



## TO STUDY THE EFFICACY OF AEROBIC EXERCISES AND YOGA ASANAS ON PAIN, MENSTRUAL DISTRESS, PHYSICAL ACTIVITY IN SUBJECTS WITH PRIMARY DYSMENORRHEA

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### ABSTRACT:

#### INTRODUCTION:

Primary dysmenorrhea is defined as pain in lower abdomen that occurs just before or during menstruation without any pelvic pathology which is one of the most common complaints of women and it continues for 8 hours to 3 days. The incidence of dysmenorrhea is 75% in adolescent girls with systemic symptoms such as headache [60%], lower back pain, nausea, vomiting, [80%] diarrhea [50%], irritability [30%].

The prevalence of dysmenorrhea is between 74% to 86.1%. Primary dysmenorrhea begins at the age of 15 to 17 yrs and persists to the maximum age of 20 to 24 yrs. The medical treatment for primary dysmenorrhea is non-steroidal anti-inflammatory drugs [NSAIDA], antidepressants, hormonal treatment such as oral contraceptives. Apart from medical therapy adjacent therapies like physiotherapy, yoga, ayurveda, homeopathy also plays a role.

Other physiotherapy interventions used in treating dysmenorrhea are TENS, relaxation techniques, stretching's, massage and yoga asanas. Paucity of studies is found on effectiveness of exercise on dysmenorrhea as well as on physical activity. In primary dysmenorrhea, very few studies were done on pelvic floor exercises, lower limb exercises and yoga asanas which has its effect on pelvic floor muscles hence, the present study is to know the efficacy of aerobic exercises and yoga asanas on pain, menstrual distress and physical activity in subjects with primary dysmenorrhea.

#### NEED OF THE STUDY:

Many of studies have been done on effectiveness of exercises on symptoms of dysmenorrhea but very few studies were done on efficacy on pelvic floor exercises, lower limb exercises and yoga asanas on symptoms of dysmenorrhea. Hence, the need of the present study is to know efficacy of aerobic exercises and yoga asanas on pain, menstrual distress, physical activity in subjects with primary dysmenorrhea. Primary dysmenorrhea is highly prevalence in females It affects the daily activity and quality of life during menstruation. There are hormonal effects on the lining on the uterus and increased level of circulator endorphins.

Physical activity stimulate sympathetic activity thus exercises helps to decreased symptoms of primary dysmenorrhea.

**AIM OF THE STUDY:** The aim of the present study is to find out the efficacy of aerobic exercises and yogasanas on pain, menstrual distress, physical activity, in subjects with primary dysmenorrhea.

#### OBJECTIVES:

-To find out the effect of aerobic exercises and yoga asanas on pain by using Mc Gill pain questionnaire in subjects with primary dysmenorrhea.

-To find out the effect of aerobic exercises and yoga asanas on menstrual distress by using moon menstrual distress questionnaire in subjects with primary dysmenorrhea.

-To find out the effect of aerobic exercise and yoga asanas on physical activity by using physical activity questionnaire in subjects with primary dysmenorrhea.

#### METHODOLOGY:

Study setup: Department of physiotherapy, in SVIMS University, Tirupati, AP

Study design: experimental design

Sampling method: randomized controlled trial.

Study duration: 8 weeks

Sample size: 64 subjects.

Assuming that there will be a moderate change in the distress score or physical activity score. We have used Cohen's d method to find out the sample size using  $d = 0.5$ , power = 80 percentage and  $\alpha = 0.05$ , we got the minimal size for pre, post comparison as  $N = 64$  [minimally]. However we took 80 members for the study.

#### STATISTICAL ANALYSIS:

- ✓ The data on pain scores, distress questionnaire, and physical activity will be expected as mean and standard deviation in each group.
- ✓ Comparison between intervention groups is done by using T test or non parametric test.
- ✓ Categorical data is summarized as count and percentage.
- ✓ Results having  $p < 0.05$  is considered as significant.
- ✓ Pre-post comparison is made using paired T test.

