

## Role Of Intensive Usage of Mobile-Based Social Media in Health-Related Physical Fitness And Academic Performance Among the Higher Secondary Students

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### Abstract

The present study aims to investigate the specific ramifications of extensive social media use via smartphones on health-related physical fitness and academic performance among higher secondary school students in Nanded, Maharashtra. By exploring these dynamics, the study seeks to provide insights into how digital technologies influence the holistic development of students and inform strategies for promoting healthier and more balanced digital engagement practices.

**Key words:** Mobile-Based Social Media, Health Related Physical Fitness, academic performance, Higher Secondary Students.

### Introduction

The increasing use of social media by adolescents and its potential neglect of health and fitness, as well as its impact on academic performance. There is a notable gap in the literature regarding the relationship between intensive social media use and health-related physical fitness and academic performance. Therefore, the aim of the present study is to investigate the usage of mobile-based social media and its correlation with health-related physical fitness and academic performance in higher secondary school students.

This study seeks to address the existing research gap by providing a comprehensive analysis of how mobile-based social media usage affects the physical and academic well-being of adolescents. It explored the extent to which social media influences their physical activity levels, and academic achievements. Understanding these relationships is crucial for developing effective interventions and guidelines to mitigate the negative impacts of social media while enhancing its positive effects on adolescent development. The findings of this study could inform parents, educators, and policymakers about the importance of balanced social media use

and promote healthier lifestyle choices among young people.

### Statement of problem

Despite these concerns, there remains a paucity of comprehensive research examining the precise impact of intensive mobile-based social media use on the health-related physical fitness and academic outcomes of secondary school students. The study titled "*Role of intensive usage of mobile-based social media in health-related physical fitness and academic performance among the higher secondary students*" aims to address this gap in knowledge. By exploring how extensive use of mobile-based social media influences physical activity levels and academic achievements, this research seeks to provide valuable insights into the complex interplay between digital engagement, physical health, and educational outcomes among adolescents.

### Objectives Of The Research Study

1. To develop a questionnaire for the assessment of intensity of usage of social media with smart phone (mobile phone) among the students.
2. To see the relationship between time spent on social media and health related physical fitness of higher secondary school students.

3. To see the relationship between use of social media and academic performance of higher secondary school students.
4. To predict the status of health-related physical fitness and academic performance on the basis of the intensity of usage of social media (by using smart phones).

### Hypotheses

- $H_0$ : There is no significant relationship between intensive usage of mobile-based social media and health-related physical fitness indicators among higher secondary students.
- $H_{01}$ : There is no significant relationship between intensive usage of mobile-based social media and academic performance among higher secondary students.

### Limitations of the Study

Respondents may alter their responses to align with societal expectations or perceived norms, especially when answering questions about their social media usage habits, physical fitness, or academic performance. This bias could potentially affect the accuracy of self-reported data.

The study's findings may be influenced by the characteristics of the sample population recruited from a specific geographic area (e.g., Nanded, Maharashtra). Generalizing results to broader populations of higher secondary students may require caution, as demographics and cultural factors can vary significantly.

The rapid evolution of social media platforms and technological advancements may render the study's findings time-sensitive. Changes in social media trends or usage patterns could affect the relevance and applicability of the study's conclusions over time.

Reliance on self-reported data, such as participants' assessments of their own physical fitness levels or academic performance, may introduce measurement errors due to recall bias or subjective interpretations.

### Delimitation of the Study

**Age Group:** The study exclusively examines adolescents in the higher secondary school stage (typically aged 15-18 years). Results may not be

applicable to younger or older student populations in different educational stages.

**Focus on Mobile-Based social media:** The study is delimited to exploring the impact of intensive usage of mobile-based social media platforms (e.g., Facebook, Instagram, Snapchat) on health-related physical fitness and academic performance. Other forms of digital media or offline social interactions are not within the scope of this investigation.

**Quantitative Approach:** The research employs a questionnaire-based quantitative methodology to gather data. Qualitative aspects such as in-depth interviews or ethnographic observations are not included in this study design.

**Health and Academic Outcomes:** The study focuses on specific health-related outcomes such as physical fitness indicators and academic performance metrics. Broader psychological or social impacts of social media use are not extensively explored within the study's scope.

### Methodology: Research Design

To address these objectives, the study followed a two-step process. First, a new questionnaire titled "Mobile-Based Social Media Usage Assessment" was developed and standardized using established procedures. This questionnaire was designed to capture data on social media usage patterns and their potential impacts on fitness and academic outcomes.

In the second step, the survey study was conducted utilizing this newly developed questionnaire to assess and predict the relationships between health-related physical fitness, academic performance, and the intensity of social media use. This design provided a structured approach to understanding how smartphone-mediated social media interactions influence students' physical health and academic success.

