Effectiveness of Calisthenics and Yoga for Primary Dysmenorrhea in Young Female

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Abstract- Background: The study aimed to find Effectiveness of calisthenics and yoga for primary dysmenorrhea in young females with age group 18-25 years. Dysmenorrhea is one common gynaecological problem affecting young teenage girls. There is no underlying pelvic discomfort, primary dysmenorrhea is characterised by recurrent painful menstruation. The pain starts a few hours before or right before the menstrual cycle starts. The intensity of discomfort rarely lasts more than 48 hours, usually lasting a few hours. Yoga and calisthenics have certain proved that, they are effective in primary dysmenorrhea, but the comparison of both not done, so to find out the better choice of treatment we conduct this study. Methods: This experimental study was conducted in engineering college Kolhapur city. Around 100 subjects were approached and 81 who met the inclusion and exclusion criteria. Using a simple random technique. Group (A) subject were asked to do warm up before yoga and and cool down for 3times a week 30-45 minutes for 8 weeks and group (B) were asked to do warm up before calisthenics exercises and cool down for 3times a week 30-45minutes for 8 weeks. Using the Visual Analog Scale (VAS) and WaLIDD Score, the pain intensity of each group was assessed before and after two post-tests. Data was analysed by using MS excel software. Results and Conclusion: This study concluded that, yoga and calisthenics exercises are both useful for reducing the symptoms of primary dysmenorrhea; however, yoga demonstrated comparatively more effective in reducing these symptoms of primary dysmenorrhea.

Keywords: Dysmenorrhea, primary dysmenorrhea, yoga, calisthenics exercises.

INTRODUCTION

Dysmenorrhea is a gynaecological problem, which is severe enough to prohibit adolescent girls from working, going to college, or living at home for a month at a time, is an increasing problem in them[1]. Primary and secondary dysmenorrhea are the two different types of dysmenorrhea. When there is no underlying pelvic discomfort, primary dysmenorrhea is characterized by recurrently painful menstruation[2,3]. The literature reports on a broad spectrum of prevalence rates for dysmenorrhea. The Young females were often more affected; estimates for those between the ages of 17 and 24 ranged from 67% to 90%. 93% of teenagers in a recent large-scale Australian research of senior high school girls reported having menstruation pain[5]. This is higher than the national average. With rates ranging from 15% to 75%, studies on adult women are less reliable in determining the prevalence of dysmenorrhea and frequently concentrate on a particular group[5]. Although 7%–15% of women experience severe discomfort that interferes with everyday activities, a study of teenagers and young people under the age of 26 found that 41% of individuals had dysmenorrhea-related limits on their daily activities[5,17]. The common symptoms of dysmenorrhea, including headaches, lethargy, vomiting, diarrhoea, and mild fever, are thought to be caused by this severe inflammatory response[6]. The woman usually feels intense, spasmodic pain in the suprapubic area that flares up and off. The lower back and backs of the legs may also experience pain[6]. An hour after menstruation, pain usually starts, peaking on the first or second day[6,18]. Numerous risk factors for dysmenorrhea have been found in research; however, the results of many of these factors have been inconsistent. Higher body mass index, smoking, nulliparity, age 13–15, earlier menarche age, longer and heavier menstrual flow, and a familial history of dysmenorrhea have all been linked to greater dysmenorrhea severity[5,7].

Dysmenorrhea is typically reported to be less severe in women who use oral contraceptives. It has also been demonstrated that stress and depression raise the chance of dysmenorrhea[7]. Other typical characteristics that yield mostly negative or equivocal findings include education, marital status, occupation, alcohol intake, and physical exercise[7,16]. An ovulatory cycle's synthesis of prostaglandins in the endometrium is thought to be the source of menstrual discomfort. Due to its detrimental effects on both academic performance and quality of life, It is a primary factor contributing to teenage girls' absence. 10% to 15% of women with dysmenorrhea are estimated by the International Association for the Study of Pain to be unable to work for one to three days throughout each menstrual cycle. Women with primary dysmenorrhea typically exhibit higher levels of prostaglandins and uterine muscle activity in comparison to normal women[6,9]. The most frequent medications for dysmenorrhea relief include oral contraceptives and commercially available formulations. Such drugs have well-known adverse effects[9], including breast discomfort, nausea, inter-menstrual haemorrhage, sleepiness, dizziness, and problems with hearing and vision. Apart from resting in bed, exercising, applying heat packs, and utilising different treatments such as TENS, SWD, pilates, acupressure, yoga, and calisthenics for primary dysmenorrhea also include these[9,17]. Stress serves to enhance sympathetic nerve activity, which in turn may increase uterine muscle contraction and menstrual pain. Menstrual pain, which is nerve-mediated via the sympathetic nervous system, is brought on by increased contraction of the uterine muscles[9].

Exercise improves overall health and well-being, which gives you more energy each day, according to a Mayo Clinic study[9].

Calisthenics: Calisthenics is a type of exercise that primarily uses your own body weight and a variety of movements performed without the aid of any gear or equipment. When performed correctly, calisthenics can be performed by persons of all ages and genders without running the danger of harm[10]. It enhances general endurance, energy, strength, agility, balance, coordination, and balance while promoting general fitness for your health. By engaging in calisthenic exercises, one can increase the energy, flexibility, and strength of their muscles[10]. Compared to weight training, the primary advantage of calisthenics is that it can be undertaken by individuals of any age with minimal to no danger of injury. It also helps that you only require a little amount of space[10,21]. Another benefit is that you won't have to spend any money because you can do calisthenics at home, where you feel most comfortable[21]. You also won't need to buy any apparatus or equipment.

