

**AN EXPERIMENTAL STUDY TO ASSESS  
THE EFFECTIVENESS OF EXERCISES  
AND RELAXATION TECHNIQUES IN  
PRIMARY DYSMENORRHOEA AMONG  
UNMARRIED GIRLS**



**REGISTER NUMBER: 27091212**

**A DISSERTATION SUBMITTED TO  
THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY  
CHENNAI  
IN PARTIAL FULFILLMENT FOR THE  
REQUIREMENT OF THE DEGREE IN  
MASTER OF PHYSIOTHERAPY**

**APRIL – 2011**

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TMMF, MADURAI

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*Guide:* \_\_\_\_\_

**Prof. D. G. ANIMA, M.P.T. (OG.)  
TMMF, MADURAI**

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*Examiners:* \_\_\_\_\_

\_\_\_\_\_

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## **CERTIFICATE**

This is to certify that the project work entitled “**AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF EXERCISES AND RELAXATION TECHNIQUES IN PRIMARY DYSMENORRHOEA AMONG UNMARRIED GIRLS**” was done by **P. VIJAYAKUMARI** a bonafide student of Master of Physiotherapy under THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI.

**PROJECT GUIDE**

**(Prof. D. G. ANIMA, M.P.T. (OG.)  
TMMF, MADURAI**

## **ACKNOWLEDGEMENT**

I first thank **LORD** and my parents for the confidence they have given throughout my life. I humbly acknowledge all the love and care showed by my parents throughout my life in making me what I am.

I respectively thank our correspondent **Prof.K.R.ARUMUGAM**, for his support and guidance for the successful completion of my project. I wish to convey my sincere regards to Principal **Dr.R.SHANKER,M.P.T. (O.G.)**.

I gracefully recognize the valuable suggestions and guidance given by my guide, **Dr.D.G. ANIMA, M.P.T. (O.G.)**, Associate Professor. Ultra College.

I am indebted to all the faculty member of physiotherapy department.

**Dr.M. ANANTHA RAJ, B.P.T.**

**Dr.J. SUDHARSAN, M.P.T. (CARDIO)**

**Dr.B. RAMKUMAR, MPT (CARDIO)**

I also thank librarian **Mr.THIRUNAVUKKARASU** and other library staffs for extending cooperation in utilization of library.

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# INTRODUCTION

*“Women’s health is global wealth*

*Let start with a girl – A new agenda for global health”*

Reproductive health of women is considered as important and one that has wide spread implications on health. Well being and development of the entire population. Women who fall in the reproductive age group especially adolescent girls are being neglected in reality. There is a consensus among health care providers and researcher that reproductive age group is a period of marked physical, social and cognitive changes (Dawn, 1994)

The term Dysmenorrhoea is a Greek word which literally means “Painful Menstruation”. ‘Dys’, meaning difficult / painful/ abnormal, ‘meno’, meaning month, and ‘rrhea’, meaning flow.

Dysmenorrhoea is classified in to two types, namely Primary and Secondary Dysmenorrhoea. These are abdominal and pelvic pains experienced before and during menstruation.

## **Primary Dysmenorrhoea**

It is defined as menstrual pain without pelvic pathology. It tends to occur within 12 months of menarche and it is more common. Dysmenorrhoea is characterized by cramping lower abdominal pain that may radiate to the lower back and upper



thighs, commonly associated with nausea, headache, fatigue and diarrhea. Often pain starts shortly before or during the menstrual period, peaks after 24 hours and subsides within two days (Bolton P, Delmar C, O' Conor V 2003).

### **Secondary Dysmenorrhoea**

It is related to the presence of pelvic lesions such as Endometriosis, adenomyosis and pelvic inflammation. Congenital uterine or vaginal abnormalities like leiomyoma or cervical stenosis can also cause secondary Dysmenorrhoea. The use of Intra uterine device can also cause secondary Dysmenorrhoea. Pain starts a few days before menstruation, usually starts several days after onset of flow.

The following risk factors have been associated with more severe episodes of Dysmenorrhoea (Harlow, 1996)

1. Earlier age at menarche
2. Long menstrual periods
3. Heavy menstrual flow
4. Obesity
5. Positive family history

Primary Dysmenorrhoea is found to be more prevalent among unmarried girls and most of them do not seek proper

medical advice for Dysmenorrhoea (Young, Herkim, Innsook Lee 2002). The peak incident of primary Dysmenorrhoea occurs in late adolescence and the early 20s (fraser 1992). The incidence of Dysmenorrhoea in adolescence is reportedly as high as 92% (Anderseh 1982). The incidence falls with increasing age and with increasing parity. The prevalence and severity of Dysmenorrhoea in parous women were significantly lower (Anderseh 1982).

The consequences of untreated Dysmenorrhoea were loss of work in college hours and personal family disruption. Therefore Dysmenorrhoea affects not only the untreated person but also affects family, social, national economics as well.

A few preliminary studies by scot ransom and Julie molden hauer (April 1998) found that regular exercise can ease some of the pain and stress in the Dysmenorrhoea. Exercise is a great stress buster. It boosts metabolism and circulation. Relaxation is a technique used to relieve stress.

Therefore this work is designed to study the role of exercise and relaxation technique program on primary Dysmenorrhoea using pain and severity of Dysmenorrhoea scale as parameters.

## **AIM**

To assess the effectiveness of exercises and relaxation techniques on pain and severity in primary Dysmenorrhoea among unmarried girls.

## **STATEMENT OF THE PROBLEM**

An experimental study to assess the effectiveness of exercises and relaxation techniques on pain and severity in primary Dysmenorrhoea among unmarried girls.

## **OBJECTIVES**

1. To evaluate the effectiveness of exercise and relaxation techniques in primary Dysmenorrhoea among unmarried girls.
2. To determine the changes after the training program.

## **HYPOTHESIS**

There is significant difference in pain and severity following exercises and relaxation techniques in primary Dysmenorrhoea among unmarried girls.

## **NULL HYPOTHESIS**

There is no significant change or difference in pain and severity following exercise and relaxation techniques in primary Dysmenorrhoea among unmarried girls.

## **KEY WORDS**

Effectiveness, Primary Dysmenorrhoea, Exercises, Relaxation Techniques.

### **Effectiveness**

It refers to the desired reduction in menstrual pain and severity among unmarried girls after receiving exercise and relaxation techniques.

### **Primary Dysmenorrhoea**

It refers to painful menstruation in girls with normal pelvic anatomy characterized by crampy pelvic pain at the onset of menstruation and lasting for one to 3 days.

### **Exercises**

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health.

### **Relaxation Techniques**

A relaxation technique (also known as relaxation training) is any method, procedure, or activity that helps a person to relax. To attain a state of increased calmness; or otherwise reduce levels of anxiety, stress or anger.

# **REVIEW OF LITERATURE**

## **1. Dawn (2004)**

Dysmenorrhoea is the painful menstruation which is the commonest gynaecological complain among unmarried girls. More than 90% of women experience pain during menstruation. Most of the adolescent and young girls will complain primary (functional) Dysmenorrhoea.

## **2. Scavenberg (2002)**

Dysmenorrhoea is a condition where the girl having cyclical pain during menstruation and investigation found no disease in the genital organs. Commonest form of Dysmenorrhoea is seen in young adults. The pain is usually spasmodic or colicky in character. It usually appears within one to two years after girls starts menstruating and it subsides usually after having baby and it may continue up to 40 years of age.

### **3. Amita Singh (2008)**

A cross sectional descriptive study among 107 female medical students regarding history of Dysmenorrhoea and its severity and absenteeism from class to detect the severity of Dysmenorrhoea.

### **4. Roger and William (2004)**

Pain of Dysmenorrhoea is crampy. Usually located in lower abdomen above the pubic bone. Some women have severe pain in back and thighs.

### **5. John. W.W. Studd**

Psychological symptoms are the most important aspect of morbidity in Primary Dysmenorrhoea. Depression, tension, irritability, anxiety and tiredness seem to be the most common complaints.

### **6. Margaret Polden and Jill Mantle**

Physiotherapist has a role in helping women to understand the condition and to consider ways of adjusting the stress levels.

## **7. Blakey et al 2008**

Exercise is effective in preventing and treating symptoms. Evidence for observational study was mixed. Several observational studies reported that physical activity and exercise was associated with reduced prevalence of Dysmenorrhoea. Evidence from controlled trials suggests that exercises can reduce primary Dysmenorrhoea, associated symptoms.

## **8. Kia's Goodine 2002**

A change in diet, nutrition, exercise and relaxation patterns can help some women get a relief from primary Dysmenorrhoea.

## **9. Merk Manual 2005**

Treatment for Dysmenorrhoea begins with adequate rest, sleep and regular exercise.

## **10. Alan .H. Decherney**

Many studies have indicated that exercises reduced prevalence and improved symptoms of Dysmenorrhoea.

## **11. K.M. Gun**

Primary Dysmenorrhoea treatment consists of psychotherapy (exercise, yoga, re assurance).

## **12. Aganoff and Boyle 1994**

Regular exercises have fewer primary Dysmenorrhoea than non-exercises.

## **13. William D Mcardle Frank Kattch Victor L Katch**

Exercise has the potential psychological benefits including a reduction in state of anxiety and depression and improves mood, self esteem and self concept

## **14. Chanty Banikarim, Marian R-Chacko, Stene H Kelder 2000**

Since most adolescents do not seek medical advice for Dysmenorrhoea health care providers should screen routinely for the same and offer treatment.

