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THE EFFECT OF ZUMBA EXECRISE AND YOGA POSES ON REDUCING MENSTRUAL PAIN IN YOUNG COLLEGE STUDENTS WITH PRIMARY DYSMENORRHEA

Kirthika P[1], Manoj Abraham Manoharlal[2], Annamol Vincent[3]

1Assisstant professor, Kg college of Physiotherapy,Affiliated to The Tamil Nadu Dr.M.G.R Medical university,Chennai

2 Professor/Principal, Kg College of Physiotherapy, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai.

3 Undergraduate Student/Intern, Kg College of Physiotherapy, Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai.

Abstract

Background: Primary dysmenorrhea is a prevalent gynecological issue among young women, adversely affecting their quality of life and academic activities. Nonpharmacological interventions like exercise are gaining recognition as viable alternatives to medication.

Objective: To compare the effectiveness of a Zumba exercise program versus a structured yoga regimen in reducing pain and improving the quality of life in college students with primary dysmenorrhea.

Methods: This randomized comparative study included 30 female college students (age 18– 22) with primary dysmenorrhea. Participants were randomly allocated to either Group A (Zumba, n=15) or Group B (Yoga, n=15). Group A performed 30-minute Zumba sessions three times per week. Group B practiced a 15-minute yoga protocol (including Cat-Cow, Cobra, Fish Pose, and Shavasana) three times per week. The intervention period was four weeks. Pain intensity was assessed using the Visual Analogue Scale (VAS), and quality of life was measured with the WaLIDD questionnaire at baselineand post-intervention.

Results: Both interventions led to statistically significant reductions in pain and improvements in quality of life (p0.05). Conversely, the Zumba group showed a significantly greater improvement in WaLIDD scores compared to the yoga group (p<0.05).

Conclusion: Both Zumba and yoga are effective non-pharmacological strategies for managing primary dysmenorrhea. While yoga provided a slightly greater magnitude of pain relief, Zumbawas more effective at improving the overall qualityof life as measured by the WaLIDD scale.

Keywords: Primary dysmenorrhea, Zumba, Yoga, Menstrual pain, Exercise therapy, Visual Analogue Scale.

