Chapter III

PROCEDURE

This chapter contains, selection of subjects, administration of test, experimental design, collection of data, selection of test batteries/variables, criterion measures, description of test, training programme, method of scoring and the statistical technique, which was used to compute the data, are presented.

Selection of subjects

A total of Eighty (80) female subjects were selected for the study. Their ages ranged from 10 to 14 years. These subjects belonged to Mussoorie International School, Mussoorie. The research scholar chose 20 female subjects for the brisk walking programme, 20 female subjects for the jogging programme, 20 female subjects for the circuit training programme and 20 female subjects for the control group.

Every effort was made by the research scholar and appropriate methods were used while selecting the subjects, the research scholar selected the obese children as subjects after taking their fat measurement. The scholar divided them into four groups i.e. group A, B, C, and group D. Before giving the training program students
were tested in the different items of health related physical fitness test. The samples consisted of 80 obese students from Mussoorie International School, Mussoorie. A random technique was applied while selecting the student for a particular group. It might be owing to the non-availability of skin fold calliper instrument and an interest of developing health and fitness that every student of the obese groups was very much interested in checking their fat percentage.

Administration of Test

Body Composition

Four-site skin fold measurement (biceps, triceps, subscapula, and suprailliac) was taken to measure the obesity. Only the subjects who crossed the 30% or above of body fat were selected as the subjects for this study. All determinations were made on the right side of the body. All measurements were taken with the skinfold in a vertical position, expect where the natural folding of the skin was in opposition, in that case the measurement was taken with the skinfold along the lines of the natural folding. All reading was recorded in millimetres.

Biceps skinfold: - The skinfold thickness was measured by placing the skinfold calliper over the anterior of the mid part of biceps and
the skin fold measurement was measured. The position of the fold was vertical and reading to the nearest half millimetre was recorded.

**Triceps Skinfold:** The skinfold thickness was measured by placing the skinfold calliper over the triceps muscles at a point half way between the tip of the shoulder (acromial process) and the tip of elbow, the point was located with fore arm relaxed to 90 degrees and while taking the measurement the arm was kept hanging free. The fold of skin was lifted parallel to the long axis of the arm and the reading to the nearest half millimetre was recorded.

**Subscapula region Skinfold:** The skin fold thickness was taken at the tip on the scapular (interior angle), with the subject in a relaxed standing position, the fold was lifted in the diagonal plane about 45 degrees from vertical and horizontal planes and the reading to the nearest half millimetre was recorded.

**Suprailliac Skinfold:** The suprailliac fold was the diagonal fold measured at the front of the hip immediately above the chest of the ilium.¹

To start with the actual experiment of 16 weeks of training programme the subjects were divided into four groups.

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1. Brisk walking group - Group-A.
2. Jogging group - Group-B.
3. Circuit training exercise group - Group-C.
4. Control group - Group-D.

Before starting the training programme research scholar administered the Fit Youth Today Test to all the subjects of groups, A, B, and C, in order to check their health related physical fitness and obesity was measured by four-site skin fold measurement. After 16-weeks of training programme, (five days in a week) again Fit Youth Today Test and four-site skin fold measurement was administered as per the procedure prescribed in the literature to check the effect of the training programme. Data were collected from four groups.
Table – 1

**Brisk Walking (Group-A)**

<table>
<thead>
<tr>
<th>No. of students</th>
<th>Age</th>
<th>Fit youth Today test</th>
<th>Skinfold Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>10-14 years</td>
<td>Steady state jog, two minute bent knee curl up, sit and reach test, and two-site skin fold calliper. (triceps and calf)</td>
<td>Biceps, Triceps, subscapula, and suprailliac</td>
</tr>
</tbody>
</table>

Table – 1 consisted of Group-A with 20 obese students, their age ranged between 10-14 years and they were tested with the Fit Youth Today Test. Obesity was measured by four-site skin fold measurement. They had been given the brisk walking schedule by the research scholar for four months and after the schedule subjects retested with the Fit Youth Today Test and were re-measured by skin fold calliper to check the effects of the training programme.
Table-2

