

Impact of Outdoor Activities on Reducing Screen Time among College Students

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Abstract:

Excessive screen time among college students has become a growing concern due to its adverse effects on physical and mental health. This study examines the role of outdoor activities in mitigating screen time, comparing Physical Education (PE) students with their non-PE counterparts. A survey of 100 college students from Delhi University (DU) assessed their daily screen usage, outdoor activity engagement and sleep patterns. Statistical analysis reveals a significant negative correlation between outdoor activity frequency and screen time ($r = -0.68$, $p < 0.001$), with PE students exhibiting notably lower screen usage ($M = 1.87$ hours/day) compared to non-PE students ($M = 3.80$ hours/day). A chi-square test ($\chi^2 = 37.30$, $p < 0.001$) confirmed a significant association between student group and outdoor activity engagement. These findings underscore the importance of structured physical education in promoting healthier screen habits and suggest that universities should integrate mandatory physical activity programs to reduce digital dependence among students.

Keywords: Screen time, Outdoor activities, Physical Education, College students

1. Introduction

The widespread use of digital devices has led to increased screen time among college students, contributing to various health issues such as obesity, poor sleep quality, and reduced social interaction. As students become more reliant on digital technology for academic, social, and recreational purposes, their engagement in physical activities has declined. Studies indicate that prolonged screen exposure can lead to negative health outcomes such as eye strain, sleep disorders, anxiety, and sedentary behaviour, all of which are prevalent among college students (Twenge & Campbell, 2018). Additionally, excessive screen use is associated with decreased academic performance, as it may contribute to procrastination and reduced attention spans.

Outdoor activities, including structured sports and recreational exercises, have been widely recognised as effective strategies for mitigating the negative impacts of screen time. Engaging in physical activities not only enhances physical well-being but also improves cognitive functions, mental health, and overall quality of life. However, there is a gap in the research that directly examines the comparative screen habits of students enrolled in Physical Education programs versus those pursuing other academic disciplines.

This study aims to explore the impact of structured outdoor activities on screen time reduction among college students, specifically in Delhi University. By comparing the screen time habits of PE students with non-PE students, this research seeks to determine whether active participation in outdoor activities is an effective intervention for reducing digital dependence.

Methodology

Selection of Subjects

A total of 100 college students aged 17-24 from various colleges of University of Delhi were selected and divided equally into two groups: PE students (n=50) and Non-PE students (n=50). Participants were randomly selected from different academic disciplines. Inclusion criteria for the PE group required students to have studied Physical Education as a subject, while non-PE students had no formal engagement in Physical Education courses.

Data Collection

A structured questionnaire was used to collect data on:

- Daily screen time (hours per day)
- Outdoor activity frequency
- Sleep disturbances related to screen usage

Data Analysis

An independent t-test was conducted to compare screen time between PE and Non-PE students. Chi-square test was used to determine the association between student group and outdoor activity frequency. Correlation analysis was employed to assess relationships between outdoor activity and screen time.

Results

Screen Time Comparison

- PE Students: 1.87 hours/day (mean)
- Non-PE Students: 3.8 hours/day (mean)

Table 1: Comparison of Screen Time between Physical Education Students and Non-Physical Education Students

Group	N	Mean Screen time (Hours/Day)	S.D.	t- value	p- value	df
Physical Education Students	50	1.87	0.92	-9.77	<0.001	98
Non- Physical Education Students	50	3.80	1.10			

Interpretation:

The t-test result ($t = -9.77$, $p < 0.001$) indicates a highly significant difference between the two groups. Since $p < 0.001$, we reject the null hypothesis, confirming that PE students have significantly lower screen time than Non-PE students.

