani Astari[1)], Muhammad[1)], Kunjung Ashadi[2)]

[1)]Department of Sports Coaching Education, Faculty of Sport and Health Sciences, Universitas Negeri Surabaya, Indonesia
[2)]Department of Sports Coaching, Faculty of Vocational, Universitas Negeri Surabaya, Indonesia

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ABSTRACT

Background: A healthy lifestyle is crucial for a high quality of life. However, research on the impact of physical activity on students' daily habits, including smoking, coffee consumption, screen time, and sleep quality, is limited. This study aims to explore the correlation between physical activity and these lifestyle factors among sports students.
Subjects and Method: A cross-sectional design was employed in the Aisyah organization at Jakarta City, Indonesia. This quantitative study used random sampling to select 105 students from the Sports Coaching Education program, who completed self-measured questionnaires on physical activity, smoking habits, coffee consumption, and screen time, along with the Sleep Quality Scale. Physical activity was the dependent variable, with the others as independent variables. Data were analyzed using Spearman correlation and linear regression tests to explore variable relationships.
Results: The linear regression results indicated that smoking habits (b= -0.07; 95% CI = -0.43 to 0.21; p= 0.497) and sleep quality (b= -0.03; 95% CI= -0.03 to 0.02; p = 0.748) had non-significant negative relationship with physical activity, while an insignificant positive relationship was found between physical activity and coffee consumption (b= 0.08; 95% CI = -0.23 to 0.56; p= 0.412) as well as screen time (b= 0.03; 95% CI= -0.32 to 0.47; p= 0.724).
Conclusion: This study found a negative relationship between physical activity and smoking, screen time, and sleep quality, suggesting that students reduce smoking and screen time to avoid a sedentary lifestyle and balance exercise with rest. A positive relationship between physical activity and coffee consumption was also observed, recommending moderate coffee intake to maximize benefits. Encouraging healthy lifestyles is crucial for improving students' quality of life.

Keywords: Lifestyle, exercise, physical activity, smoking, coffee, screen time, sleep quality

Correspondence:
Hani Astari, Department of Sports Coaching Education, Faculty of Sport and Health Sciences, Universitas Negeri Surabaya, Lidah Wetan, Kec. Lakarsantri, Surabaya, Jawa Timur, Indonesia, 60213. E-mail: hani.22128@mhs.unesa.ac.id.

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BACKGROUND

Maintaining good health is crucial for academic success (Babatunde, 2017). A healthy lifestyle involves prioritizing nutritious food, regular physical activity, and minimizing exposure to harmful substances (Badger et al., 2019). These students exhibit high levels of inactivity (Plotnikoff et al., 2015), partly

due to increasing reliance on technology (Barkley and Lepp, 2016). Lack of physical activity can lead to conditions like stroke, diabetes, heart disease, and cancer (Plotnikoff et al., 2015). Additionally, frequent consumption of fast food (McLean-Meyinsse et al., 2015) contributes to obesity (Mohammadbeigi et al., 2018) and cardiovascular diseases (Valenzuela et al., 2023). The combination of these factors increases disease risk over time.

Heavy academic workloads force students to stay up late, leading them to drink coffee to stay awake. Prolonged use of gadgets for both work and entertainment (Prakash et al., 2021; Mabaroh and Sugianti, 2021), reduces their physical activity (Wang et al., 2018), and increases screen time, which has been linked to a higher risk of depression (Ge et al., 2020). Late nights also reduce sleep (Adriansen et al., 2017). Academic stress can raise stress levels (Ramón-Arbués et al., 2020), and students may resort to smoking as a coping mechanism (Hossain et al., 2017), even though they are aware of the risks (Akl et al., 2015).

Research conducted in New York (Saddleson et al., 2015), Pakistan (Jamshed et al., 2017), and Delhi (Kamble et al., 2022) indicates that smoking has become a common habit among some students. In Saudi Arabia, 57% of students reported smoking due to stress or depression (Bin Abdulrahman et al., 2022). A study in Pakistan showed 18.96% of students would continue smoking despite knowing the risks (Yaseen et al., 2020), while research in Jordan found a negative correlation between health literacy and smoking habits (Rababah and Al-Hammouri, 2023).