I.INTRODUCTION

Dysmenorrhea is defined as the presence of painful cramps of uterine origin that occur during menstruation. Primary dysmenorrhea is described as recurrent, cramping pain occurring with menses in the absence of identifiable pelvic pathology. (1) Its onset occurs mainly during adolescence, within 6 to 24 months after menarche. Dysmenorrhea pain has a clear and cyclic pattern, which is typically severe during the first day of menses and lasts up to 72 hours. (2) Dysmenorrhea is classified as primary and secondary dysmenorrhea. Secondary dysmenorrhea is caused by a disease or condition such as infection, ovarian cyst, and endometriosis. (3) The worldwide prevalence of primary dysmenorrhea ranges from 45% to 95% in females of reproductive age, with 2% to 29% experiencing severe pain. (4) Primary and secondary dysmenorrhea, this variation in the rates may be explained by the differences between the methodologies used to assess PD, the selected population, age groups, ethnicity, and pain perception differences among communities. A greater prevalence (70% to 90%) was generally reported among younger women (<24 years).(5) Although the pathophysiology of dysmenorrhea has not been fully elucidated, current evidence suggests that the pathogenesis of dysmenorrhea is due to the increased secretion of prostaglandin F2α (PGF2α) and prostaglandin E2 (PGE2) in the uterus during endometrial sloughing. These prostaglandins are involved in increasing myometrial contractions and vasoconstriction, leading to uterine ischemia and production of anaerobic metabolites. This results in the hypersensitisation of pain fibres, and ultimately pelvic pain. (6) In addition to lower abdominal/pelvic pain, dysmenorrhea is usually associated with common symptoms that can be categorized into two main dimensions: physical and psychological symptoms. The systemic symptoms include headache, lethargy, fatigue, sleepiness/sleeplessness, tender breasts, heavy lower abdomen, backache, in addition to painful knees and inner thighs, myalgia, arthralgia, and swollen legs. (7) Menstrual cramps and intensity of pain are correlated to the high concentration of PGF2α and PGE2 in the endometrium, therefore the nonsteroidal anti-inflammatory drugs (NSAIDs) are considered the cornerstone in the management of dysmenorrhea since they inhibit the action of cyclooxygenase (COX), an enzyme responsible for the production of prostaglandin. (8)Premenstrual syndrome has a wide variety of signs and symptoms, including mood swings, tender breasts, food cravings, fatigue, irritability and depression. It's estimated that as many as 3 of every 4 menstruating women have experienced some form of premenstrual syndrome. (9) Zumba Fitness has become a very popular exercise model that combines all elements offitness: cardio, muscle conditioning, balance, and flexibility. (10) Exercise is based on the principles of aerobic, interval training, and strength exercises, which accelerate the consumption of calories, improve the work of the cardiovascular system, and strengthen the whole body (11).It represents a combination of aerobic exercise and Latin American dances choreographed to fun Latin music. Fitness programs that include dancing to music encourage women to exercise more consistently which is essential for testing the health effect of group fitness programme. (12)A recent comprehensive study found that Zumba dancing improves aerobic capacity, muscle strength and flexibility, and social and psychological well-being in addition to helping people lose weight. As a result Zumba would be more helpful for PD alleviation than other forms of exercise. (13) The Zumba intervention can reduce the severity and duration of menstrual pain thus suggesting that regularly performing Zumba might be a possible complementary treatment for primary dysmenorrhea.(14) Yoga typically combines physical poses, breathing techniques, and meditation or relaxation to improve physical fitness and also relieve stress. Therefore, regularly practicing yoga can help relieve anxiety. Yoga seems to be an effective treatment for primary dysmenorrhea. (15)Yoga is a non-pharmacological technique that teaches about a combination of relaxation techniques, breathing andbody position to increases strength and balance and reduces pain. Yoga has been found to be an alternative medicine with low cost and little risk and thus it is worth considering in the management of primarydysmenorrhea. (16)The yoga poses (Cobra, Cat and Fish poses) can be an effective non pharmacologic alternative for adolescents with primary dysmenorrhea there are a lot of evidences supporting the belief that yoga causes physical as well as mental benefits. Yoga seems to suppress menstrual pain by reducing the level of prostaglandin production and myometrial ischemia via the down regulation the hypothalamic -pituitary-adrenal axis and the sympathetic nervous system. (17)A Visual Analogue Scale (VAS) is one of the pain rating scales used for the first time in 1921 by Hayes and Patterson. It is often used in epidemiologic and clinical research to measure the intensity or frequency of various symptoms.The pain VAS is a one-dimensional measure of pain intensity, used to record patients' pain progression, or compare pain severity between patients with similar conditions. (18)

II.METHODOLOGY:

STUDY DESIGN:

Pre-test and post- test experimental study design.

STUDY SETTING:

The study was conducted at KG Physiotherapy and Rehabilitation centre, K.G College of Physiotherapy, Saravanampatti, Coimbatore. The study was done under the supervision of my guide.

STUDY DURATION:

The study was conducted over a period of 6 months, the treatment duration was 15 minutes, 2 times per day, 10 sessions, 3 times/ week.

STUDY POPULATION:

The study population was college girls.

STUDY SAMPLING:

30 subjects were selected based on selection criteria and were divided into 2 groups of 15 each by convenient sampling method.

CRITERIA FOR SELECTION:

Inclusion criteria:The study included subjects who had been diagnosed with primary dysmenorrheal,specifically girls aged between 18-22 years, who had experienced mild to moderate dysmenorrheal and were willing to participate in the study. Exclusion criteria: The study excluded subjects who had secondary dysmenorrheal, those who underwent recent abdominal surgery, those who had been consuming hormonal tablets, and those with irregular menstrual cycle.

PROCEDURE:

A total of 30 subjects who fulfilled the inclusion criteria and willing to participate were selected and briefly explained about the procedure and signed the written consent form .The selected patients were conveniently divided into two groups with each group consisting of 15 members. Group A,which included 15 participants, underwent zumba exercise.Group B which included 15 participants with yoga exercises (poses).Zumba exercise movements that were carried out for 30 minutes. The zumbamovement consisted of continuous dance movements with music within various intensity levels throughout the session. Yoga was carried out for 10 sessions for 15 minutes. First,Shavasana for 5 minutes for relaxation, followed by three cycles of yoga poses, cat, cobra, and fish performed for 10 minutes, and the last one performed several yoga Nidra steps such as rotation of awareness, awareness of breath.

