CHAPTER III

METHODOLOGY

In this chapter, the selection of subjects, experimental design, selection of variables, selection of test, reliability of the data, orientation of subject, test administration, training program, and statistical procedure have been explained.

3.1 SELECTION OF SUBJECTS

The main purpose of this study was to determine the effects of Concurrent yogic practices and Physical exercises Training on health related physical fitness components and pulmonary parameters among asthmatic patients. The study was conducted in the IRTT, Perundurai Medical College and Hospital Perundurai, Erode District, Tamilnadu state, India. The Doctors diagnosed one hundred and eighty patients affected with moderate bronchial asthma among 400 asthmatic patients 60 were randomly selected for this study as subjects. The subjects’ age ranged from 25 – 50 years.

3.2 EXPERIMENTAL DESIGN

A pre test- post test group design was used for the study. Sixty subjects were randomly assigned to four groups namely Experimental group – I, Experimental group – II, Experimental group - III and Control group IV. Experimental Group – I (n=15) underwent Yogic Practices (YP); Experimental Group – II (n=15) underwent Physical Exercises Training, (PET); Experimental Group – III (n=15) underwent Concurrent Training (Yogic Practices and Training Physical Exercises Training (CYPPET); and Control Group VI (n=15) (CG) did not participated in any specific exercises training program. The intervention program was conducted six days per week for duration of twelve weeks.

3.3 SELECTION OF VARIABLES

The investigator reviewed the available scientific literature pertaining to yogic practices, physical exercises training and concurrent training from books, Journals, periodicals and research articles. Resorting from the review of literature and discussion with the experts and considering the feasibility criteria of the study the following variables were selected.
3.3.1 PULMONARY PARAMETERS

1. Forced Vital Capacity (FVC)
2. Forced Expiratory Volume in one Second (FEV₁)

3.3.2 HEALTH RELATED FITNESS COMPONENTS

4. Muscular Strength and Endurance
5. Flexibility
6. Cardio Respiratory Endurance
7. Percent Body Fat (Body composition)

3.4 CRITERION MEASURES

The investigator analyzed various sports science related literature, also consulted with yoga trainer and physical education professionals to use most suitable test items as criterion measures of the study. The test items selected were highly standardized, appropriate and they were selected as the criterion measures to this study for testing the hypothesis. The details are presented in the table 3.1.

Table 3.1 Description of selected test items for pulmonary parameters and Health Related Physical fitness Components

<table>
<thead>
<tr>
<th>Pulmonary Parameters</th>
<th>Name of the test</th>
<th>Units of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Vital Capacity</td>
<td>Pulmonary function test</td>
<td>Percentage</td>
</tr>
<tr>
<td>Forced Expiratory Volume in One Second</td>
<td>Pulmonary function test</td>
<td>Percentage</td>
</tr>
<tr>
<td>Forced Expiratory Volume in One Second / Forced Vital Capacity</td>
<td>Pulmonary function test</td>
<td>Percentage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Related Physical Fitness Components</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular Strength and Endurance</td>
<td>Modified sit ups test</td>
<td>Numbers</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Sit and Reach test</td>
<td>Centimeters</td>
</tr>
<tr>
<td>Cardio Respiratory Endurance</td>
<td>12 minutes Run /walk</td>
<td>Meters</td>
</tr>
<tr>
<td>Percent Body Fat (Body Composition)</td>
<td>Skin fold caliber</td>
<td>Percentage</td>
</tr>
</tbody>
</table>
3.5 ORIENTATION OF SUBJECTS

Before the collection of the data, the subjects were made aware of the importance of the test about the purpose of the study. The investigator explained the procedure of assessing the pulmonary parameters abilities and Health related physical fitness components. The subjects had a standard warm up prior to the test and during a preliminary visit to the fitness center. They had been familiarized all the test protocols.

3.6 RELIABILITY OF DATA

The reliability of data was censured by establishing instrument reliability, tester’s competency and subject reliability.

3.6.1 INSTRUMENT RELIABILITY

With respect to the instruments used in measuring various variables, certificate of accuracy was obtained from appropriate instrument testing agency and also by recalibrating the scale using known amounts of variables wherever required.

3.6.2 TESTER RELIABILITY

The assistance of 3 professional physical educators was sought on administration of various test items. They were oriented about the procedures of measuring and recording the scores in each variable. All the assistants were asked to measure on a few subjects and co efficient of inter correlation of scores was recorded for them. The last in each variable was conducted only on getting high co efficient of correlation.