## **15. Kenneth J Ryan 2001**

Some girls can continue to exercise during their menses; others find the discomfort too great on the first day. Girls who are involved in competitive sports have fewer ovulatory menses and appear to have less Dysmenorrhoea.



## **16. Alicia M. Weissman et al 2004**

Menstrual cramps as experienced when not taking medications to prevent discomfort were rated on a four point severity of Dysmenorrhoea scale

- 0 – No Dysmenorrhoea
- 1 – Minimal Dysmenorrhoea (can work, some what uncomfortable)
- 2 – Moderate Dysmenorrhoea (can work, but quite (or) uncomfortable)
- 3 – Severe Dysmenorrhoea (miss work, have to be in bed)

# **METHODOLOGY**

**Research Design** : Experimental study with same subject design.

**Study Sample** : Study was conducted among the unmarried girls of Prince Ladies Hostel, Ultra College, who reported to have primary Dysmenorrhoea in our initial assessment.

**Sampling method** : A sample of 25 subjects in the age group between 18 – 25 years was selected.

## **Criteria for sample selection:**

### **Inclusion criteria**

- Unmarried
- Age less than 25 years
- Willing to comply with study protocol
- Primary Dysmenorrhoea

### **Exclusion criteria**

- Secondary Dysmenorrhoea
- Under medication for menstrual related symptoms

- With irregular/infrequent menstrual cycles
- Pelvic inflammatory diseases
- Critically ill health (severe anemic of cardio-respiratory problems)

## **Data Collection Instruments**

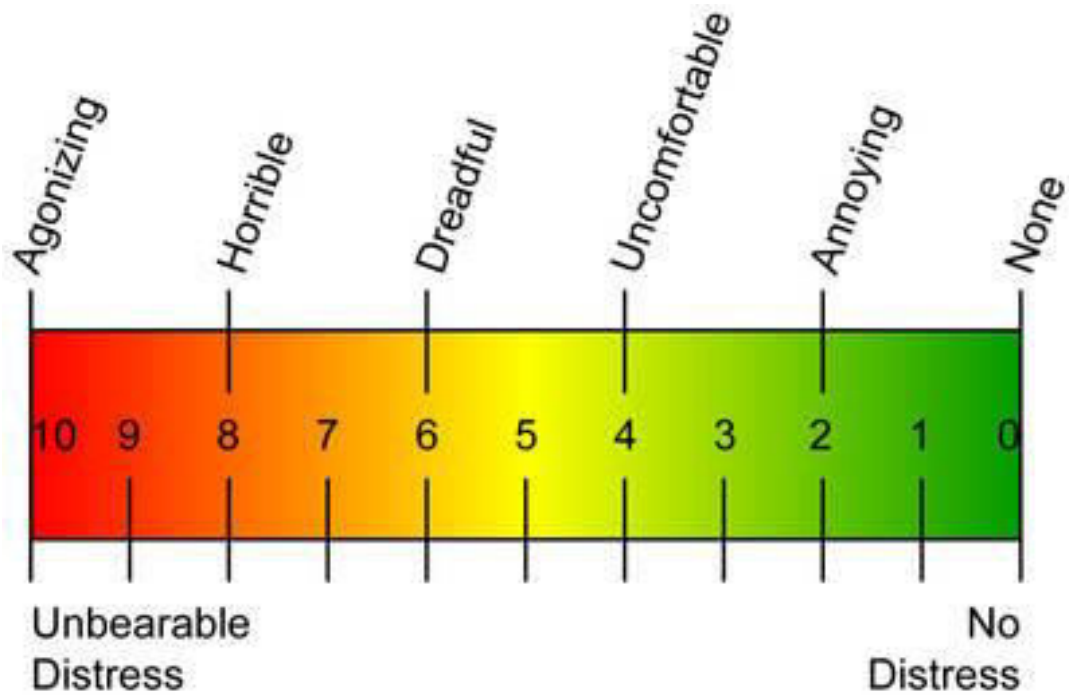
1. Visual Analogous Scale ( VAS)
2. Severity of Dysmenorrhoea Scale (Alicia M. Weissman et al.,2004)

## **Scoring Procedure:**

1. Visual Analogous Pain Scale ( Chris Adams 2004)

Note

- Please read the scale carefully and try to rate your pain as per scale.
- Don't consider other statement.
- Answers will be kept confidential.



Task \_\_\_\_\_

Date \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

2. Severity of Dysmenorrhoea Scale (Alicia M Weissman et al 2004)

0 – No Dysmenorrhoea

1 – Minimal Dysmenorrhoea (can work, some what uncomfortable)

2 – Moderate Dysmenorrhoea (can work, but quite (or) uncomfortable)

3 – Severe Dysmenorrhoea (miss work, have to be in bed)

## **Data Collection Procedure**

After pilot trial, this study was conducted in 3 phases.

I Phase – Subjects selection and pretest scoring.

II Phase – Participation in exercise program.

III Phase – Post test scoring.

### **I Phase**

- A preliminary class had been conducted about Dysmenorrhoea symptoms for the students in Prince ladies hostel, ultra college.
- Severity of Dysmenorrhea is evaluated on the first day of menstrual cycle and girls with Dysmenorrhoea for at least one day of menstrual cycle.
- Then VAS and SOS were selected.
- They were explained about the study protocol before their written consent was got.
- They were given instructions about experimental tools. Then they were scored (pre – test) for their level of pain and severity.

## **II Phase – Practice Session**

- Selected subjects participated in 45 minute lecture with demonstration session about “planned exercise program to care Primary Dysmenorrhoea symptoms”.
- They were motivated to follow the exercise program of 40 minutes session for at least 3 days per week regularly.

### **Treatment protocol**

#### **Exercise Programme:**

<b>Duration</b>	<b>Activity</b>
10 Minutes	Warm up exercises
15 Minutes	Toning exercises
5 Minutes	Cool down exercises
10 Minutes	Relaxation techniques

### **EXERCISES FOR DYSMENORRHOEA**

When done properly, stretching exercises can do more than just increase flexibility. Benefits of stretching include:

- Enhanced physical fitness
- Enhanced ability to learn and perform skilled movements
- Increased mental and physical relaxation
- Enhanced development of body awareness
- Reduced severity of painful menstruation (Dysmenorrhoea) in females

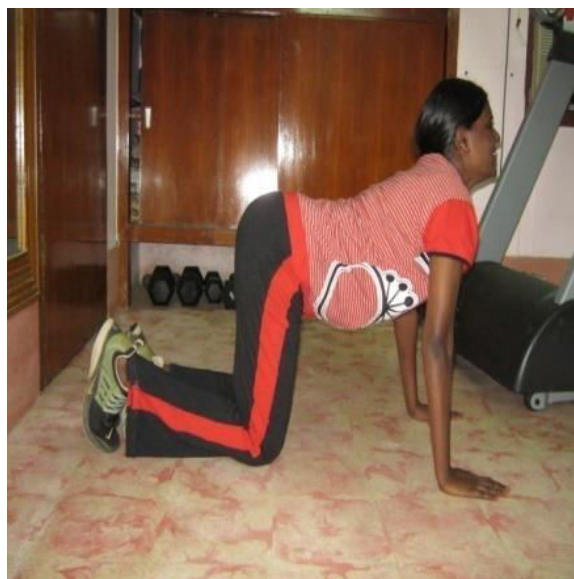
## Warm up exercises for 10 Minute – stretching – 5 repetitions

### 1a.Back Stretch



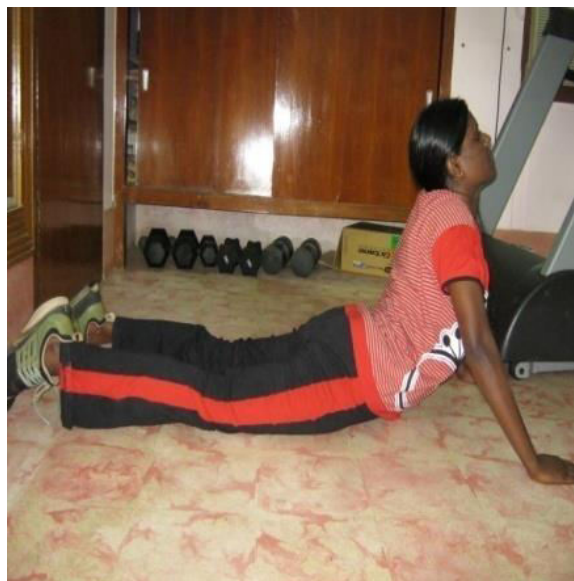
- Kneel on floor hands and knees.
- Tuck chin in towards chest as you round back upwards
- Feel mild tension through the back.
- Hold for 5 – 10 seconds.

### 1b.Back stretch (Cat Pose)



- Release and lift up head and tail bone reversing the arch in the back to a downward arch.
- Feel mild tension through the back.
- Repeat each 2 times.
- Hold for 5 – 10 seconds.