#### INCLUSIVE CRITERIA:

- ✓ With primary dysmenorrhea
- ✓ Subjects with Age group 18-25 years
- ✓ With a normal BMI

#### EXCLUSIVE CRITERIA:

- ✓ Irregular or infrequent menstrual cycle
- ✓ PCOD.
- ✓ Intra uterine contraceptive devices.
- ✓ Individuals who use medications for pain.

#### OUTCOME MEASURES:

- ✓ Mc Gill pain questionnaire is used to measure pain in units.
- ✓ Physical activity scale is measured using IPAQ in units.
- ✓ Distress measured using menstrual distress questionnaire in units.

#### METHODOLOGY:

In this study we have taken 64 subjects with primary dysmenorrhea. It is a experimental study. This study was conducted for 8 weeks in physiotherapy department, Svims University Tirupati.

Subjects included in the study who had primary dysmenorrhea, with age between 18 to 25 years, with normal BMI subjects who have irregular or infrequent menstrual cycle, PCOD, intra uterine contraceptive devices were excluded from the study. Baseline measurements are VAS scale, menstrual distress score, physical activity score, and anthropometric measurements. Subjects were randomly divided into two groups.

Group I is given yoga asanas for 8 weeks as explained on the annexure-II. group II is given aerobic exercises for 8 weeks as explained on the annexure-III. VAS, menstrual distress, and physical activity scales, were measured before starting the intervention. After 8 weeks of intervention, the above outcome measures were recorded.

#### CONCLUSION

The findings of the present study showed that both types of aerobic exercise and yogasanas were effective in reducing the intensity of primary dysmenorrhea. But aerobic exercises are more effective when compared to the yogasanas. In reducing pain, enhancing physical activity, alleviating mood levels.

**KEYWORDS:****INTRODUCTION**

Dysmenorrhea is the most common problem prevailing in women of reproductive age. It can be divided into two broad categories of primary and secondary (menstrual pain associated with underlying pelvic pathology [1]. Primary dysmenorrhea is defined as painful cramps in lower abdomen that occurs just before during menstruation without any pelvic pathology, which is one of the most common complaints of women and it continues from 8 hours to 3days[5,1,6] These cramps can produce uterine pressure more than 60 mmHg, which results in pain<sup>6</sup>. Pain is usually in the suprapubic area but may radiate to the back of the legs or lower back [4].

The incidence of dysmenorrhea is 75% in adolescent girls with systemic symptoms such as headache [60%], lower back pain, nausea, vomiting,[80%] diarrhea [50%],irritability[30%][1].

The prevalence of dysmenorrhea is between 74% to 86.1% [1]. Primary dysmenorrhea begins at the age of 15 to 17 yrs and persists to the maximum age of 20 to 24yrs [4] the diagnosis of primary dysmenorrhea is based on clinical history and physical examination. Excessive production and release of prostaglandins during menstruation by the endometrium, causes hyper-contractility of the uterus, leading to uterine hypoxia and ischemia, which is believed to cause the pain and cramps in primary dysmenorrhoea [5].

The medical treatment for primary dysmenorrhea is non-steroidal anti-inflammatory drugs [NSAIDS], antidepressants, hormonal treatment such as oral contraceptives [5]. Apart from medical therapy, adjacent therapies like physiotherapy, yoga, ayurveda, homeopathy also plays a role [2].

Aerobic Exercises initiate the release of endorphin hormones in brain that raise the pain threshold by activating the prostaglandin synthesis inhibitors and may act as thought distracter, decreasing short term depression, increase concentration and improve mood and behavior. However, surprisingly little research has been done on the effects of aerobic exercise on menstrual cycle symptoms and mood states [1].

The physical benefits of yoga are linked to the release of  $\beta$ -endorphins and the shift occurs in neurotransmitter levels, linked to emotions such as dopamine and serotonin [7]. Yoga may be a safe and cost-effective intervention for managing menstrual problems [8] .Yoga plays an important role in reducing stress and sympathetic activity, increasing parasympathetic activity, improving one's quality of life, and decreasing psychological symptoms levels [8].

Other physiotherapy interventions used in treating dysmenorrhea are TENS, relaxation techniques, stretching's, massage and yoga asanas<sup>8</sup>. Paucity of studies

is found on the effectiveness of exercise on dysmenorrhea as well as on physical activity.

