

Effect of Regular Physical Activity on Mental Health and Academic Performance Among College Students

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Abstract

Regular physical activity plays an important role in maintaining physical fitness, psychological well-being, and a healthy lifestyle among college students. Academic pressure, prolonged sitting, irregular sleep, and limited recreational opportunities may negatively influence students' mental health and learning experiences. This review examines the relationship between regular physical activity, mental health, and academic performance among college students, with particular attention to the Indian higher education context. Published research on exercise, psychological well-being, academic stress, and educational outcomes is critically examined. The available evidence suggests that regular physical activity can help reduce symptoms of anxiety, depression, and stress while supporting emotional well-being and quality of life. Physical activity may also benefit concentration, cognitive functioning, and study-related behaviour. However, findings concerning academic grades are inconsistent, and a direct improvement in academic performance cannot be assumed. The review highlights the importance of accessible physical activity opportunities within colleges and universities. Incorporating regular exercise, sports, walking, and recreational activities into students' daily routines may support mental health and create favourable conditions for academic engagement. Further research involving Indian college students is required to establish the long-term relationship between exercise participation and measurable academic achievement.

Keywords: Physical Activity, Mental Health, Academic Performance, College Students, Psychological Well-being, Exercise, India.

1. Introduction

Physical activity is an essential component of a healthy lifestyle and contributes to physical, psychological, and social well-being. It includes activities such as walking, running, cycling, swimming, yoga, sports, and structured exercise. Regular participation supports cardiovascular health, muscular fitness, and mental well-being. The World Health Organization recommends that adults perform 150–300 minutes of moderate-intensity aerobic physical activity or 75–150 minutes of vigorous-intensity activity per week, along with muscle-strengthening activities [1].

College life is an important stage of personal and academic development. Students experience changes in daily routines, social relationships, responsibilities, and learning environments. Academic examinations, assignment deadlines, competitive expectations, financial concerns,

and uncertainty about future careers may contribute to psychological stress. Limited physical activity and prolonged sedentary behaviour can further affect students' overall health.

Mental health concerns among Indian college students require particular attention. A multicentre study involving 8,542 students from 30 universities across nine Indian states reported considerable levels of depressive and anxiety symptoms [2]. These findings underline the importance of strengthening mental health support and promoting healthy daily routines within higher education institutions.

Physical activity is one potentially useful approach to supporting psychological well-being. Participation in sports and exercise provides opportunities for physical movement, relaxation, social interaction, and personal achievement. Research involving undergraduate students suggests that structured physical activity interventions can reduce symptoms of anxiety, depression, and stress, although outcomes differ across interventions and study populations [3].

Academic performance is another important aspect of student well-being. It is influenced by study habits, motivation, concentration, sleep quality, psychological health, socioeconomic circumstances, and institutional support. Regular exercise may contribute indirectly by supporting mood, sleep, and learning-related behaviour. However, evidence directly linking physical activity with higher academic grades remains inconsistent [4].

In Indian colleges, promoting physical activity through accessible sports facilities, recreational programmes, and daily movement opportunities may be valuable. Understanding its relationship with mental health and academic performance can help educational institutions develop healthier learning environments. This review examines existing evidence concerning these relationships and discusses their implications for college students in India.

2. Review Methodology

A narrative review approach was adopted to examine the relationship between regular physical activity, mental health, and academic performance among college students. Relevant published literature was considered from peer-reviewed journals and scholarly databases, with emphasis on research involving undergraduate and university students.

Studies examining exercise participation, anxiety, depression, psychological stress, educational outcomes, and sedentary behaviour were considered relevant. Research conducted among Indian college students received particular attention, while international studies were included to understand broader relationships and compare findings.

The literature was examined according to three major areas: the effects of physical activity on mental health, its association with academic performance, and the factors influencing both outcomes. Findings from observational studies, intervention studies, and systematic reviews were considered. The available evidence was interpreted qualitatively, and no independent statistical meta-analysis was performed.

3. Review of Related Literature

Research on physical activity among college students has increasingly examined psychological health, academic stress, and learning outcomes. Several studies have reported positive mental health effects, although findings concerning academic achievement remain less consistent.

Cherian et al. [2] examined mental health and related indicators among 8,542 college students from 30 universities across nine Indian states. The study identified substantial levels of depressive and anxiety symptoms, highlighting the mental health challenges faced by students in Indian higher education institutions. Although the study did not establish the effectiveness of exercise interventions, it demonstrated the need for accessible health-promotion strategies.

Huang et al. [3] conducted a systematic review and meta-analysis examining physical activity interventions among undergraduate students. The review included 59 studies and reported reductions in symptoms of anxiety, depression, and stress. However, the authors identified substantial differences among study outcomes and limitations in evidence quality.

