International Journal of Web of Multidisciplinary Studies
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
website: https://ijwos.com
Volume 3 Issue 3 , March 2026
E-ISSN : 3049-2424
DOI: https://doi.org/10.71366/ijwos

THE EFFECT OF EGOSCUE EXERCISES ON PAIN, MUSCLE TIGHTNESS, CORE STRENGTH AND QUALITY OF LIFE IN YOUNG WOMEN WITH PRIMARY DYSMENORRHEA

Dr Shikha V Paasi[1], Dr.Pratiksha Kulkarni[2], Dr Bhagyashri Sonawadekar[3]
[1] *Associate Professor, Tilak Maharashtra Vidyapeeth Jayantrao Tilak College of Physiotherapy*
[2,3] *Assistant Professor, Tilak Maharashtra Vidyapeeth Indutai Tilak College of Physiotherapy.*

Article Info

Article History:

Published:23 March 2026

Publication Issue:
Volume 3, Issue 3
March-2026

Page Number:
453-463

Corresponding Author:
Dr Shikha V Paasi

Abstract:

Primary dysmenorrhea, characterized by painful menstruation in the absence of pelvic pathology, significantly affects the quality of life and daily functioning of young women. Associated symptoms include lower abdominal cramps, nausea, headache, and fatigue. The pain is primarily linked to excessive prostaglandin production and musculoskeletal imbalances, including iliopsoas tightness and weak core muscles. While various interventions exist, research on the effectiveness of Egoscue exercises—a postural alignment-based corrective approach—is limited. OBJECTIVE:This study aimed to evaluate the effectiveness of Egoscue exercises on pain intensity, iliopsoas tightness, core strength, and menstrual distress in females with primary dysmenorrhea. METHODS:An experimental pre-post study was conducted on 89 females aged 17–30 years with primary dysmenorrhea. Participants received Egoscue exercises thrice weekly for one menstrual cycle (approx. 4 weeks). Outcome measures included the Numerical Pain Rating Scale (NPRS), Menstrual Distress Questionnaire (MDQ), Thomas Test for iliopsoas tightness, and core strength using pressure biofeedback. RESULTS:Post-intervention analysis revealed significant improvements across all outcomes. Pain intensity reduced by 43.37% (p=0.0001), iliopsoas tightness improved by 20–22% (p=0.0001), core strength increased by 27% (p=0.0001), and menstrual distress decreased by 21.52% (p=0.0001). Effect sizes ranged from moderate to large. CONCLUSION:Egoscue exercises significantly reduced dysmenorrhea-related pain, improved musculoskeletal alignment, enhanced core strength, and alleviated menstrual distress. These findings suggest that incorporating postural alignment therapy such as Egoscue can be an effective conservative management strategy for primary dysmenorrhea in young women.

Keywords: Primary Dysmenorrhea, Egoscue exercises,muscle tightness, core strength, quality of life

1. INTRODUCTION

Dysmenorrhea is defined as pain of sufficient intensity so as to incapacitate activities of day to day life. Dysmenorrhea can be of different types of pain which includes dull, shooting or throbbing. Dysmenorrhea is classified primary and secondary dysmenorrhea[1].Primary dysmenorrhea is defined as menstruation which is painful in absence of any pelvic or gynaecological pathology. Usually onset of primary dysmenorrhea is 8-12 months after menarche[1]. The pain is due to production of prostaglandins which are synthesized from the

endometrium. Maximum production of prostaglandins are released when there is shedding of endometrium. As there is increased contraction of uterus, which results in reduced blood flow and increased peripheral nerve hypersensitivity, which results in pain at onset of menstruation cycle [1, 2].

Symptom is usually lower abdomen cramping but there are many associated symptoms which are headache, vomiting, loss of appetite, weakness, nausea, dizziness, diarrhoea, facial blemishes, flushing, sleepiness or insomnia. These symptoms occurs within few hours or after 24 hours of menstruation. Severity of symptoms positively correlates with early menarche and with increased duration and amount of menstrual flow[2]. The prevalence of dysmenorrhea in India is 65.82% was greater observed in young women, for those aged 17-30 years. A study of adolescent and young women aged 26 years or less reported 41% limitations in their daily activities due to dysmenorrhea[3,4].

