CHAPTER III

METHODOLOGY

In this chapter, the selection of subjects, selection of variables, pilot study undertaken, experimental design, reliability of instruments, competency of tester, reliability of data, test administration, collection of data and the statistical procedure used have been explained.

3.1 SELECTION OF SUBJECTS

The purpose of this study was to find out the effects of different packages of yogic practices on selected motor fitness components, physiological and psychological variables among juvenile delinquents.

To facilitate the study, ninety juveniles confined in different Homes in Chennai were randomly selected in the age group of 14 to 17 years. The selected subjects were randomly divided into three groups, namely asanas – Iyengar yogasana group and Christina yoga group and control group consisting of 30 juveniles in each.

The requirements of the experimental procedures, testing as well as exercise schedules were explained to them so as to avoid any ambiguity of the effort required on their part and prior to the administration of the study, the investigator got the individual consent from each subject.
3.2 SELECTION OF VARIABLES

The research scholar reviewed the various scientific literatures pertaining to the yogic practices of different packages on selected motor fitness, physiological and psychological 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.

Independent Variables:

1. Iyanger Yoga
2. Christina Yoga

Dependent Variables

Motor Fitness Variables

1. Flexibility
2. Endurance
3. Agility

Physiological Variables

1. Vital Capacity
2. VO₂ max
3. Cardio respiratory Endurance
Psychological Variables

1. Anxiety
2. Aggression
3. Self Confidence

3.3 EXPERIMENTAL DESIGN

The study was formulated as a true random group design, consisting of a pre test and post test. The randomly selected subjects (n=90) juveniles confined in different rehabilitation schools in Chennai were randomly assigned to three equal groups of thirty each. The groups were assigned as Experimental Groups I, II and control group respectively. Pre tests were conducted for all the subjects on selected motor fitness, physiological and psychological variables such as flexibility, endurance, agility, vital capacity, vo₂ max, cardio respiratory endurance, agility, aggression and self confidence. The experimental groups participated in their respective yogic practices, Iyengar Yoga and Christina Yoga for a period of twelve weeks, six days per week between 7 a.m. and 8.00 a.m.

The post tests were conducted on the above said dependent variables after the experimental periods from all the three groups. The differences between the initial and final means of the selected variables were the effect of different packages of yogasanas on juveniles selected.
3.4 PILOT STUDY

A pilot study was conducted to assess the initial capacity of the subjects in order to fix the exercise load. For this purpose ten juveniles, who were not the subjects for this study were selected and different packages of yogasanas were given to them.

Based on the response of the subjects in the pilot study and during the training, the training schedules for group I and group II were constructed. However the individual differences were not considered. This enabled the investigator to adapt suitable training schedule for this study, for the different packages of yogic groups.

3.5 CRITERION MEASURES

By glancing the literature, and in consultation with professional experts, the following variables were selected as the criterion measures in this study.

1. Flexibility was measured through sit and reach test
2. Muscular Endurance was measured through pushups test
3. Agility was measured through 4 x 10 meters shuttle run test
4. Vital capacity was measured using Spiro meter
5. VO$_2$ max was measured using Cooper’s formulae.
6. Cardio-respiratory endurance was recorded by using Physical Efficiency Index (PEI) through Harvard Step Test.

7. Anxiety was measured through standard questionnaire. This questionnaire was developed by Spielberger.

8. Aggression measured through Guru Pyari Mathur and Raj Kumari Bhatnagar Questionnaire

9. Self confidence was measured by Hardy & Nelson (1972) Self Confidence questionnaire.

3.6 RELIABILITY OF DATA

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

3.6.1 Instrument Reliability

Stop watches calibrated to one tenth of a second were used in this study for recording the timings and this stop watch times were compared with other watches in different situations and they were considered reliable. A standard measuring steel tape and Spirometer were used to measure the tests. All the instruments used were standard and therefore their calibrations were accepted accurate enough for the purpose of the study.
3.6.2 Tester’s Competency

Reliability was established by the test-retest processes. Ninety students from all the three groups were tested on selected variables. The repeated measurement of individuals on the same test is done to determine reliability. It is a univariate not a bivariate situation; it makes sense then to use a univariate statistics like the interclass correlation coefficient (Baumgartner and Jackson, 1975).

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

Table I

**Intra Class Correlation Coefficient of Test – Retest Scores**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Variables</th>
<th>Coefficient of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flexibility</td>
<td>0.97*</td>
</tr>
<tr>
<td>2</td>
<td>Muscular Endurance</td>
<td>0.88*</td>
</tr>
<tr>
<td>3</td>
<td>Agility</td>
<td>0.82*</td>
</tr>
<tr>
<td>4</td>
<td>Vital Capacity</td>
<td>0.87*</td>
</tr>
<tr>
<td>5</td>
<td>VO₂ max</td>
<td>0.83*</td>
</tr>
<tr>
<td>6</td>
<td>Cardio respiratory Endurance</td>
<td>0.93*</td>
</tr>
</tbody>
</table>

* Significant at 0.05 level
As for psychological variables Anxiety, Aggression and Self Confidence, the authors of the questionnaire have determined reliability and the same was adapted for this study and considered as reliable.

3.6.3 SUBJECTS RELIABILITY

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

3.7 COLLECTION OF DATA

The purpose of the study was to estimate the effects of different packages of yogic practices selected motor fitness, physiological and psychological variables among juvenile boys. For this purpose, the research scholar followed the following procedure

The subjects of the study were selected at random and divided into three homogeneous groups. Among the three groups, the control group was strictly under control, without undergoing any special activity. The experimental groups were undergone with the experimental treatments.
The experimental groups were well acquainted with their allotted techniques and did only the experimental treatment given to them for a period of six weeks under the personal supervision of the researcher.