Donnelly et al. [5] reviewed 58 articles investigating physical activity interventions and mental health among higher education students. Different activities, including sports, mind-body exercises, and other structured exercise programmes, were examined. Improvements in mental health or quality of life were reported in 36 studies, suggesting that physical activity can form part of university health-promotion programmes.

Wunsch et al. [6] examined the relationships among physical activity, stress, and academic performance in university students. Their systematic review identified possible beneficial relationships but found insufficient consistent statistical evidence to confirm strong associations among all three variables. The authors emphasized the need for further research using reliable assessment methods.

Babaeer et al. [4] reviewed studies concerning physical activity, sedentary behaviour, and educational outcomes among university students. Their findings indicated that the relationship between movement-related behaviours and academic achievement is complex and influenced by differences in study design and measurement.

Whatnall et al. [7] reviewed prospective cohort studies examining health behaviours and academic performance. Among ten studies assessing physical activity, seven reported no significant association with academic performance. These findings indicate that participation in exercise cannot automatically be associated with improved academic grades.

Trott et al. [8] investigated the association between physical activity and academic performance through a systematic review and meta-analysis. Although the pooled analysis suggested a positive association, the authors considered the evidence to have limited credibility. The narrative findings were mixed, demonstrating the need for cautious interpretation.

Overall, the literature provides stronger support for the mental health benefits of regular physical activity than for direct improvements in academic grades. Indian research highlights

the importance of student mental health, while additional country-specific studies are needed to understand how regular exercise influences educational outcomes.

Table 1. Summary of Selected Previous Studies

Study	Research Focus	Major Finding
Cherian et al. (2025) [2]	Mental health among Indian college students	Identified substantial psychological health concerns
Huang et al. (2024) [3]	Physical activity and undergraduate mental health	Reductions in anxiety, depression, and stress symptoms
Donnelly et al. (2024) [5]	Exercise interventions in higher education	36 of 58 studies reported mental health or quality-of-life benefits
Wunsch et al. (2021) [6]	Exercise, stress, and academic performance	Relationships remained statistically uncertain
Babaeer et al. (2022) [4]	Physical activity and educational outcomes	Evidence varied across studies
Whatnall et al. (2024) [7]	Health behaviours and academic performance	Most physical activity studies found no significant association
Trott et al. (2024) [8]	Physical activity and academic achievement	Mixed evidence; pooled positive association had low credibility

4. Effects of Regular Physical Activity

4.1 Effects on Mental Health

Mental health is essential for emotional stability, social relationships, and effective participation in academic activities. College students frequently experience pressure associated with examinations, assignments, financial responsibilities, and future career expectations. These experiences may contribute to anxiety, stress, and depressive symptoms.

Regular physical activity can be a useful part of mental health promotion. Exercise provides opportunities for relaxation, improved mood, personal achievement, and social interaction. Activities such as walking, jogging, cycling, swimming, yoga, and outdoor sports can be selected according to individual preferences and physical abilities.

Huang et al. [3] reported that physical activity interventions were associated with reductions in anxiety, depression, and stress symptoms among undergraduate students. Similarly, Donnelly et al. [5] found favourable mental health outcomes across several types of physical activity interventions. These findings support the inclusion of exercise within broader student wellness initiatives.

Group activities may also encourage social interaction and a sense of belonging. Participation in college sports, fitness clubs, and recreational programmes creates opportunities for students to interact outside the classroom. However, the psychological benefits depend on factors such as enjoyment, exercise intensity, consistency, and personal circumstances.

Physical activity should be understood as a supportive health behaviour rather than a replacement for professional mental health treatment when such treatment is required.

4.2 Effects on Academic Performance

Academic performance reflects several aspects of the learning process, including subject understanding, examination results, assignment completion, attendance, and academic engagement. These outcomes are influenced by study habits, motivation, concentration, sleep, and psychological well-being.

Regular physical activity may support learning indirectly by improving mood, maintaining physical health, and helping students manage daily stress. Students who remain physically active may also develop greater consistency in their daily routines.

However, the relationship between physical activity and academic achievement is not straightforward. Wunsch et al. [6] found that available research did not establish consistent statistical associations between physical activity, stress, and academic performance. Whatnall et al. [7] similarly reported that most prospective studies examining physical activity found no significant relationship with academic performance.

Trott et al. [8] identified a positive association in their pooled analysis, but the overall evidence remained uncertain because many studies reported mixed results. These findings suggest that regular physical activity may create favourable conditions for learning without necessarily producing measurable improvements in examination scores.

Therefore, exercise should be encouraged primarily for its established health benefits, while its potential contribution to academic achievement should be evaluated alongside other educational and lifestyle factors.

