

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 was to find out whether there would be any significant effect of static and dynamic hatha yoga sadhana on selected socio environmental and pubertal development dimension among preteen girls.

The methodology and systematic procedure applied in this research include the process of identification of the research problem to its final conclusion. The aim of methodology applied is to carry on the research work in a scientific and valid manner. The methodology used in this research involved the selection of subjects, selection of the variables; experimental design, and orientation of the subjects, instrument reliability tester reliability, pilot study, test administration and statistical technique employed for analysis of the data.

3.1 SELECTION OF SUBJECTS

For the purpose of the study the investigator has selected 30 preteen pubertal girls from Chennai city, between the age group of 9 to 12 years and they have been divided into three groups I, II, & III of ten subjects in each group. All the subjects were assigned to two experimental groups, I and II and the other group III was Control group.

1. Group I - Static Hatha Yoga Sadhana Practices Group
2. Group II - Dynamic Hatha Yoga Sadhana Practices Group
3. Group III - Control Group

3.2 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, Madras University

and also with help of professional experts in yoga, the following Socio environmental and pubertal development dimension variables were selected.

3.2.1 INDEPENDENT VARIABLES

1. Static Hatha Yoga Sadhana
2. Dynamic Hatha Yoga Sadhana

3.2.2 DEPENDENT VARIABLES

1. SOCIO ENVIRONMENTAL VARIABLES

- i. Sedentary behavior
- ii. Physical activity
- iii. Family cohesion
- iv. Eating attitude

2. PUBERTAL DEVELOPMENT VARIABLES

- i. Dehydroepiandrosterone (DHEA)
- ii. Luteinizing hormone (LH)
- iii. Gonadotrophin releasing hormone (GnRH)
- iv. Follicle stimulating hormone (FSH)