Jogging Program (Group-B)

<table>
<thead>
<tr>
<th>No. of students</th>
<th>Age</th>
<th>Fit youth Today test</th>
<th>Skinfold Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
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<td>Steady state jog, two minute bent knee curl up, sit and reach test, and two-site skin fold calliper. (triceps and calf)</td>
<td>Biceps, Triceps, subscapula, and suprailliac</td>
</tr>
</tbody>
</table>

Table – 2 consisted of Group-B, with 20 obese students, their ages ranged between 10-14 years and they were tested with the Fit Youth Today Test. Obesity was measured by four-site skin fold measurement. They had been given the jogging program schedule by the research scholar for four months and after the schedule subjects were retested with the Fit Youth Today Test. They were re-measured with skin fold calliper to check the effects of the training programme.
Table 3

Circuit Training Program (Group-C)

<table>
<thead>
<tr>
<th>No. of students</th>
<th>Age</th>
<th>Fit youth Today test</th>
<th>Skinfold Measurement</th>
</tr>
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<tbody>
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<td>Biceps, Triceps, subscapula, and suprailliac</td>
</tr>
</tbody>
</table>

Table – 3 consisted of Group-C with 20 obese students their age ranged between 10-14 years and they were tested with the Fit Youth Today Test and obesity was measured by four-site skin fold measurement. They had been given the circuit-training program, which consists of 7 set of exercises for different parts of the body for four months, and after the schedule of circuit-training programme subjects were retested with the Fit Youth Today Test and re-measured by skinfold calliper to check the effect of the training programme.
Table 4

Control Group (Group-D)

<table>
<thead>
<tr>
<th>No. of students</th>
<th>Age</th>
<th>Fit youth Today test</th>
<th>Skinfold Measurement</th>
</tr>
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<td>Biceps, Triceps, subscapula, and suprailliac</td>
</tr>
</tbody>
</table>

Table - 4 consisted of Group-D with 20 obese students their age ranged between 10-14 years and they were tested with the Fit Youth Today Test. Obesity was measured by four-site skin fold measurement. Since the subjects were in the control group no training programme was given to them. They continued with their normal routine up to four months. Subjects were retested with the Fit Youth Today Test and re-measured by skinfold calliper after four months to check the effect if any.

**Experimental design**

Random group design was adopted for this study. Subjects as well as the experimental treatment was randomly assigned to the three experimental groups and one control group which consisted of twenty subjects each.
Collection of Data

The research scholar had taken the permission from the principal of the school in order to conduct the health related physical fitness test and also for giving the training schedule to the obese subjects. The research scholar had explained each and every item in details with the demonstration by explaining the purpose of the study and its importance to the subjects. Much time was devoted in explaining the importance of health related fitness in their life, method of reducing fats, name and function of measurement instrument, procedure of using instrument and other valuable aspects for creation of interest among the students. After explaining all necessary points in details subjects were asked to do warming up exercise to avoid the injuries. Some practice trials were given about the testing items to become familiar with the test. The name and age were procured from the school documents with the permission of concerned authority. The separate stations were setup for different items and the subjects moved from one station to another. The steady state jog test was conducted on the play field.

Selection of Test Batteries/Variables

Various Test batteries were selected to measure the health related physical fitness components of obese subjects. The fit youth
today test was conducted to check the health related physical fitness components. Test consisted of the following items; steady state jogs, bent knee curl up, sit and reach test and body composition. To start with the actual experiment of 16 weeks the subjects were divided into four groups.

1. Brisk walking group - A.
2. Jogging group - B.
3. Circuit training exercise group - C.
4. Control group - D.

Fit youth today test was administered to the subjects before starting the training and after sixteen weeks of training programme. This test was administered as per the procedure prescribed in the literature. All groups, A, B and C, participated in their respective schedule five days in a week. Before the programme fit youth today test was used by the investigator to check their health related physical fitness and then after 16-week again the same test was conducted to check the effect of the schedule.

Criterion Measures.