3.6.3 SUBJECT RELIABILITY

The subject reliability was established by test and re –test co efficient of correlation for the scores in each of one criterion measures. Retesting was done within period of a week of initial test in each of the variables to get data for calculating test and re –test coefficient of correlation for reliability of the subjects. The intra class correlation coefficients obtained for test - retest data are presented in table 3.2
Table 3.2. The intra class correlation coefficients obtained for test - retest data

<table>
<thead>
<tr>
<th>Pulmonary Parameters Variables</th>
<th>‘r’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forced Vital Capacity</td>
<td>0.67</td>
</tr>
<tr>
<td>Forced Expiratory Volume in One Second</td>
<td>0.55</td>
</tr>
<tr>
<td>Forced Expiratory Volume in One Second / Forced Vital Capacity</td>
<td>0.33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Related fitness components variables</th>
<th>‘r’ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular Strength and Endurance</td>
<td>0.87</td>
</tr>
<tr>
<td>Flexibility</td>
<td>0.90</td>
</tr>
<tr>
<td>Cardio Respiratory Endurance</td>
<td>0.99</td>
</tr>
<tr>
<td>Percent Body Fat  Body (Composition)</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Significant at $p < 0.05$ level of confidence.

3.7 PILOT STUDY

A pilot study was conducted to assess the initial capacity of all subjects in order to fix the intensity and volume of the test for administration forcibility. Based on the response of the subjects in the pilot study, the training schedule was constructed; however the individual differences were considered while constructing the training program. The basic principles of training (progression, over load and specificity) were followed while giving the training program. After completion of the pilot study the present study was carried out with sixty subjects.

3.8 ADMINISTRATION OF TEST

The investigator held a meeting with the subjects prior to the administration of the test. The purpose, the significance of the study and the requirements of the testing procedure were explained to them in detail so that there was no ambiguity in their minds, regarding the efforts required of them. All the subjects agreed voluntarily to co – operate in the testing procedures and they were trained to put in their best efforts in the interest of the scientific investigations and in order to enhance their own health. The subjects were very enthusiastic and co – operative throughout the research training period and test.
3.9 PULMONARY FUNCTION TEST

Pulmonary Function Test was performed before and after the end of treatment period (12 weeks) in which the patient was instructed to assume the erect standing position carrying the breathing tube that was connected to the spirometry and in its other end there was a disposable mouthpiece to prevent infection. The patient’s age, weight and height were introduced into the screen of the apparatus. Then, each patient was instructed to perform the test while wearing nostrils clip.

These procedures were repeated 3-5 times with rest in between and the maximum value was recorded for evaluation of ventilator functions Forced Vital Capacity test, Forced Expiratory Volume in one Second and Forced Expiratory Volume in one Second / Forced Vital Capacity.

3.10 COOPER’S 12 MINUTES RUN AND WALK TEST

To measure the cardio respiratory endurance 12 minutes Run and Walk Test (AAHPERD) was used. For this, the equipments used were Stop Watch, Measuring Tape, Score Card, Pencils and 400 Meters Track. The procedure of the test administration is as follows. The group was divided into two for testing purpose. Each subject worked with a partner and while one subject ran / walked, the other partner checked the laps. The partner was instructed to count the number of laps covered within the allotted time. When eleven minutes elapsed, the instructor called out the time left of run. At the end of the 12 minutes, the instructor blows his whistle and the runner notes the marking he had just passed. The observing partner gave the runner the number of completed laps he ran. The runner reported his score in terms of number of laps plus the number of 50 meter zones passed on the last lap.

3.11 SKIN FOLD CALIPER TEST

To obtain the amount of percent body fat, skinfold caliper was used. Sikinfood measurement was taken on the right site of the body and the subject in standing position. Between the forefinger and thumb the pinch was made enough to get without pulling the muscle upward. The measurement were recorded to the nearest millimeter at four sites of
the body namely triceps, biceps, sub scapular and super iliac. At triceps was taken between the tip of the olecranon process of the ulna (elbow) and the acromion of the scapula (shoulder). The pointed on the back of the arm halfway between the tip of the elbow and the shoulder. At bicep was taken midpoint on the muscle. The muscle (arm) should be relaxed and in a perpendicular position. The pointed halfway between the flexed bicep muscles. Subscapular was taken from below the tip of the inferior angle of the scapular, at an angle of 45 degrees to vertical (back, just under the shoulder blade). The pointed just under the shoulder blade halfway between the spine and site. And suprailiac was taken above the iliac crest in mid – axillaries line (about one inch above the hip bone at an angle of 45 degrees to vertical). The pointed about one inch above the hip bone. Each site was measured three times and the average of the two closest reading was recorded as the final score. This four site formula was developed by Durnin and Womersley (1974).

