

## **Chapter III**

### **METHODOLOGY**

Research methodology involves the systematic procedure by which researcher starts from the initial identification of the problem to its final conclusion. The role of the methodology is to carry on the research work in a scientific and valid manner. The purpose of the study is to find out whether there would be any significant effect of isolated and combined practice of naturopathy and yogasana on selected physiological, biochemical and psychological variables in menstrual irregularity women.

This chapter provides an overview of the method used in the study for the selection of subjects, selection of variables, experimental design, pilot study, orientation of the subjects, criterion measures, reliability of data, reliability of instruments, testers competency, subjects reliability, training program, training schedule, training procedure, test administration, collection of data and statistical technique which has been explained in detailed.

#### **SELECTION OF SUBJECTS**

For the present investigation Totally 120 female students were reported from Annamalai University with a problem of menstrual irregularity. After explaining the methodology of the research procedure 83 female students gave their willingness. Out of which by medical check up and by the doctors advice 60 students were selected at random and divided into four equal groups by lot procedure. Their age ranged between 18-24 years. Menstrual irregularity women subjects were assigned to experimental group I, experimental group II, experimental group III and control group IV each group consists of 15 subjects each. Experimental group I underwent naturopathy, experimental group II underwent yogasana, experimental group III

(Combined) naturopathy & yogasana for twelve weeks and control group no training was provided during the period of study.

### **SELECTION OF VARIABLES**

The investigator reviewed the available scientific literature pertaining to the study from books, journals, periodicals, magazines, research papers and available sources from Tamilnadu physical education and Sports University, Annamalai University and SRM University and also with help of professional experts in yoga, the following physiological, biochemical and psychological variables were selected.

### **SELECTION OF DEPENDENT VARIABLES**

#### **1. Physiological variables**

- i. Systolic blood pressure
- ii. Diastolic blood pressure
- iii. Respiratory rate

#### **2. Bio-chemical variables**

- i. Hemoglobin (Hb)
- ii. Thyroid-stimulating hormone (TSH)
- iii. T3
- iv. T4

#### **3. Psychological variables**

- i. Stress
- ii. Depression

## **SELECTION OF INDEPENDENT VARIABLES**

1. Experimental group I - Naturopathy.
2. Experimental group II - Yogasana.
3. Experimental group III - Combined (Naturopathy & Yogasana).
4. Group IV - Control group (No training).

## **EXPERIMENTAL DESIGN**

The study was formulated as a random group design, consisting of pre and post test. Sixty menstrual irregularity women were randomly selected and divided into four equal groups. The groups were assigned as experimental group I (Naturopathy), experimental group II (Yogasana), experimental group III combined (naturopathy & yogasana) and control group (no training). The pre test was conducted on all the subjects on selected physiological, biochemical and psychological variables such as systolic blood pressure, diastolic blood pressure, respiratory rate, hemoglobin (Hb), thyroid-stimulating hormone (TSH), T3, T4, stress and depression. The experimental group participated in their naturopathy, yogasana and combined (naturopathy & yogasana) for a period of 12 weeks. The post test was calculated on all the selected variables after 12 weeks of the training period.

## **PILOT STUDY**

A pilot study was conducted to assess and finalize the training programme to ensure the intensity and duration of the training programme within the limits of the subject's capacity to produce their desired effect. For this purpose, 5 subjects were selected and given naturopathy, yogasana and combined (naturopathy & yogasana) (5 in each group) respectively to determine the intensity and duration of

a training session. The calculated intra-class correlation of the pilot shows that there was significant improvement in physiological, biochemical and psychological variables. Based on the response of the subjects in the pilot study and during the training, the investigator adopted the suitable training schedule for the study. The number of repetitions assigned to each subject was tested and it was found that were within the reach of the individual's capacity.

### **ORIENTATION OF THE SUBJECTS**

Prior to the test the investigator explained to the subjects about the purpose of the naturopathy, yogasana and combined (naturopathy & yogasana). The investigator also explained briefly in depth about the effects and benefits of the training to the subjects. Commonly used naturopathy treatment and yogasana are selected after consulting an expert in naturopathy and explained about yogasana for the co-operation of the subjects. The method and the value of each loosening exercises, yogasanas, relaxation and naturopathy were explained and performed first by the investigator. The investigator got full co-operation and motivated them to involve completely and execute the training to their extreme level for the maximum output from the subjects.

### **CRITERION MEASURES**

By glancing, the literature and in consultation with professionals and experts the following criterion measures were selected for measuring the variables in this study is presented in the Table I.

**TABLE I**  
**CRITERIAN MEASURES AND TEST INSTRUMENTS USED**

<b>VARIABLES</b>	<b>CRITERIAN MEASURES</b>	<b>INSTRUMENT USED</b>
Systolic and Diastolic Blood pressure	mmHg	Portable Automatic Arm Blood Pressure Monitor
Respiratory rate	breaths per minute	Digital Stop Watch
Hemoglobin	Blood samples	Standard Laboratory
TSH	Blood samples	Standard Laboratory
T3	Blood samples	Standard Laboratory
T4	Blood samples	Standard Laboratory
Stress	Marks	Stress questionnaire constructed by Dr.Latha Satish (1997) consisting of 52 questions.
Depression	Marks	Goldberg Depression Questionnaire designed by Ivan Goldberg (1993) consisting of 18 questions.

### **RELIABILITY OF DATA**

The reliability of data was ensured by establishing the instrument reliability, tester reliability, test competency and subject's reliability.

## RELIABILITY OF INSTRUMENT

All the equipments which were used in the study had been obtained from standard firms which catered to need of various research laboratory in India and abroad. All instruments were available in Neela Diagnostic Center & Arun X-Rays, Chidambaram, and their calibrations were accepted as enough for the purpose of the study. The physiological and biochemical variables were assessed in the Neela diagnostic centre and Arun X-rays who was the former professor in Pharmacology in Rajah Muthiah Medical College and Hospital, Annamalai University. The test was taken with the help of the Lab assistants and lab technician and assisted by medical students in the standard laboratory

## TESTERS COMPETENCY

The intra class correlation coefficient obtained for test-retest data are presented in Table II.