ZUMBA EXERCISE:

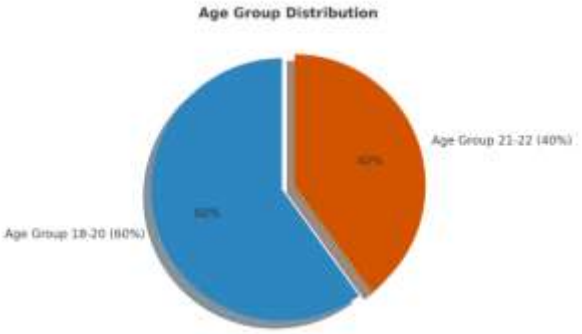
Zumba is a fitness program that involves cardio and Latin-inspired dance. It was founded by Colombian dancer and choreographer Beto Pérez in 2001. It currently has 200,000 locations, with 15 million people taking classes weekly, and is located in 180 countries. Zumba is a trademark owned by Zumba Fitness, LLC.Frequency: 10 sessions, 2 times per day and 3 times a week. Timing: 15 minutes Duration: 4 week.The exercise was performed in the following steps: Take one step to the left with the left foot. Rock the weight back to the right foot. Step back to the centre with the left foot. Pause for the fourth count. Step to the right with the right foot. Shift the weight onto the left foot. Bring the right foot back to centre.

YOGA EXERCISE:

Yoga is an ancient practice that originated in India over 5,000 years ago. The word "yoga" comes from the Sanskrit word yuj, which means "to join" or "to unite". Yoga is made up of three main elements: movement, breathing, and meditation. The practice also includes a variety of postures, or movements, that are designed to increase strength and flexibility. Yoga can improve posture, flexibility, strength, balance, and body awareness. It can also promote endurance, calmness, and well-being. Yoga can be an effective treatment for dysmenorrhea, or menstrual pain, and can also help with related symptoms like anxiety and stress. The exercise was performed in the following 3 positions: Cobra pose - They were asked to lie on the stomach and bend their elbows and place hands on the floor next to ribs, stacking the wrist and elbow. On an inhale, begin to peel the chest away from the floor, lifting into spinal extension. Hold the position for 15-30 seconds. Then they were asked to relax for 10 seconds after repeating the exercise.Cat and Cow pose -The subjects were asked to keep their hands shoulder width apart and the knees directly below hips. Inhale deeply while curving lower back and bringing head up, tilting pelvis up like a "cow." Exhale deeply and bring abdomen in, arching spine and bringing your head and pelvis down like a "cat." repeated for 10 times.Frequency: 10 sessions, 2 times per day and 3 times a week. Timing: 15 minutes Duration: 4 week.

DATA ANALYSIS AND INTERPRETATION:

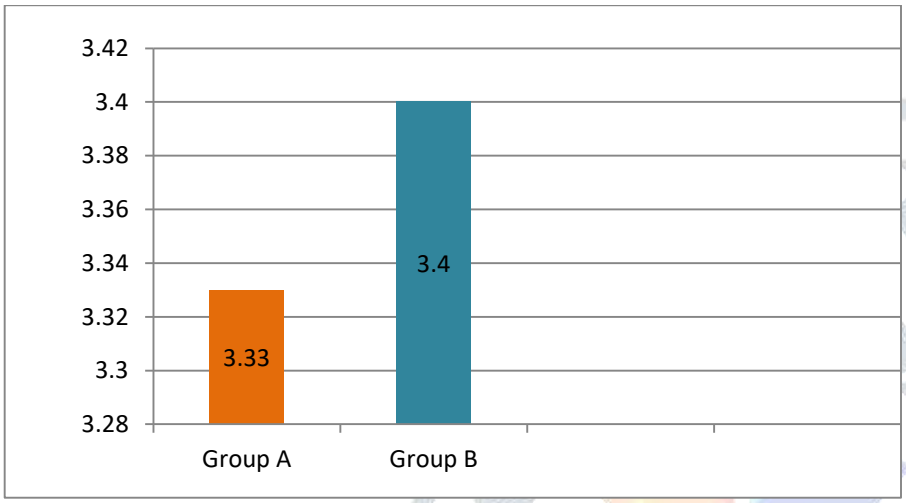
S.NO	AGE RANGE	MEMBERS
Group A	18-20	8
Group B	18-22	10



