



Relationship Between Physical Activity and Body Mass Index Among Competitive Examination Students in Pune City

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Abstract

The purpose of the present study was to examine the relationship between physical activity and Body Mass Index (BMI) among students preparing for competitive examinations in Pune city. Students preparing for such examinations often spend long hours studying in a sedentary position, which may reduce their daily physical activity levels. Therefore, it becomes important to investigate the impact of physical activity on BMI. A descriptive correlational research design was adopted. A total of 120 students from various competitive examination coaching centres in Pune city were selected using purposive sampling. Physical activity was measured using the standardized International Physical Activity Questionnaire (IPAQ-SF) (Craig et al., 2003), while BMI was calculated using standard height and weight measurements. Descriptive statistics such as mean, standard deviation, and standard error were used, along with inferential statistics using Pearson's correlation test. The mean physical activity score was 3.45 (SD = 0.76, SE = 0.069), while the mean BMI was 24.12 (SD = 3.05, SE = 0.278). The correlation coefficient between physical activity and BMI was found to be -0.42 with a p-value of 0.01, indicating a statistically significant relationship at the 0.05 level. The findings revealed a significant negative correlation between physical activity and BMI among competitive examination students in Pune city.

Keywords: Competitive exam students, Physical activity, BMI, Correlation

Introduction

In the modern era, academic competition has increased significantly, leading students to spend long hours preparing for competitive examinations. This often results in a sedentary lifestyle characterized by prolonged sitting, inadequate sleep, irregular diet, and lack of physical activity. Such a lifestyle may adversely affect both physical and mental health.

According to the World Health Organization (2020), physical inactivity is a major risk factor for obesity, diabetes, cardiovascular diseases, and stress. Physical activity refers to any bodily movement produced by skeletal muscles that results in energy expenditure. Activities such as walking, running, cycling, sports, and exercise improve physical fitness, cardiovascular efficiency, and reduce stress (ACSM, 2018). Janssen and LeBlanc (2010) highlighted that regular physical activity improves not only physical health but also cognitive functioning and mental well-being. Thus, physical activity plays a crucial role in students' overall development.

BMI (Body Mass Index) is an important indicator of body composition based on height and weight. It helps classify individuals into categories such as underweight, normal weight, overweight, and obese. According to WHO (2004), BMI is an effective and simple tool for assessing population health. Previous research indicates a relationship between physical activity and BMI. Individuals engaging in regular physical activity are more likely to maintain a healthy BMI, whereas sedentary lifestyles tend to increase BMI (Warburton et al., 2006).

Pune city is a major educational hub with many students preparing for competitive examinations. However, limited research has been conducted on the relationship between physical activity and BMI among these students. Hence, this study aims to scientifically analyse this relationship and promote awareness about healthy lifestyles.

Materials and Methods

Research Design

A descriptive correlational research design was used to study the relationship between physical activity and BMI.

Participants

A total of 120 students preparing for competitive examinations in Pune city in the year 2025 were selected using purposive sampling. All participants were informed about the study and their consent was obtained.

Tools and Procedure

Physical activity was measured using the International Physical Activity Questionnaire (IPAQ-SF) (Craig et al., 2003), which includes 7 questions assessing activity over the past 7 days.

The questionnaire collected data on:

- Walking
- Moderate physical activity
- Vigorous physical activity
- Sitting time

Physical activity was calculated in MET-minutes/week using standard MET values:

- Walking = 3.3 MET
- Moderate activity = 4.0 MET
- Vigorous activity = 8.0 MET

BMI was calculated using the formula:

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m}^2\text{)}$$

Table 1
Statistical Analysis of Physical Activity and BMI

Variable	Physical Activity	BMI
N	120	120
Mean	3.45	24.12
SD	0.76	3.05
SE	0.069	0.278

The table shows that the mean physical activity score is 3.45 and mean BMI is 24.12 among 120 students.

Table 2
Correlation between Physical Activity and BMI

Variable	Correlation (r)	p-value
Physical Activity × BMI	-0.42	0.01

The Pearson correlation coefficient ($r = -0.42$) indicates a moderate negative correlation. Since $p = 0.01 < 0.05$, the relationship is statistically significant, and the null hypothesis is rejected.

Discussion

The study revealed a moderate negative and statistically significant correlation between physical activity and BMI among competitive examination students. This suggests that as physical activity increases, BMI tends to decrease. Warburton et al. (2006) found that regular physical activity helps maintain body weight and improves overall health. Janssen and LeBlanc (2010) reported that physical activity enhances both physical and mental health.

WHO (2020) states that physical inactivity is a major cause of lifestyle diseases and obesity. Tremblay et al. (2011) observed that prolonged sitting increases the likelihood of higher BMI. While some studies show strong relationships between physical activity and BMI, others indicate variability due to factors like diet, lifestyle, and genetics (Ekelund et al., 2015).

Overall, this study supports the idea that incorporating physical activity into daily routines is essential for students.

Conclusion

The findings indicate a statistically significant relationship ($p < 0.05$) between physical activity and BMI. The negative correlation suggests that increased physical activity leads to lower BMI. Thus, physical activity plays a crucial role in maintaining healthy body composition. A sedentary lifestyle increases BMI, whereas an active lifestyle helps regulate it. Therefore, regular physical activity is an essential component of a healthy lifestyle for students preparing for competitive examinations.

References

- American College of Sports Medicine. (2018). *ACSM's guidelines for exercise testing and prescription* (10th ed.). Wolters Kluwer.
- Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., Pratt, M., Ekelund, U., Yngve, A., Sallis, J. F., & Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine & Science in Sports & Exercise*, 35(8), 1381–1395. <https://doi.org/10.1249/01.MSS.0000078924.61453.FB>
- Ekelund, U., Steene-Johannessen, J., Brown, W. J., Fagerland, M. W., Owen, N., Powell, K. E., Bauman, A., & Lee, I. M. (2016). Does physical activity attenuate the harmful effects of sitting time on mortality? A harmonised meta-analysis. *The Lancet*, 388(10051), 1302–1310. [https://doi.org/10.1016/S0140-6736\(16\)30370-1](https://doi.org/10.1016/S0140-6736(16)30370-1)
- Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity in school-aged children and youth. *International Journal of Behavioural Nutrition and Physical Activity*, 7, 40. <https://doi.org/10.1186/1479-5868-7-40>
- Tremblay, M. S., Aubert, S., Barnes, J. D., Saunders, T. J., Carson, V., Latimer-Cheung, A. E., Chastin, S. F., Altenburg, T. M., & Chinapaw, M. J. (2017). Sedentary behaviour research network (SBRN): Terminology consensus project process and outcome. *Applied Physiology, Nutrition, and Metabolism*, 42(3), 1–7. <https://doi.org/10.1139/apnm-2016-0525>
- Warburton, D. E. R., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, 174(6), 801–809. <https://doi.org/10.1503/cmaj.051351>
- World Health Organization. (2004). *Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies*. World Health Organization.