The present study was undertaken with a view to evaluate the efficacy of yoga on health related physical fitness and selected psycho-physiological variables of school girls aged 11 to 13 years. The methodology followed to conduct this scientific experiment has been presented in this chapter.

3.1 Selection of Subjects

To achieve the purpose of this study fifty school girls (n=50) from Jijamata Vidyamandir, Barshi, (Maharashtra), were selected randomly as sample by employing Fishers Random Table. The subjects’ age group was ranged from 11–13 years. The nature and importance of the study was explained to the students who expressed their willingness to serve as subjects for this study.

3.2 Design of Experiment

A completely randomized group design (Rothstein, 1985) of two groups of equal numbers was adopted for this study.

Making the use of table random numbers all the 50 subjects were divided randomly into two groups viz; Group –A (Yoga) and Group – B (Control) with equal in numbers. The blue print of subjects’ distribution has been presented in Table 3.1.

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100 Anne.I(Rothstein 1985) Research Design and Statestics for Physical Education. Prtnpice hall; new Jorcy.
### Table 3.1
Blue print of subjects’ distribution

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gr. A– Yoga Group</td>
<td>25</td>
</tr>
<tr>
<td>Gr. B – Control Group</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

The design of the experiment has been planned in three phases as follows:

- Phase – I: Pretest

- Phase – II: Training or Treatment, and

- Phase – III: Post test

**Pre – Test (phase – I)**

All the subjects of different experimental and control groups were exposed to health related physical fitness and selected psycho-physiological test to record the pre test data.

**Treatment stimuli (phase – II)**

After the pre test was over, all the subjects of Group A were exposed to yoga training with their regular school schedule daily in the morning for one hour except Sundays and holidays for a total period of 12 weeks. The subjects of control group, although did not receive the yoga training, however, they were kept busy with some recreational activities daily 1 hour in the morning except Sunday and holidays during the total period of experiment.

One yoga teacher was given responsibility to organize daily training programmes for a total period of 12-weeks under the overall supervision of the present investigator.
Finally, when the treatment or training period of 12 week was over, the post test on health related physical fitness and psycho-physiological variables was conducted for all the subjects of two groups.

The score in each criterion measure were taken before and after the experimental period of 12 weeks.

3.3 Selection of Variables

The investigator reviewed various scientific literatures pertaining to the effect of yoga practices on selected health related physical fitness and psycho-physiological variables from books, journals, periodicals, magazines and research papers. Taking into consideration of feasibility criteria, availability of instruments and the relevance of the variables of the present study, the following variables were selected and appropriate tools were used:

3.3.1 Dependent Variables and Tools Used

Before and after experiment following variables were assessed considering standard tests (Table 3.2).
### Table 3.2
Dependent Variables and Tools used

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Test Name</th>
<th>Tools used</th>
<th>Measurement Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>AAHPERD HEALTH RELATED PHYSICAL FITNESS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Cardiovascular endurance</td>
<td>1 mile run</td>
<td>Min.:Sec.</td>
</tr>
<tr>
<td>2</td>
<td>Abdominal muscle strength</td>
<td>Modified Sit ups</td>
<td>No./min.</td>
</tr>
<tr>
<td>3</td>
<td>Flexibility</td>
<td>Cureton’s Box</td>
<td>Cm.</td>
</tr>
<tr>
<td>4</td>
<td>Body fat</td>
<td>Skin fold caliper</td>
<td>mm.</td>
</tr>
<tr>
<td></td>
<td><strong>PHYSIOLOGICAL TEST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pulse Rate</td>
<td>Sphygmomanometer</td>
<td>Beats/Min.</td>
</tr>
<tr>
<td>2</td>
<td>Respiratory Rate</td>
<td>Observation of chest movement</td>
<td>Cycle/min</td>
</tr>
<tr>
<td></td>
<td><strong>PSYCHOLOGICAL TEST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Personality Inventory with following factors</td>
<td>Questionnaire</td>
<td>Points</td>
</tr>
<tr>
<td></td>
<td>• Confidence</td>
<td>Personality inventory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neurotic Tendency</td>
<td>Test by Dr. Usha</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Self Sufficiency</td>
<td>Khaire</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sociability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mental Health</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The participants were found really encouraged to exhibit their best effort in each of the above tests.

### 3.3.2 Independent Variables

One independent variable had been included in this study i.e., Yoga.

#### a) Designing Yoga Training Schedule

Yoga training programme was designed on the basis of following principles:

Yoga which is an ancient science, helpful not only for the cure of diseases but is also helpful in making and keeping already fit and healthy individuals more fit and healthy. And it has been observed
that breathing exercise (pranayama) and meditation lead to better concentration and improved performance.

- It is an established fact that Yoga training improves fitness and skill execution. In fact, the training causes enhancement in the endorphin level of the brain, required for neurological functions, leading to an increase in endurance and general vigour of an individual, thereby causing improvement in skill execution. Practice of asanas improves physical and motor fitness. Asanas involve exercising of various muscle groups at different joints and numerous combinations and also provide massage to vital organs of the body, which effects their functioning in positive manner. The slow stretching and holding methods in yogic postures increase the flexibility, a necessary quality to maintain performance and avoid injuries.

- The very principles of yoga as described in Patanjala yoga sutra (Karambelkar, 1989) were followed strictly by yoga experts. Thus, the subject steadily with comfort performed the yoga practices.

- Yoga exercise were performed by restrict the repetition to once only because there is no indication in either patanjala yoga sutra or in Hath yoga to repeat the asana several times. Thus emphasizing the mastery over the practice of yoga exercise, the subjects were instructed to maintain them for quick a long times with steadiness and comfort.

**b) Training Method for Performing Yoga practices**

Yoga practices for the experimental Group A were constituted on the basis of the principles of classical yoga (Kuvalayananda, 1933). Therefore, methods of performance were also taken care of on the basis of the followings:
• The researcher followed the principles of yogasana as described in Patanjala Yoga Sutra (Karambelkar, 1989). Thus, the subject performed the yoga practices steadily with comfort.