COMPARSION OF POST-TEST VALUES OF VISUAL ANALOGE SCALE OF GROUP - A & B

S.NO	VAS	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	T VALUE
1	GROUP A	3.33	0.07	1.180	0.166
2	GROUP B	3.40	0.07	1.120	0.166

Table shows that the analysis of visual analogue scale in group A and group B. Using the unpaired t test with 28 degrees of freedom and 0.42 of as level of significance, the calculated t value is 0.166, which was greater than the tabulated t value 0.01.The post-test mean of group A was 3.3 and the post-test mean value group B was 3.40 and mean difference was 0.07. This showed that there was a significant difference between the post-test values of both the groups.



COMPARSION POST-TEST VALUES OF WALLID QUESTIONNAIRE OF GROUP –A AND B

S.NO	WALLID	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	T VALUE
1	GROUP A	3.20	1.130	1.010	3.003
2	GROUP B	4.33	1.130	1.050	3.003

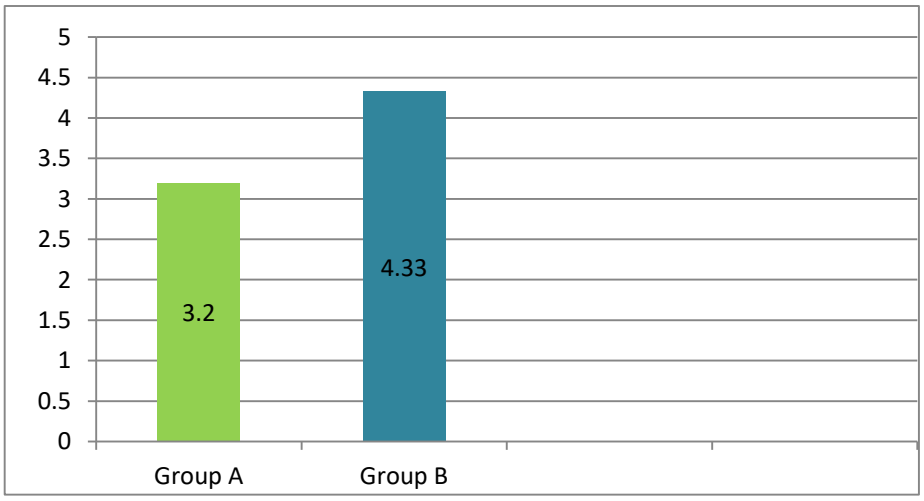


Table shows the analysis of WaLLID score in Group A and Group B. Using unpaired t' test with 28 degree of freedom and 0.005% as level of significance, the calculated t value is 3.003, which was greater than tabulated t value 2.024. The post-test mean value of group A was 3.20 and the post-test mean value of group B was 4.33 and mean difference was 1.130 .This showed that there was a significant difference in between post values of both groups.