### This study was carried out in two distinct phases:

#### Phase-I: Method of Development of Questionnaire (Mobile-Based Social Media Usage)

To assess mobile-based social media usage among higher secondary school students in Nanded city, a new questionnaire was developed following established procedures. The "Mobile-Based Social Media Usage" questionnaire was specifically designed and standardized for this study to evaluate various aspects of social media usage.

**Development Process**

**Frequency of Use (A1), Social Comparison (A2), Emotional Connection (A3) Self-Esteem (A4), Negative Impact (A5).**

**Questionnaire Construction:** Based on these dimensions, seven questions were created for each aspect, resulting in an initial questionnaire with 35 items (5 dimensions x 7 questions).

- 1. Pilot Study:** The revised questionnaire was administered to a pilot sample of 10 students, aged 17-18 years, from a higher secondary school in Nanded city. The time taken to complete the questionnaire and any difficulties faced were noted. Adjustments were made based on the feedback from the pilot study and expert consultations.
- 2. Reliability and Validity Testing:** After a month, the questionnaire was re-administered to the same sample. The test-retest reliability coefficient ranged from 0.64 to 0.75. The construct validity, assessed through item-total correlations, ranged from 0.64 to 0.69. These results indicated satisfactory reliability and validity for the preliminary form of the questionnaire.
- 3. Item Analysis:** The finalized questionnaire was then administered to a larger sample of 100 students. The questionnaire was administered in English.

**Phase-II: Method of Survey study**

**a) Population:** The population for this study consisted of higher secondary school students (ages 17-18) from Nanded city.

**b) Sample:** Due to feasibility constraints, including time and budget limitations, a purposive sample of 600 students was selected, with an equal distribution of 300 male and 300 female students.

**Methods of Data Collection**

The data collection process began with the researcher visiting the authorities of selected colleges in Nanded city to explain the research objectives and obtain permission. Upon approval, students were invited to participate in the study. The researcher provided each participant with a questionnaire and research-related information.

**Variables and Tools****1. Health-Related Physical Fitness**

**Cardiorespiratory Endurance:** Measured by the 1-mile run/walk (time in minutes and seconds),.

**Flexibility:** Assessed using the sit-and-reach test (number of reaches per minute).

**Abdominal Muscle Strength:** Evaluated by sit-ups (number per minute).

**Body Fat:** Measured using a body fat monitor (percentage).

**2. Academic Performance: Grades/Marks:**

Obtained from the higher secondary school examinations administered by the schools.

**3. Mobile-Based Social Media Usage**

**Assessment Tool:** The newly developed "Mobile-Based Social Media Usage" questionnaire with 25 items, covering dimensions such as frequency of use, social comparison, emotional connection, self-esteem, and negative impact.

**Statistical Analysis**

Descriptive statistics were applied to process the data collected for the development of the questionnaire. This initial analysis was followed by item analysis to assess item difficulty and item discrimination using statistical equations. Pearson's product-moment correlation was employed to assess the test-retest reliability and construct validity coefficients of the questionnaire.

For the survey data, descriptive statistics were utilized to process information regarding the use of social media via smartphones, health-related physical fitness, and academic performance. The scores from each test were then correlated using Pearson's product-moment method. Additionally, regression analysis was employed to predict the status of students' health-related physical fitness and academic performance based on their social media usage scores.

**Major Findings****Results on Development of Questionnaire**

The new questionnaire i.e., "mobile based social media use", as developed in this investigation, is found reliable and valid. The reliability coefficient of the Scale was ranged from 0.64 to 0.75, whereas the validity coefficient was from 0.64 to 0.69. The norms of this scale as established are found gradable

for evaluating the mobile based social media use among higher secondary school students.

### Results of Survey on Mobile Use

The result of survey of the status of “**frequency of use**” (Dimension-1 of mobile based social media usage assessment) indicates that the mean and standard deviation values for “frequency of use” (Points) of the higher secondary school students were 16.15 ( $\pm 2.49$ ). This indicates that the frequency of use of the participants was average.

The status of “**social comparison**” (Dimension-2 of mobile based social media usage assessment) indicates that the mean and standard deviation values for “social comparison” (Points) of the higher secondary school students were 17.03 ( $\pm 3.02$ ). This indicates that the social comparison of the participants was average.

In case of “**emotional connection**” (Dimension-3 of mobile based social media usage assessment), the result of mean and standard deviation values were 18.14 ( $\pm 2.97$ ). This result indicates that the performance in “emotional connection” of higher secondary school students was average.

The status of “**Self-esteem**” (Dimension-4 of mobile based social media usage assessment) indicates that the mean and standard deviation values for “Self-esteem” (Points) of the higher secondary school students were 18.93 ( $\pm 3.03$ ). This indicates that the self-esteem of the participants was average.