In primary dysmenorrhea, very few studies were done on pelvic floor exercises, lower limb exercises and yoga asanas which have its effect on pelvic floor muscles. Hence, the present study is to know the efficacy of aerobic exercises and yoga asanas on pain, menstrual distress and physical activity in subjects with primary dysmenorrhea.

**NEED OF THE STUDY**

Many of studies have been done on effectiveness of exercises on symptoms of dysmenorrhea but very few studies were done on efficacy of pelvic floor exercises, lower limb exercises and yoga asanas on symptoms of dysmenorrhea Hence, the need of the present study is to know efficacy of aerobic exercises and yoga asanas on pain, menstrual distress, physical activity in subjects with primary dysmenorrhea.

**AIM OF THE STUDY**

The aim of the present study is to find out the efficacy of aerobic exercises and yogasanas on pain, menstrual distress, physical activity, in subjects with primary dysmenorrhea.

**OBJECTIVES**

- ✓ To find out the effect of aerobic exercises and yoga asanas on pain by using Mc Gill pain questionnaire in subjects with primary dysmenorrhea.
- ✓ To find out the effect of aerobic exercises and yoga asanas on menstrual distress by using moon menstrual distress questionnaire in subjects with primary dysmenorrhea.
- ✓ To find out the effect of aerobic exercise and yoga asanas on physical activity by using physical activity questionnaire in subjects with primary dysmenorrhea.

**HYPOTHESIS****ALTERNATE HYPOTHESIS:**

Aerobic exercises and yogasanas may have positive impact on pain, menstrual distress, and physical activity in primary dysmenorrhea individuals.

**NULL HYPOTHESIS:**

Aerobic exercises and yogasanas may not have positive impact on pain, menstrual distress, and physical activity in primary dysmenorrhea individuals.

**MATERIALS AND METHODOLOGY**

After reviewing the problem of primary dysmenorrhea, review of literature, aim of the study, objectives of the study let us discuss the materials and methodology of the present study.

**MATERIALS**

- ✓ International physical activity questionnaire.
- ✓ Mc gill pain questionnaire.
- ✓ Moos menstrual distress questionnaire.

**METHODOLOGY**

**STUDY SETUP:** the study was performed in the Department of physiotherapy in SVIMS University, Tirupati, and AP.

**ETHICAL APPROVAL:** Ethical approval was obtained from the SVIMS University of College of physiotherapy. [IEC NO.844]

**STUDY DESIGN:** this is experimental design

**SAMPLING METHOD:** randomized controlled trail

**STUDY DURATION:** 8 weeks

**SAMPLE SIZE:** 64 subjects

Assuming that there will be a moderate change in the distress score or physical activity score. We have used Cohen’s D method to find the sample size, with  $d = 0.5$  power =80 percentage and  $\alpha = 0.05$ , we got the minimal size for pre, post comparison as  $N = 64$  [minimally]. However we took 80 members for the study. With dropouts of 5%.

**INCLUSIVE CRITERIA:**

- ✓ With primary dysmenorrhea.
- ✓ Subjects with Age group 18-25 years.
- ✓ With a normal BMI.

**EXCLUSIVE CRITERIA:**

- ✓ Irregular or infrequent menstrual cycle.
- ✓ PCOD.
- ✓ Intra uterine contraceptive devices.
- ✓ Individuals who use medications for pain.

**OUTCOME MEASURES:**

- ✓ Mc Gill pain questionnaire is used to measure pain in units.
- ✓ Physical activity scale is measured using IPAQ in units.
- ✓ Distress measured using menstrual distress questionnaire in units.