3.8.1 TRAINING PROGRAMME FOR IYENGAR YOGA

The subjects were assembled in a common place, which has adequate space for training programme. The experimental group I was provided with Iyengar Yogasana which consists of four distinct phases as follows:

1. Loosening Exercises for warm up purposes
2. 11 Yogic practices suggested by Iyengar
3. Shavasana for cool down purposes
4. 2 Pranayamas suggested by Iyengar
5. Relaxation for cool down purposes.

Each day programme lasted for a total period of 40 minutes including assembly and dispersal in first four weeks, which was increased to 55 minutes including assembly and dispersal during fifth to eighth week and 65 minutes including assembly and dispersal during ninth to twelfth week.

The training programme was given to experimental group I on alternative days, 3 days in a week, for 12 weeks.
### 3.8.2 TRAINING SCHEDULE FOR IYENGAR YOGA

Iyengar yoga was given to experimental group I, the following pre planned schedule. Each session of the training consists of the following schedule.

#### For First Four weeks

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Roll Call and Assembly</td>
<td>5 minutes</td>
</tr>
<tr>
<td>2</td>
<td>Loosening Exercises</td>
<td>3 minutes</td>
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<tr>
<td>3</td>
<td>11 Yogic Practices</td>
<td>22 minutes</td>
</tr>
<tr>
<td>4</td>
<td>Savasana</td>
<td>5 minutes</td>
</tr>
<tr>
<td>5</td>
<td>2 Pranayamas</td>
<td>5 minutes</td>
</tr>
<tr>
<td>6</td>
<td>Relaxation &amp; Dispersal</td>
<td>5 minutes</td>
</tr>
<tr>
<td>7</td>
<td>Total time</td>
<td>45 minutes</td>
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#### For Fifth to Eight weeks

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tr>
<td>1</td>
<td>Roll Call and Assembly</td>
<td>5 minutes</td>
</tr>
<tr>
<td>2</td>
<td>Loosening Exercises</td>
<td>3 minutes</td>
</tr>
<tr>
<td>3</td>
<td>11 Yogic Practices</td>
<td>33 minutes</td>
</tr>
<tr>
<td>4</td>
<td>Savasana</td>
<td>3 minutes</td>
</tr>
<tr>
<td>5</td>
<td>2 Pranayamas</td>
<td>6 minutes</td>
</tr>
<tr>
<td>6</td>
<td>Relaxation &amp; Dispersal</td>
<td>5 minutes</td>
</tr>
<tr>
<td>7</td>
<td>Total time</td>
<td>55 minutes</td>
</tr>
</tbody>
</table>
For Ninth to Twelfth weeks

1. Roll Call and Assembly 5 minutes
2. Loosening Exercises 6 minutes
3. 11 Yogic Practices 44 minutes
4. Savasana 4 minutes
5. 2 Pranayamas 6 minutes
6. Relaxation & Dispersal 5 minutes
7. Total time 65 minutes

Table II shows the Iyengar Yogic Practices Schedule for twelve weeks.
<table>
<thead>
<tr>
<th>S.No</th>
<th>Yogic Practices</th>
<th>I to IV weeks</th>
<th>V to VIII Weeks</th>
<th>IX to XII Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loosening Exercises</td>
<td>5 Minutes</td>
<td>5 mts</td>
<td>3 mts</td>
</tr>
<tr>
<td>2</td>
<td>Trikonasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>3</td>
<td>Parsarita Padottanasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>4</td>
<td>Sirsasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>5</td>
<td>Sarvangasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>6</td>
<td>Ustrasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>7</td>
<td>Baddha Konasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>8</td>
<td>Supta Virasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>9</td>
<td>Paschimottanasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>10</td>
<td>Janu Sirsasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>11</td>
<td>Setu Bandha Sarvangasana</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>12</td>
<td>Viparitakarani</td>
<td>2 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>13</td>
<td>Savasana</td>
<td>5 Minutes</td>
<td>3 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>14</td>
<td>Ujjayi Pranayama</td>
<td>2 Minutes</td>
<td>2 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>15</td>
<td>Viloma Pranayama</td>
<td>2 Minutes</td>
<td>2 mts</td>
<td>4 mts</td>
</tr>
<tr>
<td>16</td>
<td>Relaxation</td>
<td>5 Minutes</td>
<td>5 mts</td>
<td>3 mts</td>
</tr>
<tr>
<td>17</td>
<td>Total Duration</td>
<td>40 minutes</td>
<td>50 mts</td>
<td>60 mts</td>
</tr>
</tbody>
</table>
3.8.3 DESCRIPTIONS OF IYENGAR YOGASANAS

Experimental group I underwent iyengar yogasanas as detailed below: The subjects were practicing the yogasanas 40 minutes for the first four weeks, which was increased to 50 minutes for next four weeks and performed yogic practices for one hour (60 minutes) during ninth to twelfth weeks.

3.8.3.1 TRIKONASANA

From five pointed star position, turn the right toes to the right wall and the left toes slightly inwards. Inhale and press the left hips out to the left as the subject slide both arms to the right parallel to the floor. Exhale and rotate only the arms, raising the left arm up and resting the right hand against the right leg, with the palms facing forward. Press into the feet; pull up the knee caps, keeping the legs strong. Reach the finger tips away from each other, bringing the arms into one straight line with the shoulders stacked on top of each other. Press the left hip forward and the right hip back. Breathe and hold for 3-6 breaths. To release: inhale and reach the raised hand up towards the ceiling as you press down into the feet using the whole body to lift back into 5 pointed star. To release: inhale and reach the raised hand up towards the ceiling as the subject press.
3.8.3.2 PARSARITA PADOTTANASANA

The subject was asked to stand as in tadasana. Inhaled, place the hands on the waist and spread the legs apart from 4.5 to 5 feet. Tighten the legs by drawing up the kneecaps. Exhaled, and place the palm on the floor in line with shoulders between the feet. Inhale and raise the head up, keeping the back concave. Exhaled, bend the elbow and rest the crow of the head on the floor, keeping the weight of the body on the legs. Do not throw the body weight on the head. Both feet, both palms and the head should be in a straight line stayed in the post for half
a minute, deeply and evenly. Inhales raise the head from the floor and straighten the arms at the elbows. Keep the head well up by making the back concave as in position four. Exhale and stood as in position two. Jump back to tadasana.