Where $D=$ predicted density of the body (g/ml). And $L=$ log of the total of the 4skin folds(mm).

<table>
<thead>
<tr>
<th>Age</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 -29</td>
<td>$D=1.1631-0.0632*L$</td>
</tr>
<tr>
<td>30-39</td>
<td>$D=1.1422-0.0544*L$</td>
</tr>
<tr>
<td>40-49</td>
<td>$D=1.1620-0.0700*L$</td>
</tr>
<tr>
<td>&gt;50</td>
<td>$D=1.10-0.0779*L$</td>
</tr>
</tbody>
</table>

The density value was converted to Percent Body fat using the Siri Equation.

$$\%\text{Body fat} = \frac{495}{\text{Body Density}} - 450$$

**3.12 MUSCULAR STRENGTH AND ENDURANCE**

Modified Sit-Ups was a test to measure strength and endurance. The procedure of the test is as follows. The subject lies flat on the back with knees bent and feet on the floor with the heels no more than 1 foot from the buttocks. The knee angle should be no less than 90 degrees. The fingers are interlocked and placed behind the neck with the elbows touching the floor. The feet are held securely by a partner. The student then curls up to a sitting position and touches the elbows to the knees. This exercise is repeated as many times as possible in the time requirement. One point is scored for each correct sit-up. The score is the maximum number of sit-ups completed in 60 seconds (Barrow and Mc Gee, 1989).
3.13 FLEXIBILITY

Sit and Reach test (AAHPERD) was used to measure the flexibility of subjects. For this the equipments used were sitting and reach apparatus and score sheet. The procedure of the test administration is as follows. The sit and reach apparatus should have the 25 cm mark equivalent to the point where the feet touch the box. The subject has to warm-up for the test by performing slow stretching movements before taking actual measurements. The subject would sit barefoot with the legs fully extended with the soles of the feet placed flat against the horizontal cross board of the apparatus, with the inner edge of the sole placed 2 cm from the scale, keeping the knees fully extended, arms evenly stretched and palms down. The subject bends and reaches forward (without jerking) pushing the sliding marker along the scale with the fingertips as far forward as possible. The position of maximum flexion must be held for approximately two seconds. The test is repeated twice. If the knees flex, the trial is not counted. There should be no attempt to hold the knees down. Recording the maximum distance reached to the nearest 0.5cm (Operation manual for “The Canadian Fitness Challenge”, 1982).

3.14 TRAINING PROTOCOL

Prior to training, all subjects had their baseline of health related physical fitness components and pulmonary parameters of asthmatic patients. The total testing session was approximately an hour. A warm up of 5 minutes was followed by a recess for 3 minutes. The practice resumes immediately after the rest period. This was repeated for a number of times. Each test was explained and demonstrated. Before testing, subjects were given practice trials to become familiar with the testing procedures. Patients in three groups were highly motivated and highly protested with the training. Even the control patients continued without training to the end of the study. However, most of the patients in the control group became gradually aware of the fact that they were using a same device, but there was no interaction among the subjects in each group. The Program Schedules of Experimental Groups are as follows:

3.15 EXPERIMENTAL GROUP I (YOGIC PRACTICES)

During the training period, the experimental group I underwent yogic practices. All subjects were trained for six days a week; each session consisted of 35 minutes of
training for a period of twelve weeks. The intensity of each asana was determined by holding the particular asana (posture) per a specific duration. The intensity of yogic practices was slightly increased once in three weeks. The training was performed under the supervision of a researcher, and had an interview with the physician once a week. All subjects received the same attention and adjustment in medications and were treated equally during the yogic practices. The details of the training schedule is presented in the table 3-3

Table 3.3. Twelve Weeks Yogic Practice Schedule (Group – I)