Exercise has been proven for relief of dysmenorrhea. It improves metabolism and blood flow at the pelvic level. Exercise is known to cause the release of endorphins, substances produced by brain in uterine epithelial tissues that raise the pain threshold level[1]. Different interventions have been created for relief of dysmenorrhea like, stretching exercises, different yoga postures, Pilates exercise, relaxation techniques and conservative treatment[5,2]. Studies have shown that egoscue exercises are corrective exercises which reduce musculoskeletal pain by postural alignment. It was developed where focus was to target musculoskeletal dysfunction with the theory to bring back postural balance, stability, strength and flexibility of muscles through egoscue exercises [6]

Many interventions have been shown to reduce pain, to reduce menstrual distress and to strengthen muscles, but there is paucity of research done to understand the effect of egoscue exercises on pain and menstrual distress in females with primary dysmenorrhea.

Our study aims at determining the effect of egoscue exercises in reducing pain, muscle tightness, menstrual distress and to improve core strength and in young females with primary dysmenorrhea.

2. METHODOLOGY

The study design was experimental in nature and the type of study was pre-post experimental study. The method of sampling was convenient and the duration of intervention was between one menstrual cycle to the next menstrual cycle with 3 sessions a week. Total 89 subjects were selected based on the inclusion and exclusion criteria and were treated accordingly. The subjects were assessed from OPD and from colleges and hospitals.

The inclusion criteria were females of the age from 17 to 30 years suffering from primary Dysmenorrhea (pain affecting daily activities) with the dysmenorrhea pain equal or above 4 on the numerical pain rating scale (NPRS). Having iliopsoas tightness (> 0 degrees), core strength and endurance < 10 mm Hg with 10sec hold, nulliparous in nature.

The Exclusion criteria Age above 30 years with history of any pelvic disease and/or gynaecological disease, Irregular or Infrequent menstrual cycle. Taking oral contraceptives or using intrauterine contraceptive devices. And taking medications for pain.

The outcome measures used were Numerical Pain Rating Scale: Measures the subjective intensity of pain during first 2 days of menstruation. The NPRS is an eleven-point scale from 0 to 10. "0" = no pain "10" = the most intense pain imaginable[7,8]. The Quality of life was assessed by Menstrual Distress Questionnaire [9,10,11,12,13,14.]. Thomas test is gold standard measure to determine limited hip extension or hip flexor tightness. The test is indicative of hip flexor tightness which can be measured by a goniometer at the hip[26]. Pressure Biofeedback (Pbu) Core Strength was measured with Subject positioned in prone lying position and inflatable bag or pressure biofeedback unit will be placed under lower abdomen (between anterior superior iliac spine and navel). Before contraction, the bag was inflated to pressure of 70mmhg, then subject is asked to contract transversus abdominus muscle with following verbal commands given by examiner i.e. "draw in your abdomen without moving spine or pelvis" and maintain contraction for 10 ten seconds[15,16].

PROCEDURE:

Institutional ethical committee clearance was taken. Subjects were included on the basis of inclusion and exclusion criteria. Written informed consent was taken after the complete explanation of the procedure and treatment from the subjects. The subjects were informed about aims and procedure of study. Subjects were assessed using numerical pain rating scale, menstrual distress questionnaire, pressure biofeedback for core strength and Thomas test. Subjects were evaluated at the beginning of the treatment and re-evaluated after menstruation post intervention

TREATMENT:

Subjects received egoscue exercises for 3 times in a week for 4 weeks or until the onset of next menstruation for 1 hr 15 minutes per session.[6, 17,18] .The individuals received a total of 10 exercises which include static back alone and with diaphragmatic breathing, abdominal contraction while in the static back position, abductor press, assisted runner stretch, overhead extension, static wall, upper spinal twist, pelvic tilts, supine groin progressive stretch and air bench exercises. [6, 19]