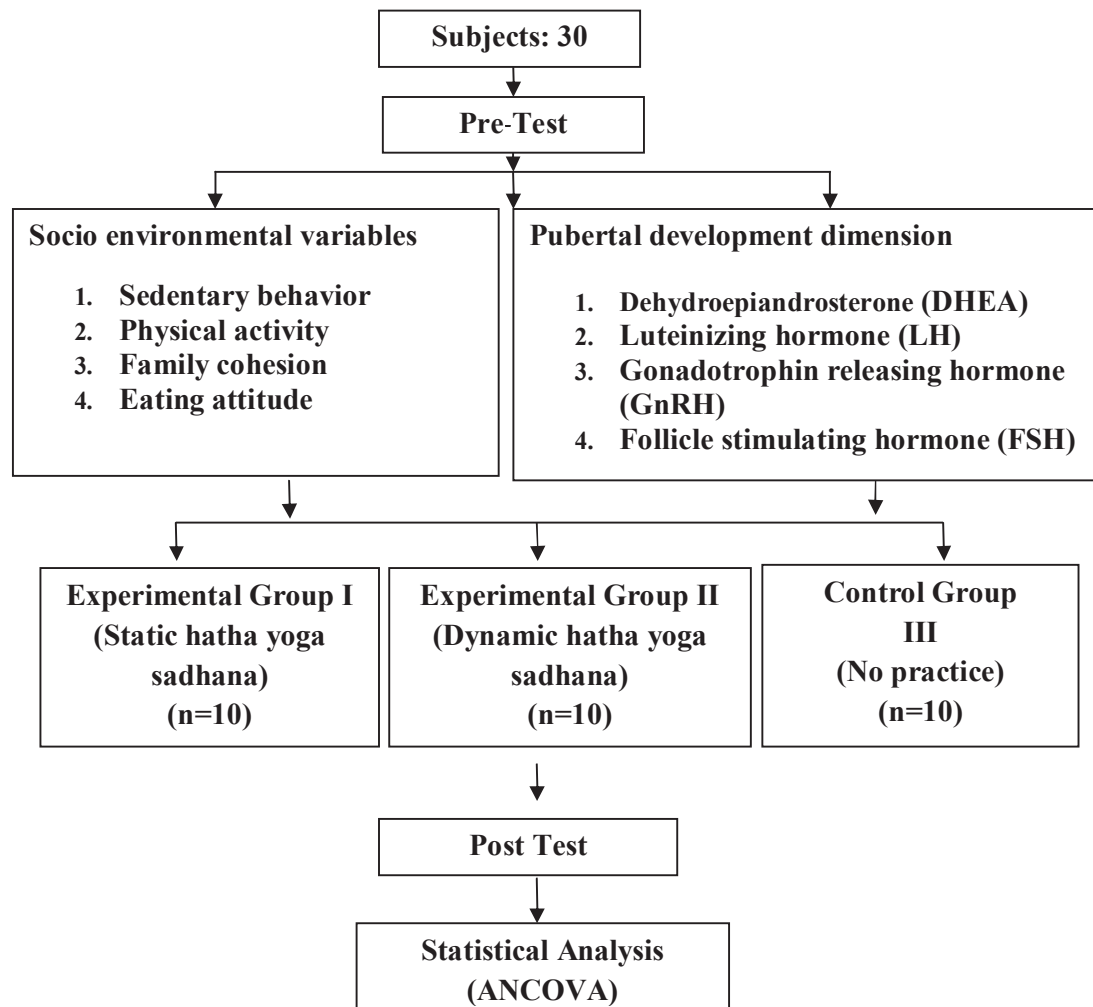
3.3 EXPERIMENTAL DESIGN

The study was formulated as a true random research group design consisting of a pre test and post test. For the purpose of the study the subjects of thirty pubertal development preteen girls between the age group of 9 to 12 years were selected and divided into three groups via two experimental groups and one Control group. All the groups were tested on selected variables before the practice. After the test scores recorded the experimental groups underwent practice as follows

1. Group I –10 Subjects were practiced on Static Hatha Yoga Sadhana
2. Group II –10 subjects were practiced on Dynamic Hatha Yoga Sadhana
3. Group III – 10 subjects treated as the Control group.

Both the experimental groups were given practice for fifteen weeks from Monday to Friday (five days a week). The post test scores were also recorded on selected socio environmental and pubertal development dimension variables, and both

pre and post tests mean values were compared for analysis using statistical technique of analysis of covariance (ANCOVA)



3.4 PILOT STUDY

The pilot study was conducted with five girls before the actual practice started to assess the initial capacity of the subjects and in order to fix the load on the both the experimental groups and the difficulties were rectified. Based on the response of the subjects in the pilot study and the calculated intra- class correlation of the pilot study found that they were within the reach of the individual's capacity and showed that there was significant changes in health related variables. This enabled the investigator to undertake the practice schedule for the purpose of research.

3.5 SUBJECTS ORIENTATION

Prior to the administration of the test, a detailed discussion was carried out with the subjects about the practice procedure and techniques, its benefits and limitations by the researcher. Before the scientific test administration, procedure was explained in detail and proper understanding, co-operation for reliability of the data.

3.6 CRITERION MEASURES

By glancing the literature and in consultation with professional and experts the following criterion measure were selected for measuring the variables in the study

Table I
CRITERION MEASURES AND QUESTIONNAIRE / TEST USED

| S.No | Criterion Measures | Questionnaire / Test Used |
|---|---|---|
| Socio Environmental Variables | | |
| 1 | Sedentary behavior | Sedentary behavior questionnaire (SBQ) by James F. Sallis 2010 |
| 2 | Physical Activity | The Physical Activity Questionnaire for Children (PAQ-C) Manual by Kowalski, K., Crocker, P., & Donen, R.(1997) |
| 3 | Family Cohesion | Family Cohesion by Moos, R. H. (1974) |
| 4 | Eating Attitude | Children's Eating Attitude Test (ChEAT) by Garner et.al., (1982) |
| Pubertal Development Dimension Variables | | |
| 5 | DHEA Test (Dehydroepiandrosterone) | Salek. SA (2002) |
| 6 | LH Test (Luteinizing hormone) | Kaplan. LA (1996) |
| 7 | GnRH Test (Gonadotrophin releasing hormone) | Sonis. WA (1986) |
| 8 | FSH Test (Follicle Stimulating hormone) | Haymond. S (2006) |

3.7 RELIABILITY OF DATA

The reliability of data was ensured by using standard instrument and by establishing tester competency and reliability of the test. The investigator took all the measurements with the intense of other professionals from a recognized laboratory with regard to bio-chemical test

3.8 INSTRUMENT RELIABILITY

Standardized equipment was used for the testing procedure. The equipments were obtained from a recognized laboratory and their calibrations were accepted as enough for the purpose of the study. The instruments used Standard / modified test for measuring, Sedentary behavior, Physical activity, Family cohesion, Eating attitude questionnaire designed. The pubertal development dimension variables Dehydroepiandrosterone (DHEA), Luteinizing hormone (LH), Gonadotrophin releasing hormone (GnRH), and Follicle stimulating hormone (FSH) were tested in the authorized laboratory.

3.9 TESTER RELIABILITY

The reliability of data together with the reliability of the tester was ensured by appointing an authorized personal from a recognized laboratory. The investigator took all the precaution with regard to pubertal development dimension variables test. Before conducting the test the researcher discussed about the testing procedure with concerned guide and staff members and got sufficient experience the test.