Prasarita Padottanasana
3.8.3.3 SIRSASANA

Sirsasana is nothing but Tadasana on the head. The subject was asked to place the head on a single blanket in the storage fold placed on a mat. Most beginners practice the pose first with their backs to a wall. Some fearful subjects were allowed to practice in a corner rather than at the wall as it gave them more security. When the subjects were using a wall, they began with the hands very close to the wall, even placing the knuckles on the wall.

Placed the heels on the wall and "scrub" them upward along the wall to try to take the torso and legs higher and higher. The subjects were asked to come into and out of this pose (especially at the wall) one leg at a time with each leg completely straight. Once the subject was able to balance in the center of the room, when entering Sirsasana, strive to learn to lift both of the legs slowly, evenly, straight, and together into the pose and to come out of the pose the same way. Relax the face and eyes in Sirsasana. Kept the pose for 5 minutes.
Sirsasana
3.8.3.4 SARVANGASANA

The subjects lie down flat on the back, palms down beside the thighs. Raise the legs with bent knees and slowly roll the back up to the shoulders until the chin touches the chest. Use the hands as a support, resting on the elbows. Straighten the legs vertically. The body should now be at a right angle to the head, neck, shoulders and elbows. The back should be straight, the chin pressing the chest. To return to the lying position, firstly bring the knees down to the forehead, place the hands on the floor, and lower the body and legs slowly to the floor. Hold the breath in while raising and lowering the body.
Sarvangasana
3.8.3.5 USTRASANA

Knelt on the floor, keep the thighs and feet together, and toes pointing back and resting on the floor. Rest the palms on the hips. Stretch the thighs curve the spine back and extend the ribs. Exhaled; place the right palm over the right heel and the left palm over the left heel. If possible, place the palm on the sole of the feet. Pressed the feet with the palms, throw the head back and push the spine towards the thighs, which should be kept perpendicular to the floor. Contracted the buttock and stretch the dorsal and the coccyx region of the spine still future, keeping the neck stretched back. Remain in his position for about half a minute with normal breathing. Released the hands one by one and rest them on the hips. Then sat on the floor and relax.

Ustrasana
3.8.3.6 BADDHA KONASANA

The subject was asked to sit on a bolster placed at right angles to the body. Place a block on either side of the hips. Sit in Dandasana. Bend the knees and join both soles together. Pull the heels closer to the bolster. Beginners may find it easier to use a bolster positioned parallel to the hips.

Push the knees away from each other and lower then gradually onto the blocks. Take the hands behind fingertips to the bolster. Open out the chest and draw in the abdomen initially, hold the pose for 1 minute. Gradually increase the duration of the asana to 5 minutes.

Baddha Konasana
3.8.3.7 SUPTA VIRASANA

The subject was asked to perform Virasana. Exhale and lower the back torso toward the floor. First lean onto the hands, then forearms and elbows. Once the subjects were elbows, placed hands on the back of the pelvis and released lower back and upper buttocks by spreading the flesh down toward the tailbone. Then finish reclining, either onto the floor or a support. If the front ribs jut up sharply toward the ceiling, it’s a sign of tight groins, which pulls the front pelvis towards knees and causes belly and lower back to tense. Use hands to press front ribs down slightly and lift pubis toward navel. This should lengthen lower back and lower it toward the floor. If it doesn’t, raise onto a higher support. Then lay the arms and hands on the floor, angled about 45 degrees from the sides of the torso, palms up. Sink the heads of the thighbones deep into the back of the hip sockets. It’s alright to lift the knees a little away from the floor to help soften the groins; in fact, you can raise the knees a few inches on a thickly folded blanket. To begin, stay in this pose for 30 seconds to 1 minute. Gradually extend stay to 5 minutes. To come out, press the forearms against the floor and come onto your hands. Then use the hands to lift the torso into Virasana. As the subject came up, lead with sternum, not head or chin. Come out of Virasana in the recommended manner.
Supta Virasana

3.8.3.8 PASCHIMOTTANASANA

The subject was asked to sit in Dandasana. Place 2 bolsters, one on top of the other, across the knees and big toes are close together. Stretch the arms over the bolsters and bend forward. Hold the feet just below the toes, keeping both legs straight. Press the thighs and knees together. Bend from the base of the spine and push the waist forward. Elongate the torso toward the feet, stretching it from the groin to the navel. Make sure that the abdominal muscles do not contract. Rest the elbows and forehead on the bolsters. Keep the muscle of the thighs and calves
fully stretched. Extend the neck. Push both the shoulders down and back moving them away from the ears. Rest the forehead evenly on the bolsters, and do not tilt the head to one side. The arms should be straight but not tensed. Consciously relax the neck, face, eyes and ears. Breathe evenly and stay in this pose for 5 minutes.

Paschimottanasana
3.8.3.9 JANU SIRSA SANA

The subject was asked to sit on the floor with buttocks lifted on a folded blanket and the legs straight in front. Inhale, bend the right knee, and draw the heel back toward the perineum. Rest your right foot sole lightly against your inner left thigh, and lay the outer right leg on the floor, with the shin at a right angle to the left leg (if your right knee doesn't rest comfortably on the floor, support it with a folded blanket).