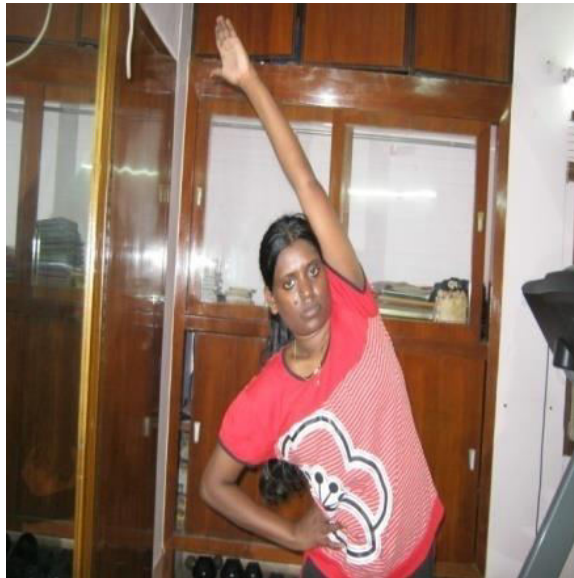
## **2. Abdominal Stretching**



- Lie face down on floor with palms down on floor. Directly under shoulders. Toes pointed. Exhale as you extend arms straight. Keeping head in line with the spine.
- Feel mild tension through the abdominals.
- Hold 5 seconds
- Repeat 2-5 times.



### 3. Torso stretch



- Stand with feet outside shoulder width. Toes pointing straight ahead.
- Place right hand on right hip for support and reach left arm up and over head. Bending torso to the right
- Feel mild tensions up through left side of torso. Repeat on other side.

### 4 Forearms/wrists



- Kneel on floor. With palms flat. Fingers pointing back toward knees.
- Slowly lean backwards, keeping palms flat to the floor.
- Feel mild tension through the wrists and forearms.

### **5. Triceps stretching**



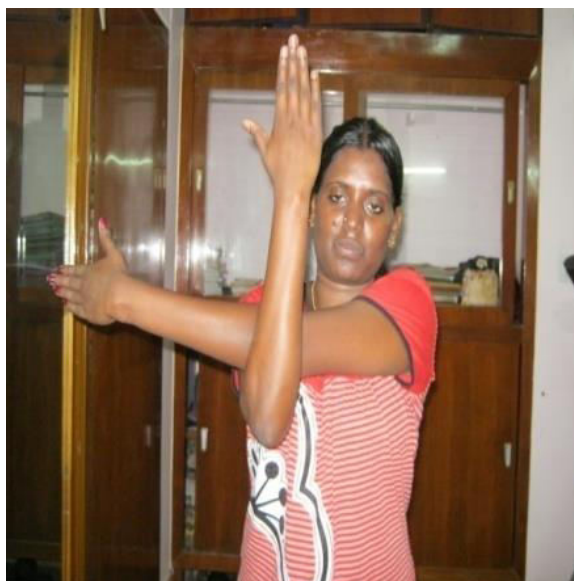
- Drop chin down to chest, and reach right arm straight up overhead. Palm forward.
- Bend elbow and drop right hand to back of neck. Now palm facing in.
- Reach overhead with left arm and grasp just below the right elbow with the left hand. Gently pulling the right arm to the left. Feel mild tension. Repeat on other side.

## 6. Chest stretch



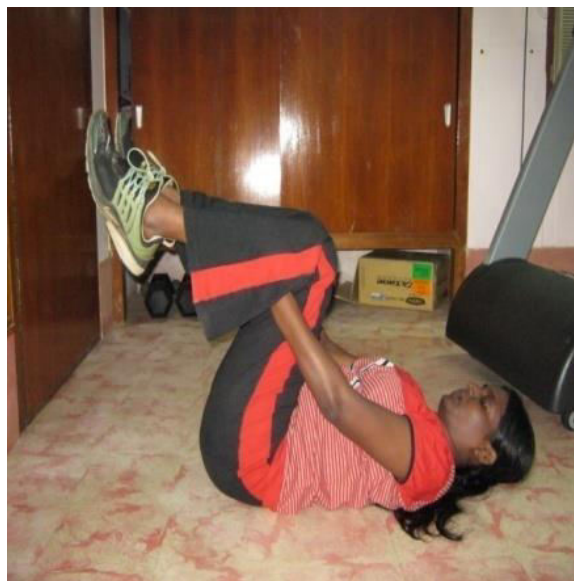
- Either sitting or standing. Extend arms straight out to the side. With palms forward Relax neck a you press straight arms back a hold.
- Feel mild tension through the chest.
- Hold 5 – 10 Seconds.

## 7. Shoulders stretch



- Either sitting or standing with shoulders square reach across body right arm, and with left hand holding right arm just beyond elbow.
- Press right arm closer in to the body. Feeling mild tension in the shoulder.
- Hold for 5 – 10 seconds and repeat on left.

### **8. Lower back/buttocks stretch**



- Lie on floor with both knees bent feet flat on floor. Keeping feet and knees together lift feet off floors.
- Reaching around behind knees with hands. Hugging knees into chest while keep back flat to the floor.
- Hold for 5 – 10 seconds and repeat on left.

## 9. Inner thigh stretch



- Sit tall on floor with knees bent bottoms of feet together feet close to body.
- With hand on knees lean chest forward slightly as you push knees down.
- Feel mild tension in inner thigh. Then repeat on left.

## 10. Quads stretch



- Stand holding wall or chair for balance.
- Bend right knee up behind you as you reach back and grasp right ankle with right hand keeping the knee closer to the body pulling the heel towards the buttock.
- Feel mild tension in front of thigh.
- Repeat on other side.

### **11. Calves stretch**



- Stand about 12 inches away from wall.
- Place forearms against wall and lean forward.
- Step back with right leg keeping the right leg straight and press the right heel down.
- Feel mild tension in the right calf.
- Repeat on other side.

## 12. Hamstrings stretch



- Stand with feet shoulder width apart knees soft (slight bent) toes pointing straight ahead.
- Bend forward at the hips and reach hands around the ankles.
- Feel mild tension in back of upper right leg.
- Repeat on other side.

## **Toning Exercises for 15 Minute**

### **1. Upper Body:**

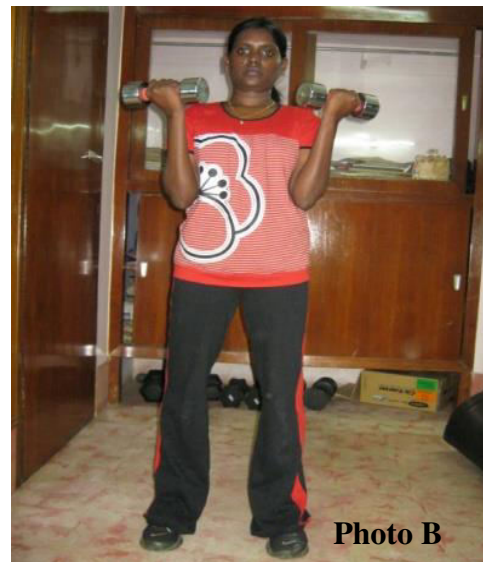
#### **Posture:**

1. Stand up straight with knees slightly bend
2. Place feet hip distance apart.
3. Mark sure toes are pointing forward.
4. Keep shoulders in both hands palms facing upward with elbows positioned

Equipment needed: weights (2.3 or 5 lbs)

#### **1.1 Bicep Curl:**

Muscles Used: Biceps (mid Upper arm)



#### **Starting position**

- Hold weight in both hands, palms facing upward with elbows positioned next to waist and rib cage. Position arms so weights are directly above thighs and elbows are slightly bent.(see photo A)



## Procedure

- Exhale (breath out) as you slowly and evenly lift both forearms upright to shoulders to a full bicep curl (ending position). (see photo B)
- Inhale (breathe in) as you evenly and slowly lower both arms down to starting position. Remember to squeeze your bicep muscles as you lift down instead of letting gravity do the work.
- Repeat exercise for a set of 6.

## 1.2 Triceps extension:

Muscles used: Triceps (Mid Posterior Arm)



## Starting position

- Place your left arm on your left thing for support. Hold weight in right hand, working right triceps muscles. Bend arm at elbow.

Life elbow back. And hold weight next to shoulder and your underarm.( see photo A)

### **Procedure**

- Exhale (breath out) as you slowly and evenly extend forearm behind your body, moving from the elbow joints so that arm is now straight (ending position).(see photo B)
- Inhale (breath in) as you evenly and slowly bring your forearm back to starting position. Remember to squeeze your Triceps muscle, instead of letting gravity do the work.
- Repeat exercises for a set of 6.
- Repeat entire sequence on left arm steps 1-7

### **1.3 Chest press:**

Muscles used: Pectorals Major (“pecs” or chest)



### **Starting position**

- Hold weights at shoulder height with palms facing forward and elbows bend to form a 90-degree angle. (See photo a).

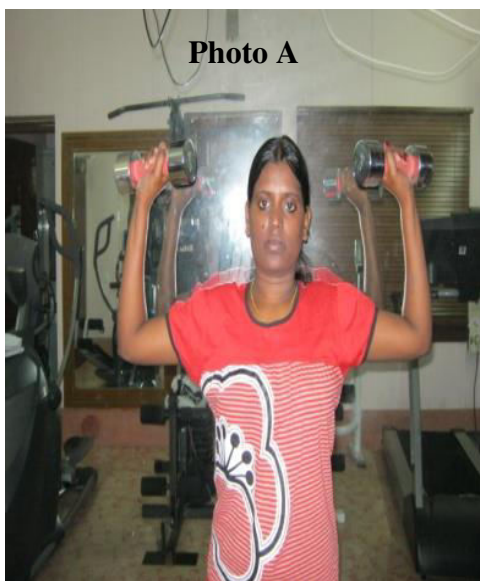
### **Procedure**

- Exhale (breathe out) as you evenly and slowly move arms together. Keep elbows bent at a 90- degree angle until elbows and bent at a 90- degree angle until elbows and forearms meet in front of your face and chest. Now palms are facing each other. (See photo B).
- Inhale (breathe in) as you evenly and slowly move both arms back to starting position.
- Repeat exercise for a set of 6.