Because calisthenics only requires two resources—your time and energy—it is an effective and convenient workout[10,22].

Additionally, because weight training puts an undue amount of strain on the lower back and stomach, calisthenics activities are preferred over weight training during menstruation[10].

Calisthenics exercises like planks, push-ups, squats and lunges, jogging has effects on a body on following ways: Plank: The plank exercise improves quality of life and reduces discomfort by strengthening the core, enabling appropriate musculature, and bringing about major changes in proper alignment and posture[11]. Squats and lunges: Exercises like squats and lunges help the uterine musculature receive blood and oxygen, and they also help the body expel waste metabolites that include excess prostaglandins, which relaxes the tight uterine muscle. Stretching exercises are particularly beneficial since other research have also revealed that the contraction of ligamentous bands in the abdomen area is a contributing factor to the significant compression of nerve pathways and associated discomfort[3,12.]

Push-ups: Push-ups improve the body's strength, balance, and stability. Similar to squats, push-ups strengthen your body's cardiovascular system, which enables your heart to pump blood enriched with oxygen to all of your body's tissues[16,20.] Jogging: Jogging can boost the synthesis of progesterone. The augmentation of progesterone has the ability to mitigate primary dysmenorrhea during menstruation by decreasing prostaglandin production[13].

Yoga: Including yoga into your workout routine can help you become healthier overall, increase your flexibility, build stronger muscles, and lessen pain.

Consequently, Yoga facilitates stress adjustment for the body and the human mind, which in turn promotes calmness and relaxation[8]. In addition to helping people get physically fit, By increasing vagal activity and lowering sympathetic nervous system tone, yoga may improve hormone and immune system function,

including reducing inflammation [8]. Many yoga poses have been shown to be helpful in reducing menstrual pain symptoms. Asanas such as Janu Sirsasana (head to knee forward bend) and Ustrasana (camel posture), Dhanurasana (bow pose), Bhujangasana (cobra pose) and Apnasana (pawanamuktasana) has effects on a body on following ways[8,14]. Ustrasana (camel pose): This pose strengthens the back and stretches the anterior part of the trunk to assist relieve menstruation cramps. It enhances spinal flexibility and helps with posture[14]. Janu sirsasana (head to knee forward bend): Menstrual pain diminishes because Janu Shirshasan stimulates the reproductive organs. It stretches the hamstrings and groin. Additionally, this pose reduces headaches, anxiety, and exhaustion[14]. Dhanurasana (bow pose): During menstruation, Back discomfort is reduced and the uterus is stimulated by Dhanurasana. It stretches the posterior side of the trunk, ankles, and groin muscles. It also maintains the body relaxed and improves blood flow to the uterus[14]. Bhujangasana (cobra pose): Menstrual pain and tension can be relieved by bhujangasana, which is known to tone the uterus and ovaries in females. Stretching the abdominal muscles is another benefit[8]. Apnasana (pawanamuktasana): Compressing the abdomen with a forward bend in the apnasana helps to activate the enteric nervous system[8].

There is a need for a uniform treatment procedure that would effectively alleviate discomfort and improve life quality notwithstanding the availability of diverse therapeutic modalities. In order to treat female primary dysmenorrhea, this study compares two different types of interventions: yoga asana and calisthenics exercises[16,18].

METHODOLOGY

Materials: Yoga mat, VAS scale and WaLIDD scale, consent form, pen, writing pad. Study type: Prospective Interventional, study duration: 6 Months, type of sampling: Simple random technique, study setting: Kolhapur city, sampling design and assumptions: Experimental study, sample size: 81 Inclusion criteria: Age between 18 to 25 years Females/participants having primary dysmenorrhea, Regular menstrual cycle (28-35 days), Mild and moderate dysmenorrhea, Participants willing to participate Exclusion criteria: Participants having low haemoglobin, participants who undergone major abdominal surgeries, participants having polycystic ovarian disease (PCOD), In the present study 82 participants took part in this straightforward randomised controlled study ,which conducted from October 2023 to March 2024. Participants were selected according to inclusive criteria and all the inclusive participants were experiencing symptoms of primary dysmenorrhea, participants assessed for pain due to dysmenorrhea by VAS scale and WaLIDD scale and the score were recorded. Following a history and clinical examination, participants were chosen based on the diagnosis of primary dysmenorrhea. following approval of the study protocol by the D.Y. Patil Education Society Kolhapur Research Ethics Committee. The whole research / research protocol was explaining to the participants. After receiving their written and verbal consent participants were divided into 2 groups by simple randomised statistical technique.i.e. Both Groups A and B. Yoga in Group A and calisthenics exercises in Group B. The participants in group A were asked to carry out 5 yoga poses. The yoga poses were: Dhanurasana, Bhujangasana, Jnushirshasan (Head to knee bend forward), Apnasan (pawanmuktasan), Ustrasana (camel pose). Each single session consists of above asana for 5 repetitions with hold for 5 breaths and 1 min rest after each repetition. They were performed single session per day, thrice in a week for 2 months/ 8 week. In Group-B, participants were asked to perform 5 Calisthenics exercises. The calisthenics exercises were: Side lunges, plank, squats, push ups and jogging. Considering the inclusive and exclusive criteria subjects were requested to take part in the research. Participants were informed about the purpose of the study and those who volunteered were enrolled. A written consent was taken from the participants. A brief demographic data Including nature, age, as per data collection sheet was recorded. VAS scale and WaLIDD scale were used to assess the subject.