Press the right hand against the inner right groin, where the thigh joins the pelvis, and your left hand on the floor beside the hip. Exhale and turn the torso slightly to the left, lifting the torso as you push down on and ground the inner right thigh. Line up your navel with the middle of the left thigh. You can just stay here, using a strap to help you lengthen the spine evenly, grounding through the sitting bones.

Or, when you are ready, you can drop the strap and reach out with your right hand to take the inner left foot, thumb on the sole. Inhale and lift the front torso, pressing the top of the left thigh into the floor and extending actively through the left heel. Use the pressure of the left hand on the floor to increase the twist to the left. Then reach your left hand to the outside of the foot. With the arms fully extended, lengthen the front torso from the pubis to the top of the sternum.
Exhale and extend forward from the groins, not the hips. Be sure not to pull yourself forcefully into the forward bend, hunching the back and shortening the front torso. As you descend, bend your elbows out to the sides and lift them away from the floor.

Lengthen forward into a comfortable stretch. The lower belly should touch the thighs first, the head last. Stay in the pose anywhere from 1 to 3 minutes. Come up with an inhalation and repeat the instructions with the legs reversed for the same length of time.

Janushirshasana
3.8.3.10 SETU BANDHA SARVANGASANA

Place a folded blanket on one end of the bench. Place a bolster on the floor in line with the bench and touching one end of it. Place a folded blanket on the bolster. Then sit on the blanket on the bench, with the legs stretched out. Place a yoga belt under your thighs and bind it round the middle of the thighs.

Exhale and lower the back toward the bolster. Press each palm down on the floor on either side of the bolster, the fingers pointing forward. Both arms should support your upper back. Keep the thighs, knees and feet close together the heels on the bench, and the toes pointing upward. Lower the arms to the floor.

Slide further down until the back of the head and the shoulder rest on the bolster. Straighten the legs, keeping the feet together. Stretch the heels and toes away from the torso to increase the stretch of the legs. Extend the arms to the sides on the floor, with the palms facing the ceiling. Hold the pose for 3 minutes. Gradually increase the time to 5 – 8 minutes.
Sethubanda Sarvanagasana
3.8.3.11 VIPARITAKARANI

The subject was asked to place the block on its long side against a wall. Place the bolsters, one on top of the other, and parallel to the block. Drape the blanket over the bolsters. Then sit sideways in the middle of the bolsters, and place your fingers flat on the floor behind the subject.

Turn the torso toward the wall, simultaneously lifting the legs, one by one onto the wall. Keep the knees slightly bent. Support the body on both palms, fingers pointing toward the bolsters. Push both palms down on the floor, and move the buttocks closer to the wall.

Bend the elbows and lower the torso until shoulder rest on the floor. Straighten the legs fully, if buttocks have moved away from the wall, bend knees and place both feet against the wall. Then, press the palms down on the floor, lift hips, and move the buttocks closer to the wall. Straighten the legs again.

Rest the head on neck on the floor. Lift the chest. Move shoulders backward toward the bolsters. Spread the arms out to the sides with palms facing the ceiling. Allow chest, abdomen, and pelvis to expand and relax. Straighten and stretch the legs. Close the eyes, breathe evenly and experience the serenity of the pose. Stay in the post for 3-4 minutes. Gradually increase the duration to 5-8 minutes.
Viparita Karani
3.8.3.12 SAVASANA

The subject was asked to lie flat on the back full length like a corpse. Keep the hands a little away from the thighs, with the palms up. Close the eyes. If possible place a black cloth folded four times over the eyes. Keep the heels together and the toes apart. To start with breathe deeply. Later the breathing should be fine and slow, with no jerky movements to disturb the spine or the body. Concentrated on deep and fine exhalations, in which the nostrils do not feel the warmth of breath. The lower jaw should hand loose and not be clenched. The tongue should not be disturbed and even the pupils of the eyes should be kept completely passive. Relaxed completely and breathe out slowly. If the mind wanders, pause without any strain after each slow exhalation. Stayed in the pose for 5 minutes.
Savasana

3.8.3.13 OCEAN BREATH – UJJAYI PRANAYAMA

Concentrates and directs the breath, giving asana practice extra power and focus. This pranayama is most often used in association with the practice of yoga poses, especially in the vinyasa style. Vinyasa yoga is breath-synchronized movement, and the breath used is Ujjayi breath. Learn this breath while seated in a comfortable cross-legged position. Once you feel confident, begin to use it during asana practice.
1. Inhale and exhale deeply through the mouth.

2. On the exhales, begin to tone the back of the throat, slightly constricting the passage of air. Imagine that you are fogging up a pair of glasses.

3. Once comfortable with the exhale, begin to apply the same toning of the throat to the inhales. This is where the name of the breath comes from: it sounds like the ocean. (It also sounds like Darth Vader.)

4. When the subject was able to control the throat on both the inhale and the exhale, close the mouth and begin breathing through the nose. Continue applying the same toning to the throat that did when the mouth was open. The breath will still make a loud noise coming in and out of the nose. This is Ujjayi breath.

5. Now start to use this breath during your practice. If the teacher tells you to move on an inhale, make it an Ujjayi inhale. If you need a little something extra while holding a pose, remember this breath.
Ujjayi Pranayama
3.8.3.14 VILOMA PRANAYAMA

The subject was asked to keep the sternum lifted and diaphragm firm. Inhale and exhale without strain, slowly and deeply. The exhalation should last for 2 – 3 seconds. Then, pause for 3 seconds before inhaling. This constitutes a single cycle. Repeat this 3 – 5 times.

The breathing should now fade away effortlessly at each pause and resume equally easily. Follow the instructions for Stage I, with exhalations longer than the pauses. Practice 15 – 20 cycles over 7 – 10 minutes. Rest in Savasana.
Viloma Pranayama
The subject was asked to do few cycles of steps 1 and 2. Focus on the silence of the pauses. Experience a feeling of serenity.

