

COMPARATIVE ANALYSIS OF SELECTED PSYCHOLOGICAL VARIABLES AMONG PHYSICALLY ACTIVE AND SEDENTARY INDIVIDUALS

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ABSTRACT

Background: Physical activity is widely recognized for its positive effects on mental health, particularly in reducing anxiety and stress. However, gender-specific responses to physical activity in relation to anxiety and stress levels remain underexplored in young adults.

Objective: This study aimed to examine the impact of regular physical activity on anxiety and stress levels among male and female university students, comparing physically active and sedentary individuals.

Methods: A total of 120 university students, stratified by gender and physical activity level, were assessed for anxiety and stress using standardized psychological scales. Participants were categorized into four groups: physically active males, sedentary males, physically active females, and sedentary females. Mean scores, standard deviations, and independent t-tests were used to determine group differences.

Results: The findings revealed that physically active individuals—both male and female—had lower anxiety and stress scores compared to their sedentary counterparts. Among males, the mean anxiety score for physically active participants was 39.40 (SD = 15.19), significantly lower than sedentary males (46.40, SD = 12.64; $p = 0.05$). In females, physically active participants scored 41.20 (SD = 14.21) vs. 47.20 (SD = 11.24) for sedentary counterparts ($p = 0.07$), indicating a trend toward significance. For stress, highly significant differences were observed in both genders: physically active males scored 17.50 (SD = 2.73) vs. 23.63 (SD = 5.16) for sedentary males ($p < 0.01$), and physically active females scored 17.73 (SD = 2.47) vs. 23.20 (SD = 3.88) for sedentary females ($p < 0.01$).

Conclusion: Regular physical activity is associated with lower anxiety and stress levels in university students, with significant benefits observed across genders. These results support the promotion of physical activity as an effective non-pharmacological strategy for improving mental well-being in young adults.

Key words: Physical activity, anxiety, Stress, Healthy

INTRODUCTION

Sport and exercise psychologists are now studying the connections between mental health and physical exertion, and sharing their findings with the public. The concept of psychophysiology, or monitoring mental processes while working out, has been crucial in these studies. Additionally, sport psychologists are starting to see physical activity as a therapeutic complement to good psychological adjustment. Today's man operates primarily in a mental realm, where the most crucial elements of success rely on his own mental processes. The relentless pursuit

of materialistic philosophy is putting even more strain on the human intellect and, by extension, on human pleasure.

According to Kamalesh (1988), psychology is the study of how people respond in response to their surroundings. Because thinking and acting are points on the same stretch and are inter-twined in the battle for life, soul or mental activity is the internal behavior exhibited via the physical or the outward.

ANXIETY

Psychosomatic disorders are thought to have their roots in disruptions in the connection between the mind and the body, and recent advances in our understanding of this relationship have opened up new possibilities for physical educators to design effective physical education programs for the prevention and treatment of these conditions. Anxiety seems to be the underlying cause of a wide range of psychological problems, including hostility, jealousy, and conflict. Anxiety may influence people's actions and reactions in a wide range of ways and to differing degrees.

Psychiatrists, educators, and physical educators all rely on the approach of assessing individual anxiety level in their research due to the expanding relevance of anxiety throughout the many domains of human activity. Since the precise measurement of the severity problems and the form of anxiety is crucial for proper diagnosis and prognosis in many psychosomatic illnesses, an inquiry into the various methods of measuring anxiety is warranted.

Anxiety may be seen as both a personality characteristic and a physiological condition. Anxiety is both a universal, contextual phenomena and a stable, innate aspect of the human nature. Anxiety is a major psychological component that has a significant impact on athletic performance. Anxiety is a complicated emotional condition that may be thought of as a feeling of dread or foreboding that is often accompanied by physical tightness. It has linked to the anxiety that comes from worrying about falling short of expectations.

STRESS

It face a variety of stresses on a daily basis. The resources and methods we use to deal with stress are equally varied. Sometimes we will be able to handle things just fine, and we will not even notice that the pressure is getting to us. Sometimes we will have a hard time with things, and that

is when the word “stress” could come up. Actually, we may name “stressful” any circumstance that puts us under strain. The stress in your life may not be as bad as you think. When we are up to the task of stress and are able to manage it well, we often refer to it as “stimulation” or “challenging” instead. The word “stress” will be used throughout this introductory section to refer to our physiological response to any kind of pressure that is ultimately detrimental, unpleasant, or incapable of allowing us to function normally. Specifically, “stress develops when the demands upon us surpass our resources to deal with those difficulties,” which is both concise and correct. Humans and other animals have a common trait: the tendency to feel justified indignation when they accomplish something difficult. “Man is a unique entity endowed with tremendous intellectual fortitude, which is often buried or rather found repressed as a result of the individual’s exposure to his or her social and environmental contexts (Mirka, 1996). One method that men may fulfill their deepest desires for greatness and success is via athletics. As a result, many looked to athletics as a means toward the end goal of greatness. Therefore, sports have grown to become a major part of modern society. Sports and physical activities designed for an age range and foster healthy competition. Young people who are talented and gifted tend to participate more often and have more fun. Athletes should be sorted into different fields of competition based on their individual skills and interests.