4.3 Effects on Concentration, Sleep, and Daily Routine

Concentration and effective time management are important for successful learning. College students often spend considerable time attending lectures, completing assignments, preparing for examinations, and using digital devices. This may increase sedentary behaviour and reduce opportunities for physical movement.

Regular physical activity can encourage students to maintain structured daily routines and take breaks from prolonged sitting. Walking, recreational sports, and planned exercise sessions may also provide opportunities for mental relaxation after extended periods of study.

Sleep and psychological well-being are important factors in academic functioning. However, these factors operate together, and the effects of physical activity cannot always be separated

from other lifestyle behaviours. Evidence from studies of university students indicates that health behaviours and academic outcomes are interconnected, although relationships differ across populations and research designs [4], [7].

A balanced routine that includes adequate sleep, regular physical movement, appropriate study time, and recreational activities may therefore be more useful than focusing on exercise alone.

4.4 Physical Activity in Indian Colleges

Indian higher education institutions have opportunities to encourage physical activity through sports programmes, yoga sessions, fitness clubs, walking activities, and recreational events. These activities can be organized according to available infrastructure and student interests.

Some students may face difficulties participating regularly because of academic schedules, commuting time, limited facilities, financial constraints, or lack of motivation. Colleges can address these challenges by providing accessible spaces for exercise, encouraging participation in recreational sports, and creating opportunities for students with different fitness levels.

Walking groups, short activity breaks, interdepartmental sports competitions, and guided exercise sessions may provide practical options without requiring expensive equipment. Such initiatives can encourage healthy routines and strengthen student engagement.

The mental health concerns documented among Indian university students [2] highlight the need for coordinated institutional support. Regular physical activity may contribute to these efforts when combined with appropriate counselling services, academic guidance, and an inclusive learning environment.

Table 2. Potential Effects of Regular Physical Activity on College Students

Area	Potential Benefit	Evidence Interpretation
Anxiety	Reduction in symptoms	Supported by intervention reviews
Depression	Improvement in symptoms and mood	Supported, although study quality varies
Stress	Better stress management	Generally favourable evidence
Social well-being	Opportunities for interaction and belonging	Plausible benefit; varies by activity
Concentration	Possible support for learning-related functioning	Direct academic effects remain uncertain
Academic grades	Possible positive association	Mixed and inconsistent evidence

Daily routine	Encourages structured activity and movement	Depends on individual participation
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5. Discussion

The reviewed studies suggest that regular physical activity has an important role in supporting mental health among college students. Exercise-based interventions have demonstrated encouraging outcomes for anxiety, depression, stress, and quality of life. These findings provide a useful basis for incorporating physical activity into higher education health-promotion programmes.

The evidence regarding academic performance is less conclusive. Some research suggests that physically active students may experience better educational outcomes, whereas other studies report no significant association. Differences in physical activity measurements, academic assessment methods, study designs, and individual characteristics may explain these inconsistent findings.

An important distinction is that improved psychological well-being does not necessarily lead to higher academic grades. Academic achievement depends on several interacting factors, including learning ability, study practices, socioeconomic circumstances, teaching quality, and personal motivation. Physical activity may support students' readiness to learn without acting as a direct determinant of academic success.

For Indian colleges, promoting regular exercise is particularly relevant because mental health concerns affect a substantial proportion of students. Accessible programmes involving walking, sports, yoga, and recreational exercise may help institutions encourage healthier daily routines. Nevertheless, physical activity should complement, rather than replace, academic and mental health support services.

The existing evidence also presents several limitations. Many studies rely on self-reported physical activity and academic outcomes. Cross-sectional designs cannot establish causal relationships, and intervention studies often differ in exercise type, duration, and intensity. Furthermore, findings from international populations may not fully represent the circumstances of students in Indian universities.

Further Indian studies should examine physical activity patterns, validated mental health measures, and objective academic results over longer periods. Such research would help clarify whether regular exercise produces lasting improvements in psychological well-being and educational performance.

6. Conclusion

Regular physical activity is an important component of a healthy college lifestyle and can contribute to improved mental health and overall well-being. The reviewed evidence indicates that participation in exercise, sports, and recreational activities can help reduce symptoms of anxiety, depression, and stress among college students.

The relationship between physical activity and academic performance remains less certain. Although exercise may support concentration, mood, and healthy daily routines, current research does not consistently demonstrate direct improvements in academic grades.

In the Indian higher education context, providing accessible opportunities for physical activity may help colleges promote student health and encourage balanced lifestyles. Integrating exercise and recreational activities with academic responsibilities and mental health support can contribute to a healthier learning environment. Further longitudinal and intervention-based studies involving Indian college students are required to establish the long-term academic and psychological benefits of regular physical activity.

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