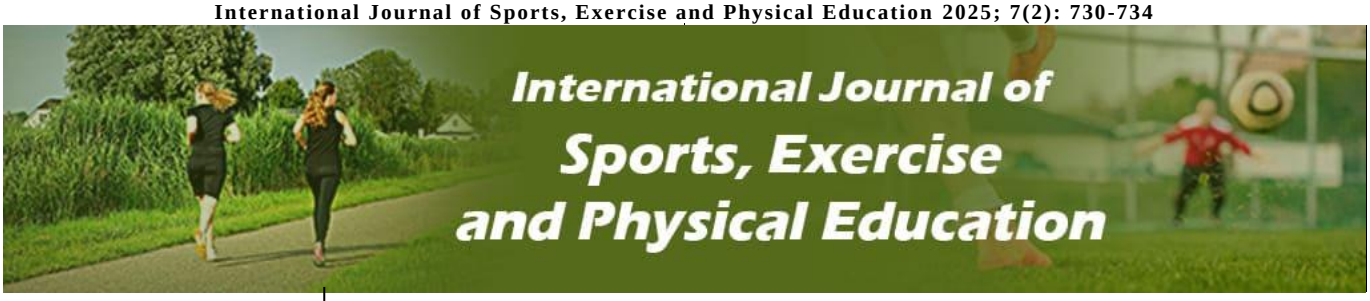

ISSN Print: 2664-7281
ISSN Online: 2664-729X
Impact Factor: RJIF 8.15
IJSEPE 2025; 7(2): 730-734
www.sportsjournals.net
Received: 25-10-2025
Accepted: 28-11-2025

Rojina Azim
Mahishadal Girls' College, Purba Medinipur, West Bengal, India

Asish Paul
Jadavpur University, West Bengal, India

Badshah Ghosh
Government College of Physical Education for Women, West Bengal, India

Madhab Chandra Ghosh
The ICFAI University Tripura, Fatikchhara, Tripura, India

Subhashis Biswas
The ICFAI University Tripura, Fatikchhara, Tripura, India

Corresponding Author:
Subhashis Biswas
The ICFAI University Tripura, Fatikchhara, Tripura, India

Effect of selected physical exercises on the anxiety of dysmenorrhea patients

Rojina Azim, Asish Paul, Badshah Ghosh, Madhab Chandra Ghosh and Subhashis Biswas

DOI: https://www.doi.org/10.33545/26647281.2025.v7.i2j.295

Abstract
Dysmenorrhea is a health-related problem of most of the young ladies which put a high impact on their health in general and society in specific, resulting in a high economic cost and even causing absenteeism from work. During this time girls feel anxiety and use some synthetic medicine to get relief from this problem. Some of these medicines have side effects. The aim of the study was to assess the effect of exercise on anxiety of dysmenorrhea. To fulfil the objective a quasi-controlled experimental design was adopted. A total of 20 female students were selected as sample for this study. The exercise training protocol was scheduled for three month. State trait anxiety inventory questionnaire was used to measured anxiety before and after the intervention. The results revealed that performing exercise significantly reduced the anxiety of dysmenorrhea ($P<0.01$). So, it can be concluded from this study that if dysmenorrhea patients regularly practice physical exercise at home, they can surely get benefit.

Keywords: Physical exercise, dysmenorrhea, anxiety, surely get benefit, dysmenorrhea patients

Introduction
Dysmenorrhea usually begins quietly in adolescence. It usually begins shortly after the girl's menstrual cycles become regular. It describes cramping pain in the lower abdomen. In clinical setting dysmenorrhea is classified as primary and secondary and non-speculative [1]. The most common of which is primary dysmenorrhea. It appears as a lower abdominal menstrual pain that happens for the first time with the absence of any identifiable pelvic pathology and usually starts about 6 to 12 months after menarche, and some time continues up to adulthood. It is a misconception that it is limited to abdominal pain. It is often accompanied by back pain in addition to abdominal pain. Young women are often subject to a spectrum of other symptoms, including gastro-intestinal symptoms, irritability, and symptoms of depression.