In case of “**negative impact**” (Dimension-5 of mobile based social media usage assessment), the result of mean and standard deviation values were 18.75 ( $\pm 3.01$ ). This result indicates that the performance in “negative impact” of higher secondary school students was average.

The status of “**overall mobile based social media usage**” indicates that the mean and standard deviation values for “mobile based social media usage” (Points) of the higher secondary school students were 89.02 ( $\pm 6.53$ ). This indicates that the overall mobile based social media usage of the participants was average.

### Results on Health-Related Physical Fitness

The result of survey of the status of “**cardiovascular endurance**” indicates that the mean and standard deviation values for “**cardiovascular**

**endurance**” (min:sec) of the higher secondary school students were 14.20 ( $\pm 1.99$ ). The status of “**flexibility**” indicates that the mean and standard deviation values for “**flexibility**” (cms) of the higher secondary school students were 6.64 ( $\pm 1.01$ ). The status of “**abdominal muscle strength**” indicates that the mean and standard deviation values for “**abdominal muscles strength**” (number/min) of the higher secondary school students were 11.22 ( $\pm 6.18$ ). The status of “**body fat percentage**” indicates that the mean and standard deviation values for “**body fat percentage**” (%) of the higher secondary school students were 21.49 ( $\pm 4.91$ ).

### Results on Relation Between Mobile Use, Health Related Physical Fitness and Academic Performance

The study revealed a significant relationship between mobile-based social media use and various aspects of health-related physical fitness, as well as academic performance among higher secondary school students. A moderately negative and statistically significant correlation was observed between mobile-based social media use and cardiovascular endurance ( $r = -0.708$ ,  $p < 0.001$ ), indicating that increased use is associated with decreased cardiovascular endurance. Similarly, flexibility was negatively impacted, with a moderately negative correlation ( $r = -0.697$ ,  $p < 0.001$ ), suggesting that higher social media use corresponds to lower flexibility. The number of sit-ups performed by students also showed a strongly negative correlation ( $r = -0.837$ ,  $p < 0.001$ ), highlighting that increased social media use results in a decreased ability to perform sit-ups. Additionally, a moderately negative correlation was found between mobile-based social media use and body fat percentage ( $r = -0.600$ ,  $p < 0.001$ ), indicating that higher use is linked to an increase in body fat percentage. Furthermore, academic performance was negatively affected, as demonstrated by a moderately negative correlation ( $r = -0.590$ ,  $p < 0.001$ ), suggesting that higher mobile-based social media use is associated with lower academic performance in these students). The results are also presented in correlation heatmap.

### Results of Regression Analysis

The regression analysis was conducted to examine the predictive power of mobile-based social

media use on various health-related physical fitness measures and academic performance among higher secondary school students.

**Cardiovascular Endurance:** Mobile-based social media use was found to be a significant predictor of cardiovascular endurance, with the analysis yielding  $F(1, 598) = 601.18, p < 0.001$ . The regression coefficient ( $b = -0.216, p < 0.001$ ) indicated a negative relationship, suggesting that higher social media use is associated with lower cardiovascular endurance. The model explained 50.1% of the variance in cardiovascular endurance ( $R^2 = 0.501$ ), highlighting the substantial impact of social media use on this aspect of physical fitness.

**Flexibility:** The analysis also demonstrated that mobile-based social media use significantly predicted flexibility,  $F(1, 598) = 563.55, p < 0.001$ . The regression coefficient ( $b = -0.108, p < 0.001$ ) reflected a negative association, with the model accounting for 48.5% of the variance in flexibility ( $R^2 = 0.485$ ). This result suggests that increased social media use is linked to reduced flexibility among students.

**Abdominal Muscle Strength:** Mobile-based social media use was found to significantly predict abdominal muscle strength, as evidenced by  $F(1, 598) = 1395.31, p < 0.001$ . The regression coefficient ( $b = -0.792, p < 0.001$ ) indicated a strong negative relationship, with the model explaining 70.0% of the variance in abdominal muscle strength ( $R^2 = 0.700$ ). This underscores the considerable impact of social media use on abdominal muscle performance.

**Body Fat Percentage:** The analysis revealed that mobile-based social media use significantly predicted body fat percentage, with  $F(1, 598) = 335.64, p < 0.001$ . The negative regression coefficient ( $b = -0.451, p < 0.001$ ) suggests that higher social media use is associated with an increase in body fat percentage. The model explained 35.9% of the variance in body fat percentage ( $R^2 = 0.359$ ), indicating a notable effect of social media use on this physical health measure.