**METHODOLOGY**

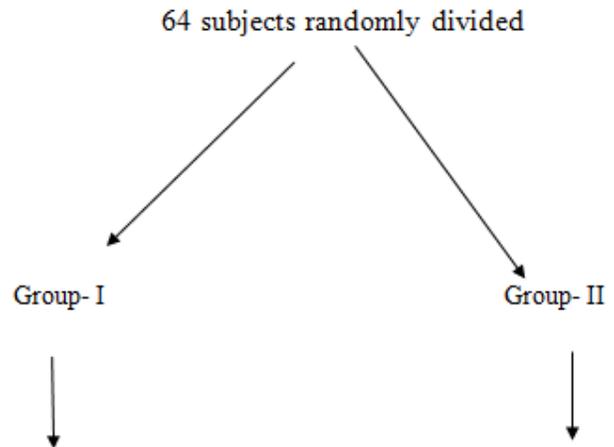
In this study we have taken 64 subjects with primary dysmenorrhea .It is a experimental study. This study was conducted for 8 weeks in physiotherapy department, Svims University Tirupathi. Subjects included in the study who had primary dysmenorrhea, with age between 18 to 25 years, with normal BMI subjects who have irregular or infrequent menstrual cycle, PCOD, intra uterine contraceptive devices were excluded from the study.

Baseline measurements are VAS scale, menstrual distress score, physical activity score, and anthropometric measurements. Subjects were randomly divided into two

groups. Group I is given yoga asanas for 8 weeks as explained on the annexure-I. Group II is given aerobic exercises for 8 weeks as explained on the annexure-II.VAS, menstrual distress, and physical activity scales. Were we measured before starting the intervention after 8 weeks of intervention? The above outcome measures were recorded.

**STUDY ALGORITHM**

Study Algorithm: Primary dysmenorrhea girls, age 18 -25 year’s females.



	Yoga asanas for 8 weeks		Aerobic exercise for 8 weeks	
	Baseline	After 8 weeks of intervention	Baseline	After 8 weeks of intervention
VAS in units				
PA in units				
MMDQ in units				

**GROUP: 1: THERAPEUTIC PROTOCOL**

**YOGA ASANAS:**

All the below each asana are done for 3min for 1 hour in a day, five days in week. All the below asana are done under supervision of yoga instructor in department of physiotherapy, SVIMS.

**NAVASANA:** Navasana is a seated yoga asana that requires core strength to hold the body in a "V" shape. As well as a range of physical benefits, it is believed to build concentration, stamina and balance.

**MATSYASANA:** he practitioner lies flat on the back then lifts the pelvis so the hands can slide under the buttocks. The back arches and the chest lifts until the crown of the head (or the back of the head for beginners) rests on the floor.

**DHANURASANA:** The practitioner lies flat on the stomach and bends the knees. Then the arms reach back to grab the

ankles. The back arches and the thighs lift off of the floor as the chest pushes forward, bending the body to resemble a bow.

**VAJRASANA:** To enter the pose, begin by kneeling on the floor. The hips and buttocks are at first lifted off the legs, the inner knees and thighs together, the tops of the feet on the floor and toes untucked. Lower the hips and buttocks to sit on top of your heels on an exhale. Feet, ankles, shins, and knees should remain in one line. Sit up tall and activate the core muscles, drawing the shoulders down the back and away from the neck and ears. Point the tailbone to the floor, arms relax on the tops of the thighs or along the sides of the body, and palms are down.

**PASCHIMOSTASANA:** is a seated forward bend with the upper body folded forward over the legs. **Padmasana:** padmasana is a seated asana with the legs crossed and the feet placed on top of the opposite thighs. The name comes from Sanskrit meaning "lotus throne." This asana is traditionally used in meditation, **both** of which originated in ancient India.

**SURYANAMASKAR:** suryanamaskar is one of the most important yoga practices. It is the set of 12 yoga poses which can be performed while chanting 12 different mantras. Mantras add a profound spiritual element to the practice.<sup>3</sup>

**SURYA NAMASKARA A CONSISTS OF THE FOLLOWING ASANAS:**

1. Samasthiti (tadasana or Mountain Pose)
2. Urdhva Hastasana (Upward Salute)
3. Uttanasana (Standing Forward Fold)
4. Ardha Uttanasana (Half Standing Forward Fold)
5. Chaturanga Dandasana (Plank Pose)
6. UrdhvaMukhaSvanasana (Upward-facing Dog Pose)
7. AdhoMukhaSvanasana (Downward-facing Dog Pose)
8. Transition – feet to hands
9. Ardha Uttanasana
10. Uttanasana
11. Urdhva Hastasana
12. Samasthiti, [11]

**YOGA ASANAS INTERVENTION**

Duration: 1 hour in a day 5 days in a week 8 weeks.