Psychologically menstrual cycles are a stressful and concerning time for many adolescents rather than just a biological function. The sight of blood may cause anxiety, embarrassment can be felt when changing sanitary towels during class, and for girls, such moments can shape how they interact socially with peers in their environment [2]. This fear or shame can result in a reduced participation in sports and other physical activities, limited concentration, and can disrupt regular school attendance. These experiences diminish the overall quality of life and create barriers to the engagement of activities that facilitate personal and professional development [3]. Pain and emotions influence each other in complex and powerful ways. Depression and anxiety worsen the experience of pain, which ties to the increased reports of severe menstrual pain in emotionally sensitive adolescents. Symptoms can be aggravated by poor diet, irregular eating, sleep deprivation, and smoking. Although advancements in science have addressed the mechanisms of hormones, uterine contractility, and prostaglandins, the connection between the psychogenic and the gynecological issue has not been fully addressed [4]. The presence of recurring pain in young women, even after undergoing various treatment options, demonstrates the need to develop strategies that integrate the psychosomatic and gynecological with the modern scientific [5].

Anxiety is more than just a feeling. It is a biological process. The pituitary hypothalamic adrenal axis is activated by stress, increasing cortisol and altering the menstrual cycle's normal hormonal pattern. Heightened cortisol is related to increased production of prostaglandins which induce further uterine contractions, thereby increasing the pain associated with menstruation. Further, anxiety increases pain inflammation, thereby worsening the pain. The relationship between emotional stress and physiological pathways that aggravate dysmenorrhea indicate that stress and anxiety reduction could lead to pain relief via indirect means. There is a broad array of management strategies. Though effective, non-steroidal anti-inflammatory drugs and hormonal contraceptives have side effects, and a lack of consistent adherence to these medications renders them unsuitable for many young women [6]. Psychological strategies, such as cognitive-behavioural therapy, are effective but high costs, a lack of available specialists, or social stigma make these approaches unattractive. These challenges have led to a search for non-pharmacological solutions that are accessible, inexpensive, and can easily be integrated into daily life.

Physical exercise may be an effective approach for managing primary dysmenorrhea. In addition to increased cardiovascular and muscular health, exercise facilitates emotional regulation, mental health, and well-being [7]. Endorphins are released, and stress responses are dampened with moderate exercise. Certain types of controlled physical activity such as mindful movement and aerobic exercises have been shown to be of great benefit to people suffering from ailments such as depression and anxiety, and even contributes to improved cognitive performance [8]. Stronger meta-analytic evidence indicates that engaging in regular moderate exercise reduces anxiety disorders [9] but results vary due to differing exercise intensity and duration [7]. In people that suffer from dysmenorrhea, exercise may also promote pelvic blood circulation, ease muscular tension, increase pain tolerance and enhance emotional regulation.

Given that the exercise is aimed at reducing anxiety, there is likely to be positive therapeutic gain for those suffering from dysmenorrhea as well. However, the data documenting such exercise interventions for this population is extremely limited. Most available data look at menstrual pain and the varying emotional pain separately, but, do not look at this in combination. Some data look at the exercise activity, but do not provide the structure of the exercise in terms of type, frequency, and duration of each session. It is for this reason that the current research is focused on a specific type of exercise over a 3-month period to establish its effects on anxiety levels for those suffering from dysmenorrhea. Measures of psychological functioning were obtained to ensure that the different approaches to improving menstrual pain and overall well-being were non-invasive and practical.

Materials and Methods

- **Study Design:** A quasi-experimental study design was adopted to investigate the impact of an exercise program on the anxiety levels of individuals who had been diagnosed with primary dysmenorrhea. The participants' anxiety levels were assessed before the commencement of the exercise program, and post-test (anxiety) levels were evaluated following the completion of the 12-week exercise intervention.
- **Participants:** A total of twenty clinically confirmed primary dysmenorrhea female students aged between 18 to 25 years were chosen for the study. All the participants were undergraduate students at Panskura Banamali College (Autonomous), Purba Medinipur, West Bengal. Initial screening involved by gynaecologists prescription to ensure menstrual regularity and confirmation of no pelvic pathology. The purpose of the study and training protocol were explained to all participants and written consent was taken. The study design and training protocol was approved by the Departmental Research Council of Panskura Banamali College (Autonomous).
- **Training protocol:** The program was conducted over a period of 12 weeks, with sessions occurring 4 times a week for 40 to 45 minutes each day.