**TABLE II**  
**INTRA CLASS CORRELATION COEFFICIENT OF TEST – RETEST SCORES**

S.No	VARIABLES	COEFFICIENT OF CORRELATION
1.	Systolic blood pressure	98*
2.	Diastolic blood pressure	98*
3.	Respiratory Rate	99*
4.	Hemoglobin (Hb)	97*
5.	Thyroid-stimulating hormone (TSH)	98*
6.	T3	97*
7.	T4	98*
8.	Depression	97*
9.	Stress	96*

\*Significant at 0.05 level

Reliability was established by the test-retest processes. Fifteen menstrual irregularity women in each group were tested on selected variables. The repeated measurement of individuals on the same test is done to determine reliability.

As for psychological variables depression and stress, the author's questionnaires have determined reliability and the same was adapted for this study and considered as reliable.

### **SUBJECTS RELIABILITY**

The intra class correlation value of the above test and retest also indicated subject reliability as the same subjects were used under similar conditions by the same tester. The co-efficient of reliability was significant at 0.05 level, for the above test under investigation.

### **TRAINING PROGRAMME**

The subjects were selected at random and were divided into four groups and the experimental group I underwent naturopathy from 7.00 am to 8.00 am and experimental group II underwent yogasana from 6.00 am to 7.00 am for the duration of sixty minutes from Monday to Saturday (6 days/week) and combined practices (naturopathy and yogasana) for 12 weeks, whereas the control group no training. The naturopathy, yogasana and combined (naturopathy & yogasana) for the selected experimental groups are presented in the following order.

1. Experimental Group I – Naturopathy (hip bath, cold abdomen compress,

Cold abdomen mud pack and abdomen oil massage).

2. Experimental Group II – Yogasana (Loosening exercises, asanas & Pranayama, relaxation).
3. Experimental Group III - Combined (naturopathy and yogasana).
4. Control Group IV - No training

### **TRAINING SCHEDULE FOR EXPERIMENTAL GROUP I–NATUROPATHY**

Experimental group I underwent naturopathy for 60 minutes were given to the subjects during the experimental period. The naturopathy program was scheduled for one session in the morning between 7.00 am to 8.00 am for 6 days (Monday to Saturday) a week and the same were continued for 12 weeks.

### **TRAINING SCHEDULE FOR EXPERIMENTAL GROUP I**

**TABLE – III**

<b>S.No</b>	<b>Naturopathy treatment</b>	<b>Duration</b>	<b>Set</b>	<b>Frequency / week</b>
1	Abdominal oil massage	10 min	1	6 days in a week
2	Cold abdomen compress	15 min	1	
3	Cold abdomen mud pack	15 min	1	
4	Cold hip bath	20 min	1	

### **TRAINING SCHEDULE FOR EXPERIMENTAL GROUP II - YOGASANA**

Experimental group II underwent yogasana for sixty minutes were given to the subjects during the experimental period. The yogasana program was scheduled for one session in the morning between 6.00 am to 7.00 am for 6 days (Monday to Saturday) a week and the same were continued for 12 weeks. Sixty minutes warming up and relaxation were also included. In order to give systematic yogic practices to the



subjects, the investigator selected sithilikarana vyayama (loosening exercises), suryanamaskar, asanas, pranayama and meditation, finally savasana for relaxation. Each session lasted for 55 to 60 minutes consisting of 5 minutes sithilikarana vyayama (loosening exercises), 10 minutes for suryanamaskar, followed by asanas each lasting for 15 minutes, 10 minutes pranayama and 15 minutes relaxation.

### TRAINING SCHEDULE FOR EXPERIMENTAL GROUP II

Table – IV

#### YOGIC PRACTICES FOR FIRST FOUR WEEKS

S.No	Yogic practices	Duration	Repetition	Set	Rest between practice	Rest between set
1	Prayer	2 min	1	1	-	10– 15 sec
2	Loosening Exercises(Sithilikarana Vyayama)	10 min	1	1	-	
3	Suryanamaskar	5 min	2	2	5to10 sec	
4	Tadasana	3 min	2	1	5to10 sec	
5	Ardhakatichakrasana	3 min	2	2	5to10 sec	
6	Padahasthasana	3 min	2	1	5to 0 sec	
7	Ardhachakrasana	3 min	2	1	5to10 sec	
8	Vrikshasana	3 min	2	2	5to10 sec	
9	Ardha Padmasana	3 min	2	2	5to10 sec	
10	Padmasana	3 min	2	2	5to10 sec	
11	Anuloma Viloma Pranayama	5 min	3	1	5to10 sec	
12	Shavasana Relaxation	10 min	1	1	-	

**TABLE – V**  
**YOGIC PRACTICES FOR FIFTH TO EIGHTH WEEKS**

S.No	Yogic practices	Duration	Repetition	Set	Rest between practice	Rest between set
1	Prayer	2 min	3	2	5 to 8 sec	10 – 15 sec
2	First four weeks Practices	20 min	3	1	5 to 8 sec	
3	Vakrasana	3 min	2	2	5 to 8 sec	
4	Paschimothasana	3 min	2	1	5 to 8 sec	
5	Ushtrasana	3 min	2	1	5 to 8 sec	
6	Shasanakasana	3 min	2	1	5 to 8 sec	
7	Gomukasana	3 min	2	2	5 to 8 sec	
8	Shavasana-Relaxation	10 min	1	1	-	-

**TABLE - VI**  
**YOGIC PRACTICES FOR NINTH TO TWELTH WEEKS**

S.No	Yogic practices	Duration	Repetition	Set	Rest between practice	Rest between sets
1	Prayer	2 min	3	2	3 to 6 sec	10 – 15 sec
2	First eight weeks Practices	20 min	3	2	3 to 6 sec	
3	Makarasana	3 min	1	1	3 to 6 sec	
4	Bhujangasana	3 min	2	1	3 to 6 sec	
5	Shalabasana	3 min	2	1	3 to 6 sec	
6	Viparithakarani	3 min	2	1	3 to 6 sec	
7	Matsyasana	3 min	2	1	3 to 6 sec	
8	Shavasana Relaxation	10 min	1	-	-	
9	AUM Kara	5 min	1	-	-	