Psychology, as defined by its own definition, “is the study of man in his environment” (Kamalesh, 1993). Anxiety is an internal state. One way in which anxiety is distinct from arousal is that it includes feelings of both relief and discomfort. Anxiety, then, is a collective word for a wide range of extreme emotional and behavioral responses. Anxiety is characterized by a negative orientation, which depicts unwelcome emotions, According to (Kamalesh, 1993). Physical activity and sports participation have a significant anxiolytic effect, reducing both state and trait anxiety (American Journal of Health Promotion, 2021). Athletes exhibit greater emotional regulation and coping mechanisms, contributing to lower anxiety (Journal of Sports Sciences, 2020). A 2022 study in the Indian Journal of Physical Education reported 35% lower anxiety levels in university-level athletes compared to sedentary peers. Regular participation in team sports enhances social support and reduces performance-related anxiety (Psychology of Sport and Exercise, 2023). Non-sportsmen, especially students with low physical activity, show higher scores on anxiety inventories like the Beck Anxiety Inventory (BAI) and STAI (State-Trait Anxiety Inventory). Athletes involved in structured training programs demonstrate better stress adaptation and lower cortisol responses

(International Journal of Physiology, 2019). Women non-athletes reported higher anxiety than their athlete counter-parts in multiple studies, indicating a gender interaction (Journal of Clinical Psychology in Sport, 2022). Participation in individual vs. team sports also plays a role; both show benefits, but team sports may offer greater anxiety reduction due to peer interaction. Psychological skills training in athletes (e.g., visualization and to set the goal) contributes to mental toughness, reducing anxiety symptoms (Sport Psychology Review, 2020). A meta-analysis in 2023 concluded that active individuals have 25–40% lower anxiety scores compared to inactive individuals across multiple age groups.

Male and female athletes from Goa (18–25 years) had significantly lower stress levels on the Perceived Stress Scale than non-athletes (Male: 16.36 vs. 24.34; Female: 17.72 vs. 21.92). Among 1,600 collegiate sports players in Tamil Nadu, residential vs. non-residential comparisons showed *significant variations* in stress depending on living status and gender, highlighting stress variability within athlete groups. University students engaging in ≥ 7 hours of sports per week had significantly lower perceived stress scores and salivary cortisol levels compared to less active peers. A study involving college student-athletes and non-athletes found no difference in stress mindset, but student-athletes reported significantly lower perceived stress scores on the Perceived Stress Scale. In a Cal Poly study, no statistically significant difference was found in perceived stress between student-athletes and non-athletes, though their stressors ranking differed. Competitive vs. organizational stressors among elite international athletes showed athletes referenced more organizational stressors—indicating unique stress sources in athletic populations; not a non-athlete comparison but relevant context. Korean university athletes in competitive sports showed 34% greater effectiveness in stress coping and resilience compared to non-competitive sports participants, highlighting sport type effects on stress adaptation. College students in Germany ($n \approx 4,189$) with high physical activity and low sedentary time reported significantly lower perceived stress (PSS difference ~ 2 to -3.5 points) than in-active, highly sedentary peers. In a Chinese adult cohort, moderate-to-low intensity daily physical activity was associated with lower perceived stress, although very high levels sometimes correlated with greater stress suggesting optimal activity thresholds. Academic stress study among college athletes/non-athletes (Singh & Kaur, 2020) shown non-athletes reported higher academic stress than athletes of the same gender; no significant gender difference within each group.

METHOD

Sixty Physically Active (30 male, 30 female) and sixty sedentary individuals (30 male, 30 female) were randomly picked from various colleges of Osmania University for the research. All of the participants were adults between the ages of 18 and 25.

To avoid any confusion regarding the process, participants were thoroughly briefed in advance about the data collection procedure using questionnaires. They provided their responses voluntarily and with honesty.

Dependent Variables

Psychological variables

a) Anxiety

b) Stress

Independent Variables

1. 30 Physically Active (Male)
2. 30 Physically Active (Female)
3. 30 Sedentary individuals (Male)
4. 30 Sedentary individuals (Female)

Criterion Measures

1. The SCAI was developed by C.D. Spielberger (1976) and measures competitive anxiety in sports.
2. Tension Scale It was determined by using the Stress Questionnaire developed by Everly and Girdano.

Assessment of Stress

The level of psychological strain was measured using the Everyly-Girdano stress measurement technique, considered the gold standard in the field. There are 14 questions in this examination. For each assertion, there are four possible answers. False, not at all, seldom false, never false, usually false, etc. Every one of these claims is upbeat and encouraging. Each responder placed a check mark () next to the answer that best described their position. This inquiry thus took use of the inventory as originally constructed.

Scoring

The following is the scoring key that used to evaluate the inventory. Each statement's total score added to the statement's individual score. The sum used as a measure of emotional strain. In the appendix, we provide the subject's psychological stress score over its range.

Time pressure, competition, animosity, multitasking, and poor planning are all assessed using this questionnaire. There are 14 questions designed to gauge pupils' stress levels; for each question, there are four possible answers ranging from "extremely high" to "low."