- |                           |          |
|---------------------------|----------|
| 1. Om chanting -18 times  | 6 minets |
| 2. Navasana               | 3min     |
| 3. Matsyasana             | 3min     |
| 4. Dhanurasana            | 3min     |
| 5. Relaxation [shavasana] | 3min     |
| 6. Vajrasana              | 3min     |
| 7. Paschimostasana        | 3min     |
| 8. Padmasana              | 3min     |
| 9. Relaxation             | 3min     |

10. Suryanamaskar [6] 2 cycles

**GROUP II**

**AEROBIC EXERCISES**

This group will be educated with 3 types of physical activities.

- ✓ Warm up
- ✓ Stretching's and resisted exercises specified for pelvic floor muscles 10 repetitions
- ✓ Walking 30 min in a day

**FREQUENCY:** 10 repetitions do each exercise in 10 repeats

**DURATION:** 1 hour

**NUMBER OF DAYS IN A WEEK:** 5 days in a week done for 8 weeks

**STATISTICAL ANALYSIS:**

Statistical analysis has been carried out to analyses the significant impact of the aerobic exercise training and yogasanas issued to the subjects of both the yogasanas and aerobic groups by using SPSS 60.0version. For that the data has got entered into Microsoft excel sheet and tabulated then it has subjected to Statistical analysis.

The total sample (N=64) has randomly divided into two groups that is control and experimental; and in each group consists of 32 subjects. All the subjects completed the protocol for 2 months without any interruption.

**THE OUTCOMES OF THIS STUDY ARE:**

1. MMDQ.
2. VAS.
3. IPAQ

To compare the pre and post therapeutic effects within the groups, the simple t-test was performed. Then the paired t-test has performed between the outcomes values of yogasanas and aerobic groups.

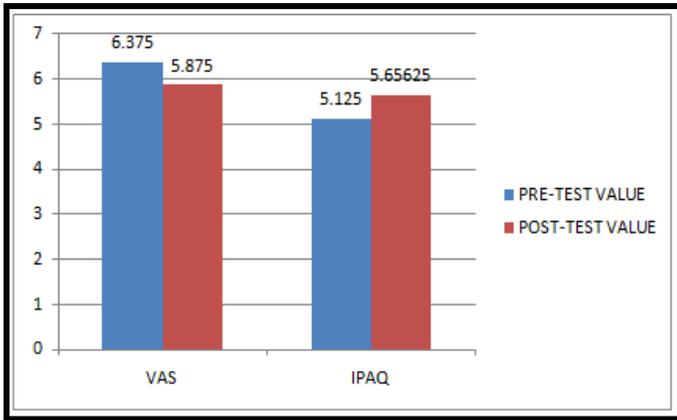
**RESULTS:**

**TABLE: 1 PRE AND POST MEAN VALUES OF VAS, IPAQ, OF PD INDIVIDUALS OF YOGASANAS TRAINING GROUP.**

	GROUP-1 YOGASANAS GROUP					
		PRE-TEST VALUE	POST-TEST VALUE			
	N	Mean±STDEV	Mean±STDEV	DF	t-Value	p-value
VAS	32	6.375±1.736	5.875±1.56	16	2.374102701	0.023967
IPAQ	32	5.125±2.012	5.656±1.944	17	2.959320151	0.005861

**RESULT:** The results shows that the pre and post mean values of IPAQ is 0.023967, VAS is 0.005861both outcome measures are not significant in yogasanas training group.