**TRAINING PROCEDURE FOR NATUROPATHY TREATMENT  
(EXPERIMENTAL GROUP – I)**

**ABDOMINAL OIL MASSAGE**

**Purpose**

To measure the menstrual disorder (amenorrhea) by lab investigation

**Equipment**

Coconut Oil, massage table

**Procedure**

The patient is asked to lie down on the massage table; the abdomen area is massage by applying coconut oil for 20 mins with massage movements

## **COLD ABDOMEN MUD PACK**

### **Purpose**

To measure the menstrual disorder (amenorrhea) by lab investigation

### **Equipment**

Cotton cloth, mud paste

### **Procedure**

The patient is asked to lie down on the table with naked abdomen; the abdomen area is covered with cold abdomen mud pack for 20 mins

## **COLD HIP BATH**

### **Purpose**

To measure the menstrual disorder (amenorrhea) by lab investigation

### **Equipment**

Hip bath tub, cold water

### **Procedure**

The patient is asked to sit down in the hip bath tub with naked abdomen for 30 mins

## TRAINING PROCEDURES OF EXPERIMENTAL GROUP II - YOGASANA

### PRAYER

#### SHANTHI MANTHRA (Starting Prayer)

Om.....Om.....Om.....

Sahana Vavathu, Sahanou Bhunaktu

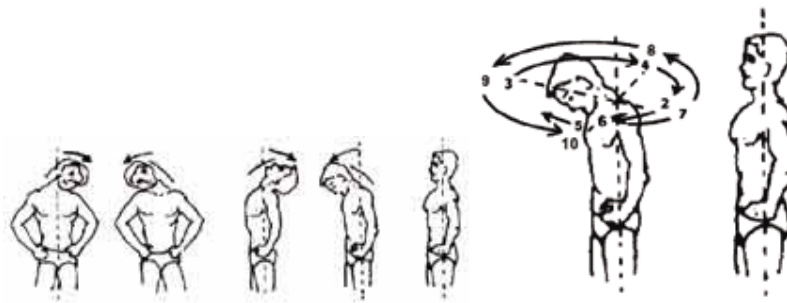
Sahaveeryam-Karvavahai

Tejaswinaa Vadhitamastu, Ma...Vidvishavahai

Om.... Shanthi..... Shanthi..... Shanthi hi.....

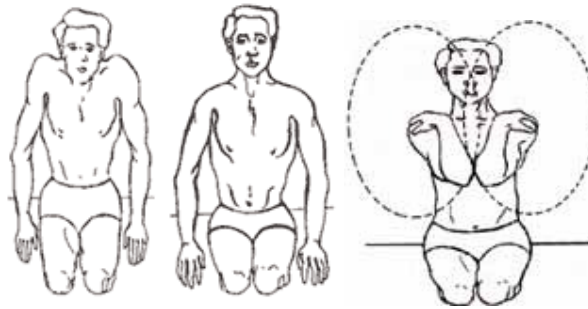
### LOOSENING EXERCISES –SITHILKARANA VYAYAMA

#### NECK MOVEMENTS – KANTHASANCHALANA



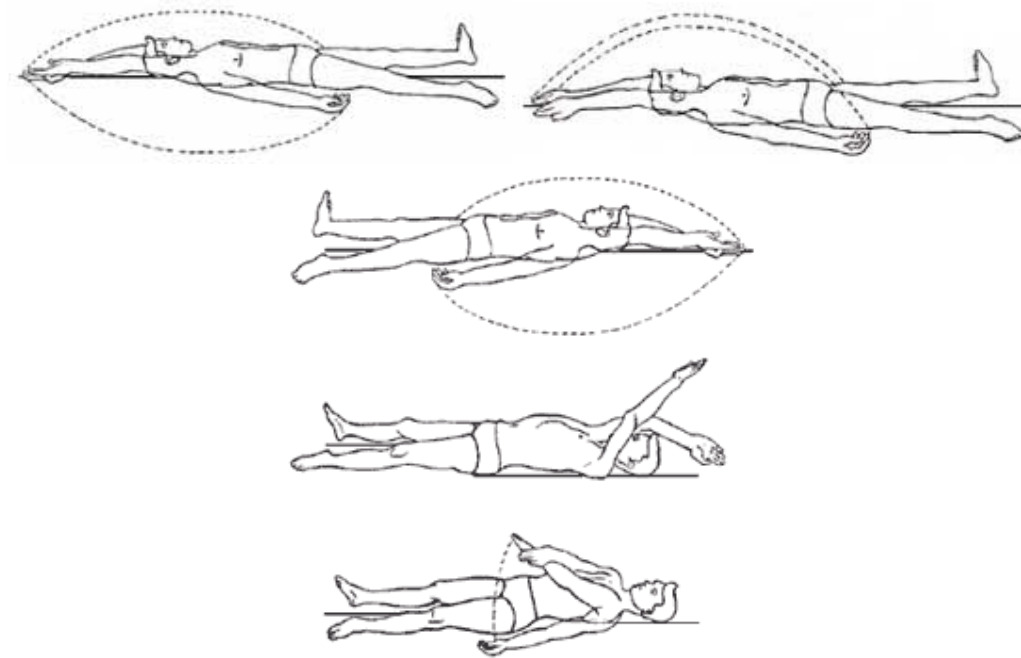
**Figure I**

- Step 1 Stand in Tadasana Position;
- Step 2 Keep the neck straight, then slowly but without jerk.
- Step 3 Start rotating neck clockwise from left shoulder to backwards then to the right shoulder and to front.
- Step 4 Repeat this in anticlockwise direction starting from right shoulder

**SHOULDER MOVEMENTS -SKANDHASANCHALANA****Figure II**

- Step 1 Sit in the Vajrasana Position,
- Step 2 Keep the body straight, with arms by side.
- Step 3 Then slowly but without jerk lift both shoulders upwards as much as possible near to ears,
- Step 4 Back to normal position.
- Step 5 Fold the hands and place left fist on left shoulder and right fist on right shoulder, bring both elbows together near chest, then slowly but without jerk.