• Treatment or training period for the subject was twelve weeks duration daily in the morning for one hour.

• Asanas were taught as well as practiced in the hall of Jijamata Vidyamandir, Barshi, in the morning at 7.30 to 8.30 a.m., under the guidance of expert yoga teacher. The subjects were suitably dressed for the purpose.

• The control group was also engaged in some light jobs of no physical adaptation, while experimental group was practicing scheduled yoga practices as treatment stimulus. All other conditions were alike in terms of daily school routine.

• Subject, in general, were interested and adoptive to the programme. None of the subjects came to the notice of investigator having a long history of practicing the selected yoga practices. Attendance of the subjects in the experiment is found satisfactory.

c) Schedule of Yoga Training for 12 weeks

The yoga training schedule for total period of 12 weeks is presented as follows:
### Table 3.3
Schedule of Independent Variable (Yoga Practices)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Yogasanas</th>
<th>1st Week to 4th Weeks (Mins)</th>
<th>5th Week to 8th Weeks (Mins)</th>
<th>9th Week to 12th Weeks (Mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prayer</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td><strong>Asana (Sitting Position)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Padmasana</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Vajrasana</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Paschimottanasana</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td><strong>Asana (Standing –Position)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tadasana</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Chakrasana</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td><strong>Asana (Prone- Position)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dhanurasana</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Shalabhasana</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Bhujangasana</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td><strong>Asana (Supine Position)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naukasana</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Halasana</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Shavasana</td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td><strong>Pranayama</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anuloma Viloma Pranayama</td>
<td>5</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Bhramari Pranayama</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td><strong>Kriya</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kapalbhati</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Trataka</td>
<td>10</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td><strong>Bandha</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mulabandha</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Jiva Bandha</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td><strong>Mudra</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sinhamudra</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Brahmamudra</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

60 Mins. 60 Mins. 60 Mins.
3.4 Collection of Data

The data were collected two times i.e., during pre-test and post-test for each variable by administering their respective tests. The tests were administered at hall. To ensure the data collected was reliable each subject was given sufficient number of trials to perform the respective test for each variable.

The tests used were explained to the subjects prior to their administration. The subjects were given chance to practice the tests and made them familiar with the same.

3.5 Reliability of Data

Data reliability was censured by establishing the instrument reliability, testers’ reliability, and reliability of tests.

**Instrument Reliability**

The instruments used in this study were obtained from the standard firms which cater to the needs of various research laboratories and accepted as accurate enough for the purpose of the study.

**Testers’ Competency**

To ensure that the investigator was well versed in the techniques of conducting the tests, the investigator had a number of practice sessions in the testing procedure under the guidance of the experts.

**Reliability of Tests**

Reliability of tests was established by test-retest method using product moment method of correlation. The score of subjects for various qualities were recorded on two days with a gap of one day in between under identical conditions. The test-retest reliability was 0.78, which significantly high. This establishes competency of scholar to administer the tests.
3.6 Description of Tests Measuring Dependent Variables

Detailed description of the following variables has been presented here-

3.6.1 AAHPERD Health Related Physical Fitness Variables

- Flexibility.
- Cardiovascular endurance
- Abdominal muscle strength and Endurance
- Body fat

A) Measurement of Flexibility

Purpose:
To measure the flexibility of the low back and posterior thigh.

Equipment:
The Cureton’s flexibility test box (a wooden box fitted with a scale calibrated in Cm) is used.

Procedure:
The subjects must remove their shoes to be tested to begin the test, the subject sits in front of the test apparatus with feet flat against the end board. The knees should be fully extended and the feet shoulder-width apart. To perform the test, the subject extends the arm forward with one hand placed on top of the other.

In the actual test the subject reaches forward, palms down along the measuring scale on the testing apparatus. The reach is repeated three consecutive times and their average is taken no consideration. The maximum reach is held for 1 second. The distance of the maximum reach is recorded as the test score.

Scoring:
The score, measured to the nearest centimeter, is the most distant point reached in the three trials average. The fingertips of both hands should
reach this point. If the reach of the two hands is uneven, the test should be re-administered.

**B) Measurement of Cardiovascular Endurance**

**Purpose:**

The purpose of the distance run is to measure maximum functional capacity and endurance of cardio respiratory system.

**Equipment:**

Stop watch, score cards, pencils, 400 meter track or any other flat measured surface.

**Procedure:**

The 1-mile run for time is administered depending on the teacher’s personal preference. Here, the research scholar administered 1-mile run/1609.34 meters run.

Instruct the students to run as fast as possible, beginning on the signal “Ready, start” As the student crosses the finish line, call out the elapsed time, which should be recorded by the student or the students partner. Working, although permissible, should be discouraged since the purpose of the test is to measure maximum capacity.

**Scoring:**

The performance 1-mile / 1609.34 meters run is scored to the nearest second.

**C) Abdominal Muscle Strength**

**Purpose:**

The modified sit ups test is used to measure abdominal strength and endurance.
Equipment:
Mats are recommended for safety and comfort, stop watch and any area with sufficient floor space may be used.

Procedure:
The starting position of the test is a back-lying position with knees flexed, feet on floor, and heels between 12 to 18 inches from the buttocks. The arms are crossed on the chest with the hands on opposite shoulders. A partner holds the subject’s feet to keep them in contact with the testing surface. The examinee curls to a sitting position, maintaining arm contact with the chest. The chin should be tucked on the chest and should remain in this position until the completion of the sit up. When the elbows touch the thighs, the sit up is completed. The subject curls back down on the floor until the mid-back contacts the testing surface. Another sit up may then be attempted.

The subject begins executing consecutive sit ups on the word “Go”!, using the signal “ Ready, Go”! At the end of 60 seconds, the test is ended with the word “Stop”! The score is the number of sit ups executed correctly during this time. Pausing between sit ups is permissible.

Scoring:
The score is the number of sit ups executed correctly during 60 seconds. Incorrect execution includes failure to curl up, pulling the arms away from the chest, failure to touch the thighs with the elbows and failure to touch the raid back to the testing surface in the down position.