3.9.1 TRAINING PROGRAMME FOR CHRISTINA YOGA

The subjects were assembled in a common place, which has adequate space for training programme. The experimental group II was provided with Christina Yogasana which consists of four distinct phases as follows:

1. Loosening Exercises for warm up purposes
2. 7 Yogic practices suggested by Christina
3. Shavasana for cool down purposes
4. 4 Pranayamas suggested by Christina
5. Meditation

Each day programme lasted for a total period of 50 minutes including assembly and dispersal in first four weeks, which was increased to 60 minutes including assembly and dispersal during fifth to eighth week and 70 minutes including assembly and dispersal during ninth to twelfth week.

The training programme was given to experimental group II on alternative days, 3 days in a week, for 12 weeks.
3.9.2 TRAINING SCHEDULE FOR CHRISTINA YOGA

Christina yoga was given to experimental group II, the following pre-planned schedule. Each session of the training consists of the following schedule.

For First Four weeks

1. Roll Call and Assembly 5 minutes
2. Loosening Exercises 4 minutes
3. Suryanamaskar 6 minutes
7. 6 Yogic Practices 12 minutes
4. Savasana 5 minutes
5. 4 Pranayamas 8 minutes
6. Meditation & Dispersal 5 minutes
7. Total time 45 minutes

For Fifth to Eight weeks

1. Roll Call and Assembly 5 minutes
2. Loosening Exercises 4 minutes
3. Suryanamaskar 6 minutes
7. 6 Yogic Practices 18 minutes
4. Savasana 5 minutes
5. 4 Pranayamas 12 minutes
6. Meditation & Dispersal
5 minutes

7. Total time
55 minutes

**For Ninth to Twelfth weeks**

1. Roll Call and Assembly
5 minutes

2. Loosening Exercises
4 minutes

3. Suryanamaskar
6 minutes

7. 6 Yogic Practices
24 minutes

4. Savasana
5 minutes

5. 4 Pranayamas
16 minutes

6. Meditation & Dispersal
5 minutes

7. Total time
65 minutes

Table III shows the Christina Yogic Practices Schedule for twelve weeks.
<table>
<thead>
<tr>
<th>S.No</th>
<th>Yogic Practices</th>
<th>I to IV Weeks</th>
<th>V to VIII Weeks</th>
<th>IX to XII Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loosening Exercises</td>
<td>3 Minutes</td>
<td>3 Min</td>
<td>3 min</td>
</tr>
<tr>
<td>2</td>
<td>Suryanamaskar</td>
<td>5 Minutes</td>
<td>5 Min</td>
<td>5 Min</td>
</tr>
<tr>
<td>3</td>
<td>Halasana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>4</td>
<td>Chakrasana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>5</td>
<td>Matsyasana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>6</td>
<td>Salabasana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>7</td>
<td>Bhujangasana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>8</td>
<td>Trikosanana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>9</td>
<td>Savasana</td>
<td>2 Minutes</td>
<td>2 Min</td>
<td>2 Min</td>
</tr>
<tr>
<td>10</td>
<td>Nadi Suddhi</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>11</td>
<td>Nadi Shodana</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>12</td>
<td>Bhramari</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>13</td>
<td>Ujjayi Pranayama</td>
<td>2 Minutes</td>
<td>3 Min</td>
<td>4 Min</td>
</tr>
<tr>
<td>14</td>
<td>Meditation</td>
<td>5 Minutes</td>
<td>5 Min</td>
<td>5 Min</td>
</tr>
<tr>
<td>15</td>
<td>Total Duration</td>
<td>40 Minutes</td>
<td>50 Min</td>
<td>60 Min</td>
</tr>
</tbody>
</table>
3.9.3 DESCRIPTION OF CHRISTINA YOGASANAS - PACKAGE II

Experimental group II underwent Christina yogasanas. The following are the asanas experimental group II underwent.

3.9.3.1 SURYA NAMASKAR

The physical base of the practice links together twelve asanas in a dynamically performed series. These asanas are ordered so that they alternately stretch the spine backwards and forwards. When performed in the usual way, each asana is moved into with alternate inhalation and exhalation (except for the sixth asana where the breath is held in external suspension). A full round of Surya namaskara is considered to be two sets of the twelve poses with a change in the second set to moving the opposite leg first through the series.

Each stage of Surya Namaskar was accompanied by regulation of breath. The twelve steps of the Surya Namaskar were as follows:

1. Stand erect with the legs together and palms also take the hands above the head and bend the trunk backwards, 
   Inhale fully.
2. Bend the body to the front and touch the knees by the forehead. Keep the palms on the floor on either side of the legs. Exhale fully.

3. In this stage, kick the right leg back take left knee forward look up touch the thigh with the heel. Inhale fully.

4. In the next step keep the left leg also back the resting only on the palms and toes keep the body straight from head to toes inclined to the ground at about 30 degrees. Exhale completely.

5. Now, bend at the knee and rest the knees on the floor without altering the position of the palms and toes. Rest the forehead on the ground. In this position inhale moving backwards and then exhale completely.

6. Without moving the hands and toes come forward on the chest and rest the forehead. In this position Sastanga Namaskar forehead, chest, hands, knees and legs all the eight organs will be touching the ground. The buttocks will be raised up stay in breath out condition.
7. Inhale, raise the head and trunk making this spine concave upwards without changing the position of the hands and feet keep the knees of the ground. Inhale fully.

8. Exhale rise. Buttocks put the head down and have a complete arch with the heel touching the ground and palms on the floor.

9. Now, bend at the knee and rest the knees on the floor without altering the position of the palms and toes. Rest the forehead on the ground. In this position inhale moving backwards and then exhale completely.