### **1.4Overhead Shoulder Press:**

Muscles used: Trapezius (Upper Shoulder),Deltoid (shoulder),

Rhomboids(Upper Back)



### **Starting position**

- Hold weights at shoulder height with palms facing forward. (See photo a).

### **Procedure**

- Exhale (breathe out) as you evenly and slowly lift both arms Upright past ears, above head, to a full arm extension. (See photo B).
- Inhale (breathe in) as you evenly and slowly lower both arms down to starting position.
- Repeat exercise for a set of 6.

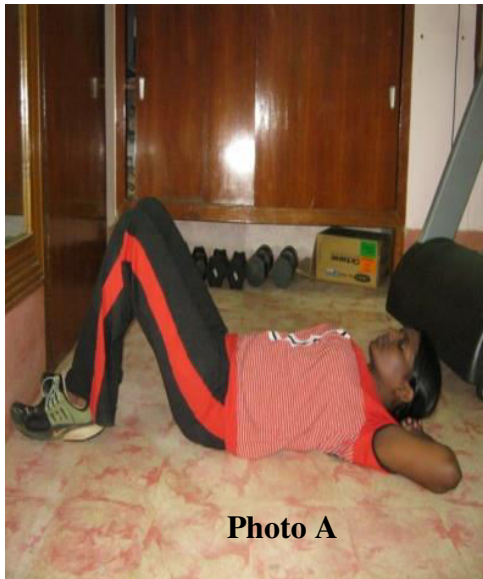
## **2 Middle Body**

### **Posture:**

- Lie with your back flat against the floor.
- Bend your knees and place both feet on floor.
- Place hands behind ears. Gently supporting your head. But not holding or lifting your head up. Do not interlace your fingers together.
- Push your lower spine flat against the floor. Pretend there is a zipper holding your lower spine to the floor.

## **Sit up:**

Muscles Used: Rectus Abdominus (Abdominals or Abs)

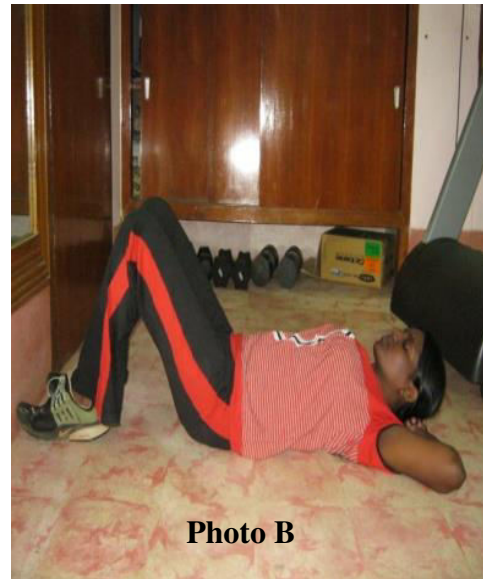


## **Instruction**

- Slowly lift your shoulders off the floor, using the strength of your abdominal muscles. As you lift, imagine you are squeezing your belly button into your spine (lifting position). (see photo B)
- Exhale (breathe out) as you lift up.
- Inhale (breathe out) as you slowly lower shoulders back to floor (starting position)
- Repeat exercise for a set of 6.

## 2.2 Isometric Sit Up:

Muscles Used: Rectus Abdominus (Abdominals or Abs)

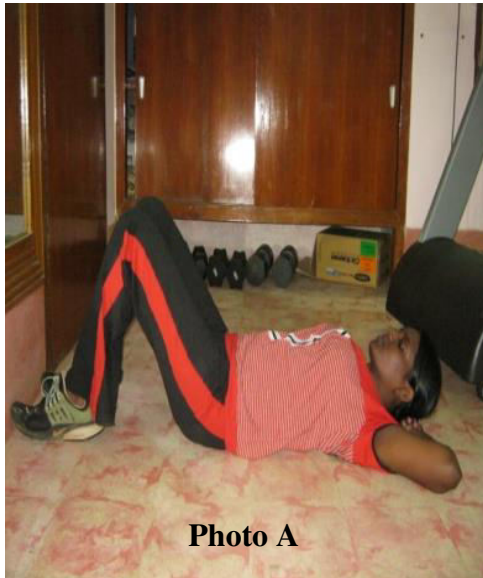


### Instruction

- Slowly lift your shoulders off the floor, using the strength of your abdominal muscles. As you lift, imagine you are squeezing your belly button into your spine (lifting position). (see photo B)
- Place your hands on your upper quadriceps and hold this position for a count of 16. This is an isometric or held muscular contraction. (see photo B)
- Exhale (breathe out) as you lift and hold while you move your hands from upper quadriceps to behind your ears.
- Repeat exercise for a set of 6.

### 2.3 Alternating Oblique Sit up:

Muscles Used: internal obliques (waist or side) Rectus Abdominus  
(Abdominals or Abs)



#### Instruction

- Slowly lift your shoulders off the floor, using the strength of your abdominal muscles. As you lift, imagine you are squeezing your belly button into your spine (lifting position). (see photo B)

- At lifting position, twist to the left by angling right shoulder and right elbow towards left knee. Squeeze the left oblique muscles in your waist and side as you twist. (see photo C)
- Return to center lifting position. (See photo B).
- Exhale (breathe out) as you lift and complete the twist.
- Inhale (breathe in) as you slowly lower your shoulders back to floor (starting position).
- Repeat exercise for a set of 6.
- Repeat entire sequence (step 1-10) twisting to the right and working the right oblique muscles.

**Remember:**

- Do keep your spine flat on the floor.
- Continue to breathe.
- Do move slowly. Rushing to complete a higher number of crunches could injure your back.
- Do use a controlled abdominal squeeze. Without locking or swinging.
- Do keep your fingers loose and unlaced behind your head.



## **Middle Body: Front Arm Raise:**

Muscles Used: Rectus Abdominus(Abdominals or Abs)



### **Instruction**

- Stand up straight, with knees slightly bent.
- Place feet hip distance apart.
- Make sure toes are pointing forward.
- Keep shoulders even as you complete this exercise.
- Hold weights in each hand. With arms extended by your sides. Slightly bend your elbows.
- Place arms so that the held weights are in line (next to) with your hip / leg area. Grip weight so palms face behind you (starting position).
- Slowly and evenly left right arm in front of body with a full arm extension. Until your arm reaches shoulder height. Be sure to keep

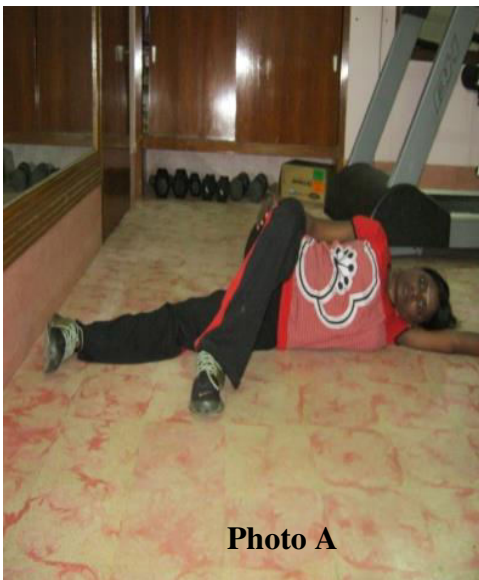
elbow slightly bent. You are working your right latissimus Dorsi & Deltoid. (See photo A).

- Exhale (breathe out) as you lift arm up.
- Inhale (breathe in) as you evenly and slowly lower arm down to starting position.
- Repeat exercise for a set of 6.
- Repeat entire sequence on your left side. Step 1-10 (working left Latissimus Dorsi & Deltoid).

### 3 Lower Body

#### 3.1. Inner Thigh Lift:

Muscles Used Adductors (inner Thigh)



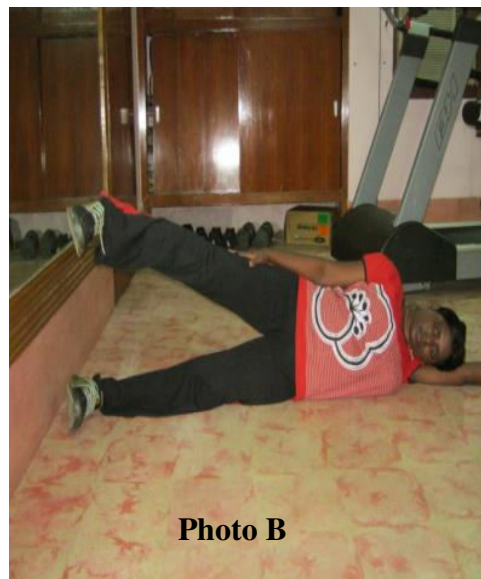
#### Instructions:

- Lie on your left side. Flat against the floor.
- Rest your head on your left upper arm.