D) Body Fat Percentage

The purpose was to assess the body fat % of the subjects. A Lange Skin fold Caliper was used. Two skin-fold sites (biceps, triceps, sub-scapula and suprailiac) have been chosen from the right side of the body at standing position. The median of three consecutive skinfolds at one place, registered on the dial of the caliper, was recorded to the nearest 0.5 mm after the needle
of the caliper stopped (1 to 2 seconds after releasing grip on caliper). The validity of Skinfold measure in estimating body fat % ranged from 0.80 to 0.90. The test-retest reliability coefficient of skinfold measurement to predict the body fat % ranged from 0.75 to 0.95.

1) Triceps Skinfold

It is the thickness of the double layer of skin plus subcutaneous fat on the posterior side of the upper arm over the triceps muscle in the middle of upper arm.

**Equipment:**

A Lang Caliper.

**Method:**

The subjects stood with the arms by the side and the elbow extended up in relaxed position. A double layer of skin and subcutaneous tissue was grasped with the thumb and forefinger of the left hand over the triceps muscle on the back of the subjects right upper arm half way between the acromion and the elbow where the skin fold runs parallel to the long axis of the arm. The skin fold caliper was gently placed to grasp the skin without removing the fingers and thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter.

**Score:**

The measurement recorded correct nearest to 0.2 mm.

2) Subscapular Skinfold

It is the thickness of double layer of skin plus subcutaneous fat below the inferior angle of right / left scapula.

**Equipment:**

A Lang Caliper.
Method:
The skin fold thickness of the sub scapula was measured with the help of Skin fold caliper. The subjects stood with the shoulder erect but relaxed, keeping the arms by the side. A double layer of skin and subcutaneous tissue was grasped with the thumb and forefinger of the left hand lateral to inferior angle of the right scapula where the skin fold runs down and outward in the direction of the ribs. The skin fold caliper was placed gently to grasp the skin without removing the fingers. The thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter.

Score:
The measurement recorded correct nearest to 0.2 mm.

Body Fat % Calculation:
The body fat percentage was calculated by using Sloan and Siri equation. For females:

Body Density\(^{101}\) = 1.0764 - (0.0008 x iliac crest skinfold in mm) - (0.00088 x tricep skinfold in mm),

Many body composition equations derive their measure of percent body fat from first determining body density. Once body density is determined, percent body fat (%BF) can be calculated using the Siri (1961)\(^{102}\) equation below:

\[
\% \text{ Body Fat} = \frac{495}{\text{Body Density}} - 450.
\]

Derivation

The Siri Equation is based on the two compartment model, that is the body is made up of essentially two components: fat mass (the total fat of an

---


individual) and fat-free mass (everything else: bone, water, lean tissue etc). Studies have determined that the densities of these two components are:

fat mass = 0.9 grams per cc

fat-free mass = 1.10 grams per cc.

As density = mass / volume, and the mass of a human is made up of the total of fat mass and fat-free mass, therefore density = (fat mass + fat-free mass) / volume. Following this through and substituting mass/density for volume, and using the values for density above, eventually you get to the Siri Equation as listed.

3.6.2 Physiological Variables

A) Pulse Rate

Objective:

To measure the pulse rate of subject.

Equipment:

Stop watch, Digital B.P. Apparatus

Procedure:

The subjects were instructed to take supine position sphygmomanometer was attached to arm pulse rate was counted.

Recording:

The number displayed digitally on the display board was recorded as pulse rate per minute.

Instruction:

Before taking the pulse rate the subjects were asked to relax for five minutes in the supine position.
B) Respiratory Rate

**Purpose:**
The purpose is to measure rate of respiration. We are not aware that when we breathe whether our chest moves up and down or our abdomen. While breathing if our chest moves we call it chest breathing and if abdomen moves it is known as abdominal breathing.

**Method:**
The subjects were directed to lie down at supine condition. The researcher asked the subjects about those to whom she likes very much. This was done to divert the subject’s attention because they should never know that the researcher is measuring respiratory rate. Here the researcher observed indirectly the movement of chest.

**Scoring:**
The movement of chest as noted should be recorded along with respiratory rate (RR) per minute in the score sheet.

3.6.3 Psychological Variable

A) Personality Test

For the assessment of personality a test developed by Dr. Mrs. Usha Khire was administrated. The test is easy to understand and can be administered approximately in 15 to 20 minutes. This test has four factors viz., Confidence, Sociability, Neurotic Tendency, and Self-Sufficiency. The questionnaire was having total 68 items. There were alternative answers against each question. Scoring is done in points. This scale bears acceptable reliability and ensures content validity.

Initially the students were asked to fill in the required personal information. All the students were given proper instruction about purpose of the test. Then they were given the questioner and related answer sheet. In
this test there were 68 questions i.e., 13 questions for confidence, 14 questions for sociability, 23 questions for Neurotic Tendency, and 23 questions for self-Sufficiency. Following items No.1, 5, 24, 26, 28, 31, 38, 45, 53, 63 measures two factors, whereas No.44 measures three factors. The maximum possible score is 13 for confidence, 14 for sociability, 23 for Neurotic Tendency and 23 for Self-Sufficiency. For example, N (Neurotic Tendency), C (confidence), and S (Self-Sufficiency); thus, Mental Health = (23-N) + C + S.

3.7 Description of Training Intervention

Following Yoga training schedule was followed during experiment for total twelve weeks:

3.7.1 SITTING POSITION ASANA

1) Padmasana

This is probably the most well known pose routinely used by Budha and is a very popular meditation pose. This is one of the basic yoga postures.

**Technique:**

- Keep the right foot on the left thigh.

- Start bouncing the right knee. If the bouncing knee easily touches the floor, then bend the left knee, take hold of the left foot with both hands, gently glide it over the crossed right leg and place it on the right thigh.

- This will give symmetrical placement of the legs and you are in lotus position.
The hands should be kept on the knees with palms open, and the thumb and second finger of each hand should touch forming a letter O.

**Benefits:**

- This is an extremely good pose for meditation and concentration.
- It has a calming effect on the mind and the nerves.
- This pose keeps the spine erect.
- Helps develop a good posture.
- Helps keep the joints in flexible condition.