To test the hypothesis, the following criterion measures were chosen.
Tester's Competency

In order to acquire knowledge of testing procedure beside the research scholar had consulted her thesis advisor and in charge of research laboratory who were very familiar with measurement techniques. The research scholar had a number of practice session for during the practical classes of LNIEE graduate students. Before testing the subjects for accuracy in order to ensure the reliability of the instrument test-retest method was applied. The procedure applied and mentioned by Hasted and Lacy was followed while administrating the health related physical fitness component test among the subjects.

Reliability Co-Efficient Of Test-Retest

This shows the reliability coefficient of test retest scores of 20 students. A total of 80 students were randomly selected for the test. The same tester under similar conditions conducted the test on same subjects. It was concluded that there was high reliability and high significance between test, instrument and tester.

Description of the Test

Fit Youth Today Test

Fit youth today test was used to measure the health related physical fitness components of Mussoorie International School. This
test was found feasible, simple to conduct. Before conducting the test, detailed instructions, demonstration, procedure of executing the test and practice trials was given to the subjects to avoid the mistakes.

All tests were conducted as per the facilities and space available at school. The steady state jog test was conducted on 200m track as per the facilities available. The fit youth today test was conducted as per procedure prescribed by Hastad and lacy

**Purpose:** The aim of this particular program was to educate students for a life of healthy living (2) to assess the level of health related physical fitness of youth (3) evaluate each student’s personal level of fitness by comparing scores to a desirable level of health fitness.

**Description:** the fit youth today program is more than an assessment tool. Fit youth today test offer a complete approach to health related physical fitness and included a planned curriculum of exercise program. Following were the items of the fit youth fitness test:-

1. Steady state jog.
2. Two minute bent knee curl up
3. Sit and reach
4. Two-site skin fold calliper.
**Validity:** validity coefficient reported ranged from .60 to .90 for a steady state run and body composition test, respectively. The curl-up and sit and reach test are supported by content validity.

**Reliability:** reliability co-efficient for distance run typically exceeds .70 Pearson’s for the flexed knee curl-up was greater than .77. The sit and reach and body composition test had reported reliabilities higher than .84 and .90 respectively.

**Age level:** 9-18

**Norms:** criteria standards for skin folds can be found.

**Test area:** Spacious outdoor areas for the steady state jog.

**Steady State Jog Test**

**Instruction:** On the command ready “go” students were instructed to jog continuously for 20 minutes.

**Equipment:** measured outdoor running area.

**Organisation hint:** All test participants were made to understand the concept of pace. Subjects were asked to stand on starting line.

On the command given by the research scholar subjects started jogging for 20 minutes. At the conclusion of the test all subjects were engaged in three to five minutes cool down.

**Scoring procedure:** The distance covered by the subjects for 20 minutes were recorded to the nearest tenth of mile.
**Bent Knee Curl-Up**

**Instruction:** Subjects were asked to assume the starting position by lying on their backs with knee flexed, feet and back flat on the floor, with the heels approximately 12-18 inches from the buttocks. Arms were folded across the chest with hands on opposite shoulder. On the command ready “go” the subjects performed the curl-up in a sitting position until the elbows contacted the thighs. The curl-up was completed when the student returned to the ready position.

**Equipment:** individual mats, pieces of carpet and a stop watch.

**Scoring:** the number of successfully completed curl-up in two minutes was recorded as a student’s score.

**Sit and Reach Test**

**Instruction:** the subjects were asked to sit comfortably on the floor without shoes, legs extended, and feet flat against the sit and reach apparatus. The subjects were asked to place the hand on top of the other hand. On the signal, the student gradually reached forward as far as possible and held her position until the test administrator placed a marker at the end of the student’s fingertips. Students were permitted three admitted consecutive attempts to push the marker further.
**Equipment:** sit and reach apparatus consisting of a box with 12 inches height.

**Scoring procedure:** the farthest point reached in the four attempts was recorded to the nearest half inch.

**Two-Site Skin Fold Calliper**

**Instruction:** this was a two-site skin fold measurement. The triceps skin fold was measured with the right arm relaxed at the side of the body. The calfskin fold was taken in the inside of the right calf at the level of the maximal calf girth.