Method of Scoring

Each question may be answered in one of four ways. The answers are: (a) nearly always true; (b) usually true; (c) rarely true; and (d) never true. The participant should choose one of the four options that best expresses his understanding of the statement at hand. The alternatives are weighted from 3 to 0, with 3 being the most weighted.

Response Value

1. Almost always true 3
2. Usually true 2
3. Seldom true 1
4. Never true 0

A score of 0 shows no tension at all, while a score of 3 indicates extreme stress, the overall amount of importance given to each factor that makes up a person's total stress score. There is no passing score and 42 is the highest possible. If your score is low, your level of stress is low, and if it's high, your level of stress is high.

Stress level classification

Score Range Interpretation

1. 0–8 Low vulnerability to stress
2. 9–15 Moderate vulnerability to stress
3. 16–25 High vulnerability to stress (At risk)

ANXIETY

There was a quantifiable evaluation of anxiety via the use of a standardized questionnaire. The purpose of the anxiety survey was to gauge levels of worry in the run-up to the big game.

Spielberger came up with the concept for it (1979). The Spielberger's Trait Anxiety questionnaire was administered to all participants. The Spielberger Trait Anxiety Scale (STAS) was adapted for this study and included 20 items. These are the final ratings for the whole questionnaire:

Sno.	Response Score of Positive	Response Score of Positive	Response Score of Positive
1	Not at all	1	4
2	Some what	2	3
3	Moderate so	3	2
4	Very much	4	1

Positive Statements	1,2,5,8,10,11,15,16,19,20
Negative Statements	3,4,6,7,9,12,13,14,17,18

Spielberger's Trait Anxiety (Level Score and anxiety level)

1. **20–37**: Low trait anxiety
2. **38–44**: Moderate trait anxiety
3. **45–80**: High trait anxiety

Higher scores indicate a greater disposition toward anxiety and general emotional vulnerability. This categorization helped to distinguish participants based on their typical anxiety levels.

The below table showing the anxiety and stress levels of Physically active and Sedentary individuals (M) & (W)

Variables	Gender	Groups			P Value
			Mean	S.D	
ANXIETY	Male	Physically active	39.40	15.19	0.05
	Male	Sedentary individuals	46.40	12.64	
ANXIETY	Female	Physically active	41.20	14.21	0.07
	Female	Sedentary individuals	47.20	11.24	
STRESS	Male	Physically active	17.50	2.73	0.00
	Male	Sedentary individuals	23.63	5.16	
STRESS	Female	Physically active	17.73	2.47	0.00
	Female	Sedentary individuals	23.20	3.88	

DISCUSSION

The present study examined the impact of physical activity on anxiety and stress levels among male and female university students. The results clearly indicate that both male and female participants who were physically active demonstrated lower levels of anxiety and stress when compared to their sedentary counterparts.

Among males, the mean anxiety score for physically active individuals was 39.40 (SD = 15.19), while sedentary males recorded a higher mean of 46.40 (SD = 12.64). The p-value of 0.05 suggests that this difference is statistically significant, indicating a potential protective effect of physical activity against anxiety in male students.

In females, a similar trend was observed, with physically active individuals having a mean anxiety score of 41.20 (SD = 14.21) compared to 47.20 (SD = 11.24) in sedentary females. However, the p-value of 0.07 indicates that the difference, while suggestive, did not reach statistical significance.

This could be attributed to individual variability or sample size and suggests the need for further investigation.

Regarding stress levels, both male and female physically active individuals demonstrated significantly lower scores than sedentary individuals. Physically active males had a stress score of 17.50 (SD = 2.73), whereas sedentary males scored 23.63 (SD = 5.16) ($p = 0.00$). Similarly, physically active females reported a mean stress score of 17.73 (SD = 2.47), while sedentary females scored 23.20 (SD = 3.88) ($p = 0.00$), indicating a strong and consistent association between physical activity and lower stress levels.

These findings are supported by prior literature. For example, Janssen et al. (2010) emphasize the psychological benefits of physical activity among youth, and Pescatello et al. (2015) observed stress-reducing effects through various physical interventions. Similarly, studies by K.Azeem et al. (2011, 2016) highlight improvements in physical and psychological parameters following structured exercise programs.

Overall, the results reinforce the idea that regular participation in physical activity plays a crucial role in emotional well-being, helping to reduce anxiety and manage stress effectively among university students.

CONCLUSION

The current study concludes that physically active individuals both male and female exhibited lower anxiety and stress levels than their sedentary peers. While the reduction in anxiety was statistically significant among males, it approached significance among females, indicating a similar but less pronounced trend.

For stress, the differences between physically active and sedentary individuals were highly significant across both genders. These findings suggest that engaging in regular physical activity is not only beneficial for physical health but also crucial for mental well-being.

Based on these observations, it is recommended that coaches, trainers, and educators promote and incorporate structured physical activity into students' routines as a preventive strategy against

anxiety and stress. Further research with larger and more diverse samples is encouraged to expand on these findings, particularly among female populations and across different age groups.

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