One study found that 60% of students were physically inactive, and 47% had an unbalanced diet, including smoking and alcohol consumption (Aceijas et al., 2016). Another study showed 72% of college students had unhealthy lifestyles, with high risks of stress, anxiety, or depression (Hanawi et al., 2020). Research in Saudi Arabia revealed that most students had poor diets and unmet physical activity needs (Almutairi et al., 2018). A study in Korea found that coffee consumption was linked to higher intake of sugary foods and alcohol (Kim, 2017). Research indicated that body mass index and family income influenced coffee consumption among students (Alfawaz et al., 2020).

A study on Chinese international students showed a link between lower physical activity levels and smartphone addiction (Kim et al., 2015). During the COVID-19 pandemic, Australian students were 30% less likely to meet physical activity targets (Gallo et al., 2020). A Romanian study showed that male students were more physically active than females (Fagaras et al., 2015), and Portuguese students accumulated more steps and engaged in more physical activity on weekdays than weekends (Clemente et al., 2016). Research during the pandemic suggested that students who met pre-lockdown physical activity guidelines were more likely to maintain those levels during lockdown (López-Valenciano et al., 2021). Physical activity was also found to positively impact students' overall quality of life (Çiçek, 2018).

Studies show that while most students are aware they need more sleep, their sleep time decreases over time (Ahmed et al., 2017). Research on medical and nursing students reveals that most suffer from poor sleep quality (Paudel et al., 2022; Yilmaz et al., 2017) often correlated with low GPAs (Cates et al., 2015). Poor sleep quality affects students' temperament and control abilities (Lukowski and Milojevich, 2015), while good sleep quality is linked to better academic performance (Herrmann et al., 2018). Un-

healthy eating habits also contribute to poor sleep quality (Ramón-Arbués et al., 2022), while consuming healthy foods like fruits and vegetables can reduce sleep anxiety and improve sleep quality (Pengpid and Peltzer, 2020). Students with good sleep quality tend to have higher life satisfaction (Emilie and Saksvik-Lehouillier, 2018).

Although much research has focused on student lifestyle behaviors, studies linking physical activity to smoking, coffee consumption, screen time, and sleep quality are scarce. This study aims to explore how physical activity affects daily habits, including smoking, coffee consumption, screen time, and sleep quality, to promote healthier lifestyles and well-being among students.

SUBJECTS AND METHOD

1. Study Design

This was a cross-sectional study design with a quantitative approach conducted in Surabaya in June 2024.

2. Population and Sample

This study targets students from sports science-related programs. Using simple random sampling, 105 students from the Sports Coaching Education program at the Faculty of Sports Science and Health, State University of Surabaya, were selected as the sample.

3. Study Variables

The dependent variable was weekly physical activity, while the independent variables were daily smoking habits, coffee consumption, screen time, and sleep quality over the past month.

4. Operational Definition of Variable

Physical Activity: Time spent on moderate to high-intensity sports activities outside of daily routines.

Smoking: The act of consuming conventional cigarettes.

Coffee Consumption: The average number of cups of coffee, with or without sweetener, consumed daily.

Screen Time: Total time spent using gadgets, TV, or other electronic devices.

Sleep Quality: The quality of sleep, including factors like ease of falling asleep, sleep duration, comfort, and how students feel upon waking

5. Study Instruments

The variables of physical activity, smoking habits, coffee consumption, and screen time are measured using a self-administered questionnaire, while sleep quality is assessed with the Sleep Quality Scale (SQS) developed by Yi, Shin, and Shin (Negelspach et al., 2025). The questionnaire is distributed online via Google Forms. Results are used to categorize weekly physical activity, smoking intensity, coffee consumption, and sleep quality from the past month into different levels.

6. Data Analysis

The data were analyzed using Spearman correlation and linear regression tests to assess the significance of relationships between variables, with IBM SPSS Statistics version 25 used for analysis.

7. Research Ethics

This research was conducted with participant consent, ensuring anonymity and confidentiality. Ethical approval was granted by the ethics committee of Universitas Negeri Surabaya (No.0035/UN38.III.1/DL.01.02/-2024) on January 8, 2025.