3.10 SUBJECT'S RELIABILITY

The test and retest also conducted to the same subjects under similar condition by the same tester.

3.11 TESTER'S 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. | Sedentary behavior | 97* |
| 2. | Physical activity | 97* |
| 3. | Family cohesion | 98* |
| 4. | Eating attitude | 97* |
| 5. | Dehydroepiandrosterone (DHEA) | 98* |
| 6. | Luteinizing hormone (LH) | 97* |
| 7. | Gonadotrophin releasing hormone (GnRH) | 98* |
| 8. | Follicle Stimulating hormone (FSH) | 97* |

*Significant at 0.05 level

Reliability was established by the test-retest processes. Thirty Preteen girls were tested on selected variables. The repeated measurement of individuals on the same test is done to determine reliability.

3.12 PRACTICE PROGRAMME

The subjects were selected at random and were divided into three groups and the group I was given Static hatha yoga sadhana and group II was trained Dynamic hatha yoga sadhana for duration of one hour from Monday to Friday (5 days a weeks) for fifteen weeks, and the group III which is Control group was not given any practice.

PRACTICE SCHEDULE

Table III

STATIC HATHA YOGA SADHANA GROUP (Experimental Group I)

| S.No | Yoga Sadhana | Repetition/ Mins |
|-------------|--|-------------------------|
| 1. | Pawanamuktasan (Sukshma Vyayama) i. Padanguli Naman ii. Goolf Naman Chakra iii. Goolf Ghoonan iv. Janu Naman v. Janu Chakra vi. Shroni Chakra vii. Ardha Titali Asana viii. Poorna Titali Asana ix. Mushtika Bandhana x. Manibandha Naman xi. Manibandha Chakra xii. Kehuni Naman xiii. Skandha Chakra xiv. Greeva Sanchalana | 3 / 10 |
| 2. | Suryanamaskar | 5 / 10 |
| 3. | Asanas (Postures) i. Utkatasana ii. Trikonasana iii. Ardha chakrasana iv. Ekapadasana v. Bhujangasana vi. Salabasana vii. Dhanurasana viii. Halasana ix. Chakrasana | 3 / 20 |
| 4. | Pranayama (Breathing) i. Nadi Sodhana ii. Bhramari iii. Anulom Viloma iv. Ujjai | 10 |
| 5. | Yoga Nidra | 10 |

Table IV
DYNAMIC HATHA YOGA SADHANA (Experimental Group II)

| S.No | Yoga Sadhana | Repetition/ Mins |
|-------------|--|-------------------------|
| 1. | Pawanamuktasan (Sukshma Vyayama) i. Padanguli Naman ii. Goolf Naman Chakra iii. Goolf Ghoonan iv. Janu Naman v. Janu Chakra vi. Shroni Chakra vii. Ardha Titali Asana viii. Poorna Titali Asana ix. Mushtika Bandhana x. Manibandha Naman xi. Manibandha Chakra xii. Kehuni Naman xiii. Skandha Chakra xiv. Greeva Sanchalana | 5 / 10 |
| 2 | Suryanamaskar | 10 / 10 |
| 3 | Asanas (Postures) i. Utkatasana ii. Trikonasana iii. Ardha chakrasana iv. Ekapadasana v. Bhujangasana vi. Salabasana vii. Dhanurasana viii. Halasana ix. Chakrasana | 5 / 20 |
| 4 | Pranayama (Breathing) v. Nadi Sodhana vi. Bhramari vii. Anulom Viloma viii. Ujjai | 10 |
| 5 | Yoga Nidra | 10 |

3.13 PRACTICE PROCEDURE

3.13.1 PAWANAMUKTASAN (SUKSHMA VYAYAMA)

PADANGULI NAMAN



Figure 1

Step 1 - Inhale toes moves backwards

Step 2 - Exhale toes moves forwards

GOOLF NAMAN CHAKRA



Figure 2

Step 1 - Inhale feet moves backwards

Step 2 - Exhale feet moves forwards

Step 3 - Slowly rotate feet clockwise then anti-clockwise

Step 4 - Inhale on upwards Exhale downwards

GOOLF GHOORAN



Figure 3

Step 1 - Bend the he right knee and bring the foot towards the groin place the foot on

left thigh

Step 2 - Hold the right ankle with right hand, toes of the right foot with the left hand