- Bend your right (top) leg at the knee and cross over in front of left leg. Rest your right arm on your right hip.
- Keep your left leg straight. Using inner thigh muscle (adductor), lift left leg 6 inches off floor. Keep left toe in flexed position (not a pointed position). (See photo A).
- Exhale (breathe out) as you lift your leg.
- Using resistance with the inner thigh muscle (not gravity), slowly lower your leg. (See photo B).
- Inhale (breathe in) as you lower your leg.
- Repeat entire sequence on your right side. Step 1-9 (working right adductor muscle).

### **3.2. Outer Thigh Lift:**

Muscles Used: abductors (Outer Thigh)



## **Instructions**

- Lie on your left side. Flat against the floor.
- Rest your head on your left upper arm.
- Rest your right arm on your right hip.
- Keep your legs straight.
- Using outer thigh muscle (abductor). Lift right leg 6 inches of floor. Keep right toe in flexed position (not a pointed position).  
(see photo A)
- Exhale (breathe out) as you lift your leg.
- Using resistance with the outer thigh muscle (not gravity). Slowly lower your leg. (See photo B).
- Inhale (breathe in) as you lower your leg.
- Repeat exercise for a set of 6.
- Repeat entire sequence on your right side. Step 1-9 (working left abductor muscle).

### 3.3 Power Lift Kick

Muscles Used: Quadriceps (Mid Lower Thigh). Rectus Abdominus  
(Abdominals or Abs)



#### Instructions

- Stand up straight, with knees slightly bent.
- Place feet hip distance apart.
- Make sure toes are pointing forward.
- Keep shoulders even as you complete this exercise.
- Lift right leg up to hip height by bending right knee. Squeeze right quadriceps muscle and supporting abdominal muscles. Clasp hands in front of chest. (see photo A)
- Extend lower leg (knee to calf) straight forward with a kick motion. (see photo B)
- Exhale (breathe out) as you lower your leg to the floor.

- Inhale (breathe in) as you lower your leg to the floor.
- Keep abdominals tight as you complete this entire exercise. To support back posture and maintain proper form.
- Repeat exercise for a set of 6.
- Repeat entire sequence (steps 1-10) with left leg using left quadriceps muscle and supporting abdominal muscles.

### **3.4 Calf Lift:**

Muscles Used: Gastrocnemius (Upper Calf)



### **Instructions**

- Stand up straight, with knees slightly bent.
- Place feet hip distance apart.
- Make sure toes are pointing forward.
- Keep shoulders even as you complete this exercise.

- Exhale (breathe out) as you lift your heels off the floor by standing on your toes and squeezing your calf muscles.
- Raise your heels 2 to 5 inches as you lift. (See photo A)
- Inhale (breathe in) as you lower your heels back to the floor. (see photo B)
- Repeat exercise for set of 6.
- For added resistance hold weights on shoulders (this is optional).

**Remember:**

- Do not lift your heels more than 5 inches.
- Do not use a controlled lifting motion. Without swinging.

**Last 5 minutes consists of Cool down exercises**

Repeat the initial stretching exercises for 2 repetitions

**Finally relaxation process for 10 minutes**

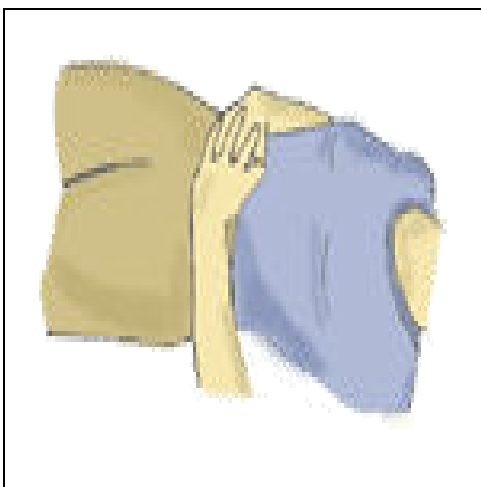
At the end of session of exercises, spend at least 10 minutes in final relaxation. During this time tense and relax each part of the body working up from feet.

## Prone Lying:



- Lie down on your front, legs slightly apart, toes touching and allow your heels to fall out to the sides.
- Make a pillow with your hands. Lengthen the body, tens and relax the muscles.
- Feel your body sinking into the floor as you exhale.
- Alternating on both sides

## Abdominal Breathing:

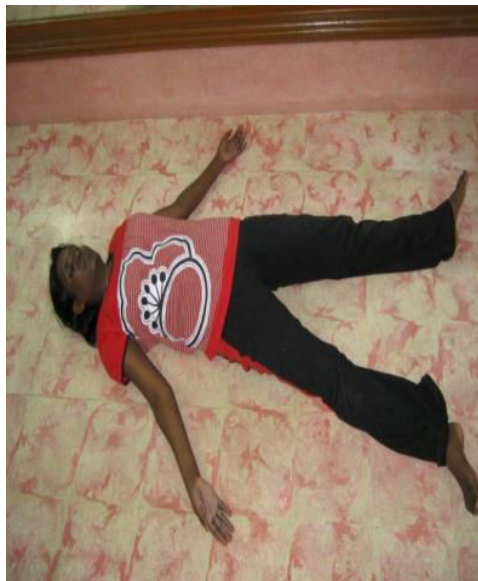









- Exhale and place your hands on your abdomen, fingers loosely interlocked.
- Inhale, your abdomen should rise up, separating your hands.

### **Supine lying: or still pose**

#### **Posture:**



- Lie on your back, feet's spread about 18 inches apart, and hands 6 inches from your sides, palms up
- Ease yourself into the pose making sure the body is symmetrical. Thighs, knees and toes turn outward.
- Close your eyes and breathe deeply.
- Working up from the feet tense and lift each part, then drop it down to relax

	<p><b>Feet and legs</b></p> <p>Lift your right foot just an inch off the floor. Tense the leg, hold, then let it drop. Repeat on the other side.</p>
	<p><b>Hands and Arms</b></p> <p>Raise your right hand an inch off the floor. Make a fist, tense the arm, and then let it drop. Repeat on the other side. Relax.</p>
	<p><b>Buttocks</b></p> <p>Clench your buttocks tightly together; lift the hips a little way off the floor and hold. Relax and drop them down</p>
	<p><b>Chest</b></p> <p>Tense and lift up the back and chest, keeping your hips and head on the floor. Relax and drop them down.</p>
	<p><b>Shoulders</b></p> <p>Lift your shoulders and hunch them up tight around your neck. Let them drop, relaxed. Now pull each arm, in turn, down alongside the body, and relax.</p>



### **Head**

Tuck in your chin slightly and roll the head gently from side to side. Find a comfortable position in the center for the head to lie and then relax.

- Let the mind be travel throughout the body, commanding each part to relax
- Bring consciousness back to your body by gently moving your fingers and toes take a deep breath and as your exhale, sit up.

### **III Phase**

Post test scoring done with the same experimental tools on the first day of next menstrual cycle.

# DATA ANALYSIS

## Statistics:

Resultant or Paired t- test was used to compare the pre - test and post - test scores.

## Formula Used

1. Mean 
$$\bar{X} = \frac{\sum x}{N}$$

2. Standard Deviation 
$$= \sqrt{\frac{\sum(x-\bar{X})^2}{N}}$$

Where,

X = the individual score

$\bar{X}$  = the mean score

N = the total number of participants

3. Test Statistic 
$$= \frac{\sum d}{\sqrt{\frac{N\sum d^2 - (\sum d)^2}{N-1}}} \quad \text{or} \quad \frac{\bar{d}}{\sqrt{N-1}}$$