RESULTS

1. Sample Characteristics

Table 1 shows the characteristics of the 105 participants. Most were male (67%), and 75% were aged 18-20 years. The highest rate of physical activity (27%) was in the 60-120 minutes/week and 120-180 minutes/week categories. Additionally, 74% were non-smokers, with the percentage of smokers

decreasing as daily cigarette consumption increased. Only 4% of active smokers were female. Coffee consumption was highest (35%) at 1 cup/day, while 57% of students did not consume coffee. Screen time was high, with 45% spending 3-6 hours/day and 43% spending more than 6 hours/day. Finally, 72% of students had low sleep quality scores (22-42 out of 84).

Table 1. Sample characteristics of age, gender, smoking, coffee consumption, screen time, and sleep quality

Characteristics	Category	Frequency (n)	Percentage (%)
Age	18-20 years old	79	75
	>20 years old	26	25
Gender	Man	70	67
	Woman	35	33
Physical Activity	60-120 minutes/week	28	27
	120-180 minutes/week	28	27
	180-240 minutes/week	21	20
	240-300 minutes/week	16	15
	>300 minutes/week	12	11
Smoking Habits	Not a smoker	78	74
	1-5 sticks/day	15	14
	5-9 sticks/day	7	7
	≥10 sticks/day	5	5
Coffee Consumption	Not Consuming	60	57
	1 cup/day	37	35
	2-3 cups/day	6	6
	>3 cups/day	2	2
Screen Time	<3 hours/day	13	12
	3-6 hours/day	47	45
	>6 hours/day	45	43
Sleep Quality Score	1-21	14	13
	22-42	75	72
	43-63	15	14
	64-84	1	1

2. Bivariate Analysis

The Spearman correlation test results in Table 2 show no significant negative relationship between physical activity and smoking habits (r= -0.04; p= 0.627), screen time (r= -0.00; p= 0.932), or sleep quality (r= -0.03; p= 0.730), indicating that physical activity does not significantly reduce these factors. However, a non-significant positive correlation was found between physical activity and coffee consumption (r= 0.07; p= 0.474), suggesting that higher physical activity levels are associated with greater coffee consumption.

Table 2. Results of the Spearman correlation test between physical activity and smoking, coffee consumption, screen time, and sleep quality

Independent Variable	r	n	p
Smoking Habits	-0.04	105	0.627
Coffee Consumption	0.07	105	0.474
Screen Time	-0.00	105	0.932
Sleep Quality	-0.03	105	0.730

Linear regression analysis, shown in Table 3, reveals two variables—smoking habits (b= -0.07; 95%CI= -0.43 to 0.21; p = 0.497) and sleep quality (b= -0.03; 95%CI= -0.03 to 0.02; p=0.748) with non-significant negative relationships with physical activity. Additionally, non-significant positive relationships were found between physical activity and coffee consumption (b = 0.08; 95%CI= -0.23 to 0.56; p= 0.412) and screen time (b= 0.03; 95% CI= -0.32 to 0.47; p= 0.724). These results differ from the previous results test on screen time, which indicated a non-significant negative relationship (r= -0.00; p= 0.932). The Spearman test showed a very weak negative relationship, which may explain the positive direction in the linear regression analysis (b = 0.03).

Table 3. The result of the linear regression analysis physical activity and smoking, coffee consumption, screen time, and sleep quality

Independent Variable	b	CI (95%)		p
		Lower Limit	Upper Limit	
Smoking Habits	-0.07	-0.43	0.21	0.497
Coffee Consumption	0.08	-0.23	0.56	0.412
Screen Time	0.03	-0.32	0.47	0.724
Sleep Quality	-0.03	-0.03	0.02	0.748
n observation=105 Adj R-Squared= -0.027 p<0.001				

DISCUSSION

Lifestyle is a key factor influencing quality of life (Cohrdes et al., 2018), with unhealthy habits leading to chronic illnesses (Farhud, 2015), and mental health issues like stress, anxiety, and depression (Hanawi et al., 2020). Therefore, promoting a healthy lifestyle among students is essential. A healthy lifestyle includes non-smoking, maintaining an ideal weight, eating fruits and vegetables, and regular physical activity (Kubová et al., 2018). Smoking, poor diet, and inactivity are unhealthy habits. Health literacy plays a crucial role in helping students make informed lifestyle choices, leading to healthier behaviors like increased fruit consumption and better hydration, which can enhance academic performance (Yang et al., 2017; Pilato et al., 2022).