Once the sample were collected according to the inclusion and exclusion criteria, the sample are equally divided into two separate groups (groups A and B) by randomized statistical technique. Group A was performed yoga for 2 months thrice in week Group B was performed calisthenics for 2 months thrice in week. Based on the visual analog scale and the

WaLIDD scale, the study was assessed. The study was concluded by statistical analysis of the outcome measures. Pain intensity was assessed for each subject in both the pre- and post-tests. Pain intensity was initially assessed using the 12-point WaLIDD scale and the 10-point Visual Analog Scale (VAS). The WaLIDD Scale and VAS Scale, which have been shown to be valid, reliable, and consistent as measures of pain intensity in numerous investigations, are also used to determine post-intervention pain intensity. The information gathered will be organized in tabular form and analyzed before a final judgment is made. The range of values on a 10-cm pain scale is zero for the least amount of pain, four to seven for moderate pain, and seven to ten for severe dysmenorrhea pain. The study's inclusion requirements included mild and moderate dysmenorrhea. Those with severe dysmenorrhea were excluded based on certain criteria. Participants who have experienced significant abdominal surgery and those with low hemoglobin levels. Individuals with PCOD, or polycystic ovarian disease also excluded from this study. The first yogasana and calisthenics workout session was overseen and demonstrated. For two months, all five yogasana and calisthenics activities were performed three times a week.

GROUP -A (YOGA) Warm-up: Group (A) members were instructed to perform two stretches before beginning yoga. They were instructed not to stretch throughout their menstrual cycle. The following were the recommended exercises: Pelvic tilt: Before practicing yoga, pelvic tilts are an excellent warm-up pose. Building up your abdominal muscles is beneficial for maintaining the health of your lower back. Guidelines for Pelvic Tilts: Assume a prone position to begin. With your toes pointing ahead, bend your legs upward. We suggest utilizing one of our yoga mats for this workout since you'll need a flat surface. After that, release the air and raise your pelvis such that it touches the ceiling. You'll feel your lower back pressing into the floor as you perform this. After 10 seconds of holding this posture, take a breath and move back to your neutral position. (figure1) Repeat 5–10 times.

FIG.1.1.1: Pelvic tilt (warm up exercises)

Easy twist: A terrific stretch to warm up your mobile muscles is the easy twist. This pose helps to warm up your hips, knees, and ankles. Additionally, the simple twist increases shoulder and spine flexibility. You can increase your range of motion with this stretch, which will enable you to perform a greater variety of yoga poses. The Simple Twist Pose: How to Do It with your legs crossed, take a seat. After then, you turn your body slightly so that your face faces one direction. The discomfort should start to feel in your knees, ankles, and hips.

FIG. 1.1.2: Easy twist (Right).
FIG. 1.1.3: Easy twist (Left)

Yogasana- Every asana listed below should be performed five times in a single session, with a one-minute break in between each hold of five breaths. For eight weeks, they will perform one session per day for three days a week.

Bhujangasana (Cobra pose) Step 1 of the Bhujangasana (cobra posture) is to lie down with your toes spread wide in front of you, place your hands close to your chest, allow your hands to rest on the floor, extend your elbows in front of one another, at this point, try not to spread your legs apart for comfort. Now, slowly elevate your body while using your hands for support, breathe in to a count of one to three while standing up, while maintaining the same posture, hold your breath for five counts. Let out a breath and return to the starting position while counting from one to three, Aim for a set of five repetitions.

FIG. 1.2.1: Bhujangasana (Cobra pose)

Bow pose, or Dhanurasana: Lie flat on your abdomen, make sure your forehead touches the ground and that your, raise your feet behind you and bend your legs at the knees, grab your ankles and extend your arms backward, take a breath. Raise your head off the floor and raise your thighs at the same time, at this point, your body should be arched upward, hold the position for the first ten to twenty seconds, you can gradually raise the timing to one minute as you practice, aim for a set of five repetitions.

FIG. 1.2.2: Dhanurasana (Bow pose)

Apnasana (pawanmuktasan): While lying on your back, bend your knees to keep your feet on the ground. Raise both legs at this point, bringing your knees close to your chest. Now, bending from the knees, move them in your arms' circles. Press the knees to the chest as you release the breath. Hold this position for 15 to 20 seconds, then straighten your legs as you exhale. Start off by doing it for as long as you can, then gradually return to breathing normally. Aim for five repetitions.

FIG.1.2.3: Apnasana (Pawanmuktasana)

Janu sirsasana (head to knee):

Sit in Staff Pose, also known as Dandasana, with your legs extended in front of you. To relax your knee, press your right foot against your inner thigh on the left while bending your right knee. As you take a breath in, extend your spine, flex your left foot, press down on the top of your leg, and raise your arms to either side of your head. As you release the breath, slightly rotate your upper body to face the left leg and fold forward from the hips. Maintain a long spine, an open chest, and relaxed shoulders. Plant your hands such that they frame your left leg, or grasp your foot or ankle. Observe for five breaths. As you release the stance, take a breath. Try performing two or three repetitions of this pose.