Where,

T = 't' value

D = difference of the observations

$\sum d$  = the total of the differences

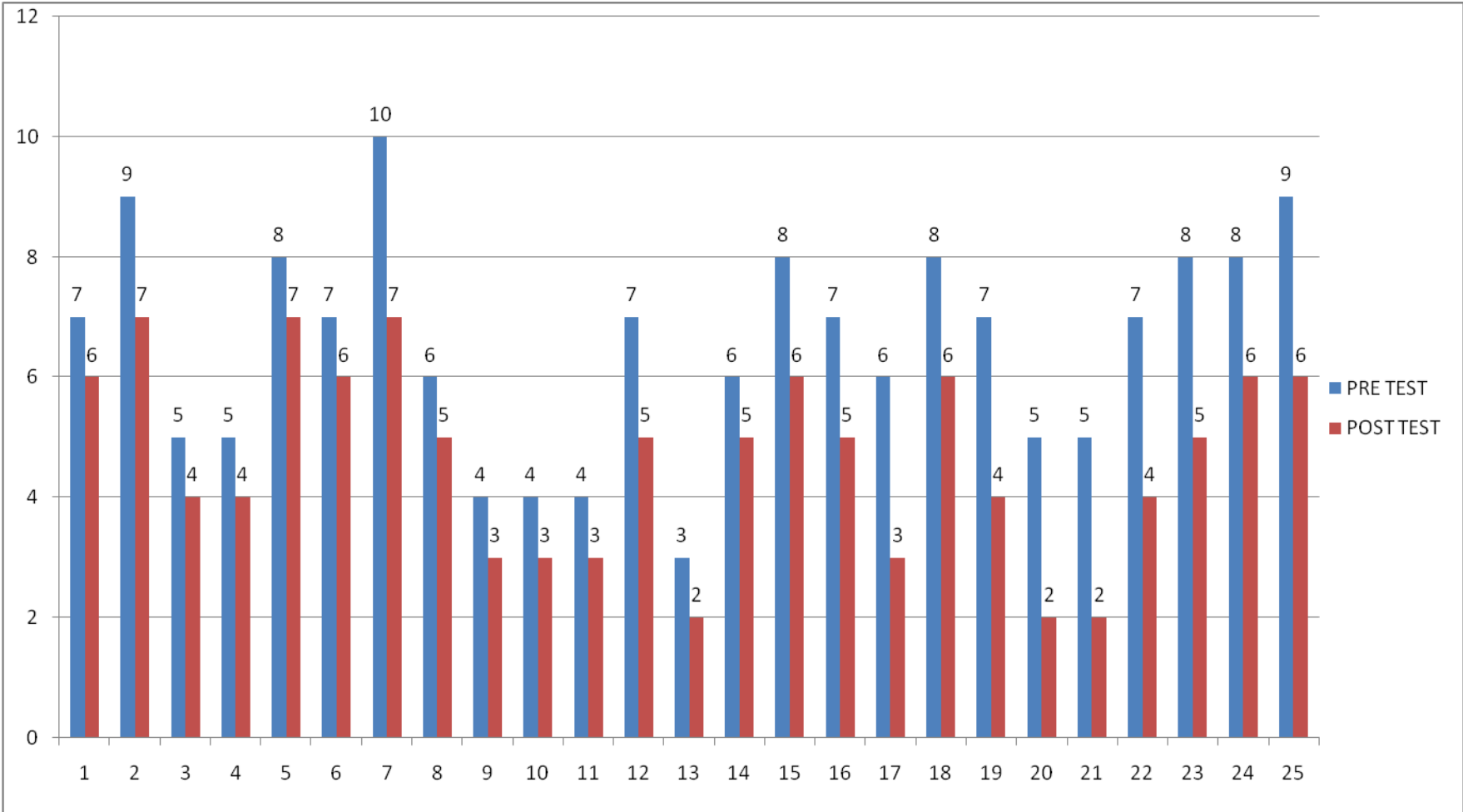
$\sum d^2$  = the total of the squared differences

N = number of subjects

**TABLE – I : VISUAL ANALOGUE SCALE FOR PAIN (CMS)**

<b>Participant No.</b>	<b>Pre Test</b>	<b>Post Test</b>
1	7	6
2	9	7
3	5	4
4	5	4
5	8	7
6	7	6
7	10	7
8	6	5
9	4	3
10	4	3
11	4	3
12	7	5
13	3	2
14	6	5
15	8	6
16	7	5
17	6	3
18	8	6
19	7	4
20	5	2
21	5	2
22	7	4
23	8	5
24	8	6
25	9	6

**FIGURE – 1 : PLOT OF VISUAL ANALOGOUS SCALE FOR PAIN VS PARTICIPANTS**

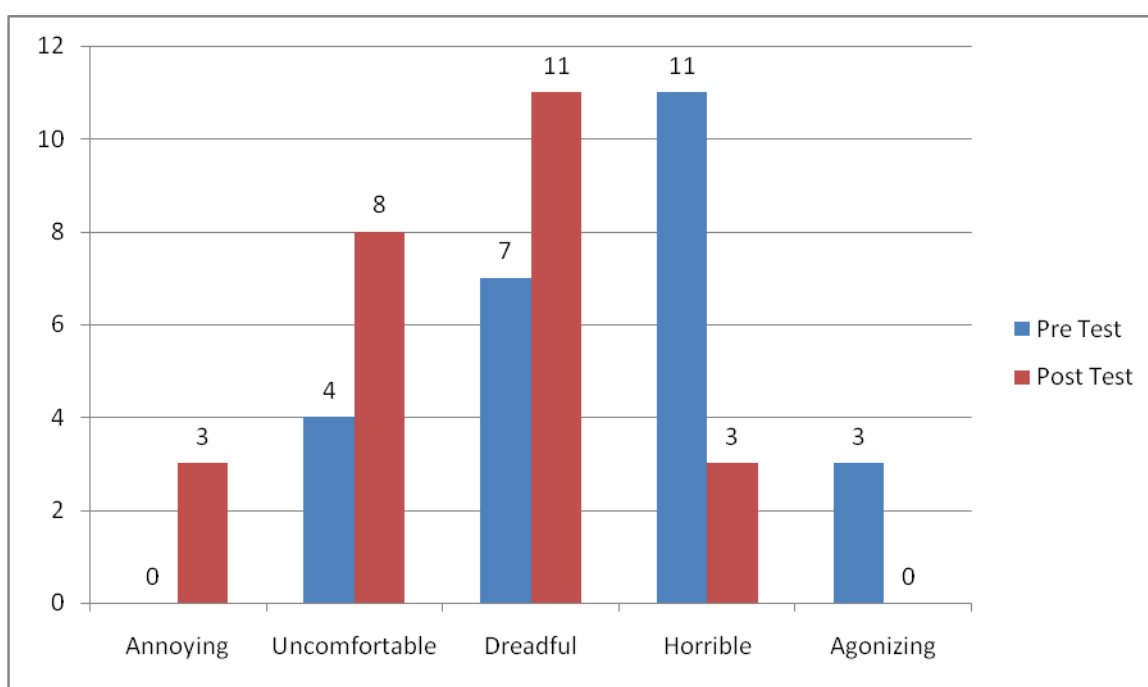


**TABLE – 2**

**DISTRIBUTION OF DYSMENORRHOEA SUBJECTS  
ACCORDING TO PAIN SCORE IN PRE TEST AND POST  
TEST**

Pain Range	N = 25 (Pre Test)		N = 25 (Post Test)	
	N	%	N	%
0<n≤2 (Annoying)	0	0	3	12
2<n≤4 (Uncomfortable)	4	16	8	32
4<n≤6 (Dreadful)	7	28	11	44
6<n≤8 (Horrible)	11	44	3	12
8<n≤10(Agonizing)	3	12	0	0

**FIGURE : 2 DISTRIBUTION PLOT CONTAINING NO. OF  
DYSMENORRHOEA SUBJECT VS PAIN**



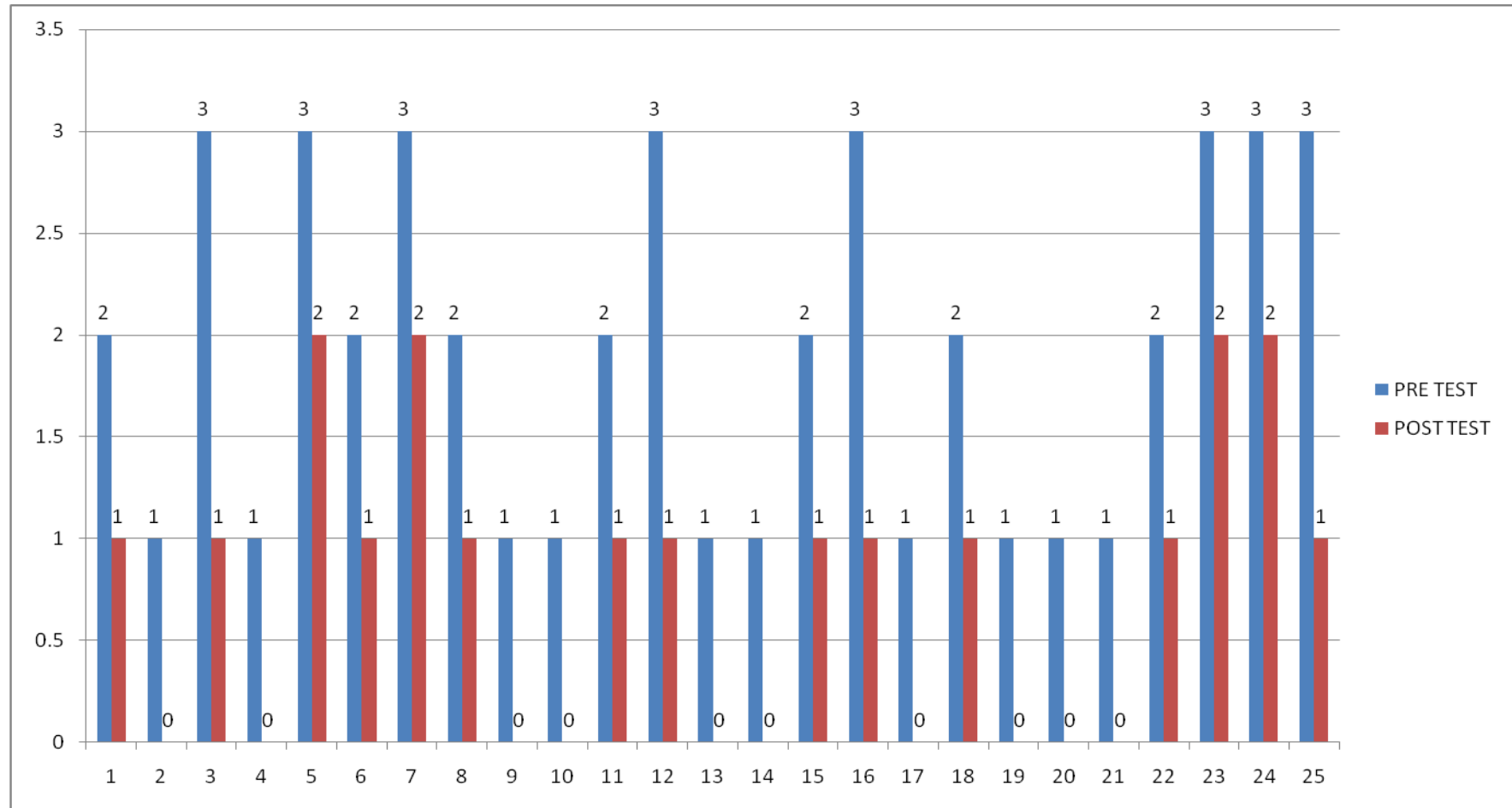
**TABLE – 3**

**SEVERITY SCORES FOR DYSMENORRHOEA**

<b>Participant Number</b>	<b>Pre Test</b>	<b>Post Test</b>
1	2	1
2	1	0
3	3	1
4	1	0
5	3	2
6	2	1
7	3	2
8	2	1
9	1	0
10	1	0
11	2	1
12	3	1
13	1	0
14	1	0
15	2	1
16	3	1
17	1	0
18	2	1
19	1	0
20	1	0
21	1	0
22	2	1
23	3	2
24	3	2
25	3	1