Intensity	3 repetitions
Duration	1 hr 15 minutes

frequency	3 days in a week
Total sessions	1 session per day for 3 days in a week after end of menstruation until onset of next menstruation

TABLE NO 1. Exercise Protocol

The progression of the exercise program will depend upon the individual capacity and will be followed by increasing number of repetitions. [6]

Week 1	3 times with 30 sec hold
Week 2	5 times with 30 sec hold
Week 3	15 times with 30 sec hold
Week 4	20 imes with 30 sec hold

TABLE NO 2. Exercise Progression

STATIC BACK: Subject in supine lying position on mat or couch with Legs up over large block. Arms at 45 degree and palms up. Subject was asked to relax the upper back. And subject was asked not to press down back on the couch or mat and allow passive elongation of lumbar muscles so as low back is flat and hold the position as directed[6,18,13]

OVERHEAD EXTENSION: Subject was asked to stand with feet pointing straight and hip width apart and was asked to interlace fingers together and reach arms, overhead pressing arms towards wall with palms up. And subject was asked to look up towards hands and keep arms straight, and not to bend elbows. Hold the position as directed. [6,13]

UPPER SPINAL TWIST: Subject was asked to lie on one side in a foetal position with arms straight out from shoulders in front and Stacking knees one directly atop the other, and open the top arm, lifting it up and over the body to the other side letting it to rest on floor. Then subject was asked to move head to look in same direction as that arm and not letting knees come apart while moving arm to other side. Hold the position as directed. And switch side and repeat. [6,13]

PELVIC TILTS: Subject was asked to lie in hook lying position and hips, knees and feet were aligned. Subject was asked to roll up hips backwards to flatten back to floor and then subject was asked to roll forward hip to arch low back and was asked to relax upper back. [6,13]

AIRBENCH: Subject was asked to stand with back against wall with feet and knees hip- width apart and feet pointed straight and was asked to walk feet away from the wall while sliding body down at a same time. Subject was asked to keep knees bent 105 degrees as sitting on invisible chair. Hips should be slightly higher than knees and ankles slightly ahead your knees .Low back should be against wall and arms can be placed on laps. Hold them as directed[6,13]

STATIC WALL: Subject was asked to lie in supine lying position with legs up the wall making a 90-degree angle. Subject's butt should touch the wall in this position and feet hip width should be apart, while keeping back relaxed and firmly in contact with ground and pulling toes back toward head, flexing at ankles and flexing upper thighs by pushing knees toward the wall. And was asked to hold the position as directed.[6,13]

SUPINE GROIN PROGRESSIVE STRETCH: Subject was asked to Lie in supine lying position with one leg on a block or chair with knee bent at 90 degrees and other leg extended out resting on wall and foot kept it in neutral position and the extended leg should be lower down after 10 minutes and held in place for another 10 minutes. Arms should be at 45 degrees and palms facing up and low back should be flatter to floor. Hold and relax as directed. Repeat on other leg. This exercise returns the pelvis in neutral position and helps the muscle around the pelvis to hold it there.[6,13]

ABDUCTOR PRESS: Subject was asked to sit on a chair or stool. Examiner placed a strap around subject's knees. Subject was asked to roll your pelvis forward to place a small arch in low back and was asked to hold position and was asked to press the thighs outward against the strap and release. Repeat the technique as directed. [6,13,19]

ASSISTED RUNNERS STRETCH: Subject was asked to kneel down in front of a chair or table that body is stabilized and supported and place the back of left heel on the front of your right knee and subject should be on the toes of right foot, with the bottom of foot pointing behind. Subject's left foot, right knee, and right foot should be in line with each other, keeping hands on the chair, standing up and begin bending over while rolling hips back, which will make an arch in your lower back. The heel of right foot should be on the ground. And subject was asked to tighten thighs (quads) while relaxing upper body and keeping weight on the inside of each foot, and keeping lower back arched. Hold for one minute; switch sides and repeat. [6,13,19]