FIG.1.2.4: Janu sirsasana (head to knee)

Ustrasana (camel pose) Keep your upper body vertical while you kneel with your thighs parallel to the floor. If the area beneath your knees is sensitive, place cushions or pads there. With your four fingers wrapped over the side of your ribcage and your thumb resting on the rear of the ribs, raise your rib cage with your hands. Place the feet in the back and softly press the toes into the ground. Breathe in and lengthen your back from your pelvis to your head. Release the breath, bring your right hand back, and grasp the block or heel. Using your left hand, repeat the same action. Raise your chest and elongate your shoulders

backward. Stretch your neck as far as it will go. Breathe slowly and deeply. Take five deep breaths to release yourself from the camel pose. Aim for a set of five repetitions.

Fig.1.2.5: Uatrasana (Camel pose)

Cool down: Child pose Assume a slanting position while keeping your buttocks on your heels and your forehead resting on the floor. Holding your arms close to your legs, with your hands facing up.

Fig.1.3.1.: child pose

Savasana : On your back, lie flat. Extend your legs and arms apart from your body.Close your eyes properly. Try to relax and take normal, even breaths. Make sure your body is fully relaxed and concentrate just on your mental processes.

Fig.1.3.2: savasana

GROUP – B (CALISTHENICS EXERCISES)

Warm-up: Group (B) members were instructed to perform two stretches before beginning yoga. They were instructed not to stretch throughout their menstrual cycle. The following were the recommended exercises: Standing toe touch: Spreading their feet wider than their shoulders was the instruction given to the participants. Next, using the same manner, the exercise was performed for the other foot. Before turning to look for her left hand, the subject was first told to bend and touch her left ankle with her right hand while holding her left hand stretched over her head so that her head was in the middle. The exercises were done five times, switching up the ways that each side of the body was worked.

Fig.2.1.1: Standing toe touch (left). Fig.2.1.2: Standing toe touch (right)

Standing waist twist: The participants were instructed to Maintain an upright posture and a contracted core. Turn your hips and knees in one direction while rotating your body in the opposite direction to start the movement. To start, keep the movement modest. After rotating back through the center, shift your hips and body to the opposite way. For every side of the body, the exercises were performed five times in an alternate fashion.

Fig.2.1.3: Standing waist twist (Left)
Fig.2.1.4: Standing twist (Right)

Calisthenics: Every exercises listed below should be performed five times in a single session, with a one-minute break in between each hold for eight weeks, they will perform one session per day for three days a week. Side lunge's: Start by putting your knees and feet next to each other. From here, take a right leg stride to the side before making a sudden lunge toward the ground. Keep your left leg straight throughout the range of motion described above. Now, return to the starting position and repeat the motion with your left leg using same posture. For the side lunges, perform about two sets of ten repetitions with holds of five to ten seconds, and vary the intensity from low to moderate.

A
B
Fig.2.2.1: Side lunges

Planks: Start by placing your elbows directly beneath your shoulders while keeping your hands flat on the ground. The knees should be hip-width apart, and the torso should remain in a straight line from the shoulder to the hip. Now, while keeping your back straight, extend your feet backward and begin lowering your elbow toward the ground. Complete two sets of ten reps each.

A B

Fig.2.2.2: Planks

Squats: Start with your feet shoulder-width apart and in an erect posture. Extend both arms in front of the chest from this stance. Now, slowly lower yourself to the ground as though attempting

to sit on a fictitious chair. Get your thighs as parallel to the floor as you can by pushing them down. There will be a lot of strain on your heels. To complete two sets of ten repetitions, push through your heels and return to the beginning position.

A

B

Fig.2.2.3: Squats

Push-ups: Begin by assuming the plank position, but instead of placing you elbows on the floor, press your palm on it. Start gradually bringing the torso down toward the floor while keeping the elbows at 90-degree angle. From the down position, slowly return to the starting position without contacting the floor. Hold the pose for one to two seconds and repeat two sets of ten repetitions.

Fig.2.2.4: Push-ups

Jogging: When you jog, maintain a straight posture, tighten your core, and focus forward. Avoid lowering your head and hunching your shoulders. Pull your shoulders back and downward, extending and maintaining your chest's height. Swing your arms comfortably while maintaining a slack grip with your hands. Give it twenty to thirty minutes.

Fig.2.2.5: Jogging

Cool down exercises- Calf wall stretch: Face the wall and place your hands there at about eye level. The leg you wish to extend should be positioned just behind the other leg. Keeping your back heel on the floor, bend your front knee until you feel a stretch in your back leg. Stretch for a period of fifteen to thirty seconds.

Fig.2.3.1: Calf wall stretch

Triceps stretch: Sit or stand upright. Bend at the elbow and extend one arm overhead in a way that your hand reaches down your back. Gently take hold of the extended arm's elbow with your other hand. Till your triceps feel stretched, slowly bring your elbow up to the middle of your head. After holding the stretch for 15 to 30 seconds, release it. Carry out the same action with the other arm.