**FIG1: GRAPHICAL REPRESENTATION OF PRE AND POST MEAN VALUES OF VAS, IPAQ, OF PRIMARY DYSMENORRHEA INDIVIDUALS OF YOGASANAS TRAINING GROUP.**

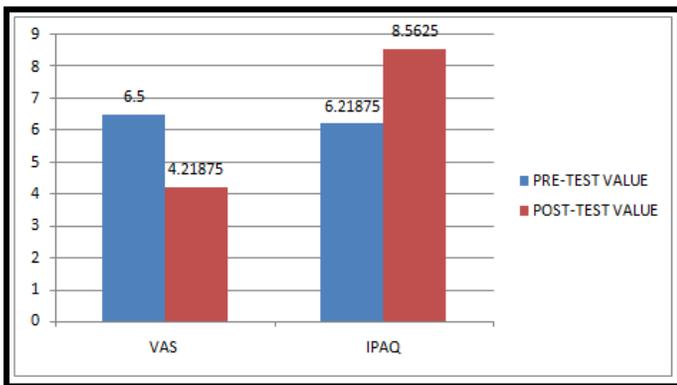


**TABLE: 2 PRE AND POST MEAN VALUES OF VAS, IPAQ, OF PD INDIVIDUALS OF AEROBIC EXERCISE TRAINING GROUP.**

		GROUP-2 AEROBIC EXERCISES GROUP				
		PRE-TEST VALUE	POST-TEST VALUE			
	N	Mean±STDEV	Mean±STDEV	DF	t-Value	p-value
VAS	32	6.5±1.646	4.218±1.069	117	11.02539046	0.000020
IPAQ	32	6.218±2.027	8.562±1.740	116	10.11893454	0.000011

**RESULT:** The result shows that the pre and post mean values of VAS is 0.000020, PAQ is 0.000011 are significant in aerobic group.

**FIG11: GRAPHICAL REPRESENTATION OF PRE AND POST MEAN VALUES OF VAS, IPAQ, OF PRIMARY DYSMENORRHEA INDIVIDUALS OF AEROBIC EXERCISE TRAINING GROUP.**



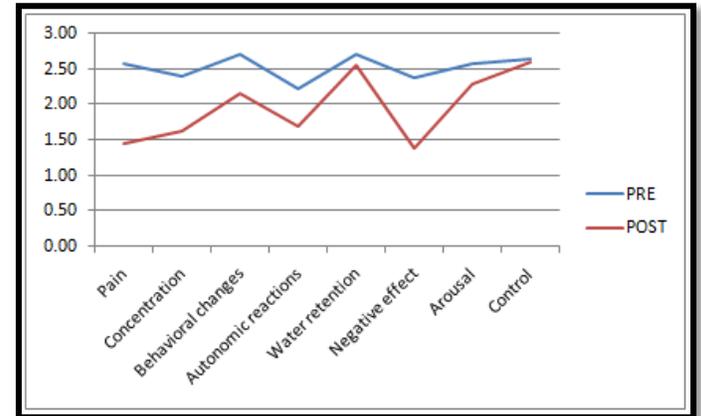
**TABLE: 3 PRE AND POST MEAN VALUES OF MMDQ OF PRIMARY DYSMENORRHEA INDIVIDUALS OF YOGASANAS GROUP.**

		GROUP-1 YOGASANAS GROUP				
Symptoms	N	MEAN±STD(PRE)	MEAN±STD(POST)	DF	T value	P-value
Pain	32	2.59±0.585	1.43±0.504	70	29.78	0.00
Concentration	32	2.40±0.704	1.65±0.531	61	18.37	0.00
Behavioral changes	32	2.71±0.504	2.15±0.614	69	19.28	0.00
Autonomic reactions	32	2.21±0.734	1.68±0.617	61	18.37	0.00

Water retention	32	2.71±0.500	2.54±0.601	69	19.28	0.00
Negative effect	32	2.37±0.706	1.375±0.630	50	15.00	0.00
Arousal	32	2.59±0.800	2.28±0.708	40	10.25	0.00
Control	32	2.65±0.655	2.59±0.655	48	13.75	0.00

**Result:** The results shows that the pre and post mean values of MMDQ 0.00 is outcome measures are not significant in yogasanas training group.