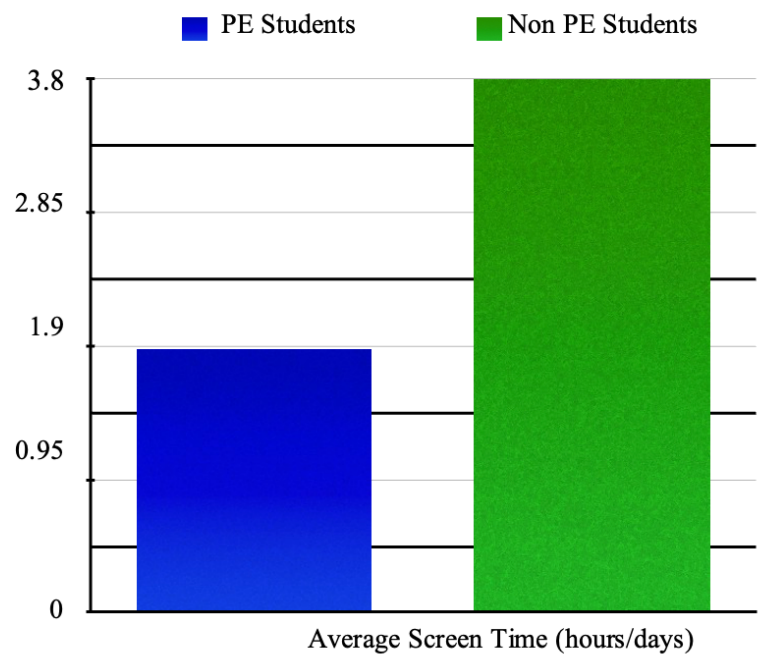


Figure 1: Comparison of Average Screen Time Between PE and Non-PE Students

Outdoor Activity Frequency

- Daily Outdoor Activity: 46% (PE) vs. 0% (Non-PE)
- 3-5 Times a Week: 54% (PE) vs. 30% (Non-PE)
- Rarely or Never: 0% (PE) vs. 70% (Non-PE)

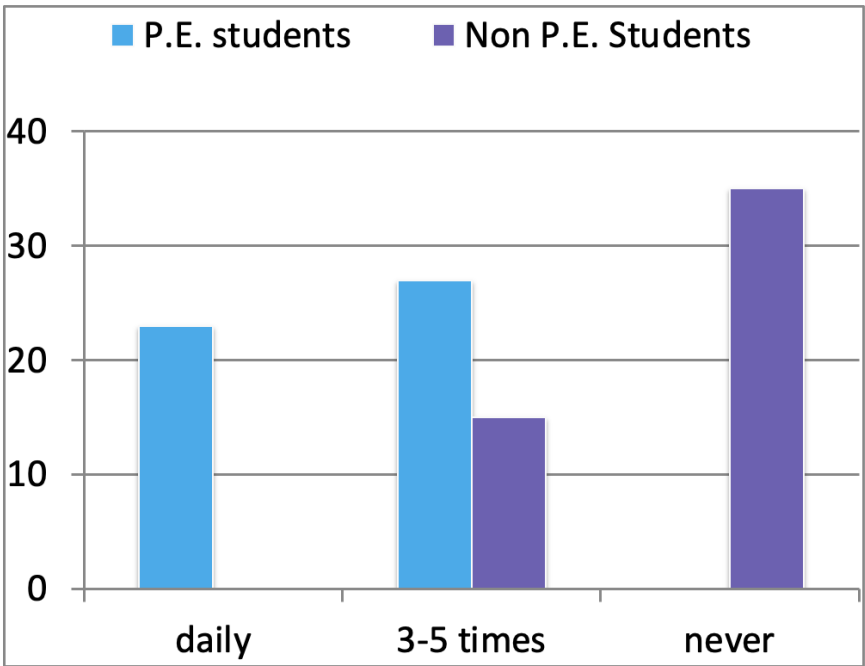


Figure 2: Comparison of Outdoor Activity Between PE and Non-PE Students

Table 2: Association between Outdoor Activity Frequency and Student Group (Chi-Square Test Results)

Outdoor Activity Frequency	PE Students (N=50)	Non-PE Students (N=50)	Total
Daily	23	0	23
3-5 Times A Week	27	15	42
Rarely/ Never	0	35	35
Total	50	50	100

Interpretation:

Chi-Square Test Result: $\chi^2=37.30, p < 0.001$

The chi-square test ($\chi^2 = 37.30, p < 0.001$) indicates a highly significant association between student group (PE vs. Non-PE) and outdoor activity frequency. The data suggest that PE students are significantly more likely to engage in daily or frequent outdoor activities, while Non-PE students are more likely to report low or no outdoor activity participation. The results reject the null hypothesis, confirming that structured physical education programs have a substantial impact on outdoor activity engagement.

Sleep Impact

- Sleep Disturbances Due to Screen Time: 30% (PE) vs. 62% (Non-PE)