10. Inhale and bring the right leg in between two hands and in line with them arch the back concave upwards.

11. Exhale and bring the left foot forward next to the right foot and touch the knees with forehead.
12. Inhale, come up, stand erect with hands along the body and relax.

3.9.3.2 **HALASANA** (The Plough)

From shoulder stand, the subject was asked to lower legs overhead, carefully not to overstrecth the neck as the toes were to touch the floor. If not possible allow the legs rest on a chair placed a couple of feet behind the head.

Once the toes are resting on a surface, stretch the arms along the floor. This will help roll more onto the tips of shoulders and deeper into this upside down forward bend interlace fingers and deepen the pose by stretching arms and legs in opposite directions. Gradually build up until the subject can hold this pose for five minutes.

Roll out of the pose with control, using abdominal muscles to lower both legs until the subject was lying flat.
3.9.3.3 CHAKRASANA

This asana is so named because the body takes the shape of a circle or a semi circle. This asana is so named because the body takes the shape of a circle - or a semi-circle. The asana is very similar to the gymnastic back-bend. The pose is the same, except while doing a back bend, the person is standing and keeps bending further back till his palms rest on the floor while in the Chakrasana, the person is lying down, and slowly lifts his body up.
1. Lie down on a mat, on the back.

2. Spread the legs so they are shoulder-length apart.

3. Bend the knees so that the feet are touching buttocks. Similarly, bend elbows so the fingers are touching the shoulders. (The palms should be inwards, facing the shoulders.)

4. Breathe IN. Slowly, using the force of the hands and legs, push oneself up until the body is fully extended in an inverted U. Feel the blood rush to the head, and the lungs expand and fill up with air.

5. Hold this pose for a few seconds.

6. Breathe OUT and let the subject down slowly.
Chakrasana

3.9.3.4 MATSYASANA

The subject was asked to sit in padmasana. Carefully bend backward, supporting the body with the arms and elbows, until the crown of the head touches the floor. Hold the big toes and rest the elbows on the floor. Keep the back well arched. Relax the whole body, allowing the head, buttocks and legs to support the body. To return to the starting position, place the palms on the floor and push on the forearms.
Matsyasana

3.9.3.5 SALABASANA

Lay on the stomach with the forehead resting on the floor. Stretch arms out in front of you. Press the pubic bone into the earth for stability, then raise the arms and legs off the ground. Breathe with attention for 5 – 10 deep rounds.
Salabhasana

3.9.3.6 BHUJANGASANA

The subjects were directed to lie down in prone position and to touch the ground with forehead. The palms rested on the ground fingers pointed towards head, placed by the side of the chest and raised the head slowly. Then raise the chest and abdomen only upto chest. Maintain the pose for a few seconds and return to the original position gradually. First touch the forehead.
3.9.3.7 TRIKOSANANA

From five pointed star position, turn the right toes to the right wall and the left toes slightly inwards. Inhale and press the left hips out to the left as the subject slide both arms to the right parallel to the floor. Exhale and rotate only the arms, raising the left arm up and resting the right hand against the right leg, with the palms facing forward. Press into the feet; pull up the knee caps, keeping the legs strong. Reach the finger tips away from each other, bringing
the arms into one straight line with the shoulders stacked on top of each other. Press the left hip forward and the right hip back. Breathe and hold for 3-6 breaths. To release: inhale and reach the raised hand up towards the ceiling as you press down into the feet using the whole body to lift back into 5 pointed star. To release: inhale and reach the raised hand up towards the ceiling as the subject press.

**Trikonasana**
3.9.3.8 SAVASANA

The subject was asked to lie flat on the back full length like a corpse. Keep the hands a little away from the thighs, with the palms up. Close the eyes. If possible place a black cloth folded four times over the eyes. Keep the heels together and the toes apart. To start with breathe deeply. Later the breathing should be fine and slow, with no jerky movements to disturb the spine or the body. Concentrated on deep and fine exhalations, in which the nostrils do not feel the warmth of breath. The lower jaw should hand loose and not be clenched. The tongue should not be disturbed and even the pupils of the eyes should be kept completely passive. Relaxed completely and breathe out slowly. If the mind wanders, pause without any strain after each slow exhalation. Stay in the pose for 5 minutes.
3.93.9 NADI SUDDHI

Sit in padmasana. Slowly and deeply inhale. After exhaling, do mula and uddiyana bandha. Inhale slowly from the left nostril, close it, do jalandhara bandha. Stay in this position for 5 to 10 counts. Release jalandhara bandha, exhaling from the right nostril. Again inhale from the right nostril, do jalandhara bandha. Stay for 10 counts. Release jalandhara exhaling through the left nostril. This forms one cycle of nadi suddhi. 10 cycles should be done.
3.9.3.10 NADI SHODANA

1. Sit in a comfortable cross-legged position.

2. Using your right hand, fold your pointer and middle fingers into your palm, leaving your thumb, ring finger, and pinky sticking up (Vishnu Mudra).

3. Bring your thumb to the right side of your nose and your ring finger to the left side.

4. Close off your right nostril with your thumb.

5. Inhale through your left nostril.

6. Close off your left nostril with your ring finger.

7. Open and exhale through your right nostril.

8. Inhale through your right nostril.

9. Close off your right nostril with your thumb.

10. Open and exhale through your left nostril.

11. Inhale through your left nostril.

12. Continue alternating 5 to 10 times.
3.9.3.11 BHRAMARI

The subject was asked to sit comfortably erect or lie with the knees bent up. Have the mouth closed, jaw relaxed and the teeth slightly apart. Pressing tongue lightly to the roof of the mouth will create a slight tension and turn the simple humming more into a bee-like droning.