Step 3 - Slowly rotate feet clockwise then anti-clockwise repeat other leg

JANU NAMAN



Figure 4

Step 1 - Stay in the base position. Bend the right knee bringing the thigh near chest

clasp the hands under the right thigh

Step 2 - Straighten the right leg

Step 3 - Inhale straighten the leg exhale bending the leg

JANU CHAKRA

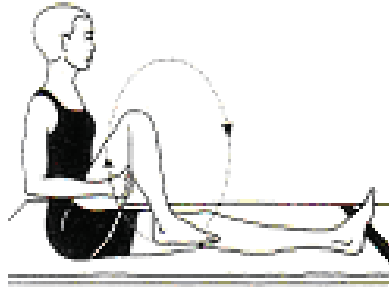


Figure 5

Step 1 - Stay in the base position. Bend the right knee bringing the thigh near chest
clasp the hands under the right thigh

Step 2 - Slowly rotate knee clockwise then anti-clockwise repeat other leg

Step 3 - Inhale on upwards Exhale downwards

SHRONI CHAKRA



Figure 6

Step 1 - Bend the he right knee and bring the foot towards the groin place the foot on
left thigh

Step 2 - Hold the right knee with right hand, toes of the right foot with the left hand

Step 3 - Slowly rotate knee clockwise then anti-clockwise repeat other leg

Step 4 - Inhale straighten the leg exhale bending the leg.

ARTHA TITALI ASANA



Figure 7

Step 1 - Bend the right knee and bring the foot towards the groin place the foot on left thigh

Step 2 - Hold the right knee with right hand, toes of the right foot with the left hand

Step 3 - Right knee upwards and push the knee downwards

POORNA TITALI ASANA



Figure 8

Step 1 - Sit in the base position.

Step 2 - Bend the knees bring the soles of the feet together keeping heels close to perineum

Step 3 - Claps the feet with the both hands

MUSHTIKA BANDHANA



Figure 9

Step 1 - Step 1 - Sit in the base position.

Step 2 - Inhale on opening the hands

Step 3 - Exhale on closing the hands

MANIBANDHA NAMAM

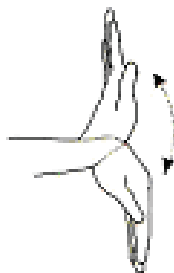


Figure 10

Step 1 - Sit in the base position.

Step 2 - Inhale with backwards movements

Step 3 - Exhale with forwards movements

MANIBANDHA CHAKRA



Figure 11

Step 1 - Sit in the base position.

Step 2 - Keep the hands at shoulder level

Step 3 - Rotate the fists together in same direction then next anti-direction

KEHUNI NAMAM



Figure 12

Step 1 - Sit in the base position.

Step 2 - Keep the hands at shoulder level

Step 3 - Inhale while straightening the arms

Step 4 - Exhale while bending the arms

SKANDHA CHAKRA

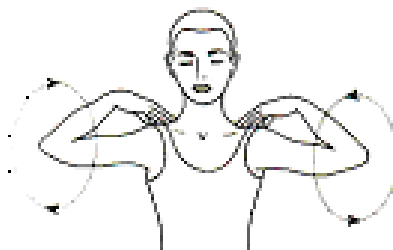


Figure 13

Step 1 - It in the base position.

Step 2 - Keep the hands at shoulder level

Step 3 - Bending the arms. Fingers place on the shoulder

Step 4 - Inhale on the upwards

Step 5 - Exhale on the downwards

Step 6 - Rotate shoulder 10 clocks then anti clock 10 times

GREEVA SANCHALANA

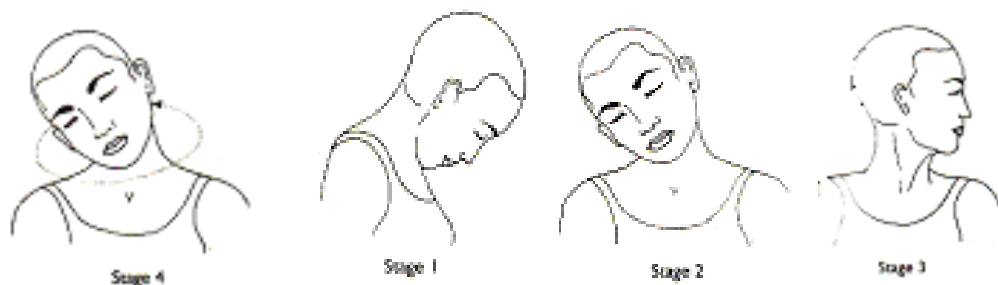


Figure 14

Step 1 - Sit in the base position.

Step 2 - While inhale neck face upwards

Step 3 - While exhale neck face downwards. Its called “yes “movements

Step 4 - While inhale neck face straight exhale bent right and left side. These movements called “ok” movements

Step 5 - While inhale neck face straight exhale turn right and left side. Its called “no” movements

ASANAS

UTKATASANA



Figure 15

Step 1 - Chair sitting posture

Step 2 - Stand in Tadasana

Step 3 - Stretch hands in front to the shoulders level

Step 4 - Bend the knee; try to sit like a chair.