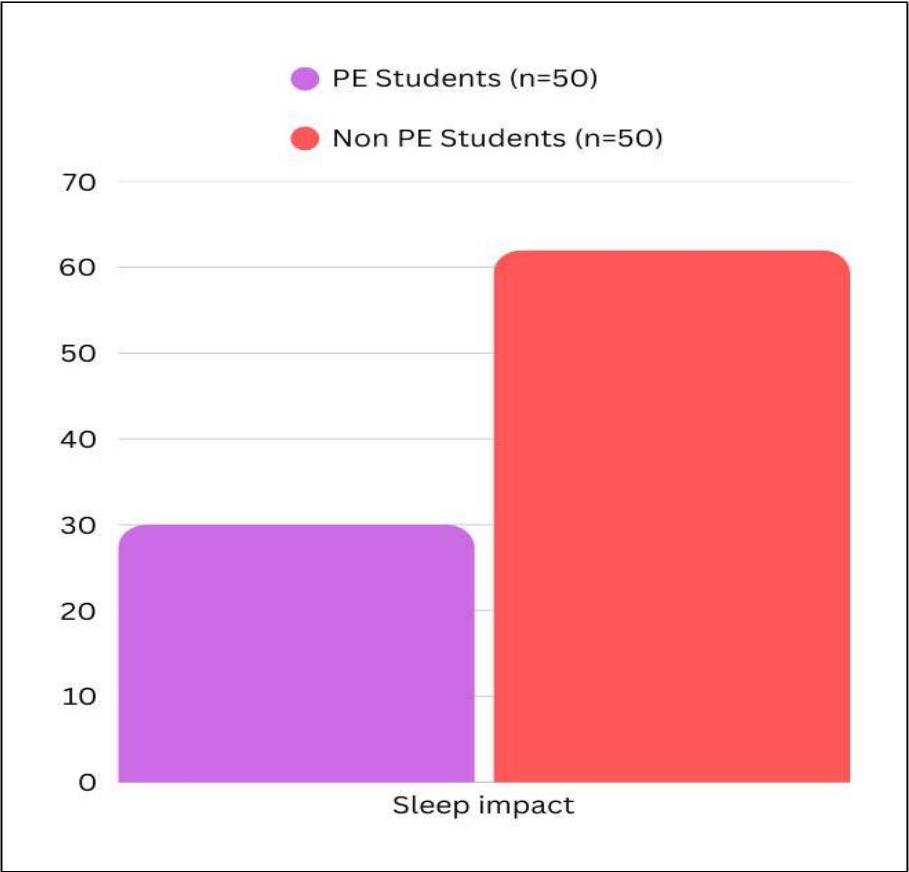


Figure 3: Comparison of Sleep Impact Between PE and Non-PE Students

Table 3: Relationship Between Outdoor Activity Frequency and Screen Time

Variables	N	Mean	S.D.	Correlation Coefficient (r)	p-value
Outdoor Activity Frequency	100	3.20	1.10	-0.68	<0.001
Screen Time		2.83	1.01		

Interpretation:

The Pearson correlation analysis between outdoor activity frequency and screen time yielded a correlation coefficient of $r = -0.68$ with a $p\text{-value} < 0.001$. This result suggests a strong negative correlation, meaning that as outdoor activity frequency increases, screen time significantly decreases.

Discussion

The findings of this study highlight a significant negative correlation between outdoor activity frequency and screen time among college students ($r = -0.68$, $p < 0.001$). This supports existing literature suggesting that increased physical activity leads to reduced sedentary behaviours, including excessive screen use (Biddle et al., 2019). The results demonstrate that PE students, who engage in structured outdoor activities as part of their academic curriculum, exhibit significantly lower screen time ($M = 1.87$ hours/day) compared to their non-PE counterparts ($M = 3.80$ hours/ day), a difference confirmed by a highly significant t-test result ($t = -9.77$, $p < 0.001$).

One key explanation for these findings is that structured physical education programs inherently encourage active lifestyles, reducing students available discretionary time for screen-based entertainment. Prior research by Tremblay et al. (2017) also supports the notion that participation in physical activity acts as a protective factor against excessive screen exposure by promoting alternative recreational choices. Furthermore, non-PE students, who lack mandated physical activity sessions, may be more prone to sedentary behaviours, leading to prolonged digital consumption, which aligns with studies demonstrating that academic pressures and unstructured leisure contribute to increased screen engagement (Twenge & Campbell, 2018).

The study also reveals notable differences in outdoor activity frequency, with 46% of PE students engaging in daily outdoor activities compared to 0% among non-PE students. This aligns with previous research indicating that habitual physical activity fosters long-term behavioural patterns that prioritise movement over screen-based activities (Guthold et al., 2020). Additionally, the sleep disturbances reported among non-PE students (62%) compared to PE students (30%) further reinforce the adverse effects of excessive screen time on sleep quality, corroborating findings by Carter, Rees, Hale, Bhattacharjee, & Paradkar (2016), which linked screen exposure before bedtime to delayed sleep onset and poor sleep efficiency.

Given these results, it is imperative for academic institutions to integrate structured outdoor activities across all disciplines to mitigate the detrimental effects of excessive screen use. Incorporating mandatory physical activity programs, as suggested by Carson et al. (2016), can serve as an effective intervention to foster healthier screen habits and overall well-being among students. Future research should explore longitudinal data to assess the long-term impact of such interventions on students digital consumption patterns and physical health outcomes.

Conclusion

This study provides empirical evidence that structured outdoor activities significantly reduce screen time among college students. The strong negative correlation between outdoor activity frequency and screen time, along with significant differences between PE and Non-PE students, reinforces the importance of incorporating mandatory physical activity programs within university curricula. Future research should explore longitudinal studies and intervention-based approaches to further validate these results.

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