## HAND MOVEMENTS -HASTASANCHALANA

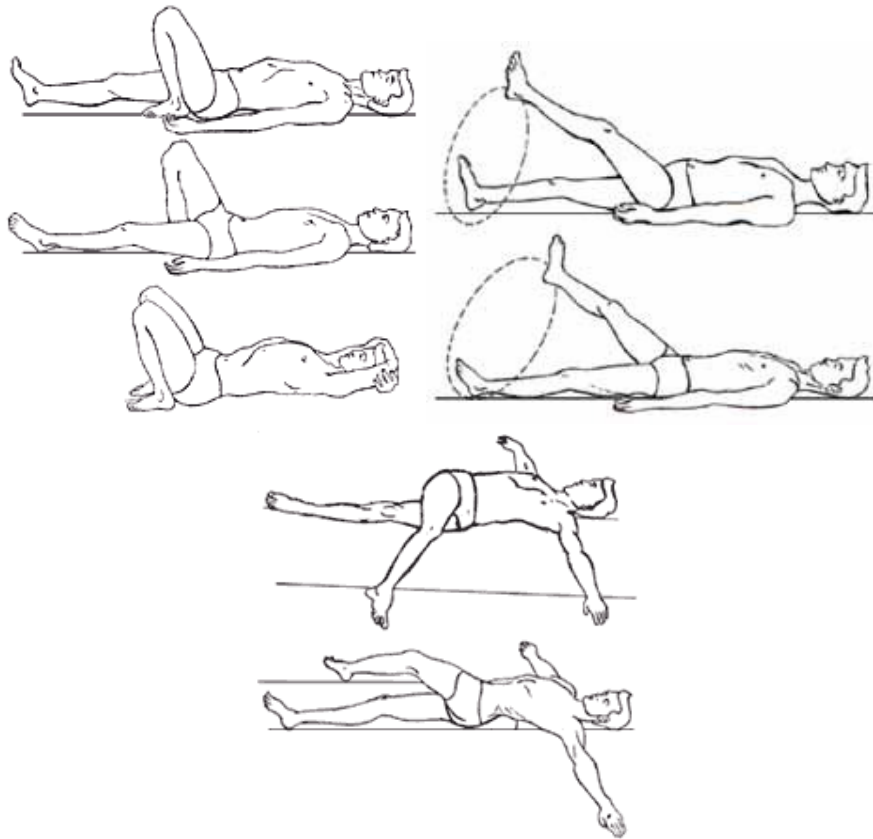


**Figure III**

- Step 1      Relax in Shavasana position,
- Step 2      Keep the hands 6 inches away from the body,
- Step 3      Legs separated with 12 inch distance between them,
- Step 3      Lift the hands 1 to 1.5 inch above ground and slowly rotate them towards head without bending elbows,
- Step 5      Keep the hands parallel to the ground till both the palms meet, place left palm on right palm and stretch hands upwards and legs downwards for 5 to 10 seconds, then slowly but without jerk rotate both the hands back to the normal position via the same path.

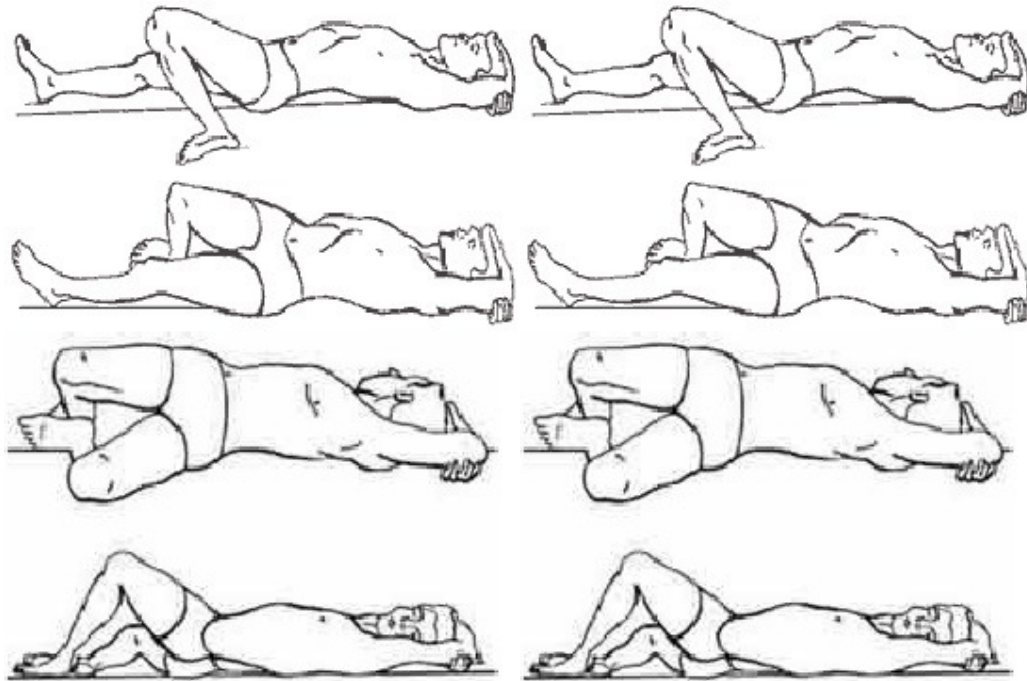


## LEG MOVEMENTS - PADASANCHALAN



**Figure IV**

- Step 1      Relax in Supine position,
- Step 2      Keep the hands around head rotating them sideways,
- Step 3      Then lift the left leg and bring it near to the hip,
- Step 4      Repeat this procedure for the right leg.
- Step 5      Then slowly bring both the hands back to the normal position.

