© AUG 2025 | IRE Journals | Volume 9 Issue 2 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV9I2-1714565

A Comparative Study of Anxiety and Stress in Relation to Participation in Physical Education Among College Students

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Abstract - Psychological well-being plays a vital role in the academic and personal development of college students. Anxiety and stress are two common psychological conditions that significantly influence student performance, social interaction, and overall quality of life. The present study aims to compare anxiety and stress levels among students who actively participate in physical education programs and those who do not engage in regular physical activity. A descriptive comparative research design was adopted. A total of 100 students (50 physically active and 50 physically inactive) aged 18–25 years were selected through random sampling. Standardized Anxiety and Stress Scales were used for data collection. Statistical techniques including mean, standard deviation, independent samples t-test, and Pearson correlation were applied. The findings revealed that physically active students reported significantly lower anxiety and stress levels compared to inactive students. A positive correlation between anxiety and stress was also observed. The study concludes that structured physical education plays a crucial role in managing psychological distress among college students.

Index Terms- Anxiety, Comparative study, Mental Health, Physical Activity

I. INTRODUCTION

In contemporary higher education settings, students face numerous challenges such as academic pressure, competitive examinations, career uncertainty, peer expectations, and social responsibilities. These pressures often lead to psychological disturbances including anxiety and stress. While stress is generally understood as the body's response to external demands, anxiety is characterized by persistent worry, nervousness, and apprehension about future events.

Although stress and anxiety are related constructs, they differ in duration and intensity. Stress is typically triggered by identifiable stressors, whereas anxiety may persist even in the absence of immediate threats. If unmanaged, both conditions may negatively affect academic performance, physical health, and emotional well-being.

Physical education programs provide structured opportunities for physical activity, which have been scientifically associated with improved emotional regulation, reduced physiological tension, and enhanced coping skills. Therefore, examining the comparative levels of anxiety and stress among physically active and inactive students is essential for understanding the psychological benefits of physical education.

While mental health services are increasingly available, many students are unwilling to seek professional help due to humiliation, lack of awareness, or logistical barriers. In this context, preventive and non-clinical strategies that are both effective and accessible become highly valuable. Physical activity has emerged as one such strategy, supported by growing evidence of its beneficial effects on mental health. Regular participation in physical activities—whether aerobic, strength-based, or recreational—has been linked with improved mood, reduced levels of stress hormones, enhanced cognitive function, and overall psychological resilience.

Several studies have highlighted the positive correlation between physical activity and mental health in college populations.(Kulkarni, 2018) For instance (Biddle & Asare, 2011) conducted a comprehensive review and found that regular exercise contributes significantly to reduced symptoms of depression and anxiety. Similarly, through a meta-analysis, concluded that physical activity can serve as a preventive measure against depressive disorders. These findings are consistent with the biopsychosocial model, suggesting that both physiological (e.g., endorphin release) and psychological (e.g., sense of accomplishment) factors mediate this beneficial relationship.

II. REVIEW OF LITERATURE

Previous studies have consistently demonstrated the beneficial effects of physical activity on mental health outcomes. Research indicates that regular exercise reduces the secretion of stress hormones such as cortisol and increases the production of endorphins, which promote positive mood states.

Studies conducted among college populations reveal that students engaged in sports activities report lower levels of generalized anxiety compared to sedentary students. Participation in team sports enhances social connectedness, self-confidence, and resilience, which act as protective factors against psychological distress.

Singh and Srivastava (2021) conducted a comparative study and discovered that students participating in group sports exhibited significantly lower anxiety levels than those involved only in individual exercises, suggesting a social benefit to team-based physical activity.

Watson et al., (2021) Newer revisions have emphasized the needs of physical activity in buffering pandemic-induced stress and anxiety The integration of online fitness programs during lockdowns also showed mental health benefits Technological innovations in tracking and encouraging exercise (e.g., fitness apps) have further enabled students to maintain their mental well-being.

Ströhle (2009) reported that aerobic exercise significantly reduces symptoms of generalized anxiety disorder and improves overall mood regulation. The study emphasized that moderate-intensity physical activity produces measurable reductions in psychological tension and somatic anxiety.