ABDOMINAL CONTRACTION WITH STATIC BACK: Subject was asked to lie in supine lying position on mat or couch with legs up over large block. . Arms at 45 degree and palms up. Subject was asked to relax the upper back. And subject was asked to press down low back on the couch or mat so as low back is flat and hold

the position as directed. While doing this subject was asked to take a deep breath and contract your abdominals after exhalation. Hold the as directed. [6, 13, 19]

STATISTICAL ANALYSIS

Statistical analysis was performed after entering the data in MS Excel. The statistical analysis of data was done using SPSS IBM version 20. The demographic data was analysed using Kolmogorov-smirnov test. The intra-group comparison for the scores of pre and post NPRS, Thomas test and core strength was done using non-parametric- Wilcoxon matched paired test. The difference of scores of MDQ follow normal distribution. Therefore, the parametric test i.e. dependent t test was applied.

3. RESULTS

The comparison of Pre and Post intervention scores of NPRS showed statistical significance ($p = 0.0001$) and the percentage of change is 43.37% with effect size of 0.084.The comparison of values of iliopsoas tightness on left and right determined by Thomas test pre and post intervention also showed statistical significance ($p= 0.0001$) with 22.32 % of change on the right side and effect size of 0.76 and 20.59% on the left side with effect size of 0.69. The values of core strength (mmHg) taken pre and post intervention also showed statistical significance ($p=0.0001$) with 27 % of change. Similarly, on comparison of Pre and Post evaluation of QOL by MDQ by dependent t-test there was a significant difference ($p=0.0001$) with 21.52 % of change and 0.80 as effect size.

DISCUSSION:

potential sources of pain that are often overlooked by the clinicians are from the musculoskeletal system. As suggested, the irritation of pelvic musculoskeletal structures due to psoas tightness promotes antidromic transmission of nociceptive impulses to bladder sensory neurons and other pelvic organs such as uterus, which increases the secretion of prostaglandins promoting a state of neurogenic inflammation.[20] The psoas muscle is in proximity to the gynaecological organs. Thereby, Inflammation at these anatomic structures are in direct relation with psoas dysfunction causing subsequent gynaecological somato-visceral reflexes.[9]

The lumber spine is designed for weight bearing and sturdy functions serving as origin and insertion of certain musculature and nerve innervations to their correlated areas. If the lumbar spine musculature is weak, and cannot optimally handle functional stress, it increases pain in females suffering from dysmenorrhea.[5,21]

The benefits of egoscue exercises were correction of alignment of lumbar spine, elongation of the hip flexors leading to reduction of anterior pelvic tilting, improved strength of intrinsic core stabilizers along with relaxation of lumbar extensors and interspinous ligaments, the exercises re-established muscular stabilising chain between trunk and pelvis.[18,19]

The reduction in pain were brought about by factors like stimulating endogenous opioid pain modulating system. It has been proved that exercises that incorporate elongation of iliopsoas reduce pain intensity and duration by vasodilation in the uterus. release of these opioids causes shunting of blood flow from viscera resulting in less pelvic congestion also the nerve irritation induced by iliopsoas tightness is alleviated by egoscue exercise

program. Various exercises such as the runner stretch position, the supine groin progressions have improved flexibility of iliopsoas and restored pelvic and lumbar mobility.[19,20] This improved extensibility of iliopsoas supresses the excitability of motor neuron pool by relieving ischemia and irritation of nerve pathways caused by contracted ligamentous band in pelvic region as happens in dysmenorrhea[9,20] which significantly reduced the values of iliopsoas tightness determined by Thomas test.

As suggested by the results, there is an increase in core strength by egoscue exercises as the exercises included static back with abdominal contractions, pelvic tilts, air bench, abdominal contraction with static wall and abductor press which inculcated the contraction of core musculature thus strengthening them which improved the value of core strength taken by pressure biofeedback (mmHg).[19] It is ascertained that the strengthening of small intrinsic musculature supporting the lumbar spine led to their better performance during menstrual stresses.[23] Exercises maintain functional stability along with improvement in blood flow and metabolism of uterus which help reduce secretion of prostaglandins hence reducing dysmenorrhea. Also, there is an enhancement in the functioning of the parasympathetic activity leading to relaxation and increase in pain threshold of the body which is brought about by the release of opiates and endorphins.[2,23] Corresponding to the study done by Saleh H.S, Mowafy H.E, et al. which concluded that core strengthening exercises reduced pain intensity and duration of primary dysmenorrhea along with Active stretching.

