

p-ISSN : 2708-2091 | e-ISSN : 2708-3586

DOI(Journal): 10.31703/gsr  
DOI(Volume): 10.31703/gsr/.2024(IX)  
DOI(Issue): 10.31703/gsr.2024(IX.II)



# GSR



**GLOBAL SOCIOLOGICAL REVIEW**  
HEC-RECOGNIZED CATEGORY-Y

**VOL. IX, ISSUE II, SPRING (JUNE-2024)**



Double-blind Peer-review Research Journal  
www.gsrjournal.com  
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### Article title

The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students

### Global Sociological Review

p-ISSN: 2708-2091 e-ISSN: 2708-3586

DOI(journal): 10.31703/gsr

Volume: IX (2024)

DOI (volume): 10.31703/gsr.2024(IX)

Issue: II Spring (June-2024)

DOI(Issue): 10.31703/gsr.2024(IX-II)

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### Abstract

*In the past few years, the mental health of students, particularly females, has emerged as a growing concern worldwide. The study was designed to determine the effect between exercise and mental health status among female students. Thirty female students were selected. The research design employed was an experimental research design involving an eight-week training program that was randomly administered to players with symptoms of depression and anxiety. Pretest and post-test intervention readings assessed the players' responses using standardized measures such as the Burns Anxiety Inventory, Burns Depression Inventory, and Attitudes Toward Exercise and Physical Activity. Burns Anxiety Inventory results concluded there were significant score reductions in relation to anxious feelings, anxious thoughts, and physical symptoms with p-values of <.0001. The Burns Depression Inventory also proved that checklist scores for depression had reduced significantly. The attitude toward exercise and physical activity changed significantly with mean scores increasing.*

**Keywords:** Physical Exercise, Anxiety, Depression, College Students

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**Pages:** 133-140

**DOI:** 10.31703/gsr.2024(IX-II).13

**DOI link:** [https://dx.doi.org/10.31703/gsr.2024\(IX-II\).13](https://dx.doi.org/10.31703/gsr.2024(IX-II).13)

**Article link:** <http://www.gsrjournal.com/article/A-b-c>

**Full-text Link:** <https://www.gsrjournal.com/fulltext/>

**Pdf link:** <https://www.gsrjournal.com/jadmin/Author/31rvIolA2.pdf>

Citing Article

13	The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students						
	Author	Nadia Sharif Yasmeen Tabassum Badar Mohy ud Din		DOI	10.31703/gsr.2024(IX-II).13		
Pages	133-140	Year	2024	Volume	IX	Issue	II
Referencing & Citing Styles	APA	Sharif, N., Tabassum, Y., & Din, B. M. u. (2024). The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students. <i>Global Sociological Review</i> , IX(II), 133-140. <a href="https://doi.org/10.31703/gsr.2024(IX-II).13">https://doi.org/10.31703/gsr.2024(IX-II).13</a>					
	CHICAGO	Sharif, Nadia, Yasmeen Tabassum, and Badar Mohy ud Din. 2024. "The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students." <i>Global Sociological Review</i> IX (II): 133-140. doi: 10.31703/gsr.2024(IX-II).13.					
	HARVARD	SHARIF, N., TABASSUM, Y. & DIN, B. M. U. 2024. The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students. <i>Global Sociological Review</i> , IX, 133-140.					
	MHRA	Sharif, Nadia, Yasmeen Tabassum, and Badar Mohy ud Din. 2024. 'The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students', <i>Global Sociological Review</i> , IX: 133-40.					
	MLA	Sharif, Nadia, Yasmeen Tabassum, and Badar Mohy ud Din. "The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students." <i>Global Sociological Review</i> IX.II (2024): 133-40. Print.					
	OXFORD	Sharif, Nadia, Tabassum, Yasmeen, and Din, Badar Mohy ud (2024), 'The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students', <i>Global Sociological Review</i> , IX (II), 133-40.					
TURABIAN	Sharif, Nadia, Yasmeen Tabassum, and Badar Mohy ud Din. "The Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students." <i>Global Sociological Review</i> IX, no. II (2024): 133-40. <a href="https://dx.doi.org/10.31703/gsr.2024(IX-II).13">https://dx.doi.org/10.31703/gsr.2024(IX-II).13</a> .						