VAS	Mean	SD	P value
Pretest	6.68	0.85	
After 4 week	5.10	0.83	2.2484E-20*
After 8 week	3.20	0.81	3.0003E-26*

Fig.2.3.2: Triceps stretch

Shoulder stretch Sit up straight in a chair or stand up straight. Raise your right arm to shoulder height and move it across your body. Your right arm should feel somewhat stretched in your shoulder and upper arm as you slowly bring it closer to your chest with your left hand. Stretch for a duration of 15-30 seconds. Let go and do it again with your other hand.

A B

Fig.2.3.3: Shoulder stretch

STATISTICAL ANALYSIS

This experimental study was conducted for 8 week / 2 months. A total 81 participants the girls who has dysmenorrhea were selected for this study from engineering college Kolhapur region. Age of participants is between 18 to 25 years. The 81 participants did not have low haemoglobin PCOD and did not undergo any major abdominal surgery were excluded from this study. The result obtained are data before and after giving yoga and calisthenics exercises demonstration. The data obtained in this study were analysed statistically by paired t method and unpaired t method. The mean and standard deviation of average age (in years) of participant girls is 21.20 and 1.62 respectively. It also shows the mean and standard deviation of average age (in years) when she attained puberty is 12.93 and 1.23 respectively.

Table-1: Mean and SD of pre post comparison in yoga using VAS scale

In the table 1 it shows the pre and post comparisons in yoga using VAS scale

The mean and standard deviation of VAS score of pre-test is 6.68 and 0.85 respectively. The mean and standard deviation of VAS score after 4 week is 5.10 and 0.83 respectively. The mean and standard deviation of VAS score after 8 week is 3.20 and 0.81 respectively. When comparing pre and post-test VAS score it showing significant decrement of VAS score pre and after 4 week is 2.2484E-20 i.e. the p value is <0.05 respectively. And also shows significant decrement of VAS score after 4 week and 8 week is 3.0003E-26 i.e.< 0.05 respectively.

WaLLID	Mean	SD	P value
Pretest	5.85	0.42	
After 4 weeks	4.56	0.67	1.93944E-19*
After 8 weeks	2.95	0.71	3.9135E-25*

Table -2: Mean and SD of pre and post comp in yoga using WaLIDD scale

In the table 2it shows the pre and post comparisons in yoga using WaLIDD scale. The mean and standard deviation of WaLIDD score of pre-test is 5.85 and 0.42 respectively. The mean and standard deviation of WaLIDD score after 4 week is 4.56 and 0.67 respectively. The mean and standard deviation of WaLIDD score after 8 week is 2.95 and 0.71 respectively. When comparing pre and post-test WaLIDD score it showing significant decrement of WaLIDD score pre and after 4 week is 1.93944E-19 i.e the p value is <0.05 respectively. And also shows significant decrement of VAS score after 4 week and 8 week is 3.9135E-25 i.e.< 0.05 respectively.

VAS	Mean	SD	P value
Pretest	7.00	0.59	
After 4 weeks	5.66	0.79	2.91772E-18*
After 8 weeks	3.90	0.77	1.38117E-27*

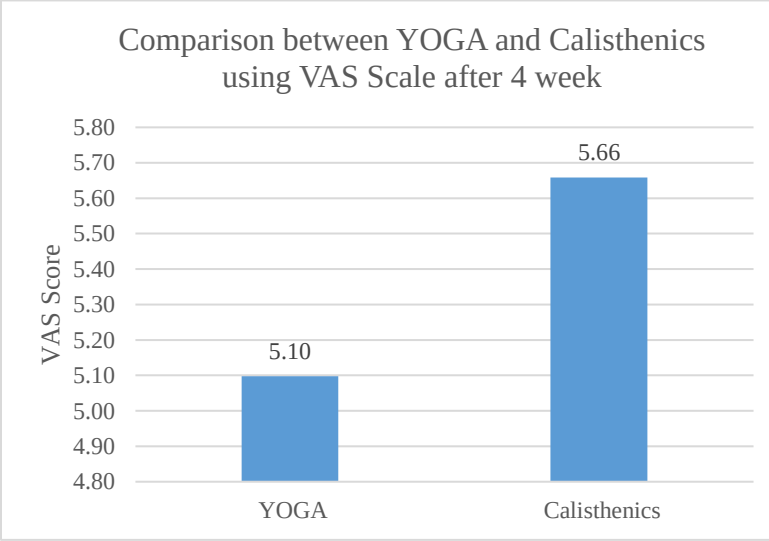
Table-3: Mean and SD of pre and post comparison in calisthenics using VAS scale

In the table 3 it shows the pre and post comparisons in calisthenics using VAS scale. The mean and standard deviation of VAS score of pre-tests is 7.00 and 0.59 respectively. The mean and standard deviation of VAS score after 4 week is 5.66 and 0.79 respectively. The mean and standard deviation of VAS score after 8 week is 3.90 and 0.77 respectively. When comparing pre and post-test VAS score it showing significant decrement of VAS score pre and after 4 week is 2.91772E-18 i.e. the p value is <0.05 respectively. And also shows significant decrement of VAS score after 4 week and 8 week is 1.38117E-27 i.e.< 0.05 respectively.