Step 5 - Inhale and come up from the position

TRIKONASANA



Figure 16

Step 1 - Three triangle posture

Step 2 - Stand in Tadasana

Step 3 - Feet apart slightly more than shoulder width

Step 4 - Lift right hand above the head and feel the stretch

Step 5 - Bend towards left while exhaling.

Step 6 - Left hand resting on left leg.

ARDHA CHAKRASANA



Figure 17

Step 1 - Half wheel posture

Step 2 - Stand in Tadasana.

Step 3 - Slowly side up the palms and support the back

Step 4 - Bend backwards from lumbar region

Step 5 - Bend neck backwards.

EKAPADASANA



Figure 18

Step 1 - One foot standing posture.

Step 2 - Stand in Tadasana

Step 3 - Fold the right leg and place inside left thigh

Step 4 - Keep the heel high up and toes pointing downwards

Step 5 - Slowly bring hands down and release the posture

BHUJANGASANA



Figure 19

Step 1 - Serpent posture

Step 2 - Lay down in prone posture

Step 3 - Place the palms by the side of the cheeks

Step 4 - Elbows towards chest

Step 5 - Slowly lift your head and then bend backwards

Step 6 - Bring your head down and then bend backwards

SALABHASANA



Figure 20

Step 1 - Locust posture

Step 2 - Keep the palms under the thigh

Step 3 - Raise both legs together up from the waist

Step 4 - Exhale and return to starting position

DHANURASANA



Figure 21

Step 1 - Bow posture

Step 2 - Lay down in prone posture

Step 3 - Fold the knees and hold with both hands

Step 4 - Raise the head and stretch legs and hands out

Step 5 - The spine is arched backwards like a bow

Step 6 - Slowly release hands and legs and come to starting position

HALASANA



Figure 22

Step 1 - Plough posture

Step 2 - Lay down in supine position

Step 3 - Raise both the legs together up to 90 degrees

Step 4 - Raise your buttocks and the trunk

Step 5 - Support the back with both leg hands

Step 6 - Place the legs down above the head

Step 7 - Slowly bring the legs straight down

Step 8 - Release the posture, come to starting position

CHAKRASANA



Figure 23

Step 1 - Wheel posture

Step 2 - Start with supine position

Step 3 - Bend the knees and place the heels closest to buttocks

Step 4 - Place the palms by the side of the respective ears

Step 5 - Stretch both legs and palms and balance

Step 6 - Slowly bring the body down and release the posture

PRANAYAMA

NADI SODHANA



Figure 24

Step 1 - Alternate nostril breathing

Step 2 - Sit in any comfortable asanas with spine erect, eyes closed.

Step 3 - Close the right nostril, with the thumb.

Step 4 - Inhale through the left nostril, then close the left nostril

Step 5 - Exhale through the right nostril.

Step 6 - Inhale through the right nostril, then close the right nostril

Step 7 - Exhale through the left nostril.

Step 8 - Continue doing 10 to 15 rounds.

BHRAMARI



Figure 25

- Step 1 - Sit in any comfortable asanas with spine erect
- Step 2 - Plug the ears with the thumb finger and other four finger on the eyes, nose and near mouth.(Shanmukhi mudra)
- Step 3 - Release a murmuring sound like that of a humming bee as you exhale slowly.
- Step 4 - Repeat for 10 to 15 rounds.

ANULOMA VILOMA



Figure 26

- Step 1 - Inhale by first expanding the abdomen and then the chest in one slow, smooth motion until the maximum possible amount of air has been drawn into the lungs.
- Step 2 - Then exhale and allow the air to passively escape form the lungs.
- Step 3 - This should be accompanied by a feeling of letting go and relaxation.
- Step 4 - Inhalation is active, exhalation is passive.
- Step 5 - The whole movement should be smooth(no jerks) from the abdomen to the chest, like a wave.

UJJAYI



Figure 27

Step 1 - Sit in a comfortable meditative posture like padmasana, siddhasana or Vajrasana.

Step 2 - Keep the spine erect and eyes gently closed.

Step 3 - Inhale deeply and exhale slowly feeling the breath at the throat region.

Step 4 - The inhalation and exhalation should be complete.

Step 5 - Both the inhalation and exhalation should be graceful.

Step 6 - A gentle hissing sound can be heard and felt.

Step 7 - Feel the soothing relaxation.

YOGA NIDRA



Figure 28

Step 1 - Lie down comfortably in savasana, with the arms and the feet slightly apart and eyes gently closed.