**Academic Performance:** Finally, the regression analysis showed that mobile-based social media use significantly predicted academic performance,  $F(1, 598) = 319.46, p < 0.001$ . The regression coefficient ( $b = -0.555, p < 0.001$ ) highlighted a negative association, with the model accounting for 34.8% of

the variance in academic performance ( $R^2 = 0.348$ ). This result suggests a significant adverse impact of social media use on students' academic outcomes.

### Discussion of Results

The role of mobile-based social media in the lives of adolescents is a topic of growing concern, particularly regarding its impact on health-related physical fitness and academic performance. The results of present study revealed a significant negative correlation between mobile-based social media use and both health-related physical fitness and academic performance among higher secondary students. These findings highlight the broader implications of social media consumption patterns on adolescent well-being and performance.

The study provides compelling evidence of the negative effects of intensive mobile-based social media use on both health-related physical fitness and academic performance among higher secondary students. The negative correlations and significant regression results emphasize the importance of addressing social media use as a critical factor influencing adolescent health and educational outcomes. These findings suggest a need for interventions aimed at reducing excessive social media use and promoting healthier lifestyle choices, including increased physical activity and focused academic efforts.

Hence, the hypothesis "*H<sub>0</sub>: There is no significant relationship between intensive usage of mobile-based social media and health-related physical fitness indicators among higher secondary students*" is rejected. The study's findings contribute to the growing body of evidence suggesting that interventions aimed at reducing screen time and promoting physical activity are essential for maintaining and improving physical fitness in adolescents.

And the hypothesis "*H<sub>01</sub>: There is no significant relationship between intensive usage of mobile-based social media and academic performance among higher secondary students*" is rejected.

### Conclusion

Intensive usage of mobile-based social media is strongly associated with a decline in cardiovascular endurance among higher secondary students. The significant negative correlation and regression results

suggest that increased time spent on social media may lead to a reduction in physical activities that promote cardiovascular health, thereby compromising students' overall endurance levels.

The study found a significant negative relationship between mobile-based social media use and flexibility. Students who engage more frequently in social media activities tend to have lower flexibility.

Abdominal muscle strength is particularly affected by intensive social media use, with the strongest negative correlation observed in this study. This suggests that excessive social media consumption may contribute to weaker core muscles.

The study indicates that higher levels of mobile-based social media use are associated with an increase in body fat percentage.

Academic performance is significantly and negatively impacted by intensive social media use. The findings suggest that students who spend more time on social media platforms tend to have diminished focus on their studies and allocate less time to academic activities, leading to poorer academic performance.

## Recommendations

### For Students

**Limit Social Media Usage:** Students are encouraged to set specific time limits for social media use to prevent it from interfering with their physical fitness and academic responsibilities. Allocating designated periods for study and physical activities can help maintain a balanced lifestyle.

**Prioritize Physical Activity:** Engage in regular physical exercise, including cardiovascular and strength training activities, to counteract the sedentary effects of prolonged mobile-based social media use. Incorporating stretching routines can also help improve flexibility.

### For Parents

**Monitor and Regulate Social Media Use:** Parents should actively monitor their children's social media usage and set appropriate boundaries to prevent excessive use. Encouraging the use of educational apps and content can help direct screen time towards productive activities.

**Promote Physical Activity:** Encourage children to participate in sports or other physical activities

regularly. Creating a family routine that includes physical exercise can help instil healthy habits and reduce the negative impact of screen time on physical fitness.

### For Educational Institutions

**Incorporate Digital Literacy Programs:** Schools should integrate digital literacy programs into the curriculum to educate students on the responsible use of social media. These programs can cover topics such as time management, the impact of social media on health, and strategies for reducing screen time.

**Promote Physical Education:** Institutions should prioritize physical education and ensure that students have ample opportunities to engage in physical activities. Providing diverse and engaging physical education programs can help students develop a lifelong habit of staying active.

### Suggestions for Future Research

Conduct longitudinal studies to examine the long-term effects of intensive mobile-based social media use on physical fitness and academic performance.

Explore the effectiveness of various interventions aimed at reducing social media use among students. This could include implementing digital detox programs, educational workshops on media literacy, or behavioural modification strategies, and assessing their impact on physical fitness and academic performance.

### Contribution To The Knowledge

This study significantly advances our knowledge of the impact of intensive mobile-based social media use on higher secondary students by highlighting its detrimental effects on both physical fitness and academic performance. Through detailed correlation and regression analyses, the research quantifies how excessive social media use negatively influences cardiovascular endurance, flexibility, abdominal muscle strength, body fat percentage, and academic achievement. By identifying these specific areas affected, the study provides a robust framework for developing targeted interventions and offers a comprehensive perspective on how digital behaviours can compromise physical and academic outcomes.

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