As pain, tightness and reduced core strength are sources that impact the menstrual symptomatology in menstrual distress. Significant reduction in pain helped to improve the menstrual distress which was seen by reduction of MDQ scores after treatment in our study.[2,3,4]

The improvement in the results could also be attributed to improvement in postural alignment of lumbo-pelvic spine .A study done by M.J.Kim, I.Baek, et al. identified that there were effects of mal-alignment of the lumbar-pelvis, as passive elements and thickness of abdominal muscles as active elements on primary dysmenorrhea and supposed that hyperlordosis was one of the cause shown by increased lordotic angle in females with dysmenorrhea.[24] A randomised controlled trial by G. S. Kudchadkar, P.Gurudut, et al. concluded that egoscue exercises were significantly effective in reducing hyperlordosis characterized by muscle imbalances with tightness and weakness of opposite group of muscles.[6] Egoscue exercises focused to target the musculoskeletal dysfunction by maintaining postural balance by rectifying poor posture through corrective exercises.[6] In correlation to a study proposed by K. Moonjeoung, M. Kim, et al. Pilates stabilization exercise relieved dysmenorrhea by correcting the stability and alignment of the lumbar pelvis region and reducing lordosis.[25] This resonates with our study; the potential mechanism could be improvement in posture and improved alignment of lumbo-sacral spine by correcting increased lordosis and maintaining the spine in optimal alignment.

4. CONCLUSION

The present study concludes that egoscue exercises for 3 times in a week after end of menstruation until the onset of next menstruation proved to be effective in reducing pain, iliopsoas tightness, menstrual distress and improving core strength of young females having primary dysmenorrhea.

References

1. Hiralal K. DC Dutta's textbook of gynaecology. 4th edition. India: 2019.
2. Zeev H. Dysmenorrhea in Adolescents and Young Adults: Etiology and Management.Vol19; Issue: 2006, 363-371.
3. Jaywant A, Kiran R. A Cross-Sectional Study of Dysmenorrhea among Adolescent Girls. Vol 4; Issue: Sep 2016, 3421-3423.
4. Angelo C. Prevalance of Menstrual Pain in Young Women. Vol 5; Issue: 2012, 169-174.
5. Shahnaz S, Fahimeh M. Effect of Core Stability Exercises on Primary Dysmenorrhea: A Randomized Controlled Trial. Vol 13; Issue: 2019, 113-122.
6. Gayatri S, et al. Comparative Effect of mat Pilates and Egoscue Exercises in asymptomatic Individuals with Lumbar Hyperlordosis. Indian Journal of Physical Therapy and Reaserch.2019;1(2):79-88
7. Ahmad H, et al. Test- retest reliability, validity and minimum detectable change of visual analog, numerical rating and verbal rating scales for measurement if osteoarthritic knee pain. Journal of pain research, 2018.
8. Anne M, et al. Cut off points for mild, moderate, and severe pain on Numeric Pain Rating scale for pain in patients with chronic musculoskeletal pain: Variability and influence of sex and catastrophizing. Frontiers in psychology, 2016.
9. Andrea T, Gautam D. Psoas Syndrome: A Frequently Missed Diagnosis. Vol 112; Issue: Aug 2012, 522-528.
10. Rudolf H, Moos. The Development of Menstrual Distress Questionnaire. Vol 6; Issue 1968, 853-867.
11. Yaelim L, et al. Translation and cross cultural variation of Korean version of menstrual distress questionnaire, SAGE, 2020.
12. Rosemary A, et al. Assesment of reliability of the effect of neutral instructions on symptom ratings on Moos Menstrual Distress Questionnaire, Psychosomatic medicine Vol.38, June 1976.
13. Ellen H, et al. Menstrual distress questionnaire: Are the Critics Right? Current Psychology, 1992.
14. Gregory J, et al. Intersect relationship between the eight state questionnaire and menstrual distress questionnaire, Person individ. Vol,12, No. 7, 703-711, 1991
15. Pedro P, Rodrigo R. Concurrent validity of the pressure biofeedback unit and surface electromyography in measuring transversus abdominus muscle activity. Vol 16; Issue: Oct 2012, 389-395.
16. Carolyn K, Lynn C. Therapeutic Exercises: Foundation and Techniques. 6th edition. 2012,
17. Zachary V. The Effect of Egoscue Corrective Exercises on Chronic Knee and Hip Pain. Vol 1; Issue: 2014, 1-32.
18. Derek S, et al. Evaluating acute changes in joint ROM using self-myofacial release, postural alignment exercises, and static stretches. International Journal of exercise science, 2013.
19. Pete E. Pain Free for women. Edition: 10th. 2003, 480.
20. Frank F, et al. Physical therapy evaluation of patients with chronic pelvic pain: a controlled study. Am J Obstet Gynecol, 2008.
21. Berde S, Yadav S. Effect of Core Strengthening Exercises and Chair Aerobic Exercises in Primary Dysmenorrhea. Vol 9; Issue: 2019, 77-82