Table 1: Prescribed training protocol for the participants

Exercise / Activity	How to Perform	Time / Repetitions
Warm-up	Light walking or jogging + simple body movements	5-7 min
Standing Forward Bend	Bend forward from standing and reach toward toes	10-12 reps (≈ 2 min)
Sumo Squat	Wide-stance squat, knees and toes pointed outward	10 reps (≈ 2 min)
Side Lunge	Step sideways and bend the knee, alternate	10 reps each side (≈ 3 min)
Standing Crossover Toe Touch	Touch opposite foot with alternate hand	12 reps (≈ 2 min)
Glute Lift (Hip Raise)	Lie on back, raise hips upward, hold briefly	12-15 reps (≈ 3 min)
Thigh Dancing Exercise	Kneeling hip movement forward and backward	10 reps (≈ 2 min)
Rockette Kick	Alternating high front kicks	10 reps each leg (≈ 3 min)
Toe Tap Exercise	Alternate toes tapping on a step/box	30-45 sec × 2 sets (≈ 3 min)
Squat Thrust with Medicine Ball	Squat, lift ball overhead, return	8-10 reps (≈ 3 min)
Cool-down	Gentle pelvic stretching + breathing	5-10 min

All sessions were supervised, and proper orientation was provided to ensure correct technique and reduce the risk of injury.

Table 2: Inclusion and exclusion criteria of the volunteers

Inclusion Criteria	Exclusion Criteria
Female students aged 18-25 years	Diagnosed pelvic or reproductive disorders
Confirmed diagnosis of primary dysmenorrhea	Musculoskeletal injuries affecting mobility
Regular menstrual cycles	Current medical treatment or ongoing medication
Willing to complete the full 12-week intervention	Pregnancy or marital status (hormonal variability)
No recent exercise training history	Use of analgesic or anti-anxiety medication

- **Independent and dependent variables:** The independent variable within this study was the structured physical exercise intervention provided over the twelve-week period. This variable represented the treatment condition aimed at triggering an impact on the psychological variables. The dependent variable was anxiety and was measured using the State-Trait Anxiety Inventory, which consists of two separate dimensions of anxiety. These dimensions include state anxiety, which refers to anxiety experienced as an emotional reaction that is transient, and trait anxiety, which refers to persistent, long-lasting tendencies to be anxious and experience anxiety. Both state and trait anxiety were surveyed prior to the intervention and at the end of the training session.
- **Statistical procedures:** The data was analyzed using non-parametric statistical methods, as the data were not normally distributed and there was a relatively small sample. The differences between pre- and post-intervention anxiety scores of the same subjects were compared using the Wilcoxon Signed Rank Test. Anxiety scores were summarized using descriptive statistics, and a significance level of $p<0.01$ was used to demonstrate a high level of confidence that differences existed between pre-measurements and post-treatment measurements.

Results

Table 3: Wilcoxon signed ranks test of state anxiety between the pre and post result of exercise group

State anxiety	Mean	SD	Median	Z	P
Pre	59.30	2.58	60.0	3.94	0.01
Post	41.05	2.04	41.50		

The above noted table stated significant reduction in state anxiety.

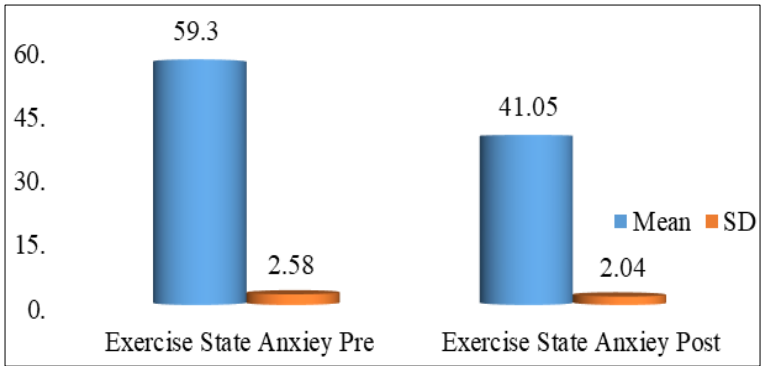

Fig 1: Graphical representation of effect of exercise modulation on state anxiety

Table 4: Wilcoxon signed ranks test of trait anxiety between the pre and post result of exercise group

Trait anxiety	Mean	SD	Median	Z	P
Pre	73.55	3.14	73.50	3.92	0.01
Post	33.50	2.69	33.0		

The above table shows significant difference was found between the trait anxiety score.