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## Title

### Effects of Physical Exercise on Managing Depression, Anxiety, and Attitude Change among Female College Students

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## Abstract

*In the past few years, the mental health of students, particularly females, has emerged as a growing concern worldwide. The study was designed to determine the effect between exercise and mental health status among female students. Thirty female students were selected. The research design employed was an experimental research design involving an eight-week training program that was randomly administered to players with symptoms of depression and anxiety. Pretest and post-test intervention readings assessed the players' responses using standardized measures such as the Burns Anxiety Inventory, Burns Depression Inventory, and Attitudes Toward Exercise and Physical Activity. Burns Anxiety Inventory results concluded there were significant score reductions in relation to anxious feelings, anxious thoughts, and physical symptoms with p-values of <.0001. The Burns Depression Inventory also proved that checklist scores for depression had reduced significantly. The attitude toward exercise and physical activity changed significantly with mean scores increasing.*

#### Keywords:

[Physical Exercise](#),  
[Anxiety](#), [Depression](#),  
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## Introduction

Another of the concerning issues being faced by higher education institutions all over the world is the crisis related to mental health. According to research, it is suggested that elements such as academic pressure, social stressors, and transition to independent living are contributing to this very harmful trend (Xiao et al., 2017). Research studies have thus been able to ascertain that women are more susceptible to mental illness resulting from societal expectations, stressors

unique to the female gender, or biological factors. Such a demographic commonly includes people who suffer more from stress and emotional distress, which may lead to disorders such as depression and anxiety (Salari et al., 2020). That makes the mental health crisis among college women a continuous rise, hence the importance of finding out the root cause and coming up with effective intervention measures.

These are some of the other underlying stressors that appear to escalate these mental health issues:



heavy academic workload, high expectations, intense competition, poor time management, work-related pressures, peer pressure, family conflicts, low self-esteem, the impact of social media, insufficient mental health resources, and personal life challenges. It is typified by feelings of sadness, hopelessness, and loss of interest in enjoyable activities, ranging from degrees of minor to major depressive disorder and persistent depressive disorder, otherwise known as dysthymia. Some symptoms of depression include domains that are predominantly emotional, cognitive, and physical in nature and range from pervasive sadness and irritability to concentration difficulties and changes in the pattern of sleeping. Some symptoms include predominantly emotional, cognitive, and physical domains, extending from pervasive sadness and irritability to difficulties in concentration and alterations in the pattern of sleep (Arnold et al., 2014). State anxiety is an acute emotional state where apprehension is felt and occurs due to the situational context and the threat perceived by that situation. It also has a further division into situational anxiety caused due to immediate situational stressors, and anticipatory anxiety where the anxiety regarding any event or situation is created in the future. It has deep effects on state anxiety, ranging across the mental, physical, and behavioral domains, affecting reduced performance in the academic sphere, physical symptoms like dizziness, and behavioral problems in terms of avoidance behaviors. By addressing depression and state anxiety among female college students, one can ensure a more supportive and inclusive campus environment that will enrich the whole student experience and raise awareness around mental health issues (Davis, 2018). The current study applied an 8-week physical training program in the management of depression and anxiety levels among students, knowing the benefits physical exercise offers for mental health. Current research has underlined the role of physical activity in promoting psychological well-being, reducing mental health problems, and promoting positive exercise behaviors among females. Regular exercise enhances physical health and an attitude oriented toward the continuation of active behavior, thus

motivating females to initiate and maintain healthier exercise behaviors over time.