Inhale fully, and then exhale while making a humming sound. The vocal cords keep just a small amount of tension so the pitch is low. The constancy of the exhalation keeps the sound uniform. The vibration comes from the soft palate at the top of the back of the mouth. Widen the inside of the mouth to increase the resonance in the nasal cavity. Hone the awareness of the vibration to expand it out to the throat, to the top of the head, and eventually the rest of the body. Practice Bhramari for two minutes and build to five. Afterward, sit or lie quietly with eyes closed to enjoy the after effects. If the subject experience dizziness or tingling or should the mind become agitated switch to simple breathing.

Another position for practice is sitting on a blanket with knees bent up in front of the subject. Place elbows on the knees so the subject can easily cover the eyes with his hands and the flap over the ear holes with thumbs. Become absorbed in the sound that seems to fill the skull.
Bhramari
3.9.3.12 UJJAYI PRANAYAMA

Concentrates and directs the breath, giving asana practice extra power and focus. This pranayama is most often used in association with the practice of yoga poses, especially in the vinyasa style. Vinyasa yoga is breath-synchronized movement, and the breath used is Ujjayi breath. Learn this breath while seated in a comfortable cross-legged position. Once you feel confident, begin to use it during asana practice.

1. Inhale and exhale deeply through the mouth.

2. On the exhales, begin to tone the back of the throat, slightly constricting the passage of air. Imagine that you are fogging up a pair of glasses.

3. Once comfortable with the exhale, begin to apply the same toning of the throat to the inhales. This is where the name of the breath comes from: it sounds like the ocean. (It also sounds like Darth Vadar.)

4. When the subject was able to control the throat on both the inhale and the exhale, close the mouth and begin breathing through the nose. Continue applying the same toning to the throat that did when the mouth was open. The breath will still make a loud noise coming in and out of the nose. This is Ujjayi breath.
5. Now start to use this breath during your practice. If the teacher tells you to move on an inhale, make it an Ujjayi inhale. If you need a little something extra while holding a pose, remember this breath.

Ujjayi Pranayama
3.9.3.13 AUM MEDITATION

Select a quiet place, sit down, close your eyes and completely relax your muscles and nerves. Concentrate on the space between your eyebrows and quieten and silence the conscious mind. Begin to repeat "Aum" mentally while associating the ideas of infinity, eternity, immortality, etc. You must repeat Aum with the feeling that you are the infinite and all-pervading. Mere repetition of Aum will not bring the desired result. Keep the meaning of Aum always at heart. Feel Aum. Feel that you are the pure, perfect, all-knowing, eternal, free, Brahman. Feel that you are absolute consciousness and the infinite, unchanging existence. Every part of your body should powerfully vibrate with these ideas. This feeling should be kept up all day long. Practice regularly and steadily with sincerity, faith, perseverance and enthusiasm in the morning, midday and evening. (James Hewitt 1985).
3.10 TEST ADMINISTRATION

3.10.1 FLEXIBILITY (SIT AND REACH)

Purpose

To estimate the trunk flexibility

Equipments

Yardstick and measuring steel tape

Procedure

Place the yardstick on the floor and put an 18 inch piece of tape across the 15 inch mark on the yardstick. The tape should secure the yardstick to the floor. The subject sits with the O end of the yardstick between the legs. The subject heel should almost touch the tape at the 15 inch mark and be about 12 inch apart with the legs held straight. The subject bends forward slowly and reaches with parallel hand as far as possible and touches the yardstick. The subject should hold this reach long enough for the distance to be recorded.

Scoring

The best score recorded out of the three trials was the score in flexibility.
3.10.2 MUSCULAR ENDURANCE (PUSH UPS)

Purpose

To measure the muscular strength of the subject.

Apparatus used

Gymnastic Mats

Procedure

The subject being tested took prone lying position on the ground with the hands under the shoulders and fingers stretched, legs straight and parallel with comfortably apart and the toes tucked under the feet. On the command ‘go’ the subject performed pushups with the arms and extended it completely. The legs and the back were kept straight throughout the test. Then the subject lowered her body using the arm until it came to 90 degree angle and upper arms were parallel to the ground. The action was repeated as many times as possible.

Scoring

Total number of correct pushups was recorded as the score of the test.
3.10.3 AGILITY

**Objective**

The purpose of this test was to measure agility.

**Facilities and Equipments**

Floor, stop watch, whistle, score sheet, measuring tape, chunnam powder, two wooden blocks (2”x2”x4”), score card and pencil.

**Administration**

Two parallel lines were drawn on the floor 10 meters apart. The blocks were placed behind one of the lines. The subjects were instructed to start from behind the other line. To start the shuttle run a whistle was blown and the subject ran to the blocks up one block, run back to the starting lines and placed the block on the ground beyond the line. Then the subject ran back picked up the other block and run across the starting line as fast as possible. The stop watch was started as the whistle blew and stopped when the subject crossed the starting line.

**Scoring**

The trials were administered with a rest period of five minutes in between the best of the two times were recorded as the scores in seconds.
3.10.4 VITAL CAPACITY

Purpose

The purpose of this test was to find out the maximum quantity of air that can be expired after a full inspiration.

Equipment

Spiro meter, mouth pieces and nose clips.

Procedure

Vital capacity was measured by Spirometer in liters. The Spiro meter was equipped with a good length of rubber hose. The Spiro meter placed at a height where by all the subject can stand erect at the beginning of the test. The mouth piece was disinfected by an antiseptic solution after use by each subject.

The subjects were asked to take a deep breath for test: There after the fullest possible inhalation, the subject exhaled slowly and steadily bending forward over the hose till the air within his control was expelled.

Care was taken to prevent air from escaping either through nose or around the edges of mouth piece and was also ensured that a second breath was not taken by the subject during the test. In case of doubt the test was repeated. Care was taken to lower the drum without spilling the water, each time after use.
Scoring

The score was taken from the dial of the Spiro meter which was recorded in liters.