WaLLID	Mean	SD	P value
Pretest	6.32	0.52	
After 4 weeks	5.05	0.50	3.55537E-21*
After 8 weeks	3.59	0.50	3.86973E-26*

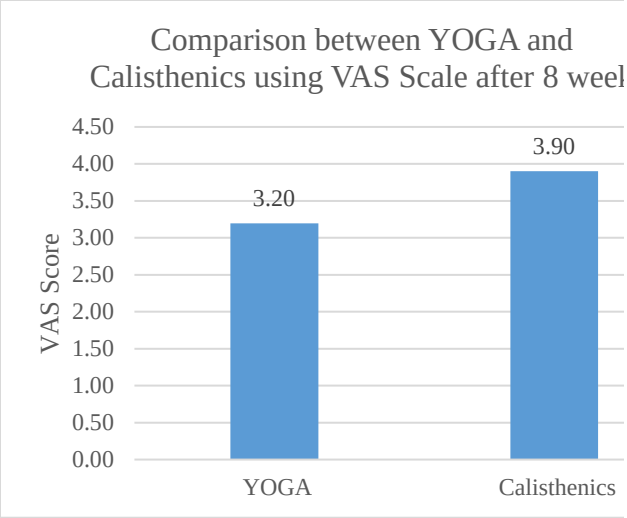
In the table 4 it shows the pre and post comparisons in calisthenics using WaLIDD scale

The mean and standard deviation of WaLIDD score of pre-tests is 6.32 and 0.52 respectively. The mean and standard deviation of WaLIDD score after 4 week is 5.05 and 0.50 respectively. The mean and standard deviation of WaLIDD score after 8 week is 3.59 and 0.50 respectively. When comparing pre and post-test WaLIDD score it showing significant decrement of WaLIDD score pre and after 4 week is 3.55537E-21 i.e the p value is <0.05 respectively. And also shows significant decrement of VAS score after 4 week and 8 week is 3.86973E-26 i.e.< 0.05 respectively.



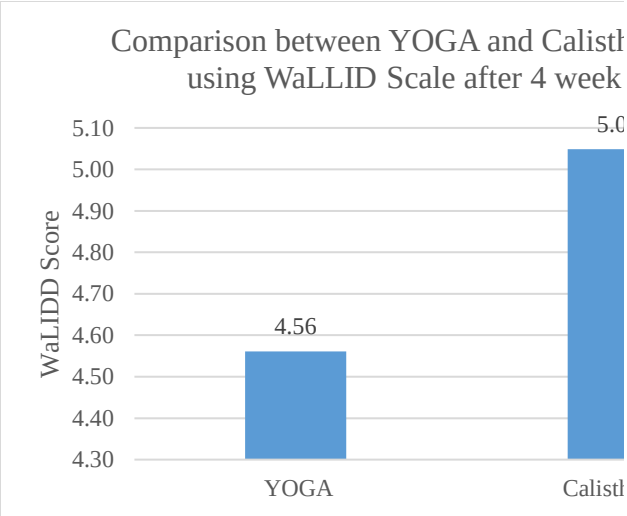
Graph-1

In the above graph-1 VAS score after 4 week is compared between yoga and calisthenics exercises, mean and Standard deviation of VAS score after 4 week of Group-A is 5.10 and 0.83 while Group-B is 5.66 and 0.79 respectively. It showing significant difference between the score of Group-A and Group-B with p value 0.001237 i.e. p value is (< 0.05).



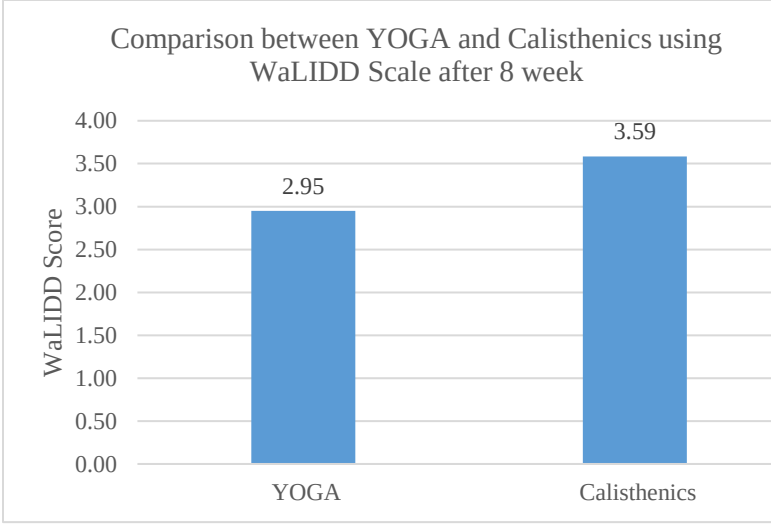
Graph-2

In the above graph-2 VAS score after 8 week is compared between yoga and calisthenics exercises, the mean and Standard deviation of VAS score after 8 week of Group-A is 3.20 and 0.81 while Group-B is 3.90 and 0.77 respectively. It showing significant difference between the score of Group-A and Group-B with p value 5.91E-05 i.e. p value is (< 0.05).



Graph-3

In the above graph WaLIDD score after 4 week is compared between yoga and calisthenics exercises, mean and Standard deviation of WaLIDD score after 4 week of Group-A is 4.56 and 0.67 while Group-B is 5.05 and 0.50 respectively. It showing significant difference between the score of Group-A and Group-B with p value 0.000176 i.e. p value is (< 0.05).