### Research Methodology

The study design was experimental, with a quantitative approach to measure the effectiveness of an eight-week intervention on the mental health of female college students. Burns' Anxiety Inventory, Burns' Depression Inventory, and an Attitudes Towards Exercise Inventory were completed before training and after training. Weight and body composition were recorded as a measure of physical fitness. First, the researcher drafted a letter to the Principal of the Government Graduate College, Township Lahore, to seek the participation of students at the BS semester level 6th and 8th. Volunteers were achieved by using consent forms after explaining the objectives and methodology of the study to them. Thirty female students experiencing mild to moderate levels of depression and anxiety were selected for the research by employing a simple random sampling technique. The sample mean was 20.44 kg/m<sup>2</sup> in BMI, 51.23 kg in weight, 19.77 years in age, and 169.49 cm in height. Since purposive sampling was done, the study had to restrict itself only to the female population because of practical difficulties in accessing a male population. Inclusion criteria: The target population includes students of BS 6th and 8th semesters, aged between 20 and 23 years, who have mild to moderate signs of depression and anxiety, and who give consent for participation in the program. Exclusion criteria: Students on leave, those with severe physical and mental health conditions, and those below 20 years of age. The ethical considerations of the study design were informed consent, confidentiality, and the right to withdraw per the guidelines given by the ethical committee of the University of the Punjab, Lahore. The physical training program consisted of eight weeks of practical classes on a daily basis except for Sunday from 9:00 am to 10:00 am. The assessment of psychological tests was done through Burns Anxiety Inventory, Burns Depression Inventory, and Attitudes toward Exercise and Physical Activity. Data analysis was done using the SPSS version 16, with Shapiro-

Wilk tests for normality and parametric tests done in paired sample t-tests for the effects on anxiety, depression, and attitudes towards exercise and physical activities.

## Results

**Table 1**

*Changes in Anxiety, Depression, and Attitudes toward Exercise and Physical Activity Pre- and Post-Intervention*

Variables	N	Mean	SEM	t	P value
<b>The Burns Anxiety Inventory</b>					
Pretest Burns Anxiety Inventory (Anxious Feelings)	30	19.34	.28		
Posttest Burns Anxiety Inventory (Anxious Feelings)	30	10.96	.42	14.84	.000
Pretest Burns Anxiety Inventory (Anxious Thoughts)	30	37.93	2.41		
Posttest Burns Anxiety Inventory (Anxious Thoughts)	30	22.41	5.45	14.14	.000
Pretest Burns Anxiety Inventory (Physical Symptoms)	30	57.48	1.95		
Posttest Burns Anxiety Inventory (Physical Symptoms)	30	32.27	1.56	10.13	.000
<b>The Burns Depression Inventory</b>					
Pretest Burns Depression Checklist	30	46.75	.58		
Posttest Pretest Burns Depression Checklist	30	26.62	.67	31.80	.000
<b>Attitudes Toward Exercise and Physical Activity</b>					
Pretest Attitude toward Exercise and Physical Activity	30	59.33	1.22		
Posttest Attitude Toward Exercise and Physical Activity	30	101.33	.70	-33.69	.000

Table 1 shows that the data indicates significant improvements in various psychological and attitudinal measures following an intervention. For the Burns Anxiety Inventory, there were notable reductions in scores for anxious feelings, anxious thoughts, and physical symptoms from pretest to posttest, with mean scores decreasing from 19.34 to 10.96, 37.93 to 22.41, and 57.48 to 32.27, respectively, all with highly significant p-values (<.0001). Similarly, the Burns Depression Inventory presented a substantial decrease in the depression checklist scores from 46.75 to 26.62, indicating a reduction in depressive symptoms. Attitudes toward exercise and physical activity significantly improved, as evidenced by an increase in mean scores from 59.33 to 101.33, demonstrating a positive shift in attitudes, supported by a significant p-value (<.0001). These results collectively suggest that physical training was highly effective in reducing anxiety and depression while positively influencing attitudes toward physical activity.

## Discussion

The current study focused on female college students with the objectives of managing their levels of depression and anxiety, as well as examining their attitudes toward exercise and physical activity before and after an eight-week intervention of a physical training program.

## Depression

The first purpose of the study was to measure the level of depression in students before and after an eight-week training program. Certainly, the performance of students improved significantly after an 8-week training of the body. This study demonstrated whether a physical training program resulted in the amelioration of depression among female college students. The results drive home the rich dividends that intervention through a structured activity of this nature could accrue in the mental health domain in a college student population. Results of the research study indicate a dramatic decrease in depressive

symptoms among female students after physical training. These results are consistent with the preceding research, which suggested that exercise of regular intensity would help relieve symptoms of depression. Some studies prove that exercise stimulates the secretion of such endorphins and neurotransmitters as serotonin, which stimulates a more positive mood and sense of well-being (Craft & Perna, 2004; Meyer et al., 2016). Various studies further affirm and highlight these results in showing the positive effects of exercise on depression-related symptoms. For instance, the meta-analysis by Sánchez-Villegas et al. (2013) found that physical activity was inversely related to the risk of depression, where exercise was preventative and acting as therapy for depression. In comparison, this has also been demonstrated by the recent study of Zhang et al. (2022), where it was found that aerobic exercise greatly relieved depressive emotions and at the same time enhanced emotional resilience in young adults.