**KNEE: MOVEMENT 1 JANUSANCHALAN****Figure V**

- |        |   |
|--------|---|
| Step 1 | Relax in Supine position,                                     |
| Step 2 | Move the hands around head                                    |
| Step 3 | Then bend left leg in knee and rest foot near to hips,        |
| Step 4 | Then turn the knee to the right side as far as possible.      |
| Step 5 | Repeat this procedure for the right leg.                      |
| Step 6 | Then slowly bring both the hands back to the normal position. |

## SURYA NAMASKAR-SUN SALUTATION



**Figure VI**

Step 1 Hastauthanasana

Chant Manthra: Aum Hram Mitraya Namah

Breathing: Inhale

Step 2 Padahasthasana

Chant Manthra: Aum Hrim Ravaye Namah

Breathing: Exhale

Step 3 Asvasanchala

Chant Manthra: Aum Hrum Suryaya Namah

Breathing: Inhale

Step 4 Danadal

Chant Manthra: Aum Hraim Bhanave Namah

Breathing: Exhale

Step 5 Sasangasana

Chant Manthra: Aum Hroum Khagaya Namah

Breathing: Inhale and Exhale

Step 6 Astanaganamaskar

Chant Manthra: Aum Hrah Pushne Namah

Breathing: Bahyakumbhaka

Step 7 Bhujanagasana

Chant Manthra: Aum Hram Hiranyagarbhaya Namah

Breathing: Inhale

Step 8 Parvatasana

Chant Manthra: Aum Hrim Maricaye Namah

Breathing: Exhale

Step 9 Sasangasana

Chant Manthra: Aum Hrum Adityaya Namah

Breathing: Inhale and Exhale

Step 10 Asvasanchala

Chant Manthra: Aum Hraim Savitre Namah

Breathing: Inhale

Step 11 Padahasthasana

Chant Manthra: Aum Hroum Arkaya Namah

Breathing: Exhale

Step 12 Hastautthanasana

Chant Manthra: Aum Hrah Bhaskaraya Namah

Breathing: Inhale.

## **ASANAS**

### **TADASANA - MOUNTAIN POSTURE**



**Figure VII**

- Step 1 Stand with both feet touching from the heel to the big toe, keeping the back straight and the arms pressed slightly against the sides with palms facing inward.
- Step 2 Slightly tighten or flex the muscles in the knees, thighs, stomach and buttocks maintaining a firm posture. Balance your weight evenly on both feet.
- Step 3 Inhale through the nostrils and lift the buttocks off the legs arching the back and thrusting the abdomen forward and tilt the head as far back as possible.

### **ARDHAKATICHAKRASANA -LATERAL ARC POSTURE**

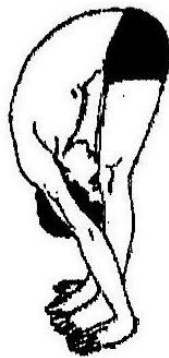


**Figure VIII**

1. Stand erect with feet close together, hands along the thighs, fingers stretched out.
2. While inhaling, slowly raise the right arm side ways up above the head until the arm touches the ear, palm facing left.

3. Bend slowly on the left-side; slide the left palm down as far as possible along the left leg. Exhale as you bend. Raised hand should not bend at the elbow. Knee straight. Breathe normally. Maintain for about a minute.
4. Return to position 2 inhaling completely. Bring the hand down to 1st position.
5. Repeat on the left side, by bending towards the right.

### **PADAHASTHASANA -HAND- TO- FEET POSTURE**



**Figure IX**

- |        |  |
|--------|--|
| Step 1 | Stand erect. Keep the arms by the sides. Keep the heels close together. Keep some gap between the feet.                                |
| Step 2 | Raise both the arms. Slowly bend forward at the waist. Keep the knees stiff and firm. The legs should not bend at the knees.           |
| Step 3 | Keep the palms under the feet.   |
| Step 4 | Slowly exhale - while bending low and contract the stomach. Put forehead between the knees. Hold this position for two to ten seconds. |

**ARDHA CHAKRASANA- HALF WHEEL POSTURE****Figure X**

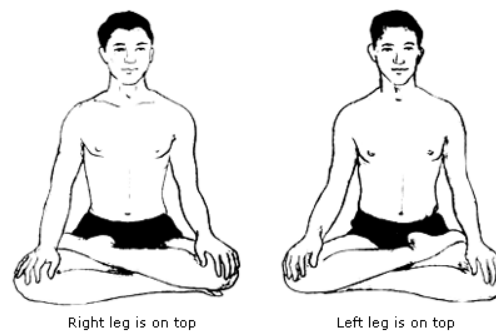
- Step 1            Stand Tad asana.
- Step 2            Place your hands on your waist, Inhale and bend back, fixing your eyes on an object behind, like a picture on the wall.
- Step 3            Stay for as long as you can, exhale and bend forward.

**VRIKSHASANA - TREE POSTURE****Figure XI**



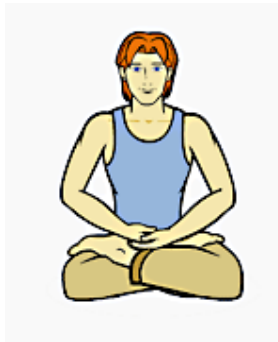
- Step 1 Stand with the feet together and the arms by your sides.
- Step 2 Bend the right leg at the knee, raise the right thigh and bring the sole of the right foot as high up the inside of the left thigh as possible.
- Step 3 Balancing on the left foot, raise both arms over the head keeping the elbows unbent and joining the palms together. Hold the posture while breathing gently through the nostrils for about 10 complete breaths.
- Step 4 Lower the arms and right leg and return to the tad-asana, standing position with feet together and arms at the sides. Pause for a few moments and repeat on the opposite leg.

### **ARDHA PADMASANA – HALF LOTUS POSTURE**

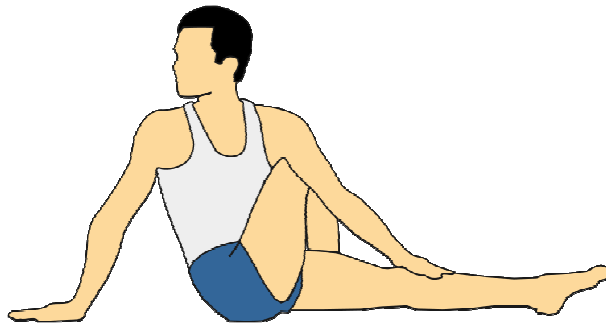


**Figure XII**

- Step 1 From start pose – Dandasana, bend the right knee and bring the right ankle to the left hip crease with the sole of the right foot facing upwards.
- Step 2 Settle the foot into the hip crease.
- Step 3 Bend the left knee and cross the left ankle under the right hip knee in a comfortable, cross-legged position.