Poor lifestyle choices can also increase the risk of stress (Hanawi et al., 2020). The living environment, including parental influence and social factors, can significantly impact lifestyle choices (Lupi et al., 2015). Living with parents or in a dormitory can promote healthier lifestyles (Chen, 2022).

1. Physical Activity and Smoking Habits

A negative correlation between smoking habits and physical activity was observed in this study, though it was not statistically significant. This suggests that increased smoking is associated with decreased physical activity. This relationship may be influenced by the connection between smoking and stress levels, as stress can contribute to more sedentary behavior (Lee and Kim, 2018). However, a study in South Korea found that female smokers had higher physical activity levels than non-smokers (Lee and Yi, 2016). which contradicts the findings of this study. Other study showed that moderate physical activity was more common among students with lower smoking intensity (Chauvet et al., 2018), supporting the negative relationship observed in this study. Lack of physical activity is linked to poor well-being, as only 7% of U.S. students maintain an active lifestyle (Yahia et al.,

2015), and sedentary behavior increased to 3 hours per day during COVID-19 in Canada (Bertrand et al., 2021). Despite this, many students in this study met the WHO's recommended 150-300 minutes of physical activity per week (Deliens et al., 2015; WHO, 2020), likely because the subjects were sports students, who tend to be more active than the general student population.

Cigarettes, including e-cigarettes, are addictive (Grossman, 2017), and smoking is prevalent among students (Nasser et al., 2020). Although e-cigarettes are marketed as a safer alternative (Copeland et al., 2017; Sears et al., 2017), but still need further study (Marques et al., 2021). The success rate for quitting with e-cigarettes is about 5% (Warner and Mendez, 2019). Smoking is often driven by stress, family issues, or part-time work (Shaheen et al., 2016), leading to serious health issues like cancer, heart disease, and respiratory problems (Aryal and Bhatta, 2015). Nicotine harms brain development (Bernat et al., 2018) and causes about six million deaths annually (Gallucci et al., 2020).

Studies show smoking is more common among male students, often linked to alcohol consumption (Fujita and Maki, 2018). Smoking, including e-cigarettes, is associated with poor sleep and increased alcohol intake (Hefner et al., 2019). Despite knowing the risks (Cooper et al., 2017), many students continue due to addiction and stress (Villanti et al., 2016). Smokers also reported consuming poorer diets (Alruwaili et al., 2024). This reality suggests that quitting smoking can improve quality of life. Additionally, reducing smoking and increasing physical activity can enhance students' well-being.

2. Physical Activity and Coffee Consumption

This study found a positive correlation between physical activity and coffee consumption, indicating that students who engage in more physical activity tend to drink more coffee. A study in Australia found that women who drank 1-2 cups of coffee daily had increased physical activity levels compared to those who consumed less (Torquati et al., 2018). This supports the findings of this study, which show a positive relationship between coffee consumption and physical activity among students. Research has shown that moderate coffee consumption can enhance physical performance (O'callaghan et al., 2018) and increase enjoyment of exercise (Torquati et al., 2018), possibly motivating more physical activity.

Coffee also offers health benefits, including reducing the risk of type-2 diabetes and liver disease (Nieber, 2017), acting as an antioxidant (Gökcen and Şanlier, 2019), and reducing the risk of death (Poole et al., 2017). However, excessive coffee consumption can raise blood pressure, (Grosso et al., 2017), cause insomnia, and pose other health risks (Depaula and Farah, 2019). Thus, moderate coffee intake is recommended for students to balance benefits and risks. The positive link between physical activity and coffee consumption suggests more active students tend to drink more coffee. To avoid health issues, students should limit sugar in their coffee and consume it within recommended daily limits.

3. Physical Activity and Screen Time

This study found a negative relationship between physical activity and screen time, indicating that more active students tend to spend less time on screens. However, a study in Brazil showed no significant effect of screen time on physical activity (de Lucena et al., 2015). This finding contrasts with the results of this study, which shows a negative correlation between physical activity and screen time. While others, like in Chile (Lavados-Romo et al., 2023) and Canada (Chow, 2020), highlighted that

increased physical activity can reduce screen time. This result aligns with the findings of this study, where a negative relationship between physical activity and screen time was observed.