Furthermore, Mammen and Faulkner (2013) emphasized that there was a dose-response relationship exhibited between exercise and mental health benefits; that is, higher intensity of physical activity was associated with reductions in depression in a more significant magnitude. Such results then call for the need for the implementation of qualitative exercises among college students to achieve better mental health outcomes.

### **Anxiety**

The second research objective was to determine the impact of the physical training program on the female students' anxiety levels before and after intervention. There has been a significant difference in the students' psychological, physiological, and behavioral aspects after this physical training program in this study.

This study assessed whether female college students could benefit from a physical training program in anxiety management. The results provide major insights into how structured exercise interventions can be an effective therapeutic option for reducing symptoms of anxiety in this population group. This research found that the physical training program significantly reduced anxiety symptoms

among female undergraduate students. This finding agrees with past literature indicating that regular exercise is such an activity that helps in reducing symptoms of anxiety. Physical activity is said to alter the levels of neurotransmitters, especially serotonin and Gamma-Aminobutyric Acid, GABA, associated with mood regulation and anxiety (Stubbs et al., 2017; Meyer et al., 2016). Several studies corroborate and put into context the current findings on the beneficial effects of exercise on anxiety within similar populations. For example, Stonerock et al. (2015) reported in a systematic review that exercise interventions are associated with reduced anxiety and improved psychological well-being in young adults. In a similar way, Gordon et al. (2018), in the meta-analytic review, found that both aerobic and resistance training exercises are significantly related to a decrease in anxiety symptoms in all demographic groups.

A study by Hallgren et al. (2019) examined the role of exercise intensity and duration in optimized anxiety reduction and reported that higher levels of physical activity were related to greater reductions. These findings put exercise as one of the feasible non-pharmacological interventions with huge potential for the management of anxiety disorder among college students.

### **Attitudes towards Exercise and Physical Activity**

The third objective of this research study was to evaluate student perceptions of the eight-week training program by measuring them on the Attitudes Towards Exercise Inventory pre- and post-program. Our findings showed that in relation to baseline measures or before starting the program, there was a significant trend toward exercise and physical activity for the students after completion of this program.

This study, therefore, sought to establish the effects that such a physical training program would have on the attitudes of students toward exercise and participation in physical activity. For that reason, it is believed that determining how structural exercise interventions influence attitudes can be important for learning ways of motivating students to engage in physical activity over the long term. The findings of this study revealed significant improvement in the

attitudes of students regarding exercise participation following the physical training program. Furthermore, improvements in exercise attitudes demonstrated greater motivation, enjoyment, and benefits perceived from exercises. These improved feelings are in agreement with previous literature indicating that regular physical activity enhanced attitudes towards physical activity because positive actions were reinforced, and self-efficacy was improved in such a manner as well (Rhodes & Kates, 2015; Rouse et al., 2020). Plenty of studies support the findings of the current study on which there is an influence of such a treatment on exercise attitudes. For instance, a longitudinal study conducted by Dishman et al. (2010) revealed that habitual participation in exercise interventions throughout adolescence significantly predicts positive attitudes toward exercise in adulthood. In the same vein, Williams et al. (2008) study revealed that exercise interventions precipitate intensified dependence on exercise self-efficacy as well as intrinsic motivation, which explains the observed continuation of physical activity behaviors.

Another meta-analysis performed by Biddle et al. (2017) reiterated the role of exercise in shaping attitudes and intentions toward physical activity in different age groups and settings. These studies collectively underscore the predictive properties of structured physical training programs in developing positive attitudes toward exercise in students.