**FIGURE – 3 : PLOT OF SEVERITY SCORE VS PARTICIPANTS**

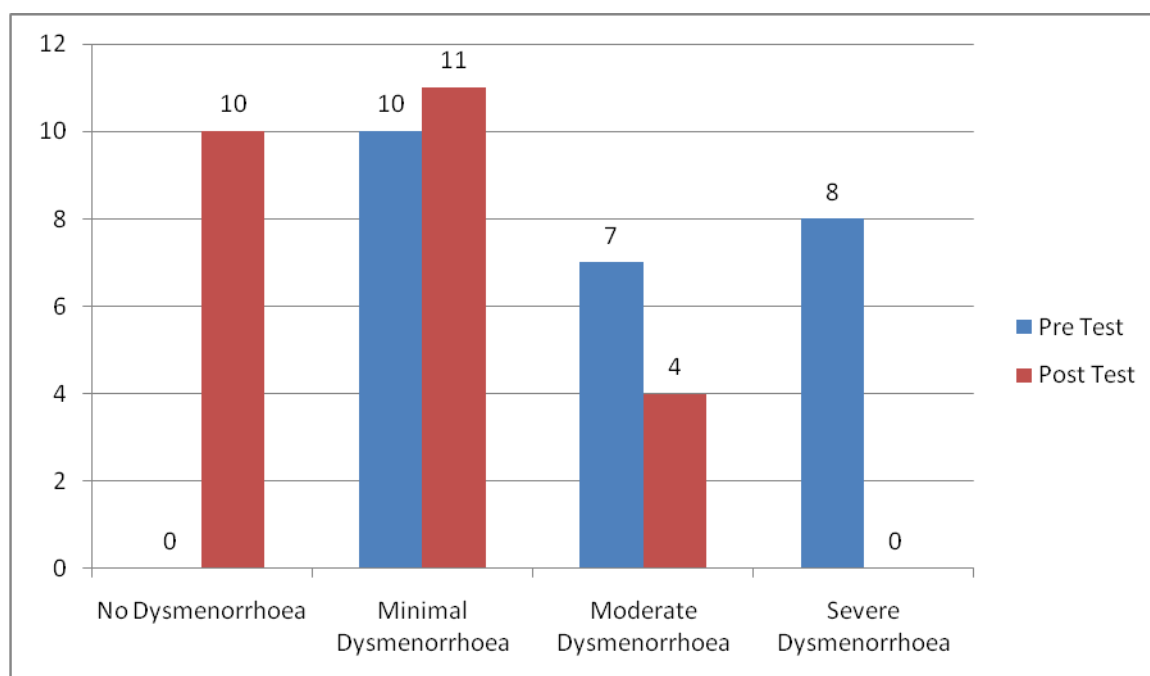


**TABLE – 4**

**DISTRIBUTION OF DYSMENORRHOEA SUBJECTS ACCORDING TO SEVERITY SCORE IN PRE TEST AND POST TEST**

Pain Range	N = 25 (Pre Test)		N = 25 (Post Test)	
	N	%	N	%
0 (No Dysmenorrhoea)	0	0	10	40
1 (Minimal Dysmenorrhoea)	10	40	11	44
2 (Moderate Dysmenorrhoea)	7	28	4	16
3 (Severe Dysmenorrhoea)	8	32	0	0

**FIGURE : 4 DISTRIBUTION PLOT CONTAINING NO. OF DYSMENORRHOEA SUBJECT VS SEVERITY**

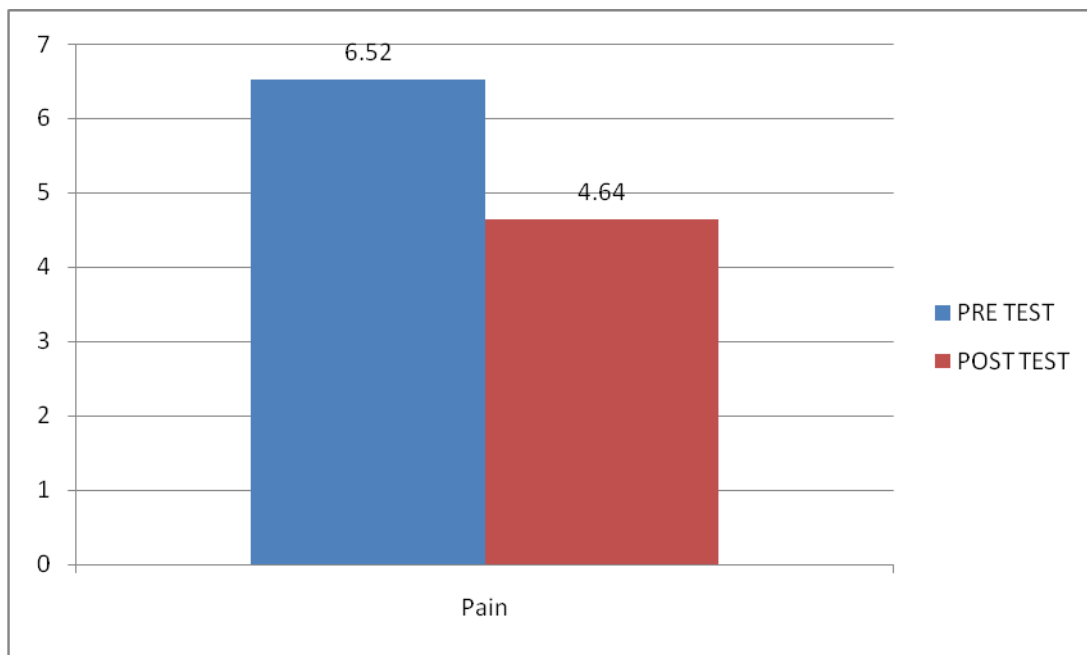


**STATISTICAL ANALYSIS OF IMPROVEMENT IN PRIMARY  
DYSMENORRHOEA SUBJECTS INTERMS OF PAIN**

**TABLE – 5 PRE TEST, POST TEST & TEST STATISTICS FOR VAS  
PAIN SCORES**

	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	TEST STATISTIC	P VALUE
<b>PRE TEST</b>	6.52	1.88	0.867	10.87	0.001
<b>POST TEST</b>	4.64				

**FIGURE : 5 PLOT OF THE MEAN DIFFERENCE VS PRE/POST  
TEST FOR PAIN**

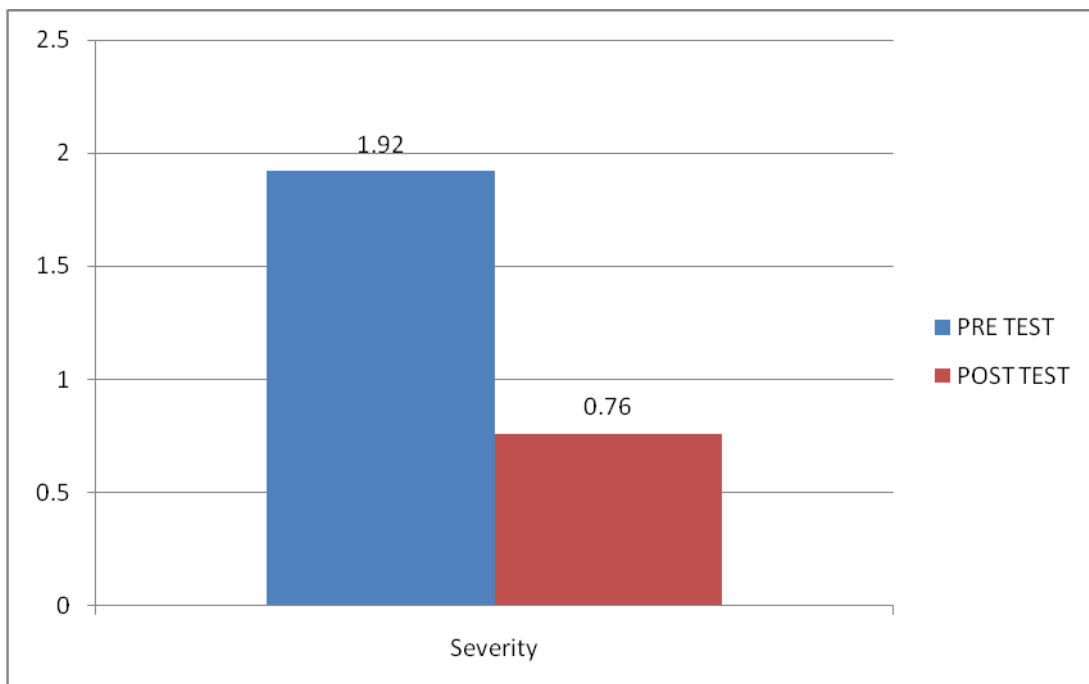


**STATISTICAL ANALYSIS OF IMPROVEMENT IN PRIMARY  
DYSMENORRHOEA SUBJECTS INTERMS OF PAIN**

**TABLE – 6 PRE TEST, POST TEST & TEST STATISTICS FOR  
SEVERITY SCORES**

	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	TEST STATISTIC	P VALUE
<b>PRE TEST</b>	1.92	1.16	0.36	16.11	0.001
<b>POST TEST</b>	0.76				

**FIGURE : 6 PLOT OF THE MEAN DIFFERENCE VS PRE/POST  
TEST FOR SEVERITY**



# DISCUSSION

The necessary tabulation and their graphical representation for the study have been presented. Based on the recorded values the statistical analysis has been carried out and presented for interpretation. Table 1 presents the participant number, pre test and post test visual analogous score for pain. Its plot was shown in. Figure 1.