**PADMASANA –LOTUS POSTURE****Figure XIII**

- Step 1 Sit on the floor with the legs stretched out straight in front.
- Step 2 Bend the right knee and grasp the right foot with both hands and place it on top of the left thigh bringing the heel as close to the navel as possible.
- Step 3 Bend the left knee and grasp the left foot with both hands and place it on top of the right thigh bringing the heel as close to the navel as possible.
- Step 4 Both knees should be on the ground and the soles of the feet are pointed upward. The spine is held straight but not rigid.

**VAKRASANA -SITTING SIDEWARD TWIST POSTURE****Figure XIV**

- Step 1 Sit in danadasana.
- Step 2 Bend the left leg in the knee and place it near the thigh of left leg.
- Step 3 Place the right hand beyond the folded knee of the left leg and in front of the left hand. Keep the palms of both the hands in opposite direction. There should be a distance of one foot between the two hands.
- Step 4 Press the standing left knee with the right hand and shoulders, and twist the neck to the left. Turn the sight also in the same direction and continue normal breathing.

**SHASHANKASANA -HARE POSTURE****Figure XV**

- Step 1 Sit in Vajrasana.
- Step 2 Inhale and raise the hands slowly above your shoulder.
- Step 3 Exhale and slowly bend forward and try to place the head on the floor and resting the hands from elbow onwards on the floor.
- Step 4 Stay for 20 to 30 breath counts and then come back to original position slowly with exhalation.

**PASCHIMOTHANASANA - BACK-STRETCHING POSTURE****Figure XVI**

- Step 1 Sit in dandasana with legs stretched and heels together. Back, neck and head should be held straight. Bring both the hands with the palms down, parallel to the legs.
- Step 2 Inhale and proceed towards the toes and try to touch them.
- Step 3 Exhale and slowly bring your head down in between the hands; stretch out the hands, toes and head.
- Step 4 Inhale and return to the first position.

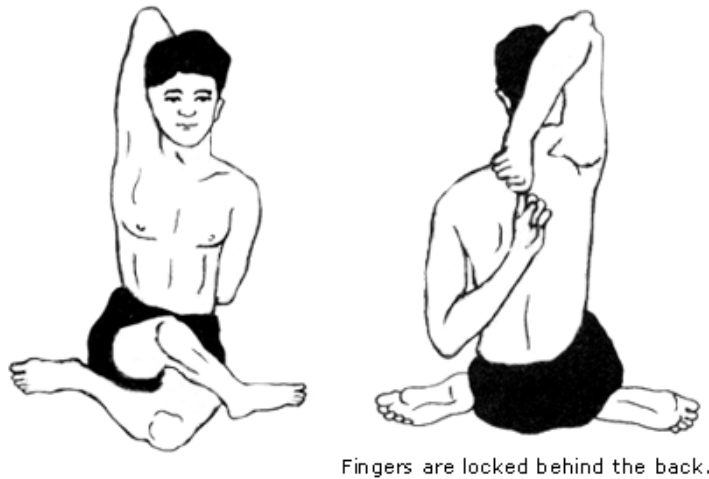
### **USHTRASANA -CAMEL POSTURE**



**Figure XVII**

- Step 1 Sit with knees bend.
- Step 2 Hold the ankles with hands.
- Step 3 Raise the buttocks from the seated position and bend head back.
- Step 4 Inhale deeply 4 or 5 times and hold for 5 seconds.

## GOMUKHASANA- COW FACE POSTURE

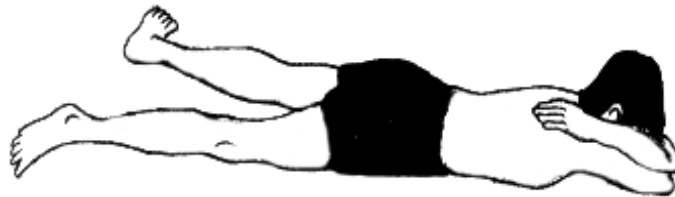


**Figure XVIII**

- Step 1 Sit in a crossed-leg position, right leg over left.
- Step 2 Spread the legs as far apart as possible without bending the knees.
- Step 3 Bend the left knee and place the bottom of the left foot against the inner left thigh. Bring the left heel as close to the perineum as possible. Keep the left knee on the floor.
- Step 4 Grasp the right foot with the left hand and keeping the foot on the floor place the heel of the right foot against the front-left portion of the left buttock. The right knee should be directly on top of the left knee.
- Step 5 Inhale slowly through the nostrils and raise the right hand over the head and bend the right elbow. Reach behind the back with the left hand and clasp the fingers of both hands (forming an "s" shaped lock).

- Step 6 Hold the posture as long as you can comfortably hold the inhale breath. Exhale slowly and then repeat the posture reversing the arms and legs.

### **MAKARASANA -CROCODILE POSTURE**



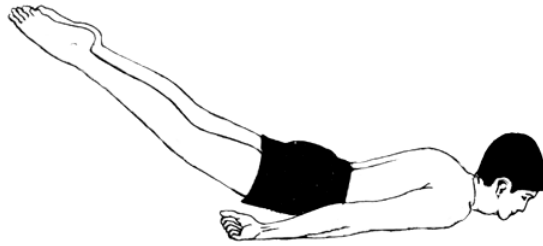
**Figure XIX**

- Step 1 Lie on prone position place both hands crossed around head or rest the forehead on it, relax all the muscles, continue normal breathing.
- Step 2 Bring the arms forward and fold them. Then place the forehead on the folded elbows and relax the neck.
- Step 3 Spread the legs and keep them at a distance of a foot or so, with the heels inside and the toes outside. Then relax the legs.
- Step 4 Keep the whole body relaxed. Try to touch as many parts of the body to the floor as possible. Keep the breathing normal and the head in a position which is comfortable.

**BHUJANGASANA - COBRA POSTURE****Figure XX**

- Step 1 Lie on the stomach with the head turned to one side and the arms alongside the body with palms facing upward.
- Step 2 Turn the head and place the chin on the floor. Inhale then exhale slowly through the nostrils and swing the arms around until the hands are placed just below the chin with the palms down and the finger tips of each hand almost touching and the elbows on the floor.
- Step 3 Inhale slowly through the nostrils, press down on the hands and lift the torso from the waist up off the floor, arching the spine backwards and straightening the arms. Keep the hips on the floor.
- Step 4 Tilt the head as far back as possible and hold the posture for the duration of the inhaled breath.
- Step 5 Exhale and reverse the process to return to position 1.