**Equipment:** skin fold calliper.

**Scoring:** the median of three measurements at each site was recorded as a subjects score.

**Training Program**

The training programme included brisk walking, jogging and circuit training.

**Brisk Walking.** Students went through the brisk walking program for 4 months, after every one-month the intensity and load was increased for the students.

**Schedule**

1st to 4th week 15 minutes

4th to 8th week 20 minutes
8th to 12th week 25 minutes
12th to 16th week 30 minutes

**Jogging Program.** Students went through the jogging program for 4 months, after every one-month intensity and load was increased for the students.

**Schedule**

1st to 4th week 15 minutes
4th to 8th week 20 minutes
8th to 12th week 25 minutes
12th to 16th week 30 minutes

**Circuit Training Program.** Students went through the circuit training program in which a set of 7 exercises were given for 4 months. After every one month intensity of the load was increased for the students.

Circuit Training Program included -

**Shuttle run**

**Purpose:** - To measure the agility of the subjects.

**Equipment:** - Measuring tape, stop watch, Lime powder.

Two parallel lines were marked on the ground 10 yards apart. Research scholar placed the wooden blocks behind one of the lines. The subjects started from behind the other line. On the signal “Ready
Go! The subjects ran towards the line where the wooden blocks were kept, subjects picked one up, ran back to the starting line, and placed the wooden block behind the line; subjects then repeated the same thing with the remaining 3 blocks.

**Rules:** - Two trials were given with some rest in between.

**Scoring:** - The minimum time taken to complete the test was recorded to the nearest tenth of a second.

**Skipping**

**Equipment needed** - skipping rope

**Procedure** - Subjects were asked to do skipping as fast as possible according to the schedule

**Step Up**

**Starting position** - Subjects were asked to stand straight in front of the wooden bench. Height of the wooden bench was 18 inches.

- Count 1 - Right leg up on the step, elbows bent towards sides.
- Count 2 - Left leg up on the step
- Count 3 - Right leg down
- Count 4 - Left leg down, same as starting position.
**Medicine Ball Throw**

**Starting position** - Medicine ball was used to measure the power of arms and shoulder girdles.

**Equipment** - Six-pound medicine ball.

The subjects stood between two restraining lines 15 feet apart (throwing area) using shot put form. Subjects propel the six-pound medicine ball as far as possible straight down the line. Subjects were not allowed to step on the line.

**No of trials** - 3 trials were given to the subjects.

**Scores** - Best score of successful trial was recorded to the nearest foot.

**Squat Thrust**

**Count 1**  Subjects were asked to start the test by bending in a squat position.

**Count 2**  Subjects placed the hands on the floor in front of the feet.

**Count 3**  (Squat Position) quickly thrust the leg backward to a front leaning rest position.

**Count 4**  Squat positions and then standing position.
Abdominal Curl

Subjects assumed the starting position by lying on their backs. With knees flexed, feet and back flat on the floor, with heels approximately 12-18 inches from the buttocks. Arms were folded across the chest with hands on opposite shoulder. On command subjects came to sitting position until elbows touched the thigh. The curl up was completed when the subjects returned to ready position.

Push Ups

Subjects had taken starting position and placed her arms at the level of shoulder. Toes on the ground and heels up.

The subjects were instructed to complete as many as push ups as possible.

Equipment- Mat or piece of carpet.

Schedule

1st to 4th week 2 sets of 30 seconds with rest of 30 seconds
4th to 8th week 2 sets of 40 seconds with rest of 30 seconds
8th to 12th week 2 sets of 50 seconds with rest of 30 seconds
12th to 16th week 2 sets of 60 seconds with rest of 30 seconds
Statistical Procedure for Analysis of Data

The main aim of the study was to investigate effect of selected training program on health related physical fitness components of obese children. For the study analysis of co-variance was used. The purposed hypothesis was tested at .05 level of confidence. Beside this mean and standard deviation were also calculated for the composite scores.