Step 2 - Become aware of the slow steady gentle breathing co-ordinate with the abdominal movements.

RELAXATIONS

- Become aware of the whole body which is resting comfortably and beginning to relax.
- Listen to the few rounds of “Om kar” chanting feeling the relaxation and resonance.

RESOLVE

- Time for making a resolve.

ROTATION OF CONCIIOUSNESS

- Rotation of the awareness on the body parts – right side, left side, back, front and major parts.

BRETAHING

- Counting of breath in descending order and relaxing more with each count down.

IMAGE VISUALIZATION

- Taking the awareness away from the body and visualizing a few relaxing imageries.

RESOLVE REPEATATION

- Repeat the resolve with Shraddha.

FINISH

- Bring the feet together. Palms by the side of the body. Gently roll over to one side and sit up in any comfortable position and finish the practice with Om kar chanting followed by a prayer. Gently open the eyes.

3.13.2 SURYANAMASKAR

Pranamasana



Figure 29

- Stand upright and relaxed with hands folded.
- Breathing Normal
- Chant Om Kameshvaryai Namaha

Hastautthasana



Figure 30

- Bend head and body back with arms raised
- Breathing Inhale
- Chant Om Bhagamalinyai Namaha

Padahastanasana



Figure 31

- Bend forward palms on the floor knees locked.
- Breathing exhale
- Chant Om Nityaklinnayai Namaha

Ashwasanchalanasana



Figure 32

- Right foot back and left foot forward between hands
- Chant Om Bherudayai namaha
- Breath inhale

Parvatasana



Figure 33

- Press palms on the floor raise hips at angle with the floor
- Chant Om Vajreshvaryai namaha
- Breath Exhale

Ashtanga Namaskar

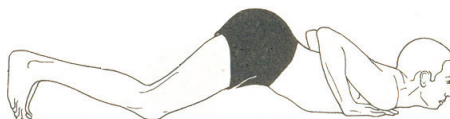


Figure 34

- Drop knees chest and chin on the floor, hip little up.
- Chant Om Dutyai Namaha
- Breath outside Breath retain

Bhujangasana



Figure 35

- Lift the head up and bend all the way back
- Om Tvaritayai Namah
- Breath inhale

Parvatasana

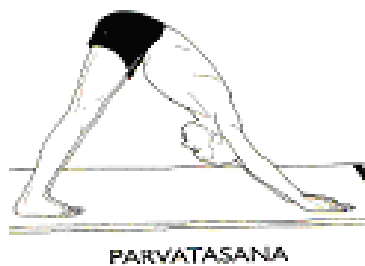


Figure 36

- Press palms on the floor, raise hips at angle with the floor.
- Om kulasundaryai Nanaha
- Breath exhale

Ashwasanchalasana



Figure 37

- Right foot back and left foot forward between hands
- Om Nithyayi Namaha
- Breath inhale

Padahastanasana



Figure 38

- Bend forward palms on the floor knees locked.
- Om Vijayayai Namaha
- Breath inhale

Hastautthanasana

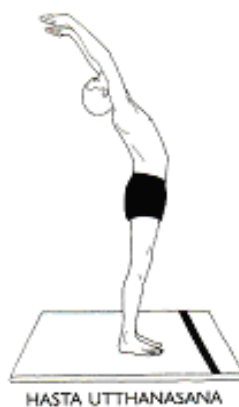


Figure 39

- Bend head and body back with arms raised
- Om Sarvamangalayai Namaha
- Breath inhale

Pranamasana



Figure 40

- Stand upright and relaxed with hands folded.
- Om Jvalamalininyai Namaha
- Breath exhale

3.14 TEST ADMINISTRATION

The following criterion measures were chosen for testing hypothesis.

3.14.1 SOCIO ENVIRONMENTAL VARIABLES

3.14.1.1 SEDENTARY BEHAVIOR

| | | |
|-----------------------|---|---|
| Purpose | : | To ascertain the sedentary behavior level |
| Equipment used | : | Sedentary behavior questionnaire (SBQ) developed by James F. Sallis (2010) |
| Procedure | : | The Sedentary behavior questionnaire (SBQ) for pre teen girls is a self-administered, recall instrument. It was developed to assess general levels of screen timing throughout the school year for students in grades 4 to 8 and approximately 8 to 14 years of age. The SBQ can be administered in a classroom setting and provides a summary of screen timing score derived from nine items, each scored on a 9-point scale. Estimated completion time is 10 minutes. On atypical, how much time do you |

spend (from when you wake up until you go to bed) doing the following.