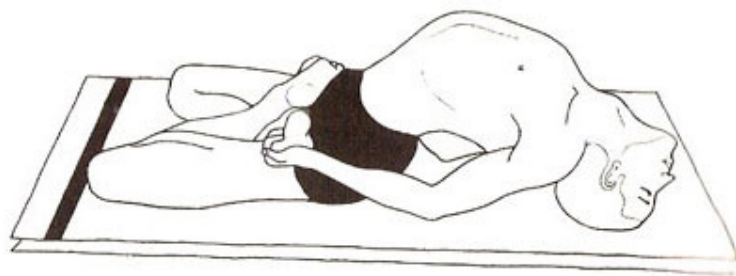
**SHALABHASANA -LOCUST POSTURE****Figure XXI**

- Step 1 Lie on the floor with the abdomen touching the mat.
- Step 2 Rest the chin on the floor with arms at the sides. The heels and toes must be held together.
- Step 3 Inhale and lift both the legs above the floor. While lifting the legs, pressure must be applied on the fists.
- Step 4 Maintain this position for a few seconds and come back to the original position.
- Step 5 Relax and feel the stretch on the muscle of the back.

**VIPARITHAKARANI - HALF SHOULDER STAND POSTURE****Figure XXII**

- Step 1 Lie on back and relax the whole body.
- Step 2 Fold the legs over the stomach and lift it high up with help of hands.
- Step 3 Support the buttocks and the chest as lift them.
- Step 4 then rest the elbows on the floor and strengthen the legs.
- Step 5 Focus the eyes on the big toes and hold

### **MATSYASANA -FISH POSTURE**



**Figure XXIII**

- Step 1 Lie on back in Padma Asana: Plant hands under lower back, raise the chest and bend the head.
- Step 2 Hold big toes with hands and breathe deeply. Stay in this position for 5-15 counts and come to normal position.

## SHAVASANA -CORPSE POSTURE



**Figure XXIV**

- Sep 1 Lie on the back with the feet comfortably apart.
- Step 2 The spinal column is straight but not rigid and the arms rest
- Step 3 The head is in line with the spine eyes and mouth is closed gently.
- Step 4 Relax body completely.

## PRANAYAMA

### SURYA ANULOMA VILOMA - RIGHT NOSTRIL



**Figure XXV**

Step 1 Sit erect in Padmasana and Adopt Nasika mudra

Step 2 Close the left nostril with fingers

Step 3 Inhalation and exhalation through right nostril.

### **CHANDRA ANULOMA VILOMA-LEFT NOSTRIL YOGA BREATHING**



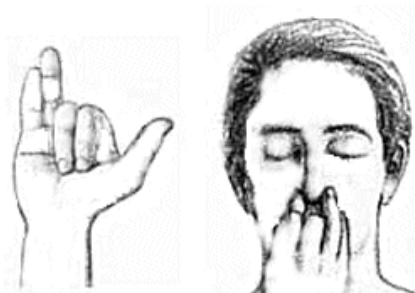
**Figure XXVI**

Step 1 Sit erect in Padmasana and Adopt Nasika mudra

Step 2 Close the right nostril with fingers

Step 3 Inhalation and exhalation through left nostril.

### **NADHI SUDHI**



**Figure XXVII**

- Step 1 Sit erect in Padmasana and Adopt Nasika mudra
- Step 2 Close the right nostril with fingers
- Step 3 Inhalation through left and exhalation through right nostril and again inhale through right and exhale through left

### AUM KARA



**Figure XXVIII**

- Step 1 Sit in Sukhasana
- Step 2 Deep inhalation for 5 seconds
- Step 3 Exhaling pronounce A for 2 seconds with lips open.
- Step 4 Exhaling pronounce U for 3 seconds with lips partially closed.
- Step 5 Exhaling pronounce M for 5 seconds with lips completely closed.

The experimental group III was given the training on Combined Practices (naturopathy & yogasana)

**TEST ADMINISTRATION****PHYSIOLOGICAL VARIABLES****BLOOD PRESSURE (SYSTOLIC AND DIASTOLIC BLOOD PRESSURE)****Purpose**

To measure the systolic and diastolic blood pressure at rest.

**Equipment**

Sphygmomanometer and stethoscope (Diamond) was used to measure the blood pressure.

**Procedure**

It can be viewed straight on and within 15 inches of the viewer. Right arm will be used when possible. Upper arm should be bare and unconstructed by clothing. Select the appropriate size cuff. The bladder width should equal at least 40% of the circumference of the upper arm, and the length of the bladder should be 80% of the circumference of the arm, but no more than 100%. Palpate the location of the brachial artery (on the upper arm's inner aspect). Position the center of the cuffs bladder over the brachial artery. Apply the cuff evenly and snugly one inch (2.5cm) above the antecubial fossa (bend of arm). Check snugness at both top and bottom of the cuff. Position the arm the cuff is at heart level. The arm should rest firmly supported on a table, slightly abducted and bent, with palm up. For the first reading only, obtain estimated systolic pressure. Palpate the radial artery pulse. Inflate the cuff to the point where the pulse can no longer be felt. Slowly deflate the cuff, noting on the gauge the point where the pulse reappears/can again be felt. This is the estimated systolic pressure. Rapidly deflate the cuff. Wait at least 15-30 seconds before re-inflating the cuff to begin the first auscultator's measurement. (This allows good circulation to be reestablished). Calculate the maximum inflation level (MIL) by adding 30mm Hg to the estimated systolic pressure. At the time of

testing the clients' position was, legs should be uncrossed, feet resting firmly on the floor and the back supported while blood pressure is being measured. (Clients may need to be reminded to uncross their legs each time ready to take a blood pressure reading). Insert the stethoscope earpieces, angled forward to fit snugly. Place the bell or the diaphragm head of the stethoscope lightly over brachial artery at the bend of the elbow, but with good skin contact. Avoid too much pressure, which can close off the vessel and distort the sounds, therefore altering the reading). The bell head is preferred because it permits more accurate auscultation of the Korotkoff sounds than the diaphragm, especially in the interpretation of the diastolic readings).