22. Patil SD, Patil P. Effect of Iliopsoas Muscle Release on Running Speed in Recreational Runners. EDITORIAL BOARD. 2023 Jan 16;17(1):57.
23. Hayam A, Eitteh. The Impact of Heat Application versus Stretching and Core Strengthening on Relieving Pain of Primary Dysmenorrhea among Young Females. Vol 6; Issue: 2017, 47-55.
24. Moon-Jeong K, et al. The effect of lumbar-pelvic alignment and abdominal muscle thickness on primary dysmenorrhea. The journal of physical therapy science.2016;28(10):2988-2990.
25. Moon-Jeong K, et al. The relationship between pelvic alignment and dysmenorrhea. The journal of physical therapy science.2016;28(3): 757-760.
26. J Peeler, et al. Reliability of the Thomas test for assessing range of motion about the hip. Physical therapy in sport, 14-21, 2007.

Table 3. Comparison of pre and post- intervention scores of NPRS by Wilcoxon matched pairs test

Treatment time	Mean	Std.Dv.	Mean Diff.	SD Diff.	% of change	Z-value	P-value	Effect size
Pre- intervention	7.33	1.35						
Post- intervention	4.16	1.46	3.16	1.34	43.17	7.8269	0.0001*	0.8480

Table 4. Comparison of pre-intervention and post-intervention scores of MDQ by dependent t test

Treatment time	Mean	Std.Dv.	Mean Diff.	SD Diff.	% of change	t-value	P-value	Effect size
Pre-intervention	69.49	28.00						
Post-intervention	54.53	25.45	14.95	7.51	21.52	18.4616	0.0001*	0.8000

Table 5. Comparison of pre-intervention and post-intervention scores of Thomas test (angle in degrees) in Right side by Wilcoxon matched pairs test.

Treatment time	Mean	Std.Dv.	Mean Diff.	SD Diff.	% of change	Z-value	P-value	Effect size
Pre-intervention	10.94	3.00						
Post-intervention	8.50	3.19	2.44	1.37	22.32	7.7216	0.0001*	0.7630

Table 6. Comparison of pre-intervention and post-intervention scores of Thomas test (angle in degrees) in Left side by Wilcoxon matched pairs test

Treatment time	Mean	Std.Dv.	Mean Diff.	SD Diff.	% of change	Z-value	P-value	Effect size
Pre-intervention	10.73	2.83						

Post-intervention	8.52	3.12	2.21	1.46	20.59	7.3037	0.0001*	0.6970

Table 7. Comparison of pre-intervention and post-intervention scores of Core strength (mmHg) by Wilcoxon matched pair test

Treatment time	Mean	Std.Dv.	Mean Diff.	SD Diff.	% of change	Z-value	P-value	Effect size
Pre-intervention	6.12	1.42						
Post-intervention	7.77	1.39	-1.65	1.07	-27.00	6.8930	0.0001*	0.7060