Graph-4

In the above graph WaLIDD score after 8 week is compared between yoga and calisthenics exercises, the mean and Standard deviation of VAS score after 8 week of Group-A is 2.95 and 0.71 while Group-B is 3.59 and 0.50 respectively. It showing significant difference between the score of Group-A and Group-B with p value 5.33E-06 i.e. p value is (< 0.05).

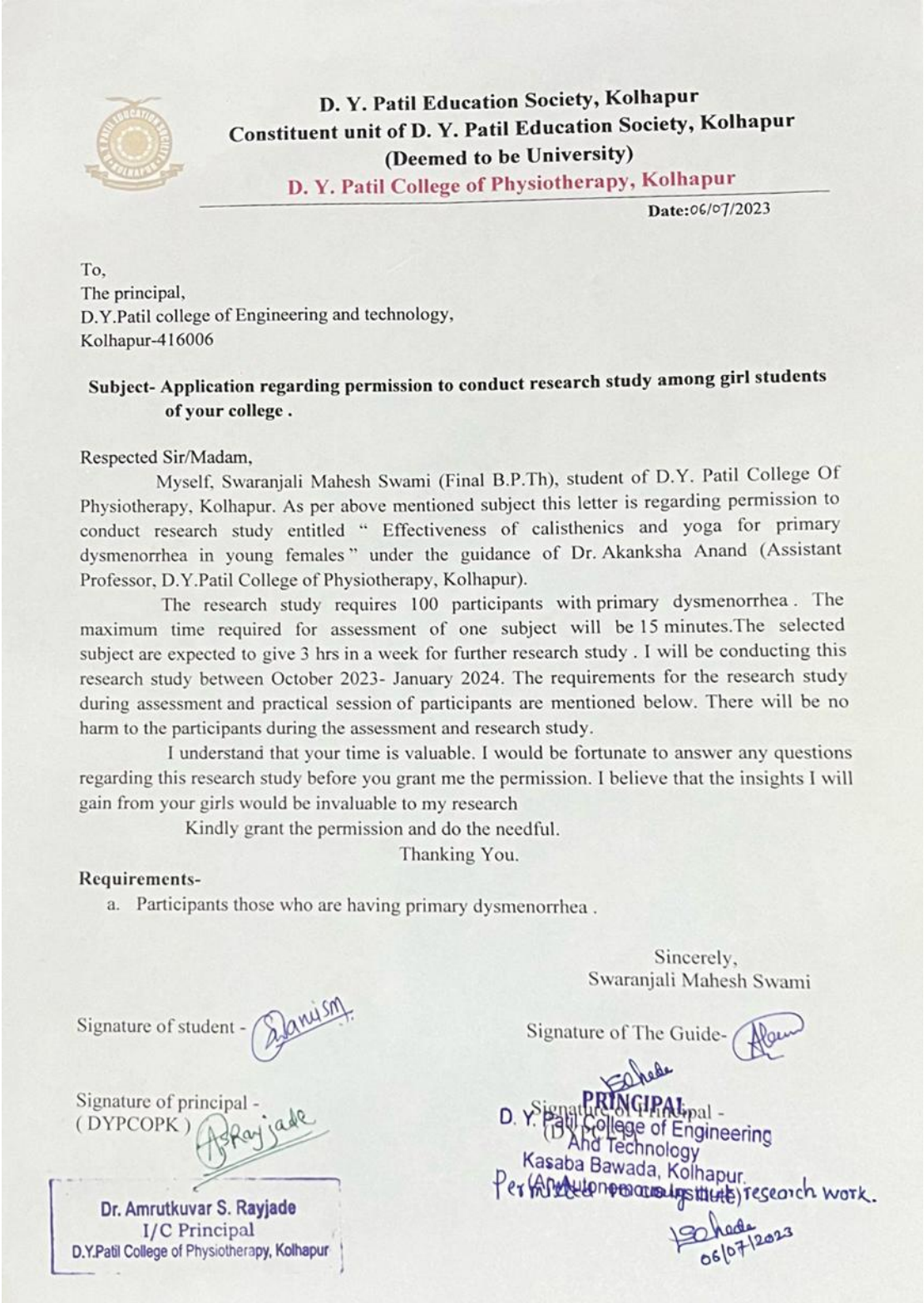
DISCUSSION

Dysmenorrhea, or painful menstruation, is the most common gynaecological condition among young adult females. Pain typically has a debilitating effect, adds stress to the dysmenorrhea experience, and becomes a significant source of annoyance for many women. Some women carry on with their work while using painkillers. There aren't many research that compare physical therapy to medicine for primary dysmenorrhea. The purpose of the current study was to assess the effectiveness of primary dysmenorrhea management using yoga and calisthenics exercises among young girls. The subject stated that during day one or the full menstrual cycle, they suffer one or more of the following symptoms. They frequently have headaches, nausea, vomiting, diarrhoea, exhaustion, and a low-grade temperature. They may also have discomfort that radiates to the lower back and back of the legs. Numerous studies have provided evidence that regular physical activity has a significant role in pain reduction and is related with a lower prevalence of primary dysmenorrhea.