2) **Vajrasana**

**Posture:**

Like Padmasana, this is also the Asana for meditation. One can sit comfortably for a prolonged period in this Asana.

**Pre position** - Sitting Position.

**Procedure:**

- Fold the left leg in the knee and place the toe on the floor.
- Fold the right leg in the knee and place the toe on the floor and join the two toes.
- Sit on the pit formed by the parted heels.
- Place the palms on the knees.

**Position:**

It is important to keep the spine, the neck and the head, upright in one straight line in this Asana. Keep the sight fixed at the level of the height. Don't have any pressure on the hands. The whole weight of the body be set on the spine. Continue smooth breathing, when the final position is attained.

**Releasing:**

- Remove the palms from the knees and bring them to the sides.
o Take out the left leg and straighten it.

o Take out the right leg and straighten it.

o Take the sitting position.

**Duration:**

After a little practice, this Asana can be maintained for a long time. In the daily routine it should be kept for five minutes to experience good results. With more practice it can be kept for three hours.

**Internal Effects:**

Along with the body, the mind also gets stabilized in this Asana. Hence, it is preferred for meditation in this Asana. Hence, it is preferred for meditation and concentration. This Asana is also found to be good for Pranayama.

**Precaution:**

The people having stiff joints and whose movements have become difficult should practice this Asana with a lot of care. Such persons should practice this Asana after getting the joints free and relaxed.

3) Paschimottasana (Seated Forward Bend)

**Introduction:**

This posture is called Paschimottanasana because it generates in almost all the body a gentle but wide back stretching. It is a traditional asana mentioned in the Hathapradipika as “Paschimatan” (I 28-29) and in the Gheranda Samhita as “Paschimottana” (II 26). The Siva Samhita describes a difficult variation of it as “Ugrasana” in (III 111-112). In Sanskrit “Paschima” indicates “back”, the root “tan” means, “to stretch” and “asana” indicates “a stable and comfortable posture”. Swami Kuvalayananda included it under the “Yogic physical culture positions”.

**Stages:**
Preparation - This practice is done by sitting down on the floor with a straight back and the legs extended together. The arms remain relaxed by the sides of the body with the hands on the floor.

- Slowly lift the arms and bend forward to clasp the toes or ankles.
- Try to bend further with a gentle stretch to place the head near to the knees and elbows on the floor if possible. Bend forward from the pelvic area. Do not force the spine at the thoracic vertebra.
- Maintain the posture for some time while breathing, relaxed.
- Come back slowly to the initial position by reversing the steps.
- Relax.

*The salient points to remember:*

**Do’s:**
- Bend forward and relax while exhaling.
- Try to keep the spinal column in line. Bend forward from the pelvic area.
- Concentrate on the back muscles.
- Maintain a normal breath throughout the practice.
- Try to do all the movements very smoothly and slowly.
- If it is too difficult to clasp the toes, place the hands on the calf or thigh.
- Increase the asanas maintenance time slowly by regular practice.

**Don’ts:**
- Do not jerk the body while bending.
- Do not hold the breath.
- Do not bend the knees.
Do not bend forward from the thoracic vertebra, do it from the pelvic area. Avoid pulling down from the back muscles.

Do not contact the abdominal muscles.

B) STANDING POSITION ASANA

1) Tadasana

'Tada' means a mountain and sama upright, unmoved. 'Sthiti' means standing still. 'Tadasana', therefore, implies a pose where you stand firm and erect like a mountain. 'Tada' also means a palm tree growing straight. This is the basic standing pose.

**Technique:**

- Remain as natural as you are when standing.
- Keep the feet together, toes and inner heels touching and the arch raised.
- Rest the feet flat on the ground and stretch all toes.
- Heels should not come off the floor and the weight should be exactly in the center of the feet.
- Tighten the knees and pull up the kneecaps. Compress the hips and pull the muscles at the back of the thighs up.
- Keep the spine erect, raise the sternum and expand the chest.
- Keep the stomach in and the neck straight.
- Do not lift the shoulders when you keep the arms by the sides of the body, fingertips extending downwards and palms facing the thighs.
- Stand still for 20 to 30 seconds and breathe normally.
Special Instructions:

Most people don’t pay attention to the correct method of standing. Some take the body weight only on one leg or stand with knees bent. Others protrude the abdomen or keep the feet at an angle. These can result in deformities hampering spinal elasticity, which affect the mind.

Benefits:

Tadasana is useful for an alert body and mind. It induces lightness and agility. If practiced as in the picture here, it also relieves stiffness in shoulders and back and tones ankles and knees.

2) Chakrasna (Wheel Pose)

‘Chakra’ means ‘wheel’. In this asana the whole body is given the shape of a wheel or half a wheel, hence it is called Chakrasana.

Technique:

- Stand erect with legs together, toes together, hands by the side of the thighs, gaze in front.

- Slowly raise your one hand (right) from the side and bring it parallel to your shoulder, hands straight. Palms facing downwards.

- In the same position turn the palm towards the sky.

- Start raising your hands upward and let the arms touch the ear. Fingers will Point towards sky.

- Now start bending laterally towards left side. Loosen the left part of your body. The left hand will go slope down from the thigh together with the body.

- After maintaining for some time, slowly return your hands and stand erect.
Similarly practice it from other side. This forms one complete round of Chakrasana.

**Remember:**

While bending do not bend forward or backward. Only the upper part of the waist will bend laterally either towards left or right.

- Do not start bending before hand is completely straight upward.

- While practicing asana gaze in front.

### C] PRONE POSITION ASANA

1) Dhanurasana (Bow Pose)

**Introduction:**

It is a posture in which the body is supposed to imitate the shape and stand of a bow. This traditional asana is mentioned in the Gheranda Samhita (II 18) and Hathapradipika (I 25) in Sanskrit “Dhanus” means “bow” and “asana” indicates “a stable and comfortable posture”. Dhanurasana can be considered as a combination of Bhujangasana and Shalabhasana.