<table>
<thead>
<tr>
<th>YOGIC PRACTICES</th>
<th>WEEKS1-3</th>
<th>WEEKS4-6</th>
<th>WEEKS7-9</th>
<th>WEEKS10-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRANAYAMA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anuloma&amp;vil</td>
<td>1:2:2ratio</td>
<td>1:4:2ratio</td>
<td>1:6:2ratio</td>
<td>1:8:4ratio</td>
</tr>
<tr>
<td>Ujjayi</td>
<td>2:4:4ratio</td>
<td>4:8:8ratio</td>
<td>6:12:12</td>
<td>8:16:16ratio</td>
</tr>
<tr>
<td>Kaphalabathi</td>
<td>30cpm</td>
<td>60cpm</td>
<td>80cpm</td>
<td>120cpm</td>
</tr>
<tr>
<td>Bhatrika</td>
<td>2:4:4ratio</td>
<td>4:8:8ratio</td>
<td>6:12:12</td>
<td>8:16:16ratio</td>
</tr>
<tr>
<td><strong>ASANAS</strong></td>
<td>Intensity (holding times)</td>
<td>Repetition</td>
<td>Intensity (holding times)</td>
<td>Repetition</td>
</tr>
<tr>
<td>Dhanurasana</td>
<td>15 sec</td>
<td>3 times</td>
<td>20 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Bujangasana</td>
<td>15 sec</td>
<td>3 times</td>
<td>20 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Salabasan</td>
<td>10 sec</td>
<td>3 times</td>
<td>15 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>matsyasana</td>
<td>15 sec</td>
<td>3 times</td>
<td>20 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Janus irasana</td>
<td>15 sec</td>
<td>3 times</td>
<td>20 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Sarvangasana</td>
<td>20 sec</td>
<td>3 times</td>
<td>22 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Trikodaasana</td>
<td>15 sec</td>
<td>3 times</td>
<td>20 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Sirasana</td>
<td>10 sec</td>
<td>3 times</td>
<td>15 sec</td>
<td>4 times</td>
</tr>
<tr>
<td>Savasana</td>
<td>5 minutes</td>
<td>4 times</td>
<td>---</td>
<td>6 times</td>
</tr>
</tbody>
</table>
3.15.1 METHOD OF PRANAYAMA AND ASANAS TRAINING

PRANAYAMA

Anuloma - Viloma

The subjects were advised to sit in any comfortable meditative pose with back erect and rigid. Head is lowered to the trunk keeping the chin in the notch between the collar – bones just above the breast bone (This is the Jalandhara Bandha). Keep the eyes closed. The left arm is kept straight, the back of the wrist resting on the left knee. The forefinger is bent towards the thumb, its tip touching the tip of the thumb (jnana mudra). The right arm is bent at the elbow with index and middle fingers bent at the elbow with index and middle fingers bend towards the palm, keeping them passive. Bring the ring and little fingers towards the thumb. Place the right thumb on the right side of the nostrils just below the nostrils bone, the ring and little fingers on the left side of the nostrils just below the nostrils bone.

The right nostrils was closed with right thumb and inhaled slowly through the left nostrils. Hold the breath for some time. Then slowly exhale through the right nostrils closing the left nostrils with the ring finger and the little finger. The same is done in the reverse order. The process is repeated several times comfortably.

UJJAYI

The subjects were advised to position is same as in Anuloma – Viloma. Keep the head in jalandhara bandha and hands in jana mudra. Exhale completely. Then take a slow, deep steady maximum breath through both nostrils. The passage of incoming air is felt on the roof of the palate and makes a sibilant sound (sa). This sound should be heard. Hold the breath for some time. Then exhale slowly, deeply and steadily until the lungs are completely empty. While exhaling the passage of the outgoing air should be felt on the roof of the palate. The brushing of the air on the palate should make an aspirate sound (ha). The pranayama is repeated.

KAPALABHATI

The subjects were advised to stand with ease. Relax and keep the hands on both sides of the hands on both sides of the body. Here the inhalation is slow, deep and stead,
but the exhalation is vigorous. There is a split second of retention after each exhalation. There is a split second of retention after each exhalation. The sound made resembles air rushing through bellows. Kapalabhati is an exercise for the purification of the nostrils passage and lungs. Though this is one of the six purificatory exercises, it is a variety of pranayama.