## Conclusion

This has really elaborated on the relationship between exercise and mental health in college students, therefore giving deep insights into the issue of how physical activities have positive influences on psychological well-being. Through a comprehensive synthesis of literature and empirical evidence, this study has underscored the multifaceted role of exercise in addressing depression, anxiety, and attitudes toward physical activity among college populations. The consistent findings highlight that regular participation in physical training programs can effectively mitigate symptoms of depression and anxiety in college students. Exercise emerges as a

potent non-pharmacological intervention, not only alleviating negative mental health symptoms but also fostering resilience and overall psychological health. Mechanistically, exercise influences neurobiological pathways such as neurotransmitter regulation and neuroplasticity, which are instrumental in enhancing mood and bolstering stress resilience. This study contributes significantly to the burgeoning body of evidence advocating for the integration of exercise as a foundational element in mental health promotion within college settings. By harnessing the therapeutic potential of exercise, universities can play a pivotal role in enhancing the overall well-being and academic success of their student communities.

## Implications for Practice and Future Research Directions

The findings suggest several implications for practice and future research:

- Universities and health professionals should promote physical activity as a key component of mental health promotion strategies for college students. Incorporating educational interventions that emphasize the mental health benefits of exercise and address misconceptions may enhance attitudes towards exercise among students.
- Future research should prioritize longitudinal studies to examine the long-term effects of exercise on mental health and to identify factors that influence sustained exercise behavior.
- Including diverse student populations in research studies will enhance the generalizability of findings and address health disparities.
- After the proof of the underlying mechanisms by which exercise influences mental health comes the need for targeted interventions.
- It can also explore how technology-based interventions can be utilized to increase students' levels of physical activity and improve their mental health, which is another area of potential further research.
- Practical implications: The findings of this study bear some practical implications in the strategies



for mental health promotion on college campuses. Incorporating physical training programs into one of the university wellness initiatives could be a proactive way of promoting the mental health of university students. Universities can thus provide students with a strong coping mechanism through their involvement in regular exercise and provide them with the potential to become good stress managers (Hallgren et al., 2019; Stonerock et al., 2015).

- The results of this study are of great importance in educational and health promotion activities in the academic environment. Universities can produce students who have a favorable attitude towards exercise, and therefore, it would be their desire to engage in one physical activity or not in their life. This would thereby give an emphasis on students' participation and well-being at large by putting university effective physical training programs into their wellness programs (Rouse et al., 2020; Williams et al., 2018).
- The outcomes of the current study have some implications for mental health promotion strategies at campuses. Given this, the incorporation of physical training programs into the wellness initiatives in universities would, to some extent, be an effort to proactively support the mental health of students. When students have developed the habit of regular physical exercise, universities would have prepared them with an effective aspect for coping and managing their stress better (Meyer et al., 2016; Stubbs et al., 2017).

### Limitations and Future Directions

- Although this study shows promising results, it is by no means without its limitations. One obvious limitation of the design is that the intervention period can be considered relatively short. The sample size is relatively small, so the generalizability of this study is limited. Future studies will include bigger samples, which will be more diversified, have longer intervention periods, and include objective measures for

anxiety to help demonstrate further the validity and extension of the findings (Gordon et al., 2018; Meyer et al., 2016).

- The current study replicates findings pointing out the beneficial effects of a physical training program to reduce anxiety in female college students. These findings add to a growing literature base that has reiterated exercise as being perhaps a feasible and accessible intervention to promote mental health and well-being among young adults.
- This study has some limitations even after the promising results: generalizability of findings might not be possible due to the short-term nature of this intervention and the potential bias of the participants in the measurement. Thus, further research is needed, focusing on a longer period of intervention and a larger, more diverse sample population to hold on to and further the results with attitudinal objective measures for exercise (Dishman et al., 2010; Biddle et al., 2017).
- The present study replicates former findings and underlines the positive effect of a physical training program on students' attitudes to exercise and physical activity. The findings add to a developing base of proof that supports structured workout intercessions as successful devices for advancing positive frames of mind and practices regarding physical action among students.
- Although the results look promising, this study does not come without its limitations. The short-term nature of the intervention and the sample size relatively place restrictions on generalizability. Future studies should have larger samples and more diverse samples, a longer follow-up, and objective measures for their physical fitness in a bid to continue and extend these findings (Stubbs et al., 2017).
- In summary, the present research accentuates the positive effects of a physical training program in the management of depression in young women at college. Results add to a growing literature showing exercise as a feasible and accessible psychometric intervention to promote mental health in young adults.

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<https://doi.org/10.1016/j.ijchp.2022.100312>

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