The reduction in screen time can be influenced by several factors, such as the support of those around them (Xu et al., 2015), dietary patterns (Ramsey Buchanan et al., 2016), and type of device (Lauricella et al., 2015). Research has revealed that high levels of screen time can negatively impact health, including aerobic fitness, quality of life, self-esteem, and social habits (Saunders and Vallance, 2017). The decrease in physical activity and increase in screen time was also linked to mental health risks such as anxiety, depression, and poor sleep quality (Wu et al., 2015). In addition, dependence on digital devices can lead to decreased sleep quality due to disruption of the body's circadian rhythm and increased vulnerability to the negative effects of content (Nakshine et al., 2022). Despite the weak significance in this study (p= 0.932), the trend suggests that balancing physical activity with reduced screen time may benefit students' overall well-being.

4. Physical Activity and Sleep Quality

This study found a negative relationship between physical activity and sleep quality, suggesting that higher levels of physical activity are associated with lower sleep quality. A literature review (Wang and Boros, 2021) noted that moderate physical activity improve sleep quality more effectively than vigorous activity. The sports students in this study, many of whom are athletes, engage in vigorous physical activities, which may lead to lower sleep quality due to increased physical exertion. This explains the negative relationship found between physical activity and sleep quality. Another review (Zhao et al., 2023) also highlighted that physical activity's impact on sleep quality is less significant for young adults, supporting the findings of this study. This aligns with the findings of this study, where no significant relationship was observed between physical activity and sleep quality among students.

Poor sleep quality is often caused by sleep disorders. Several factors can cause sleep disturbances, including depression (Dinis and Bragança, 2018), social anxiety (Gonzaga Cavalcanti et al., 2021), age and obesity (Lee and Kim, 2018). Additionally, there are several ways to improve sleep quality, such as regulating eating habits (Ramón-Arbués et al., 2022; Pengpid and Peltzer, 2020), napping during the day (Liu et al., 2021), and practicing self-relaxation (Doorley et al., 2021). Research also suggests avoiding the consumption of more than 3 cups of coffee per day, especially before bedtime, as it can reduce sleep quality (Nugroho, 2019). Furthermore, there is a negative relationship between smoking (Alfurqon, 2021) and screen time with sleep quality (dos Santos et al., 2024). With good sleep quality, students are more likely to have a positive sense of satisfaction with their lives (Emilie Bækø Ness and Saksvik-Lehouillier, 2018).

Moderate physical activity improves sleep quality (Wang and Boros, 2021), and reduces the risk of various diseases (Kim et al., 2021), but factors like age, socioeconomic status, and campus life can affect activity levels (Pengpid et al., 2015; Deliens et al., 2015). The negative relationship between physical activity and sleep quality suggests that higher levels of physical activity among students may lower sleep quality. Therefore, students should carefully manage their schedules and choose appropriate types of activities to prevent any adverse impact on their sleep quality.

This research aims to raise awareness of healthier lifestyle choices and encourage students to adopt positive changes. Students

are expected to analyze their lifestyle, identify unhealthy habits, and make positive changes to improve their overall well-being. Given the rapid pace of societal change and diverse student lifestyles, the evolving needs of students necessitate further research. This study was limited to sports students and did not consider factors such as gender, age, campus environment, or social conditions.

To gain a comprehensive understanding of student lifestyle behaviors, future research should employ a larger and more diverse sample, encompassing students from various genders, academic programs, and sociocultural backgrounds. This study found a negative correlation between physical activity and the variables of smoking habits, screen time, and sleep quality. Given this reality, it is hoped that students will reduce the intensity of smoking and screen time to avoid a sedentary lifestyle and be able to manage their exercise schedules without disrupting their rest time. Additionally, a positive correlation was found between physical activity and coffee consumption. Based on these results, students are encouraged to consume coffee within reasonable daily limits so that the benefits of coffee consumption can be enjoyed while avoiding the risks associated with excessive intake. These findings highlight the importance of adopting healthier lifestyle habits to improve overall quality of life and reduce the risk of various chronic diseases. With these findings, it is also hoped that universities will provide environments that encourage students to be more physically active, thereby improving their health.

AUTHOR CONTRIBUTION

Hani Astari leads the design, data analysis, and writing, Muhammad collects data, while Kunjung Ashadi mentors and reviews the research.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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