**Stages:**

Preparation – The starting position is resting on the chest (prone) with the chin on the floor. Maintain the legs together and arms by the side of the body.

- Slowly bend the knees, bring the heels near to the back and hold both ankles with the hands.

- While pulling the ankles from the back raise the chest and legs till the body remain on the abdomen and the spine gets stretched backward.

- Try to maintain a normal breath during the practice. After some time you may try to relax in the posture.
- Remain in the posture for a while and come back to the initial position by reversing the steps. Relax.

**Salient points to remember:**

**Do's:**
- Try to keep the knees together.
- Concentrate on the back muscles.
- Maintain a normal breath throughout the practice.
- Try to do all the movements very smoothly and slowly.

**Don’ts:**
- Do not force to reach the final position pulling the ankles too much.
- Do not jerk the body while moving it to avoid lesions and sprains.

2) Shalabhasana (Locust Pose)

**Posture:**

Shalabh means 'locust' as the position of the body in the asana appears to be like that of a locust. To facilitate easy learning first learn Ardha Shalabhasana.

**Pre position:**

Prone Position.

**Procedure:**

- Exhale and inhaling, raise both the legs from the waist keeping them straight in the knees. Keep the toes stretched to the backside and continue normal breathing.
- Take the precaution that the legs are straight in knees as otherwise the strain on desired organs is reduced and desired results are missed. During the practice chin should rest on ground.
**Position:**

Keeping the raised legs straight in the knees, stretch the toes towards the backside. At this point the legs may tremble, but this trembling can be stopped if the raised legs are slightly lowered. Attempt should be made to raise the legs as much as possible without having any tremble and then stabilize them at that point and keep the breathing normal.

**Releasing:**

Inhale and exhaling bring both the legs down on the ground and then back to the prone position.

**Duration:**

Only difference between Ardha Shalabhasana and this asana is that both the legs are raised simultaneously instead of one in this asana. As the strain is more, the duration be reduced.

**Internal Effects:**

This asana mainly centers the lower vertebra of the spinal cord and the muscles of the abdomen and thighs. The strain activates their blood circulation. As a result of this the concerned organs become more active and efficient. This strain is effective on small and big intestine and certain enzyme producing glands.

**Precaution:**

People suffering from Back problems, TB in intestine, Ulcer in stomach, hernia should consult Yoga expert before practicing this asana. Jerks and unbearable strains should be avoided.

3) Bhujangasana (The Cobra posture)

**Introduction:**

It is a traditional posture mentioned in the Gheranda Samhita (II 42) in which the body imitates the shape of a cobra. In Sanskrit “bujanga” means
“cobra” and “asana” indicates a stable and comfortable posture”. In the final position this asana resembles a hooded cobra standing straight. The snake is also a symbolic representation of the energy. A good complementary posture of Bujangasana can be Halasana.

**Stages:** Preparation- The starting position is resting on the chest (prone decubitus) with legs and toes together. The arms remain by the side of the body with the hands relaxed and the chin on the floor.

- Fold the arms by the side of the chest with the palms resting on the floor near to the shoulders.
- Bring up the chin, head and chest from the floor.
- Slowly raise the vertebra one by one so that the pressure on the spine moves step by step down to the pelvic bone.
- Maintain the posture comfortably for some time (approx. 15 to 20 seconds according to one’s capacity). Put the attention on the back muscles.
- Come back to the initial position slowly by reversing the steps.
- Relax in Makarasana.

**Salient Points to remember:**

**Do’s:**

- All the exercise shall be done very smoothly, moving the chest up vertebra by vertebra.
- Use the back muscles (not the arms) to raise the head and trunk.
- Try to do all the movements very slowly stopping at different degrees for a while.

**Don’ts:**
Do not jerk the body while lifting the chest up or while coming down.

Do not go beyond your capacity to reach the final position.

Do not open or raise the legs from the floor.

D] SUPINE POSITION ASANA

1) Naukasana

Posture:
In this asana the shape of the body looks like a yacht and hence it is called Naukasana (Yacht in Sanskrit). There is another Naukasana which is practiced in prone position. The difference between these two asanas is that in supine Naukasana, muscle of abdomen and stomach is contracted and in the prone position Naukasana the muscles are stretched.

Pre position: Supine Position.

Procedure:
- While exhaling and inhaling start raising both the legs upward and stop when they make angle of 45 degree with the floor.
- Hold breathe, and in the same position raise the shoulders and the back. Hold the toes of the legs with both the hands.
- Continue normal breathing.

Position:
Keep the knees straight or else the expected pressure on the organs is not achieved. In this position it is always difficult to maintain the balance of the body but with practice one can achieve the steady posture. If initially one can't catch the toes then hold the legs at ankles but don't bend the legs in knees.

Releasing:
- Inhale & exhaling bring the hands to normal position releasing the toes.
- Continue exhaling and slowly bring the legs to normal position.
- Attain the supine position.
**Duration:**

Due to the balance and strain involved in this asana, initially it is difficult to maintain it for long. One can practice it for up to 15 seconds after sufficient practice.

**Internal Effects:**

The size of the BELLY reduces due to the contraction of the abdomen from both the sides. Organs like liver, intestines, pancreas, kidneys etc. are pressurized which helps in improving the functioning.

**Precaution:**

Though this asana is useful for abdomen problems, people who have been operated on abdomen should not do this asana.

**Do’s & Don’ts**

**Do’s:**

Keep the legs straight in knees and inclined at 45 degree angle with the floor. As far as possible the back remains straight. Arms straight with fingers holding the toes. Eye sight fixed on the toes. You may start from sitting position if it is difficult to achieve the position from supine position. Try to balance on the buttocks.

**Don’ts:**

- Do not bend the legs in knees.
- Do not bend the arms in elbows.

2) Halasana(Plough Pose)

**Introduction:**

It is a traditional posture in which the body imitates the shape of a plough. In Sanskrit “Hala” means “plough” and “asana” indicates “a stable
and comfortable posture”. This asana benefits all the body by increasing the spine flexibility. While practicing one should not force to reach the final position but maintain the comfortable point. Flexibility will increase day by day naturally.