3.10.5 VO₂ MAX

To ascertain VO₂ Max of the subjects, Cooper’s formulae was used and accordingly Cooper’s 12 Minutes Run / Walk Test was administered.

COOPER’S 12 MINUTES RUN OR WALK TEST

Purpose

To measure the VO₂ max (cardio respiratory endurance)

Equipment

Whistle, stopwatch, 400 meters track.

Description

Subjects assemble behind the starting line. at the starting signal, they, run or walk as far as possible with in the 12 minutes time limit. An experienced pacer should accompany performers around the running area during the actual test. At the signal ‘to stop ‘performers should remain where they finished long enough for
test administrators to record the distance covered. Ample time should be given for stretching and warm-up as well as cool down.

**Scoring**

The distance in meters covered in 12 minutes

The VO$_2$ max in ml/min/kg was calculated based on the formulae suggested by Cooper (1960) was:

\[
\text{VO}_2 \text{ max} = \frac{d_{12} - 505}{45}
\]

Where, $d_{12}$ is the distance (in meters) covered in 12 minutes.

### 3.10.6 CARDIORESPIRATORY ENDURANCE

**Harvard Step Test**

**Objective**

To measure the cardio respiratory endurance through Physical Efficiency Index.

**Equipments**

A stable bench 20 inches high and a stop watch.
Procedure

1. The subject step up and down 30 times a minute on a bench 20 inches high. Each time the subject should step all the way up on the bench with the body erect. The stepping process is performed in four counts, as follows: 1. One foot is placed on bench, 2. other foot is placed on the bench, 3. one foot is placed on the floor; 4. the other foot is placed on floor. The tester may lead off with the same foot each time or any change feet as he desires, so long as the four count step is maintained. The steps were counted the cadence as ‘up, up, down, down’.

2. The stepping exercise continues for exactly five minutes, unless the subject is forced to stop sooner due to exhaustion. In either case the duration of the exercise in seconds is recorded; the maximum number of seconds is 300 for the full five minute period.

3. Immediately after completing the exercise, the subject sits on a chair. The pulse is counted 1 – 1½ , 2 – 2½ and 3 – 3½ minutes after the stepping ceases.

Scoring

A physical efficiency index (PEI) is computed utilizing the following formula:

\[
\text{PEI} = \frac{\text{Duration of Exercise in Seconds} \times 100'}{2 \times \text{Sum of pulse counts in recovery}}
\]
3.10.7 ANXIETY

Anxiety was measured through the anxiety questionnaire. The anxiety questionnaire was designed to measure the degree of anxiety experience prior to the competition.

It was developed by Spielberger. Spielberger's Trait Anxiety questionnaire was given to all subjects. Twenty items were adopted from Spielberger's Trait Anxiety questionnaire for this investigation. The complete questionnaire is scored as follows:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Response</th>
<th>Score of Positive statements</th>
<th>Score of Negative statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not at all</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Some what</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Moderately so</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Very much</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Positive Statements 1,2,5,8,10,11,15,16,19,20

Negative Statements 3,4,6,7,9,12,13,14,17,18
3.10.8 AGGRESSION

Aggression of the college men players under study were measured through Aggression Scale test developed by Guru Pyari Mathur and Raj Kumari Bhatnagar (2004).

Description of the Questionnaire

The aggression scale questionnaire consists of fifty five statements. The subjects have to answer the statement in the graded manner, namely, strongly agree, agree, undecided, disagree and strongly disagree. The level changes from extremely uncharacteristic to extremely characteristics. The respondents were made to mark ‘✓’ against the box provided for this purpose. This represents the appropriate characteristics suited to their attitude.

Scoring

This inventory was scored with the help of the scoring key given below. The range of score was from 275 to 55. The higher the score is the more aggressive the player.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Response</th>
<th>Score of Positive statements</th>
<th>Negative Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly Agree</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Agree</td>
<td>4</td>
<td>2</td>
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<td>Undecided</td>
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<td></td>
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<td>4</td>
<td>Disagree</td>
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<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Strongly Disagree</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

### 3.10.9 SELF CONFIDENCE

Standard Hardy and Nelson (1992) questionnaire for self confidence was used to scale the self confidence level of juvenile delinquents. The test consists of four questions with six levels of responses. The level of changes from strongly disagrees to strongly agree. The respondents were made to encircle the appropriate number which suited their attitude. The scale was revalidated by administering the questionnaire.

**Scoring**

This scoring range of this questionnaire was 4 to 24. The higher score indicate the high level of self confidence.

### 3.11 COLLECTION OF DATA

The data was collected on the selected items as per the methods described above. The pre test was organized before the experimental period and after 12 weeks of experimental period post test was organized and data was collected for the study.
3.12 STATISTICAL TECHNIQUE

The data obtained were analyzed by Analysis of Variance (ANOVA) and Analysis of Covariance (ANCOVA). The analysis of variance will be used to assess the significance of difference between the pre-test and post-test, for each of the variables on the effect of varied yogic practices and control groups. To find out the paired mean differences, Scheffe’s post hoc test was used.

Analysis of Covariance (ANCOVA) may be computed for any number of experimental groups, the final means were adjusted for differences in the means were tested for significance. A further of this method is that analysis of variance is first computed for the difference between initial mans. In this instance, no significance, ‘F’ ratio will provide confidence that the critical samples came from the same population and are devoid of sampling bias.

Scheffe’s Post Hoc test has the greatest power and is the most conservation with respect to Type 1 error: this method loads to the smallest number of significance differences. The difference between two means would be significant if it exceed Scheffe F. In order to be significant, F’ must equal (k – 1) (F .05 or F .01). Thus, the necessary F’ rations for the difference between paired adjusted mean (k-1). Thirumalaisamy A (1998).