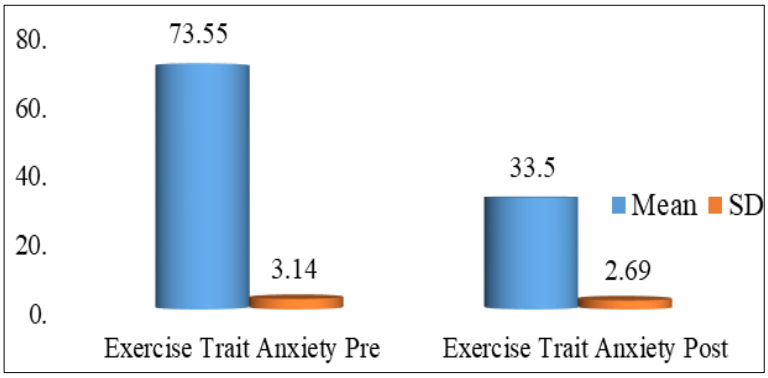

Fig 2: Graphical representation of effect of exercise modulation on trait anxiety

Discussion

The study express primary dysmenorrhea patients have a notable decrease in state and trait anxiety after starting a regular workout program. The degree to which these improvements manifest suggests that exercise interventions leads to some degree of psychological improvement in dysmenorrhea patients. These alterations correlate to some of the mental and psychological benefits that regular physical activity brings. Previous literature suggests that anxiety symptoms which include but are not limited to stress, fatigue, and concentration loss can be alleviated through routine structured exercise [10, 11]. The impact of exercise on dysmenorrhea anxiety symptoms appears to be greater than that of the general population. Evidence suggests that exercise, in particular, the aerobics classes, decreased anxiety sensitivity and dysphoria [12]. More

specifically, the moderate to vigorous component of the three months of the study that focused on aerobic exercise, especially with the dynamic hip and lower body exercises, served as a significant positive training stimulus. This correlates with studies conducted on a wider scale regarding physical activity and respiratory symptom and anxiety reduction which indicate that the effect could be a result of greater physical fitness and reinforced parasympathetic dominance [9].

The current findings suggest that the use of simple breathing and synchronized movement patterns may exert an effect on the psychological component of dysmenorrhea and its associated symptomatology by acting upon a specific set of hormones/neurotransmitters. The regular practice of physical activity has also been reported to decrease anxiety and elevate mood [13] because of the neural effects of physical activity that increase endorphins and positive neurotransmitters (serotonin and dopamine). Such effects could also explain why a pronounced decrease in the levels of both state and trait anxiety was observed. Furthermore, findings from Lin and Gao [20, 23] suggest that longer the duration of physical exercise, greater the reduction in symptoms of anxiety [10]. The current study also supports the findings of the present study where the participants undertook medium to long duration of exercise in a 12-week intervention programme, suggesting that this may be the minimum duration required to achieve meaningful psychological improvement. The results of the study allowed us to understand the effects of movement in other menstrual and reproductive conditions. Research by Yin *et al*. [20, 21] indicated that mindful movement is useful in the short term control of numerous anxiety symptoms [8]. In contrast, participants in multi-week training protocols showed more sustained emotional regulation. This is precisely the order of the participants' results in the current study and supports the hypothesis that chronic movement interventions mitigate stable trait anxiety, which is often resistant to short term psychological change. Moreover, Brinsley *et al*. [20, 22] observed that some forms of exercise, including yoga and exercise at a moderate intensity, had a significant positive impact on the mood of study participants with anxiety and depressive disorders [14]. There was some similarity in the mood enhancement experienced by current participants, who, although dysmenorrheic, probably had less depression and anxiety comorbidity. When one looks at the potential side effects of pharmacochemistry, issues related to compliance, and exercise is a low risk, low cost management method, it is concluded that exercise is a low risk and low cost management method [15].