**FIG1II: GRAPHICAL REPRESENTATION OF PRE AND POST MEAN VALUES OF MMDQ OF PRIMARY DYSMENORRHEA INDIVIDUALS OF YOGASANAS TRAINING GROUP.**

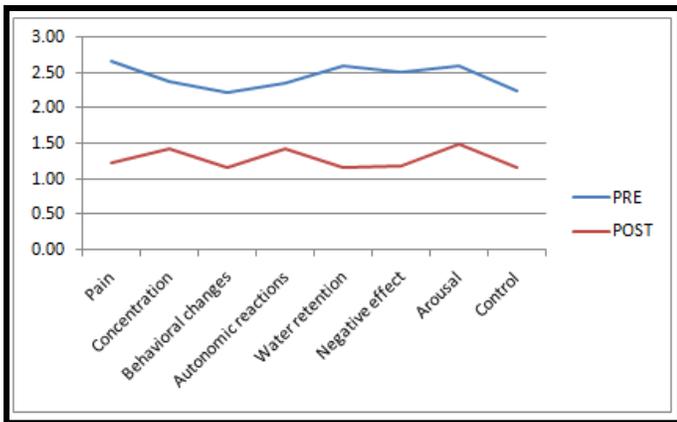


**TABLE: 4 PRE AND POST MEAN VALUES OF MMDQ OF PRIMARY DYSMENORRHEA INDIVIDUALS OF AEROBIC TRAINING GROUP**

		GROUP-2 AEROBIC EXERCISES GROUP				
Symptoms	N	MEAN±STD(PRE)	MEAN±STD(POST)	DF	T value	P-value
Pain	32	2.65±0.56	1.21±0.504	70	28.78	0.005
Concentration	32	2.37±0.68	1.43±0.531	61	17.37	0.005
Behavioral changes	32	2.21±0.49	1.15±0.614	69	18.28	0.005
Autonomic reactions	32	2.34±0.71	1.43±0.617	61	17.37	0.00
Water retention	32	2.59±0.49	1.15±0.601	69	18.28	0.00
Negative effect	32	2.5±0.706	1.18±0.630	50	14.00	0.00
Arousal	32	2.59±0.79	1.5±0.708	40	9.25	0.005
Control	32	2.25±0.65	1.15±0.655	48	12.75	0.005

**Result:** The results shows that the pre and post mean values of MMDQ 0.005 is outcome measures are significant in aerobic exercise group training group.

**FIG1V: GRAPHICAL REPRESENTATION OF PRE AND POST MEAN VALUES OF MMDQ OF PRIMARY DYSMENORRHEA INDIVIDUALS OF AEROBIC TRAINING GROUP.**



## DISCUSSION

The aim of the present study is to find out the efficacy of aerobic exercises and yogasanas on pain, menstrual distress, physical activity, in subjects with primary dysmenorrhea.

As per the inclusion criteria, 64 primary dysmenorrhea individuals were taken for the study, they are randomly allocated into two groups. Group-1 with 32 PD individuals underwent training of yoga asanas and Group- 2 with 32 individuals underwent training of aerobic exercises for 2 months.

In the literature review, paucity of studies were found on Comparison studies on the effects of these two interventions on the intensity of dysmenorrhea.

### PRE AND POST INTERVENTION MEAN VALUES OF VAS, IPAQ, OF GROUP 1

(From table .1)

In the present study it has been reported that primary dysmenorrhea individuals in group 1 with yogasanas showed mean value of **VAS** from 6.375+ 1.736 (pre-intervention) to 5.875 +1.56 (post intervention), mean value of **IPAQ** from 5.125 +2.012 (pre- intervention) to 5.656+1.944(post intervention), mean value of **MMDQ** from 104.6 +29.0(pre- intervention) to 96 +16.3(post intervention), the values are not significant.

**Usha Nag1, Madhavi Kodali**, concluded, "Yoga reduced the severity and duration of primary dysmenorrhea. The findings suggest that yoga poses are safe and simple treatment for primary dysmenorrhea. [3]

**Hyun-Nam KO, Sam-Sun Le**, the mechanism which an abnormal increase in vasoactive prostanoids in the endometrium and menstrual fluid may induce myometrial hyperactivity and tissue ischemia subsequently. A yoga intervention improves blood flow at the pelvic level as well as stimulating the release of B endorphins acting as nonspecific analgesics. In addition, another study reported that yoga poses improves spinal flexibility and strengthens muscles in the back. Subsequently, decreases oxygen consumption causing pain relief.