As previously reported, subjects often use a variety of strategies to deal with menstrual pain, including relaxation, warm baths, and medication. Therefore, we made the decision to assess how well yoga and calisthenics activities worked to relieve primary dysmenorrhea pain. The aim of this present study to assist individuals overcome primary dysmenorrhea by comparing the efficacy of yoga and calisthenics activities. In this present study 82 participants were included according to the inclusion criteria. Further they were divided in Group -A and Group-B consisting of 41 participants in each group. The participants in Group-A received Yoga poses such as Ustrasana (camel pose), Apnasana (pawanamuktasan), Bhuangasana (cobra position), and janu sirsasana (knee to head forward bending). And participants in Group- B received Calisthenics activities such as planks, squats, lunges, push-ups, and jogging. In order to assess the effect, outcome measures VAS (visual analogue scale) and WaLIDD are used. The previous study on the effect of Yogasanas on menstrual cramps in young adult females with primary dysmenorrhea proved that, according to statistical analysis, Yogasanas significantly reduced pain intensity, menstrual symptoms, and stress. However, the present study discovered that yoga poses significantly reduced stress, menstruation symptoms, and pain intensity when compared to calisthenics workouts. Through the inhibition of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, yoga has been shown to improve both physical and mental health issues. It may also help treat primary dysmenorrhea by reducing the pain associated with menstruation. Yoga creates a balance between hormones that regulate reproduction and helps to increase the passage of critical energy to the reproductive organs. The improvements may be due to regular exercises, It increases blood flow and helps the body eliminate extra fat. The overall effect is a decrease in primary dysmenorrhea. The study's findings demonstrated the beneficial effects of yoga on primary dysmenorrhea symptoms. The results of the study show that practicing yoga and calisthenics reduces pain and menstrual distress in women with primary dysmenorrhea. Recent researches proved this as well. When comparing the female participants in Group A who received yoga with those in Group B who underwent calisthenics exercises, the Group-A participants showed a greater reduction in pain and impairment.

CONCLUSION

Based on the findings of this study, yoga and calisthenics exercises are both useful for reducing the symptoms of primary dysmenorrhea; however, yoga demonstrated comparatively more effective in reducing these symptoms when compared In terms of mean differences between the two groups of VAS score and WaLIDD score.



D. Y. Patil Education Society, Kolhapur
Constituent unit of D. Y. Patil Education Society, Kolhapur
(Deemed to be University)
D. Y. Patil College of Physiotherapy, Kolhapur

Date: 06/07/2023

To,
The principal,
D.Y.Patil college of Engineering and technology,
Kolhapur-416006

Subject- Application regarding permission to conduct research study among girl students of your college .

Respected Sir/Madam,

Myself, Swaranjali Mahesh Swami (Final B.P.Th), student of D.Y. Patil College Of Physiotherapy, Kolhapur. As per above mentioned subject this letter is regarding permission to conduct research study entitled " Effectiveness of calisthenics and yoga for primary dysmenorrhea in young females " under the guidance of Dr. Akanksha Anand (Assistant Professor, D.Y.Patil College of Physiotherapy, Kolhapur).

The research study requires 100 participants with primary dysmenorrhea . The maximum time required for assessment of one subject will be 15 minutes.The selected subject are expected to give 3 hrs in a week for further research study . I will be conducting this research study between October 2023- January 2024. The requirements for the research study during assessment and practical session of participants are mentioned below. There will be no harm to the participants during the assessment and research study.

I understand that your time is valuable. I would be fortunate to answer any questions regarding this research study before you grant me the permission. I believe that the insights I will gain from your girls would be invaluable to my research

Kindly grant the permission and do the needful.

Thanking You.

Requirements-

a. Participants those who are having primary dysmenorrhea .

Sincerely,
Swaranjali Mahesh Swami

Signature of student -

Signature of The Guide-

Signature of principal -
(DYPCOPK)

Dr. Amrutkuvar S. Rayjade
I/C Principal
D.Y.Patil College of Physiotherapy, Kolhapur

Signature of Principal -
(D.Y.P.C.E.T.)

PRINCIPAL
D. Y. Patil College of Engineering
And Technology
Kasaba Bawada, Kolhapur.
(An Autonomous Institute)

Permission granted for research work.

06/07/2023

Ethical approval

ACKNOWLEDGEMENT

While working, nothing concrete can be accomplished without the best inspiration. I want to thank everyone

who contributed to making this work reach its final form. Many hands and hearts made this possible.

I would like to express my profound thankfulness to God Almighty for his amazing grace over the entire study period. Being a human is enhanced by encouragement, without which nothing is possible for anyone to accomplish. I appreciate all of the people that pushed me to finish this assignment successfully.

This is a chance for me to express my sincere gratitude to my principal, Dr. Amrutkuvar Rayjade of the D. Y. Patil College of Physiotherapy in Kolhapur. Her inspirational perspectives, motivation, and continuous encouragement has all been extremely beneficial for supporting me completing my bachelor's dissertation effectively.

It permits me a lot of pleasure of expressing my sincere appreciation to my guide, Dr. Akanksha Anand of the D. Y. Patil College of Physiotherapy, Kolhapur, for everything that she provided their support, guidance, and encouragement throughout the coursework.

I would also like to expressing my sincere thanks to my study participants for providing support and devotion to me during every step of the study.

I am grateful to my college, university, and guide for providing me with the chance to work on my intended topic: Effectiveness of calisthenics and yoga for primary dysmenorrhea in young females.

In the end I would certainly like to express my heartfelt thanks to my father and Mother for their support and love. I would also like to express thanks to my friends and family for their constant encouragement, motivation to succeed, and help throughout the course of my education. My friends and family were always there to stand by and inspire me during challenging moments.

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