Deflate the cuff slowly and consistently at the rate of 2mm per pulse beat. The rate of deflation should be slow enough to accurately evaluate the exact millimeter marking of the Korotkoff sounds heard. Once deflation has begun, never reinflate. Where the first sharp rhythmic sounds appear in relation to the number of markings on the gauge. This is the systolic pressure.

Continue deflation at the established rate. The gauge where the last sound is heard. This is the diastolic pressure (5<sup>th</sup> Korotkoff phase) in adults. Continue deflation for 10mm Hg past the last sound. (This assures that the absence of sound is not a "skipped" beat but is the true end of the sound). Then deflate the cuff rapidly and completely.

### **Record**

The readings to the nearest 2 mm (round off upward). This means all readings taken with non-electronic equipment will be stated and written in even numbers.

### **Scoring**

Unit of measure was mm/Hg (**Perloff, et al., 1993**).

Normal Value is **120/80 mm Hg**

## RESPIRATORY RATE

**Purpose** :-The purpose was to measure the ability of the subject to number of breath per minute.

**Equipment** :-Stop Watch.

**Procedure** :-The subjects were made to sit relaxed and comfortably. Then the investigator simply involves counting the number of breaths for one minute by counting how many times the chest rises.

**Scoring** :-Average respiratory rate reported in a healthy adult at rest is usually given as 12 breaths per minute (12/60 Hz) Accurate readings were obtained by counting the number of breaths over a full minute.

## BIOCHEMICAL VARIABLES

### HEMOGLOBIN

**Purpose** : To record hemoglobin level in the blood.

**Equipments** : Standard Laboratory test

**Procedure** : Recorded in a sitting relaxation position

**Scoring** : Investigation Reports

### TSH

**Purpose** : To record TSH in the blood.

**Equipments** : Standard Laboratory test

**Procedure** : Recorded in a sitting relaxation position

**Scoring** : Investigation Reports



**T3**

**Purpose** : To record T3 in the blood.

**Equipments** : Standard Laboratory test

**Procedure** : Recorded in a sitting relaxation position

**Scoring** : Investigation Reports

**T4**

**Purpose** : To record T4 in the blood.

**Equipments** : Standard Laboratory test

**Procedure** : Recorded in a sitting relaxation position

**Scoring** : Investigation Reports

**PSYCHOLOGICAL QUESTIONNAIRE****STRESS****Purpose**

To assess the stress level of the subjects

**Equipment**

**Latha's stress questionnaire (1997)** used to assess the stress.

**Procedure**

Questionnaire describing 52 events which causes mental stress was given to the subjects and they were asked to fill yes or no along with the level of control exercised by them over event. Level of control is assessed in three groups. Complete control, Partial control and no control.

### Scoring

If the answer is 'yes' a score of one, two and three is assigned for complete control, partial control and no control respectively. If answer is 'no' then no score is assigned as the event does not bring any stress to the subject. The level of stress is arrived taking into account of the score obtained by the subject. Lower the score is considered as less stress and vice versa

### Norms

#### Level of Stress

0 -17 Mild Stress

18 - 35 Moderate stress

36 - 52 severe stress

#### Control Index

0- 51 complete control over stress

52-105 Partial control over stress

106- 156 No control over stress.

## DEPRESSION

**Purpose** :-The purpose of this test is to measure the Depression level of the subjects.

**Equipment** :-Goldberg Depression Questionnaire designed by Ivan Goldberg (1993)

**Procedure** :-The questionnaire administered in group setting and the subjects were seated comfortably. The researcher has explained about the questionnaire and made them to fill up the questionnaire.

The following instructions were given to the subjects.

This questionnaire has 18 statements, each statement describe some personal experience. Each statement was evaluated on given six options.

The researcher requested them to read each statement carefully and decide to what extent each statement was true asked them to put tick mark at the appropriate option

**Scoring** : 0 points Not at all  
1 point Just a little  
2 points somewhat  
3 points moderately  
4 points Quite a lot  
5 points Very much

The higher the number, the more severe the depression.

**Norms :-** 0-9 No Depression Likely  
10-17, Possibly Mildly Depressed  
18-21, Borderline Depression  
22-35, Mild-Moderate Depression  
36-53, Moderate-Severe Depression  
54 and up, Severely Depressed

## **COLLECTION OF DATA**

To achieve the purpose of the study four groups consisting of 15 subjects each were selected at random, the first ,second and third experimental groups were treated with naturopathy, yogasana and combined (naturopathy and yogasana) for about twelve weeks (6 days/week). After the training period all subjects were tested on selected criterion variables at different levels as pre and post training. The pre and post test data on the selected criterion variables were collected by administering the test as per the standardized procedures before and after the twelve weeks of the training programme. Similarly the blood sample was collected from individuals.

The research scholar has collected the data for physiological variables like Systolic blood pressure, diastolic blood pressure and respiratory rate; biochemical variables like hemoglobin (Hb), thyroid-stimulating hormone (TSH), T3, T4 in the standard laboratory with standard equipments like Sphygmomanometer (Panasonic Portable Automatic Arm Blood Pressure Monitor), Stethoscope (Diamond Company), Digital stop watch (Naugra) with the help of the lab technicians and lab assistance under the supervision of medical students and psychological variables like stress and depression were done in the psychology lab under the guidance of Dr. Arunmozhi psychology lecturer

### **STATISTICAL TECHNIQUE**

The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant difference among the groups between the pre test and post test on physiological, psychological and biochemical variables to find out the effect of isolated and combined practice of naturopathy and yogasana on selected physiological, biochemical and psychological variables in menstrual irregularity women. The normality of the data collected was tested through F test (ANCOVA). The data and the regression were plotted and found to be in the standing straight line and thus tested for normality of data and found the data are normal. The adjusted post test mean differences among the experimental groups were tested and if the adjusted post test result was significant the Scheffe's post hoc test was used to determine the significance of the paired means differences (**Thirumalaisamy, 1995**).

The investigator has analyzed scientific results obtained by application of various methodologies discussed above and the results are analyzed by **SPSS package** and presented in the form of detailed discussion graphs and various tables in the next chapter.