DISSCUSSION

Primary dysmenorrhea is defined as pain during the menstrual cycle in the absence of an identifiable cause. It is one of the most common causes of pelvic pain in women (32). Dysmenorrhea can negatively affect a woman's quality of life and interfere with daily activities. The cause elucidated is the increased secretion of prostaglandin in the uterus during endometrial sloughing (33) The aim of the study was to find out the effect of zumba exercise and yoga poses on reducing menstrual pain in young college students with primary dysmenorrhea. 30 Subjects among the age group of 18-22 years were included in the study. The subjects who fulfilled the inclusion criteria were randomly divided into 2 groups with 15 members each. Group-I received zumba exercise whereas Group-II received yoga poses.Following 6 weeks of intervention, the outcome measures were measured. Pain was measured using Visual analogue scale (VAS) and severity of dysmenorrhea is measured by WaLLID questionnaire. The statistical analysis of the pre-test and post-test values showed a significant decrease in pain and improvement of quality of life among Group B subjects who underwent yoga poses Yoga poses consists of repeatedly contracting and relaxing the muscles that form part of the pelvic floor and improves its strength. Yoga is regarded as one of the best holistic stress management approaches since it causes a series of physiological changes in the body that lessen the stress and pain response. Yoga poses showed improvements among subjects with primary dysmenorrhea, especially in physiological symptoms such as abdominal cramps, loss of appetite, back pain and other symptoms including nausea, vomiting, and leg pain. Among the several complementary therapies accepted, practice of yoga has been added to the list. Yoga is a type of mind-body exercise that combines physical body with a conscious mental emphasis.In case of dysmenorrhea, yoga suppresses the pain by lowering the level of prostaglandin production and myometrial ischemia. Yoga poses have been proven to be effective, simple inexpensive and non-pharmacological physiotherapeutic interventions that alleviate dysmenorrhea.

CONCLUSION

There was a significant difference between within the group and between the Group A and B values in both the outcomes following the intervention. Both the groups showed substantial improvements. However, Group B that received yoga poses showed significant improvements in all the outcomes than Group A that receivedzumba exercise. So, this study concludes that Yoga poses is more effective in reducing pain than zumba exercise. Hence, the study refuses the null hypothesis and supports the alternate hypothesis.

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REFERENCES

1.Bernardi, Mariagiulia, et al. "Dysmenorrhea and Related Disorders." F1000Research, vol. 6, no. 6, 5 Sept. 2017, p. 1645, www.ncbi.nlm.nih.gov/pmc/articles/PMC5585876/, https://doi.org/10.12688/f1000research.11682.1.

2. Sharghi M, Mansurkhani SM, Ashtary-Larky D, Kooti W, Niksefat M, Firoozbakht M, et al. An update and systematic review on the treatment of primary dysmenorrhea. JBRA Assisted Reproduction. 2019;23(1). 3.Proctor ML, Farquhar CM. Dysmenorrhoea. BMJ clinical evidence [Internet]. 2007 Mar 1;2007:0813. Available from:https://pubmed.ncbi.nlm.nih.gov/19454059/

4.ICI Journals Master List [Internet]. Indexcopernicus.com. 2025 [cited 2025 Jan 21]. Available from: https://journals.indexcopernicus.com/search/article?articleId=153152

5.Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HMJ. Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean Journal of Family Medicine [Internet]. 2022 Mar 20;43(2):101–8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8943241/

6.H J, M J, G M. The Prevalence and Risk Factors of Dysmenorrhea [Internet]. Epidemiologic reviews. 2014. Available from: https://pubmed.ncbi.nlm.nih.gov/24284871/

7.Bernardi M, Lazzeri L, Perelli F, Reis FM, Petraglia F. Dysmenorrhea and related disorders. F1000Research [Internet]. 2017 Sep 5;6(6):1645. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5585876/

8. Karout S, Soubra L, Rahme D, Karout L, Khojah HMJ, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. BMC Women's Health. 2021 Nov 8;21(1).

9.Marjoribanks J, Ayeleke RO, Farquhar C, Proctor M. Nonsteroidal anti inflammatory drugs for dysmenorrhoea. Cochrane Database of Systematic Reviews. 2015 Jul 30;2015(7).

10.Ljubojevic A, Jakovljevic V, Bijelic S, Sârbu I, Tohănean DI, Albină C, et al. The Effects of Zumba Fitness® on Respiratory Function and Body Composition Parameters: An Eight-Week Intervention in Healthy Inactive Women. International Journal of Environmental Research and Public Health. 2022 Dec 25;20(1):314.

11.Chavarrias M, Villafaina S, Lavín-Pérez AM, Carlos-Vivas J, Merellano Navarro E, Pérez-Gómez J. Zumba®, Fat Mass and Maximum Oxygen Consumption: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2020 Dec 25;18(1):105.