**Stages:**

Preparation – The starting position is resting on the back (supine dicubitus) with the legs together. The arms remain by the side of the body with the hands on the floor.

- Raise both legs without bending the knees up to 30 degrees and stop there for a few seconds.
- Raise the legs slowly up to 60 degrees and stop again for a few seconds.
- Then raise the legs up to 90 degrees and stop for a few seconds, once more.
- Go further bringing the legs towards the head by lifting the buttocks from the floor till the feet touch the floor over the head. Feel the stretching at the lumbo sacral region. Put the toes further if possible till the stretching is felt at thoracic and cervical region.
- Place the hands over the head.
- Place the chin in the glottis as in the chin lock (Jalandhara Bandha).
- Maintain the posture according to ones capacity and come back to the initial position slowly by reversing the steps.
- Relax in Shavasana.

**Salient points to remember:**

**Do’s:**
o Try to do all the movements very slowly and smoothly. It is sometimes advised to practice Ardha (half) Halasana or Vipritkarni before starting this practice.

o Stop at 30 degree, 60 degree and 90 degree while raising the legs up and while bringing them down.

o Maintain a normal breath throughout the practice.

o Give support to the back with the hands if the legs do not reach the floor in the beginning.

**Don’ts:**

o Do not bend the knees unless the legs get too much tension.

o Do not jerk the body.

o Do not practice beyond the capacity.

o Do not withdraw the hands from the back until the feet reach the floor.

3) Shavasana (Corpse Pose)

**Introduction:**

In this asana the body remains completely relaxed on the floor. In Sanskrit “Sava” means “a dead body” and “Asana” indicates “a stable and comfortable posture.” This is a traditional asana mentioned in the Hathapradipka (I–32) and the Gheranda Samita (II-19).

**Stages; Preparation:**

o The starting position is resting on the back (supine decubits) with the legs together. The hands remain by the side of body with the palms resting on the floor.

o Slowly, separate the legs up to 30 or 40 cm. And stop there. Relax the feet so that the toes remain pointing outwards.
o Open the arms very slowly up to 30 cm. from the body and stop there. Relax the hands so that the palms are facing upwards.
o Then relax the head and the whole body. Close and relax the eyes. To concentrate, feel the heart, the touch of the air on the nostrils and the breathing movements.
o Keep a natural deep breath throughout the practice and go further relaxing.
o Maintain the posture for some time and come back to the initial position slowly by reversing the steps.

**Salient points to remember:**

**Do's:**
o Try to do all the movements very mindfully avoiding mechanical actions.
o In the final posture keep the feet open and the spine in a straight line.
o Maintain a natural breath throughout the practice.
o Keep the eyes closed if it is comfortable for you.
o Concentrate your mind to avoid dreaming and to maintain attention on the posture.
o Keep the head in line to prevent tension on the neck.
o Once you have adopted the complete asana try to move as less as possible.

**Don’ts:**
o Do not tilt the head while relaxing it.
o Do not jerk the body while opening the legs up or while opening the arms.
Do not tense the elbows during the practice, keep them open and relaxed.

Do not move the body after assuming a comfortable and stable position.

E. PRANAYAMA

1) Anulom-Vilom

Introduction:

It is classed as a type of pranayama. In pranayama controlled breathing is insisted upon. When the breath is unsteady, the mind is unsteady, but when the breath is still, the mind is also still. In Sanskrit, anuloma means ‘towards’ and loma or viloma means ‘reverse’. It is also called Loma-Viloma. One inhales through the left nostril, holds the breath and exhales it through the right nostril and again inhaling through the right nostril and holding the breath, exhales through the left nostril. These complete one round of the Anuloma-Viloma. One should neither retain the breath more than one’s capacity nor should one exhale rapidly. In fact, one should start this practice just like Ujjayi breathing without holding the breath. Here for controlled inhalation and exhalation certain arrangement of the fingers is advocated. Fold the middle and the index fingers and use only the thumb for the right nostril and the little and the ring fingers for the left nostril. When the fingers are not used to close the nostrils they are kept on the bridge of the nose.

To start the practice form a foot-lock, if possible, other wise sit in any comfortable pose. Raise the right hand and close the right nostril with the right thumb and inhale slowly though the left nostril to the capacity. Close the left nostril now by using only the ring and the little fingers. Open the right nostril and exhale slowly. Inhale once again through the right nostril and close it with the thumb and exhale slowly through the left nostril. Maintain a time ratio of 1:2 between the inhalation and the exhalation, i.e. if inhalation is for five seconds then exhalation should before 10 seconds. While doing this practice
keep a control over the abdomen. One may start with five rounds and slowly go on increasing the rounds up to ten or even more.

**Stages for practice:**

Starting position: Sitting in Swastikasana or Padmasana or in any other comfortable posture.

- Keep the body erect and place the hands on the respective knees.
- Raise the right hand and place the right thumb on the right nostril and close it. Inhale slowly through the left nostril.
- Close the left nostril by using only the ring and the little fingers and exhale slowly through the right nostril in a ratio of 1:2 between the inhalation and the exhalation.
- Again inhale through the right nostril.
- Now exhale through the left nostril.
- Repeat the stages 2 to 5 at least five times.
- Place the right hand on the right knee.
- Stop the practice and release the posture.

**Important Points to remember:**

**Do’s:**

- Slowly inhale the air without bulging the abdomen.
- Exhale the air by pressing the abdomen in.
- Keep a ratio of 5:10 between the inhalation and the exhalation.

**Don’ts:**

- Avoid producing any sound from the nose.
- Avoid pressing hard on the nostrils.
Avoid retaining breath in the beginning.

**Expected Learning Outcomes:**

- Helps to reduce the physical and mental fatigue.
- Helps to keep emotional balance and gives peace to the mind.

All the above yogic practices are beneficial as they promote more blood supply to the brain, keeping it healthy and alert. This enhances the alertness and improves neuro muscular co-ordination, which is required for health related fitness and concentration.