- Scoring** : Overall process - Find screen timing score between 1 and 9 for each item. Questions 1 to 9 the answers for each item start from the lowest activity response and progress to the highest activity response. Use the reported value that is checked off for each item (the lowest activity response being a 1 and the highest activity response being a 5). Once you have a value from 1 to 9 for each of the 9 items (items 1 to 9) used in the sedentary behavior score, you simply total the score of these 9 items, which results in the final SBQ activity summary score
- Response Value** : A score of 1 indicates low sedentary behavior, whereas a score of 9 indicates high sedentary behavior.

3.14.1.2 PHYSICAL ACTIVITY

- Objective** : To ascertain the physical activity level
- Equipment used** : **The Physical Activity Questionnaire for Children (PAQ- C) Manual by Kowalski, K., Crocker, P., & Donen, R. (1997)**
- Procedure** : The Physical Activity Questionnaire for Children is a self-administered, 7-day recall instrument. It was developed to assess general levels of physical activity throughout the school year for students in grades 4 to 8 and approximately 8 to 14 years of age. The PAQ-C can be administered in a classroom setting and provides a summary of physical activity score derived from nine items, each scored on a 5-point scale. Estimated completion time is 20 minutes.
- Scoring** : Overall process - Find an activity score between 1 and 5 for each item (excluding item 10) **Item 1** Spare Time

Activity Take the mean of all activities ("no" activity being a 1, "7 times or more" being a 5) on the activity checklist to form a composite score for item 1. 2) **Item 2 to 8** (PE, recess, lunch, right after school, evening, weekends, and describes you best). The answers for each item start from the lowest activity response and progress to the highest activity response. Use the reported value that is checked off for each item (the lowest activity response being a 1 and the highest activity response being a 5). 3) **Item 9** Take the mean of all days of the week ("none" being a 1, "very often" being a 5) to form a composite score for item 9. 4) **Item 10** Can be used to identify students who had unusual activity during the previous week, but this question is NOT used as part of the summary activity score. 5) How to calculate the final PAQ-C activity score Once you have a value from 1 to 5 for each of the 9 items (items 1 to 9) used in the Physical Activity composite score, you simply take the mean of these 9 items, which results in the final PAQ-C activity summary score.

Response Value : A score of 1 indicates low physical activity, whereas a score of 5 indicates high physical activity.

3.14.1.3 FAMILY COHESION

Objective : To ascertain the Family cohesion level

Equipment used : **Family Cohesion by Moos, R. H. (1974)**

Procedure : The Family Cohesion scale is a nine item scale intended to measure the degree of commitment, help, and support family members provide for one another. Items are presented as descriptive statements. Respondents rate these statements as mostly true or mostly false about their family.

Scoring : Overall process - Find a family environment score between 1 and 9 for each item. Questions 1 to 9 the

answers for each item start from the lowest cohesive family environment and progress to the highest cohesive family environment. Use the reported value that is checked off for each item. Once you have a value from 1 to 9 for each of the 9 items (items 1 to 9) used in the family environment score, you simply total the score of these 9 items, which results in the final FES activity summary score. Responses categories: 0=Mostly True and 1= Mostly False

Response Value : Reverse coding is necessary. Items 1, 3, 4, 6, 8, and 9 are reverse coded. Responses are summed to create a total score. A higher score indicates a more cohesive family cohesion.

3.14.1.4 EATING ATTITUDE

Objective : To ascertain the eating attitude level

Equipment used : **Children’s Eating Attitude Test (ChEAT) by Garner et.al. (1982)**

Procedure : Children's Eating Attitudes Test (ChEAT): A modified version of the Eating Attitudes Test (EAT). It asks about perceived body image, obsessions/preoccupation with food, and dieting practices. There are 26 questions; each question is rated with a 6 point Likert-type scale with responses always, very often, often, sometimes, rarely and never. The EAT was modified so that it is comprehensible for children as young as 8. The instructions on how to complete the questionnaire are given orally to the child. It is easy to administer and takes about 30 minutes to complete. It measures attitudes toward eating and dietary behavior.

Scoring : Validity testing of the ChEAT confirms recoding scores such that the least three symptomatic answers (never, rarely, sometimes) are recoded as 0, with often=1,

usually=2, and the most symptomatic score, always, coded as 3. Thus, the total ChEAT score may range from 0–78

Response Value : Children, who had tried to lose weight, felt too fat and thought that their friends would like them more if they were thinner, had significantly higher total scores on the ChEAT.