It is all the more significant that study participants achieved the benefits described without the use of medication. This is crucial, especially since women with dysmenorrhea often exhibit emotional distress, irritability, and anxiety regarding the pain dysmenorrhea [5]. In this regard, the application of movement as a non-pharmaceutical intervention is of great importance. The association between heightened anxiety response of the sympathetic nervous system and the severity of pain during menstruation posits that exercise contributes to the relief of pain through the reduction of symptoms.

Conclusion

The study found that adults with anxiety or depressive disorders and with dysmenorrhea can also gain the psychological benefits of exercise. The result of this study supports the growing advocacy for exercise as an adjunct treatment for dysmenorrhea. The result of the study also support structured exercise programs as a means of alleviating the psychological symptoms of menstruation. To clarify the connection between anxiety and dysmenorrhea, future studies might employ a comparative design using different forms of exercise and intensities, as well as a control group, and a longitudinal design.

Acknowledgments

The authors thank all participants for their cooperation and the Departmental Research Council of Panskura Banamali College (Autonomous) for approving and supporting this research. Appreciation is also extended to colleagues and staff who assisted during the study.

References

1. Sanctis DV, Soliman A, Bernasconi S, Bianchin L, Bona G, Bozzola M, *et al*. Primary dysmenorrhea in adolescents: Prevalence, impact and recent knowledge. Pediatr Endocrinol Rev. 2015;13(2):512-520.
2. Esen İ, Oğuz B, Serin HM. Menstrual characteristics of pubertal girls: A questionnaire-based study in Turkey. J Clin Res Pediatr Endocrinol. 2016;8(2):192-196.
3. Williams CE, Creighton SM. Menstrual disorders in adolescents: review of current practice. Horm Res Paediatr. 2012;78(3):135-143.
4. Habibi N, Huang MSL, Gan WY, Zulida R, Safavi SM. Prevalence of primary dysmenorrhea and factors associated with its intensity among undergraduate students: A cross-sectional study. Pain Manag Nurs. 2015;16(6):855-861.
5. Sahin N, Kasap B, Kirli U, Yeniceri N, Topal Y. Assessment of anxiety-depression levels and perceptions of quality of life in adolescents with dysmenorrhea. Reprod Health. 2018;15(1):13.
6. Garakani A, Murrough JW, Freire RC, Thom RP, Larkin K, Buono FD, *et al*. Pharmacotherapy of anxiety disorders: current and emerging treatment options. Front Psychiatry. 2020;11:595584.
7. Ashdown-Franks G, Firth J, Carney R, Carvalho AF, Hallgren M, Koyanagi A, *et al*. Exercise as medicine for mental and substance use disorders: A meta-review of the benefits for neuropsychiatric and cognitive outcomes. Sports Med. 2020;50(1):151-170.
8. Yin J, Tang L, Dishman RK. The effects of a single session of mindful exercise on anxiety: A systematic review and meta-analysis. Ment Health Phys Act. 2021;21:100403.
9. Bartley CA, Hay M, Bloch MH. Aerobic exercise for the treatment of anxiety disorders: A meta-analysis. Prog Neuropsychopharmacol Biol Psychiatry. 2013;45:34-39.
10. Lin Y, Gao W. The effects of physical exercise on anxiety symptoms of college students: a meta-analysis. Front Psychol. 2023;14:1136900.
11. Field T, Diego M, Reif HM, Medina L, Delgado J, Hernandez A. Yoga and massage therapy reduce prenatal depression and prematurity. J Bodyw Mov Ther. 2012;16(2):204-209.
12. Broman-Fulks JJ, Berman ME, Rabian BA, Webster MJ. Effects of aerobic exercise on anxiety sensitivity. Behav Res Ther. 2004;42(2):125-136.

13. Conn VS. Depressive symptom outcomes of physical activity interventions: Meta-analysis findings. Ann Behav Med. 2010;39(2):128-138.
14. Brinsley J, Smout M, Girard D, Davison K. Acute mood and cardiovascular responses to moderate-intensity vinyasa yoga, static yin yoga and aerobic exercise in people with depression and/or anxiety disorders: A five-arm randomized controlled trial. Ment Health Phys Act. 2022;22:100450.
15. Ravindran LN, Stein MB. The pharmacologic treatment of anxiety disorders. J Clin Psychiatry. 2010;71(7):839-854.