2) Bhramari

**Introduction:**

The original word in the term Bhramari is Bhramar (humming bee). This pranayama relates to the word bhramar, i.e. the sound that bhramar emits. The characteristics of this pranayama is to create a sound like that of the humming bee while performing Pooraka or Rechaka. Hence, we can state that the name is quite appropriate.

**To perform the Pranayama**

The pranayama should be studied while sitting in asanas such as Padmasan or Simhasan. Since the left or right nostril is not to be used independently, there is no need for Pranavmudra. The entire action is with both the nostrils.

**Pooraka**

To perform the Pooraka efficiently, first perform a gradual Rechaka and then start Pooraka. While inhaling air, the soft palate of the breathing tube in the throat area should be pressed a little so as to obstruct the air flow. Since this palate is soft and flexible, it starts vibrating and a peculiar sound is
generated. Initially, the sound is hoarse and odd. However, with continuous practice, the sound turns melodious and similar to the beautiful tone of the humming bee. This sound is of a lower volume than that in Rechaka. Hence, it is termed as Bhramar Dhwani (sound of humming bee). When the Pooraka with a constant pace and the sound is complete, then Kumbhaka is performed.

**Kumbhaka**
When the Pooraka is completed, the nostrils are closed with pranavmudra, all the three bandhas are fixed and Kumbhaka is performed. No sound is expected while being in Kumbhaka. All the three bandhas should be observed as described earlier. Initially, the duration of the Kumbhaka should be same as that of Pooraka and then gradually it should be increased with continued practice to be four times that of Pooraka.

**Rechaka**
After completion of Kumbhaka, the bandhas should be released in the order defined earlier and Rechaka should be started. The Rechaka, too should generate sound as that in Pooraka. However, the sound generated here is more in volume than that in Pooraka. This can be termed as Bhraamari Naad (sound of female humming bee) this is more melodious than earlier. The sound should be gradual and at a constant pace without any ups and downs. With continued practice, the sound will be more clear and pleasing to the ears. The units in Rechaka should be double than that in Pooraka. After Rechaka, the next rotation can be immediately commenced.

**F] KRIYA**
1) **Kapalbhati**
In Sanskrit “Kapala” means skull, bhati means shining Kapalabhati is considered to be so cleansing to the entire system that, when practiced on a regular basis, the skull (and the face) shine with good health and inner
radiance. Although a breathing exercise Kapalabhati is technically considered to be one of the “Shat Kriyas”.

**Preliminary Exercise:**

**The complete breath**

It in a comfortable cross- legged position. erect keeping the spine, neck and head straight line. Relax the abdominal muscles. Do not bend forward. Put one and onto the abdomen and the other onto ribcage. Take a deep breath. As you inhale, feel the breath filling the lungs n three steps:

1. **Low breathing:** the abdomen expands as the diaphragm moves downward, filling the bottom of the lungs with air.

2. **Middle breathing:** the ribcage expands as the middle lungs fill with air.

3. **High breathing:** the collar bone expands and raises as the upper portion of the lungs fills with air.

A full deep breath encompasses all three of these steps in this order. Exhalation will follow these three steps as well. Exhale fully, emptying the lower, then middle and finally the upper lungs. Be sure that you are breathing properly before commencing the various Yoga breathing exercises.

**The Respiratory Muscles:** Your lungs work like bellows, in the partial vacuum of the thoracic cavity to suck in air, the cavity enlarges- the ribcage expands and the diaphragm moves down, massaging the abdominal organs. When you exhale, air is expelled as the abdomen contracts, the rib cage recoils and the diaphragm moves up, massaging the heart.

**How to do Kapalabhati**

- Sitting in cross- legged position with back straight:

- Quick contract the abdominal muscles pulling the abdomen in sharply, exhaling through the nose. The diaphragm is contracted and pulled up into the chest cavity, pushing the air out of the lungs.
o Relax the abdominal muscles, allowing the diaphragm to descend to the abdominal cavity. The lungs will automatically expand and inflate with air.

o If Kapalbhati is done properly, exhalation takes one fourth of the time of inhalation. passive inhalation and sudden expulsion of breath follow each other continuously until a round is completed.

o Beginners may undertake 3 rounds of 20-30 pumping each. This may gradually be increased to 5 rounds of 50-100 pumping. Make sure that the face is kept relaxed. Back and shoulders do not move.

**Common Mistake:**

o Moving the diaphragm in the opposite direction. Many people will contract the abdominal muscles while inhaling.

o Contracting the shoulders to push the air out when exhaling.

o Contracting the facial muscles to force the air out of the nose.

**Physical Benefits:**

o Kapalbhati cleanses the nasal passages, lungs and entire Respiratory System.

o It strengthens and increases the capacity of the lungs and the intercostals (ribcage) muscles.

o Kapalbhati helps to drain the sinuses and eliminate accumulated mucus.

o Bronchial congestion is removed, as is spasm of the bronchial tubes. Consequently, asthma is relieved and cured over a period of time.

**Note:** Kapalabhati should not be practiced when on asthmatic attack is in progress.
As the lungs are cleansed, excess carbon dioxide is eliminated. This permits the red-blood cells to suck in more oxygen, increasing the richness of the blood.

The blood is purified and toned; the body gets an increased supply of oxygen to all cells.

The abdominal contractions of Kapalabhati massage the liver, spleen, pancreas, stomach and heart, thus invigorating them.

Abdominal muscles are strengthened, digestion is improved.

The regular practitioner of Kapalabhati enjoys blooming vigor and health.

**Mental/ Psychic Benefits:**

- Kapalabhati refreshes and invigorates the mind.
- Brings an increase in alertness as a result of the increase of oxygen to the brain.
- It creates a feeling of exhilaration.
- Kapalabhati activities pranic energy.
- Increases the supply of stored-up pass in the solar-plexus region.