12.Bedosky L. Zumba: What It Is, the Health Benefits, and How to Get Started [Internet]. EverydayHealth.com. 2022. Available from: https://www.everydayhealth.com/fitness/zumba-what-it-is-health-benefits-and getting-started/

13.Hofmann SG, Andreoli G, Carpenter JK, Curtiss J. Effect of Hatha yoga on anxiety: a meta-analysis. Journal of Evidence-Based Medicine. 2016 Aug;9(3):116–24

14.Pawar K, Sawant S, Deshmukh P. Effects of Yogasanas Along with Pranayama on Pain and Severity in Primary Dysmenorrhea in Adult Young Females: Interventional Study. International Journal of Health Sciences and Research [Internet]. 2023 Jun 9;13(6):195–202. Available from: https://www.ijhsr.org/IJHSR_Vol.13_Issue.6_June2023/IJHSR33.pdf

15.Delgado DA, Lambert BS, Boutris N, McCulloch PC, Robbins AB, Moreno MR, et al. Validation of Digital Visual Analog Scale Pain Scoring with a Traditional Paper-based Visual Analog Scale in Adults. JAAOS: Global Research and Reviews [Internet]. 2018 Mar;2(3):e088. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6132313/

16.Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HMJ. Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean Journal of Family Medicine [Internet]. 2022 Mar 20;43(2):101–8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8943241/

17.Parra-Fernández ML, Onieva-Zafra MD, Abreu-Sánchez A, Ramos-Pichardo JD, Iglesias-López MT, Fernández-Martínez E. Management of Primary Dysmenorrhea among University Students in the South of Spain and Family Influence. International Journal of Environmental Research and Public Health. 2020 Aug 1;17(15):5570.

18.Guimarães I, Póvoa AM. Primary Dysmenorrhea: Assessment and Treatment. Revista Brasileira de Ginecologia e Obstetrícia / RBGO Gynecology 45 and Obstetrics [Internet]. 2020 Jun 19;42(08):501–7. Available from: https://www.scielo.br/pdf/rbgo/v42n8/1806-9339-rbgo-42-08-501.pdf

19.Ortiz MI, Espinoza-Ramírez AL, Cariño-Cortés R, Moya-Escalera A. Impacto de la dismenorrea primaria en el rendimiento académico de estudiantes universitarios. Enfermería Clínica (English Edition) [Internet]. 2022 Sep 1;32(5):351–7. Available from: https://www.sciencedirect.com/science/article/abs/pii/S244514792200087X 20.Karout S, Soubra L, Rahme D, Karout L, Khojah HMJ, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. BMC Women's Health. 2021 Nov 8;21(1).

20.Karout S, Soubra L, Rahme D, Karout L, Khojah HMJ, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. BMC Women's Health. 2021 Nov 8;21(1).

21. Kirca N, Celik A. The effect of yoga on pain level in primary dysmenorrhea. Health Care for Women International. 2021 Sep 17;1–20.

22.Yonglitthipagon P, Muansiangsai S, Wongkhumngern W, Donpunha W, Chanavirut R, Siritaratiwat W, et al. Effect of yoga on the menstrual pain, physical fitness, and quality of life of young women with primary dysmenorrhea. Journal of bodywork and movement therapies [Internet]. 2017;21(4):840–6. Available from: https://www.ncbi.nlm.nih.gov/pubmed/29037637

23.Rakhshaee Z. Effect of Three Yoga Poses (Cobra, Cat and Fish Poses) in Women with Primary Dysmenorrhea: A Randomized Clinical Trial. Journal of Pediatric and Adolescent Gynecology [Internet]. 2011 Aug;24(4):192–6. Available from: https://www.sciencedirect.com/science/article/pii/S108331881100060X

24.Kim SD. Yoga for menstrual pain in primary dysmenorrhea: A meta-analysis of randomized controlled trials. Complementary Therapies in Clinical Practice. 2019 Aug;36:94–9.

25.Samy A, Zaki SS, Metwally AA, Mahmoud DSE, Elzahaby IM, Amin AH, et al. The Effect of Zumba Exercise on Reducing Menstrual Pain in Young Women with Primary Dysmenorrhea: A Randomized Controlled Trial. Journal of Pediatric and Adolescent Gynecology. 2019 Oct;32(5):541–5.