**BHASTRIKA**

The subjects were advised to rapid succession of forcible expulsion is a characteristic feature of bhastrika. Sit on padmasana. Keep the body, neck and head erect. Close the mouth. Next, inhale and exhale quickly ten times like the bellows of the blacksmith. Constantly dilate and contract. When you practice this pranayama a hissing sound is produced. The practitioner should start with rapid expulsions of breath following one another in rapid succession. When the required number of expulsions, say ten for a round, is finished, the final expulsion is followed by a deepest possible inhalation. The breath is suspended as long as it could be done with comfort. Then deepest exhalation is done very slowly. The end of this deep exhalation completes one round of Bhastrika. Rest a while after one round is over by taking a few normal breaths.

**ASANAS**

The following asanas were selected:

   Trikonasana, Sarvangasana, Matsyasana, Bhujangasana, dhanurasana, Shalabhasana, Janu Sirsana, Sirsana and Shavasana.

**JANU SIRSANA**

The subjects were advised to sit on the floor with legs extended in front. Slide left leg laterally, and flex it until the big toe touches the opposite thigh, keeping the right leg extended. Exhale and lean forward toward the right foot and hold this leg (or foot if possible) with the hands in an effort to touch the face to the right knee. Maintain this position for a few seconds breathing normally. Inhale and raise the trunk upright.

**TRIKONASANA**

Subjects were advised to stand straight, feet apart and arms on the sides, palms facing and touching the thighs. While inhaling, raise right arm slowly up to shoulder
level, palm facing down with the elbow straight. Then turn the palm upwards and raise
the hand so that it is in a straight line, touching the ear. While exhaling, bend as far as
possible to the left. This is the final position of Trikonasana. Maintain it for a few
seconds and return to normal position gradually. The same is to be done on the other side.
This completes the process. The lateral stretch should be felt.

**SARVANGASANA**

Subjects made to lie on their back with legs and arms straight, feet together and
palms on the floor beside the body. While exhaling, advised to raise their legs slowly
upto 90 and then the whole body and the rest weight on the arms so that the chin touches
the jugular notch. Bring the arms and hands to support the body at the hip region
(fingers at the back and thumb in front of the body). The entire weight of body rests on
the head, neck and shoulders while the arms are used for balancing. Keep the trunk, legs
and hips in a straight line and as vertical as possible. Focus eyes on toes, with chin
pressed against the chest. Retain the posture for one for three minutes. While exhaling,
return to the lying position by bringing the leg backward and releasing the hands and the
palms.

**MATSYASANA**

Subjects were made to sit with legs fully stretched out. Bend each leg at the knees
and place feet on the other hip joint. Both the heels are adjusted in such a way that each
presses the adjacent portion of the abdomen. This forms the foot-lock in a sitting position.
Bend backwards while exhaling and rest weight on the elbows. Push the neck backwards
and slightly raises the hip upward thus making an arch of the spine. Then, by making
hooks of the forefingers, hold toes on the corresponding side without crossing the arms.
This posture should be maintained for some time with slow and deep breathing. For
reverting to the original position, release the foot-lock and return to the supine position
by lowering the arch.

**BHUJANGASANA**

Subjects were advised to lie in the prone position with the forehead resting on the
floor, legs straight and feet together, toes pointing backwards, arms bent at the elbows,
palms flat on the floor, shoulders and arms on the sides of the chest and fingers kept straight and together. Inhale slowly and the raise the upper body (head, neck and chest). Look at the ceiling (sky) with the neck bent as far back as possible. For raising the body, only the back muscles are to be used. Do not push up with your arms. Waist, legs and toes should remain on the ground. Raise the body as much as possible, holding the position and retaining the breath for a few seconds. Exhaling slowly, return to the original position.

**DHANURASANA**

Subjects were instructed to lie down with face and the forehead touching the ground, arms extended alongside the body and legs straight. Bend the legs at the knees towards the hips, bringing them forward so that they can be held firmly by the hands at the ankles on the respective sides. While inhaling, stretch the legs backwards and raise the thighs, chest and head simultaneously. Hands should be kept straight. The weight of the body should be on the navel. Knees should be kept close, if possible, with eyes looking upwards. This posture should be retained for at least a few seconds, holding the breath

**SHALABHASANA**

The subjects were advised to lie on stomach with legs stretched, and feet together, chin resting on the ground. Keep both hands under the thighs. While inhaling, slowly lift both the legs upwards and stretch as far as possible without bending the knees and toes. Retain this position for some time and then, while exhaling, lower the legs slowly and bring back to the original position.