**2) Trataka**

Trataka is a deceptively simple but powerful practice. Trataka means 'to gaze steadily at a fixed point' and there are two forms of the practice. One is 'bahiranga' or external trataka and the other is 'antaranga' or internal trataka. Bahiranga is easier to practise because one simply has to gaze at an object or symbol. However, antaranga trataka involves clear and stable inner visualisation of an object.
In the practice of trataka an object is gazed at until its subtle form manifests in front of the closed eyes. The point of concentration is usually a symbol or object which activates the inner potential and can absorb the mind. The symbol most commonly used is a candle flame, because even after the eyes are closed, the impression remains naturally for some time, and then antaranga trataka can easily be performed. The purpose of focusing the eyes on an external object is to arouse the internal vision and make it absolutely steady by stopping the eye movements.

G) BANDHA

1) Jiva Bandha

**Technique:**

- Sit comfortably.
- Press the tip of the tongue against the front upper teeth and open the jaw.
- Further press the surface of the tongue against the roof of the palate.
- Maintain the position of the mouth comfortably for some time.
- Release the pressure of the tongue and close the mouth.
- Repeat the practice conveniently several times.

**Useful Hints:**

- In a successful practice the phrenum (lower band of the tongue) is clearly seen. If you are unable to maintain the tongue lock effectively, practice for some time producing a “tuk” sound as the children do.
- Open the jaw wide to create adequate pressure of the tongue.

**Benefits:**

- It is an excellent practice for the care and prevention of throat troubles like tonsillitis etc., especially for children.
2) Mula Bandha

**Technique**

- Sit comfortably with erect spine.
- Lower abdomen is contracted inside and hold the breath.
- Contract anus inside, hold for 3-4 secs and then relax
- Such contraction and relaxation of anus is a repeated process for a duration of 2-3 minutes. This is considered as one round. Like-wise there shall be 5 rounds per day.

**Benefits**

It is an excellent practice for the care and prevention of rectum (Large intestine) and for strengthening the related muscles.

H) MUDRA

1) Sinha Mudra

**Technique**

- If possible face towards the sun, sit in Vajrasan and spread the knees. The fingers of the hands should be turning backside and keep them straight in between the legs.

- Inhale and take out the tongue. Look in between the eyebrows and exhale. While exhaling roar like a lion. Repeat this 3 to 4 times.

- After doing sinhasan leave the saliva from the mouth and lightly massage the throat, this prevents soar throat.

**Benefits**

- It is useful for tonsils, thyroid and other throat problems.
- It is beneficial in ear problems and unclear pronunciation.
- It is beneficial for the children who lisp (speak indistinctly).

2) Bramha Mudra
**Introduction:**

This posture is supposed to resemble the four heads of Lord Brahma (as the four Vedas), one of the Gods of Hinduism. In this practice, the person’s head is slowly twisted and placed looking to the left, right, back and forward.

**Technique:**

Starting posture – Subject is asked to sit down with legs folded in a comfortable position (preferably in Padmasana) with the back as straight as possible and front.

- Turn slowly the head backward as far as possible and relax. The person may gaze at the tip of the nose if it is comfortable for him. Keep the mouth closed and the head relaxed. Maintain for few seconds without forcing the posture.

- Slowly come to the center relax for a while, bring the head down and put the chain against the chest.

- Bring back the head to the initial position.
- Turn it slowly towards the left side (try to keep it vertical) and look to the left as far as possible.

- Bring it back to the central position again.
- Turn the head slowly to the right side in the same way. Remain there for a while and come back, Relax.

- This completes a round Brahma Mudra. Do two rounds in the beginning adding one per month up to six rounds

**Salient points to remember**
Sit in any comfortable position with straight but relaxed back. Place the hands on the knees and look in front.

- Do all movements very slowly and cautiously.
- Maintain the posture for two or three seconds in the beginning.
- Turn the head to the right or the left without bending.
- Try to keep the shoulders relaxed, moving only the head.
- If one feels uncomfortable with the eyes open, keep it closed and relaxed.

Don’ts

- Do not bend the back while sitting.
- Do not jerk while moving.
- Do not overdo it.
- Do not bend the head while turning it to the sides.
- Do not force the eyes.

3.8 Procedure of the Study

3.8.1 Preliminary phase

Pre test was conducted with consent in writing from all the subjects prior to this programme.

Each subject was given individual code number i.e. Case number and record card prepared by the investigator so that they can be identified easily.

The schedule of testing programs for pre-test was notified to the subjects and testing stations were established to gather the related data. As per scheduled dates and time, the subjects were assembled in a hall for testing physiological as well as psychological variables. After wards the
subjects were directed to report at the playground for testing health related physical fitness attributes.

Demonstration of the test items and question asked by the students were given and explained prior to execution of pre-test. The uniform for the testing of the subject was tracksuit.

Standard procedures were followed for testing all the selected variables.

3.8.2 Daily Administration of Training Phase

During the yoga training phase regular attendance of the subjects was taken. Any question asked by the students has been clarified and they were found contented with the teacher / trainer.

The training conducted per day was 60 minutes in the morning session (7:30-8:30 a.m.). This was continued for 6 days in a week (except Sundays and holidays) for a total period of 12 weeks.

Yoga practices were taught and practiced in a hall inside the campus, whereas during the same period control group was engaged in recreational activities. The instructional part for experimental group was looked after and tackled by qualified teacher under the overall supervision of present investigator.

Adaptation of Learning Yoga practices

As the subjects’ age group was ranged from 11 to 13 years and the yoga practices are new to them, a ten-day teaching session was organized to teach the yoga practices. Proper correction in yoga techniques was made in this phase of adaptation. The researcher found that almost all the subjects could learn the yoga practices efficiently. However, some of the selected yoga practices, which are difficulty, required more gradual and longer duration (i.e., 10 – 12 days) for adaptation.
3.8.3 Post-test Phase

Post-test was conducted like pre test. All the subjects were strictly instructed to arrive each testing station in time.

3.9 Statistical Analysis

Descriptive statistics was applied to process the data. Further the efficacy of the yoga training was evaluated by employing inferential statistics i.e., 2 x 2 x 11 Factorial ANOVA. This design seems to be justified, because there were two groups, two times testing of variables (pre-, & post) and total eleven variables were tested. However, the results of factorial ANOVA were further substantiated to Scheffe’s post hoc analysis.