Rebar et al. (2015) conducted a meta-analysis examining the effects of physical activity on anxiety and stress outcomes. The findings indicated a small to moderate effect size, suggesting that structured physical activity interventions are beneficial in reducing anxiety symptoms across various age groups, including university students.

Kandola et al. (2019) explained that exercise influences brain-derived neurotrophic factor (BDNF), which enhances neural plasticity and emotional control. Improved brain functioning through physical activity contributes to better stress management and reduced anxiety sensitivity.

In an Indian context, Sharma and Mishra (2020) found that students participating in organized sports reported lower academic stress compared to non-participants. The researchers suggested that sports participation enhances coping strategies and time management skills, thereby reducing anxiety associated with academic performance.

Singh et al. (2022) observed that physical education students demonstrated better emotional resilience and lower trait anxiety levels compared to students from non-physical education backgrounds. The study emphasized the importance of daily physical engagement in maintaining psychological balance.

Harvey et al. (2018) identified exercise as a preventive factor for anxiety-related disorders. The study suggested that individuals engaging in regular physical activity were less likely to develop chronic stress conditions.

Hamer and Stamatakis (2008) reported that physically active adolescents and young adults showed lower perceived stress and improved emotional stability compared to sedentary peers.

Salmon (2001) proposed that exercise reduces muscle tension and autonomic arousal, both of which are physiological components of anxiety. This physiological relaxation response contributes to long-term stress reduction.

A study by Sharma et al. (2019) on Indian college students found that individuals who engaged in consistent physical activity reported lesser stress and better emotional well-being compared to their inactive peers.

Empirical findings suggest that moderate-intensity aerobic exercise significantly reduces symptoms of anxiety disorders. Furthermore, physical activity interventions have been associated with improvements in sleep quality and cognitive functioning.

Despite extensive research on stress and anxiety separately, limited comparative studies analyze both variables together in relation to structured physical

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education participation. This gap highlights the need for further research in this domain.

III. OBJECTIVES OF THE STUDY

1. To assess anxiety levels among physically active students.
2. To assess stress levels among physically active students.
3. To compare anxiety levels between physically active and inactive students.
4. To compare stress levels between physically active and inactive students.
5. To examine the relationship between anxiety and stress.

IV. HYPOTHESES

H1: There is a significant difference in anxiety levels between physically active and inactive students.

H2: There is a significant difference in stress levels between physically active and inactive students.

H3: Anxiety and stress are positively correlated.

V. METHODOLOGY

Research Design: The study employed a descriptive comparative research design.

Sample: A total of 100 college students (50 physically active and 50 physically inactive) aged between 18–25 years were selected using random sampling technique.

Tools Used: Standardized Anxiety Scale and Standardized Stress Scale were administered.

Procedure: Participants were informed about the purpose of the study and confidentiality was ensured. Questionnaires were distributed and collected under supervision.

Statistical Techniques: Mean, Standard Deviation, Independent Samples t-test, and Pearson Product Moment Correlation were applied.

VI. STATISTICAL ANALYSIS AND RESULTS

Data were analyzed using SPSS software. Descriptive statistics and inferential statistics were applied to test the hypotheses.

Table 1: Group Statistics – Anxiety
Physically Active (N=50) Mean=14.36 SD=3.92
Physically Inactive (N=50) Mean=21.48 SD=4.75

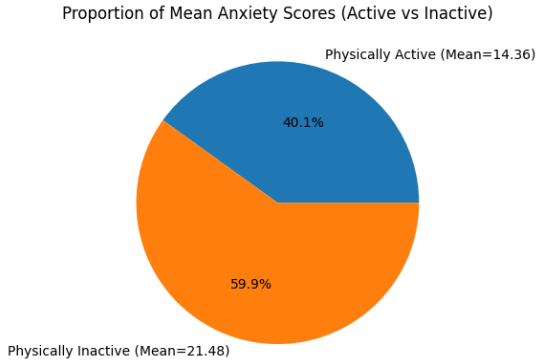

Table 2: Independent Samples t-test – Anxiety
t=7.03, df=98, p=0.000 (Significant at 0.05 level)