Table 2 shows the distribution of Primary Dysmenorrhoea subject's pain for pretest and posttest. In the pretest, number of subjects having annoying pain - 0 , Uncomfortable pain - 4 (16 %), dreadful pain – 7 (28 %) , horrible pain – 11 (44 %) and agonizing pain – 3 (12 %) has been shown. In the post test, number of subjects having annoying pain - 3 (12 %), Un comfortable pain - 8 (32 %), dreadful pain – 11 (44 %) , horrible pain – 3 (12 %) and agonizing pain – 0 has been shown. These results are graphically presented in figure 2.

Table 3 contains the pre test and post tests Severity score of Dysmenorrhoea subjects. Figure 3 depicts the plot of the same.

Table 4 shows the distribution of Primary Dysmenorrhoea subjects Severity score for pretest and post test. In the pretest, number of subjects having No Dysmenorrhoea – 0, minimal Dysmenorrhoea – 10 (40%) , moderate Dysmenorrhoea – 7 (28%) , severe Dysmenorrhoea - 8 (32%) has been shown. In the post test, number of subjects having No Dysmenorrhoea – 10 (40 %), minimal Dysmenorrhoea – 11 (44 %),

moderate Dysmenorrhoea – 4 (16%), severe Dysmenorrhoea - 0 has been shown. These results are graphically presented in figure 4.

Table 5 and 6 shows the statistical analysis of improvement in Primary Dysmenorrhoea in terms of pain and severity. The table 5 shows the Mean difference – 1.88, standard deviation – 0.867 and the test statistics - 10.87 for the pain with a P value of .001. The table 6 depicts the improvement by giving the Mean difference – 1.16, standard deviation – 0.36 and the test statistics – 16.11 for the Severity scores with a P value of .001.

## **RESULT**

This study presented the assessment of effectiveness of Exercise and Relaxation techniques in Primary Dysmenorrhoea for 25 unmarried girls of Prince Ladies hostel. Among the selected participants most of them found to have Primary Dysmenorrhoea with Agonizing, horrible pain and severe Dysmenorrhoea. The study carried out had a correlation with the literature review.

The distribution of girls having Dysmenorrhoea with agonizing and horrible pain initially have been shifted to the lower scale (refer figure 2) and girls with severe Dysmenorrhoea has become minimal Dysmenorrhoea (refer Figure 3). The statistical Interpretation of the mean difference and the standard deviation shows a reduction in pain and severity. Test statistic for pain and severity calculated has been compared with the tabulated related t test values. It is found that the calculated test statistic from the recorded value is greater than the tabulated value of 1.71 (refer Table 5 and 6). So we reject Null Hypothesis and accept the Hypothesis saying that there is significant difference in pain and severity following Exercises and Relaxation Techniques in Primary Dysmenorrhoea among unmarried girls.

# **CONCLUSION**

The statistical analysis done from the pretest and post test values of VAS and severity scores showed that exercises and relaxation procedure had a significant effect in reducing pain and severity in primary Dysmenorrhoea among unmarried girls.



## **SUGGESTION**

Certain relaxation techniques reduce the mood symptoms of Dysmenorrhoea. Margaret Polden and Jill Mantle suggests the Mitchell method of relaxation.

Yoga can also be helpful. There are other various methods of relaxation can also be included with exercises. It is combination of gentle stretching, breathing techniques and meditation can help to ease mind tension.

Women's having Secondary Dysmenorrhoea with pelvic pathology can also follow the exercises. But in order to obtain better result they must follow the program along with the proper medical care for underlying pathology. With regular exercises and relaxation procedures, other health care measures like maintenance of good body mechanics, maintenance of proper nutritional dietary habits, avoidance of constipation and avoidance of stress and fatigue, particularly during the time proceeding menstrual periods. Staying active and interested in activities may also help. Education and supportive therapy can provide women with a foundation for coping with this common occurrence and increasing feelings of control and self reliance.

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# **APPENDIX – I**

## **ASSESSMENT FORM**

- **Subjective Assessment**

- Name:
- Age:
- Address:
- D.O. Assessment:
- Chief Complaints:

(On the 1<sup>st</sup> day of Menstruation)

- **History:**

- Age of Menarche:

- **Menstrual History:**

- No of days/cycles:
- Regular / Irregular
- Painful / Pain free

- **Onset of Pain:**

(No of days Preceding Menstruation)

- **Duration of Dysmenorrhoea:**

(Whether participant is on any drugs for Dysmenorrhoea:

Having any diagnosed gynaecological disease Eg. Endometriosis)

- **Objective Assessment:**

- Pain Location

- Low Back
- Gluteal region
- Thighs
- Lower abdomen
- Calf region or perennial region
- **Events Preceding:**
  - Emotional outbursts
- **Description of Pain:**
  - Aching
  - Pricking
  - Boring etc.,
- **Amount of Bleeding:**
  - Normal
  - Abnormal or unusual
- **Rate Dysmenorrhoea from 0 – 10 (VAS)**
- **Rate Dysmenorrhoea according to Severity scale (0 – 3)**
- **Relieving factors:**
  - Rest
  - Hot packs
  - Abdominal Massage etc.,

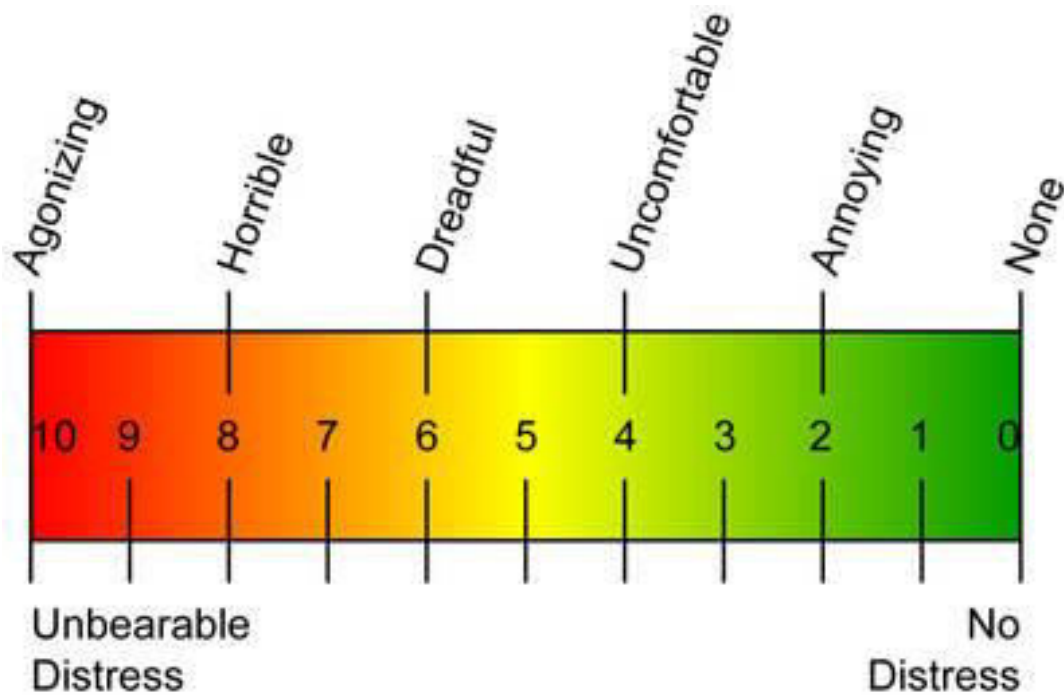
- **Pain scoring by Visual Analogous scale after exercise:**
- **Pain scoring by Severity scale after exercise:**
- **Problem List –**
- **Physiotherapy Management:**
- **Short Term Goals:**
- **Long Term Goals:**



# APPENDIX II

## DATA COLLECTON TOOLS

### Visual Analogous scale:



Task \_\_\_\_\_

Date \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

### Severity of Dysmenorrhoea scale:

- 0 – No Dysmenorrhoea
- 1 – Minimal Dysmenorrhoea (can work, some what uncomfortable)
- 2 – Moderate Dysmenorrhoea (can work, but quite (or) uncomfortable)
- 3 – Severe Dysmenorrhoea (miss work, have to be in bed)