3.14.2 PUBERTAL DEVELOPMENT DIMENSION

3.14.2.1 DEHYDROEPIANDROSTERONE (DHEA)

Objective : To test DHEA levels in pre teen girls

Equipment used : Syringe, Cotton, Blood collector tube, elastic band (tourniquet) by **Salek. FS, (2002)**

Procedure : A health professional will draw the blood from a vein After cleaning the skin surface with antiseptic and placing an elastic band (tourniquet) around the upper arm to apply pressure and cause the veins to swell with blood. A needle is inserted into a vein (usually in the arm inside of the elbow or on the back of the hand) and blood is withdrawn and collected in a vial or syringe. After the procedure, the elastic band is removed. Once the blood has been collected, the needle is removed and the area is covered with cotton or a bandage to stop the bleeding. Collecting the blood for the test will only take a few minutes. The sample will then be analyzed for DHEA levels.

Scoring : DHEA normal level in puberty girls is 145 to 395 ug/dl (ug/dl stands for micrograms per deciliter)

3.14.2.2 LUTEINIZING HORMONE (LH)

| | | |
|-----------------------|---|---|
| Objective | : | To test the LH test in preteen girls |
| Equipment used | : | Syringe, Cotton, Blood collector tube, elastic band (tourniquet) by Kaplan. LA, (1996) |
| Procedure | : | A health professional will draw the blood from a vein After cleaning the skin surface with antiseptic and placing an elastic band (tourniquet) around the upper arm to apply pressure and cause the veins to swell with blood. A needle is inserted into a vein (usually in the arm inside of the elbow or on the back of the hand) and blood is withdrawn and collected in a vial or syringe. After the procedure, the elastic band is removed. Once the blood has been collected, the needle is removed and the area is covered with cotton or a bandage to stop the bleeding. Collecting the blood for the test will only take a few minutes. The sample will then be analyzed for LH levels |
| Scoring | : | Normal LH levels for puberty girls 1.8 to 8.6 IU/L. (IU/L stands for international unit per liter) |

3.14.2.3 GONADOTROPHIN RELEASING HORMONE (GnRH)

| | | |
|-----------------------|---|--|
| Objective | : | To test the GnRH test in preteen girls |
| Equipment used | : | Syringe, Cotton, Blood collector tube, elastic band (tourniquet) by Sonis. WA, (1986) |
| Procedure | : | A health professional will draw the blood from a vein After cleaning the skin surface with antiseptic and placing an elastic band (tourniquet) around the upper arm to apply pressure and cause the veins to swell with blood. A needle is inserted into a vein (usually in the arm inside of the elbow or on the back of the hand) and blood is |

withdrawn and collected in a vial or syringe. After the procedure, the elastic band is removed. Once the blood has been collected, the needle is removed and the area is covered with cotton or a bandage to stop the bleeding. Collecting the blood for the test will only take a few minutes. The sample will then be analyzed for GnRH levels

Scoring : Normal level of GnRH for puberty girls is 1 to 5 iu/L (iu/L stands for International units per liter)

3.14.2.4 FOLLICLE STIMULATING HORMONE (FSH)

Objective : To test the FSH test in preteen girls

Equipment used : Syringe, Cotton, Blood collector tube, elastic band (tourniquet) by **Haymond S, (2006)**

Procedure : A health professional will draw the blood from a vein after cleaning the skin surface with antiseptic and placing an elastic band (tourniquet) around the upper arm to apply pressure and cause the veins to swell with blood. A needle is inserted into a vein (usually in the arm inside of the elbow or on the back of the hand) and blood is withdrawn and collected in a vial or syringe. After the procedure, the elastic band is removed. Once the blood has been collected, the needle is removed and the area is covered with cotton or a bandage to stop the bleeding. Collecting the blood for the test will only take a few minutes. The sample will then be analyzed for FSH levels

Scoring : Normal FSH levels for puberty girls : 0.3 - 10.0 mIU/ml (mIU/ml = milli international units per milliliter)

3.15 COLLECTION OF DATA

The data was collected from 30 preteen pubertal girls. They were divided into three equal groups consisting of 10 subjects at random. First and second experimental groups and Third as control group. Group I –10 Subjects were trained on Static Hatha Yoga Sadhana, Group II –10 subjects were trained on Dynamic Hatha Yoga Sadhana, Group III – 10 subjects treated as the Control group respectively for fifteen weeks (5 days a week). After the practice period all subjects were tested on selected criterion variables at different levels as pre and post practice. During the collection of data due ethical procedure were followed in the presence of the constituted committee.

3.16 STATISTICAL TECHNIQUE

The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant difference among the groups between the pretest and posttest on socio environmental and pubertal development dimension to find out the effect of static hatha yoga sadhana and dynamic hatha yoga sadhana package among pubertal development dimension preteen girls. The adjusted posttest mean difference 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 difference.

The investigator has analyzed scientific results obtained by application of various methodologies discussed above and the results are analyzed and presented in from of detailed discussion graphs and various tables in the Chapter IV