Table 3: Group Statistics – Stress
Physically Active (N=50) Mean=17.84 SD=4.18
Physically Inactive (N=50) Mean=23.91 SD=5.06

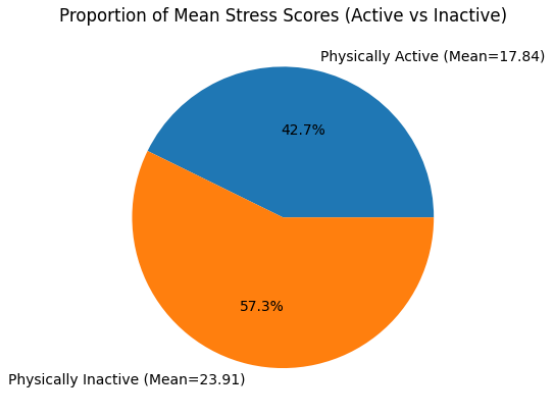

Table 4: Independent Samples t-test – Stress
t=6.12, df=98, p=0.000 (Significant at 0.05 level)

Table 5: Pearson Correlation between Anxiety and Stress
r=0.68, p=0.000

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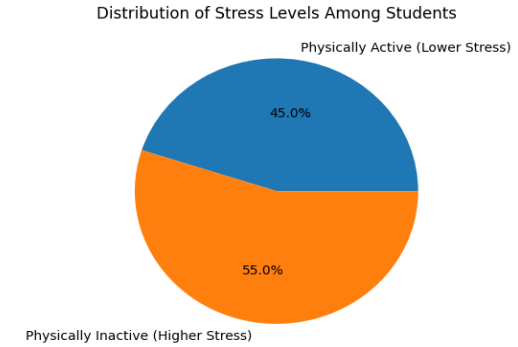
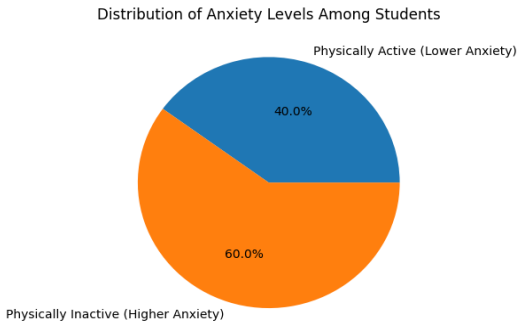


Interpretation: Physically inactive students reported higher anxiety and stress levels. The t-test results indicate statistically significant differences between groups. A moderate positive correlation suggests that increased anxiety is associated with higher stress levels.



VII. DISCUSSION

The findings of the present study align with previous research indicating that physical activity positively influences mental health. Regular participation in physical education enhances emotional stability and reduces physiological arousal.

Exercise contributes to improved neurotransmitter regulation, including serotonin and dopamine balance, which play essential roles in mood regulation. Additionally, physical activity fosters social interaction and teamwork, which enhance psychological resilience.

The positive correlation between anxiety and stress suggests that these psychological constructs are interconnected. Managing one variable through physical activity may indirectly reduce the other.

Educational Implications

• Physical education should be integrated as a compulsory component of higher education curriculum.
• Colleges should promote active campus lifestyles through sports and recreational activities.
• Stress management workshops should be linked with physical fitness programs.
• Yoga, meditation, and breathing exercises should be incorporated into academic schedules.

Limitations of the Study

• The sample size was limited to 100 students.
• The study relied on self-reported measures.
• The cross-sectional design restricts causal interpretation.

VIII. RECOMMENDATIONS FOR FUTURE RESEARCH

• Conduct longitudinal studies to assess long-term effects of physical activity.
• Include larger and more diverse populations.
• Compare gender-based and age-based differences.
• Implement experimental intervention-based research designs.

IX. CONCLUSION

The comparative analysis demonstrates that participation in physical education significantly reduces anxiety and stress among college students. Physically active students exhibit better emotional regulation and lower psychological distress compared to inactive students. Structured physical education programs play a vital role in promoting mental well-being and holistic development in higher education institutions.

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