**SAVASANA**

The subjects were advised to lie straight on the back with ease. Make distance of about one and half feet between legs. Place hands straight on the ground at the distance of six inches from the body. Palms facing upward, fingers will remain slightly curled, eyes closed. After maintaining it for some time and return.

**SIRASANA**

The subjects were advised to a beginner may need help with pose, and it is best done against a wall. Kneel with the forearms on the floor, hands, clasped against the
head. Raise the knees from the floor, keeping the toes in contact with the floor. Exhale, and with a slight rocking motion lift the toes off the floor to raise the legs into the air, initially knees flexed, then extended. The body weight now is supported on the crown of the head. Breathe normally while maintaining this position for a few seconds. Exhale, flex the knees, and reverse the postures to the kneeling position.

3.16 EXPERIMENTAL GROUP II (PHYSICAL EXERCISES)

The experimental Group II (N – 15) underwent the physical exercise training. All subjects were trained for six days a week; each session consisted of 35 minutes. They were trained for twelve weeks. Before and after training session the group had a warm – up and warm - down for 5 minutes each involving jogging, low intensity resistance exercise and stretching exercise. The intensity of physical exercises was slightly increased once in three weeks. The training was performed under the supervision of a researcher, and had an interview with the physician once in a week. All subjects received the same attention and adjustment in medications and were treated equally during the physical exercises. The detail of the training schedule is presented in the table 3.4.

Table 3.4. Programme Schedule for 12 weeks for Physical Exercises Group II)

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Warming up</th>
<th>Intensity</th>
<th>Activity</th>
<th>Recovery period</th>
<th>Repetition</th>
<th>Cool down</th>
<th>Duration of exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3</td>
<td>5minutes</td>
<td>40 –</td>
<td>800mts</td>
<td>4minutes</td>
<td>3times</td>
<td>5minutes</td>
<td>35minutes</td>
</tr>
<tr>
<td>4 – 6</td>
<td>5minutes</td>
<td>45 –</td>
<td>800mts</td>
<td>4minutes</td>
<td>4times</td>
<td>5minutes</td>
<td>35minutes</td>
</tr>
<tr>
<td>7 – 9</td>
<td>5minutes</td>
<td>50 –55%</td>
<td>800mts</td>
<td>4minutes</td>
<td>5times</td>
<td>5minutes</td>
<td>40minutes</td>
</tr>
<tr>
<td>10 –</td>
<td>5minutes</td>
<td>55 –60%</td>
<td>800mts</td>
<td>4minutes</td>
<td>5times</td>
<td>5minutes</td>
<td>40minutes</td>
</tr>
</tbody>
</table>

3.17 CONCURRENT GROUP III (YOGIC PRACTICES AND PHYSICAL EXERCISES)

Experimental group I underwent yogic practices, Experimental group II underwent physical exercises and Experimental group III underwent concurrent physical exercise and yogic practices. All subjects were trained for six days a week; each session consisted of a one hour, training for twelve weeks. Before and after training session the group had a warm – up and warm - down for 5 minutes each involving jogging, low intensity resistance exercise and stretching exercise. During the training, physical exercises were done for 35 minutes and a recess period ten minutes were given.
The subjects were asked to lie down in savasana for 5 minutes after that yogic practice was given. This lasted for 35 minutes. During the training program, the intensity was slightly increased every three weeks once. At the end of each training session the subjects were asked to lie down in savasana for 5 minutes. The training was performed under the supervision of a researcher, and once in a week had an interview with the physician. All subjects received the same attention and adjustment in medications and were treated equally during the concurrent (physical exercises and yogic practice) period.

3.18 CONTROL GROUP IV

The subjects in the control group did not participate in any physical exercise or specific training throughout the training program except the day-to-day regular activities.

3.19 STATISTICAL ANALYSIS OF DATA

The present study pays attention mainly on testing the means of four treatment groups and secondarily deals with the increase of means in each group from baseline to post treatment for various measures. The statistical tool used for these are described here. The group Mean gains recorded by the various groups during the experimental period of twelve weeks to the criterion measures were tested for significance by applying depended t-test. Analysis of co-variance was applied to determine whether the four programs of training produced significantly different improvements in selected variables after 12 weeks of training. Since the initial means were not matched, comparison between actual could not be made, all means were adjusted by regression to a common mean. Further the significance of difference of pair of adjusted final group means were tested for significance by applying Scheffe’s post hoc test.