The mean values of data reveals an improvement between pre and post but significant changes are not noted. The

literature supports that yogasanas has beneficial effect in reducing pain, menstrual distress and improves the physical activity in primary dysmenorrhea individuals.

### PRE AND POST INTERVENTION MEAN VALUES OF VAS, IPAQ, OF GROUP II

(From table .2)

In the present study, it has been reported that primary dysmenorrhea individuals in group II with aerobic exercise showed mean value of **VAS** from 6.5+ 1.646 (pre-intervention) to 4.218 +1.069 (post intervention), mean value of **IPAQ** from 6.218 +2.027 (pre- intervention) to 8.562+1.740(post intervention), mean value of **MMDQ** from 104.6 +29.0(pre- intervention) to 96 +16.3(post intervention), the values are significant.

Earlier studies by **Mohammadi et al**, [2018], also examined the effect of aerobic exercise on some menstrual symptoms of nonathletic students, and concluded that regular and continuous aerobic exercises can control initial dysmenorrhea and severe menstrual bleeding. [12]

**Nategheh Dehghanzadeh** [2014], the results of this study showed 8 weeks of aerobic training significantly decreased psychological and physical symptoms in primary dysmenorrhea. Over the past 50 years, many studies have been done on the impact of physical activity on menstrual disorders. [13]

**Zahra Mohebbi Dehnavi<sup>1</sup>, Farzaneh Jafarnejad**, regular exercise plays an important role in reducing stress and helps its improve blood circulation and increases levels of endorphins and nerve transducers. [13]

**Chantler et al.** shows that exercising due to the release of endorphins, relaxation, stress relief and improved blood flow can reduce the severity and duration of dysmenorrhea

Aerobic Exercises initiate the release of endorphin hormones in brain that raise the pain threshold by activating the prostaglandin synthesis inhibitors and may act as thought distracter, decreasing short term depression, increases concentration and improves mood and behavior

The effect of regular exercises on dysmenorrhea might be due to the effect of hormones on the uterine epithelial tissue or on increase in endorphin levels.

Exercise acts as a non-specific analgesia by improving pelvic blood circulation and stimulating the release of beta-endorphins. Exercise leads to the prevention and regression of dysmenorrhea by reducing stress and improving mood. Age at menarche is significantly higher in athletes. Exercise reduces body fat, and since obesity is associated with a high prevalence of dysmenorrhea, the loss of fat significantly increases age at menarche. Exercising three days before the beginning of the menstruation improves pelvic blood flow, disrupts the accumulation of prostaglandins in this part of the body and thus delays the onset of pain. Exercise during menstrual pain also leads to the faster transfer of excess substances and prostaglandin from the uterus, which is the main

factor responsible for menstrual pain, and thus reduces the duration of pain during menstruation. [14]

**American college of obstetrics and gynecology** [2004], which found that aerobic exercises is one natural way to relieve menstrual discomfort like headache, backache, muscle spasm, abdominal cramps. It also reduces generalized anxiety, depressive episodes and improved concentration and increased sense of control over moods.

The findings of present study it concluded that aerobic exercises are significantly effective in decreasing the menstrual distress among the adolescent girls. [14]

#### CONCLUSION:

Aerobic exercise is one of the effective, inexpensive and non-pharmacological measures to reduce the primary dysmenorrhea symptoms among adolescent girls. The study concludes that aerobic exercise is a physical activity that has effect in reducing the symptoms of primary

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dysmenorrhea during menstruation among adolescent girls. The findings of the present study showed that both types of aerobic exercise and yogasanas were effective in reducing the intensity of primary dysmenorrhea. But aerobic exercises are more effective when compared to the yogasanas. in reducing pain, enhancing, physical activity, alleviating mood levels.

#### SCOPE AND LIMITATIONS

1. Long term effects have not been studied.
2. BMI levels would have been measured.
3. Not used any electrotherapy modality.

#### RECOMMENDATIONS

1. The similar study could be conducted in school setting.
2. The similar study can be conducted in large group of population.

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