CHAPTER- III

METHODOLOGY
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The procedure to be adopted for the selection of subjects, selection of variables, collection of data and statistical techniques employed for analyzing the data have been described in this chapter.

**Selection of Subjects**

To achieve the purpose of the study N 90 women Athletes were randomly selected from Sri Padmavathi Womens Degree College, Tirupati and Sri Venkateswara University, Tirupati, age ranged from 18-21 years. The subjects were divided in to three groups namely experimental group I, group II and control.

**Experimental Design**

90 subjects were randomly selected and divided in to three equal groups. The group I and II are experimental groups and group III is control. The Initial tests were conducted for all the groups and readings were recorded carefully. The experimental groups I and II were treated with the circuit training program for 5 days and 3 days per week. The control group was given only general warm-up along with experimental groups. After 12 weeks of the training final test was conducted for all three groups and the readings were recorded carefully.

**Selection of Variables**

The following variables were selected as criterion variables.

<table>
<thead>
<tr>
<th>Table - I</th>
</tr>
</thead>
</table>

**Training Program**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variables</th>
<th>Tests</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Physical Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>Muscular Endurance</td>
<td>Sit ups</td>
<td>No./Min.</td>
</tr>
<tr>
<td>b.</td>
<td>Speed</td>
<td>50 Mts. Dash</td>
<td>Sec.</td>
</tr>
<tr>
<td>c.</td>
<td>Flexibility</td>
<td>Sit and reach</td>
<td>Cms.</td>
</tr>
<tr>
<td>d.</td>
<td>Agility</td>
<td>4 x 10 Mts., Shuttle run</td>
<td>Sec.</td>
</tr>
<tr>
<td>e.</td>
<td>Explosive Power</td>
<td>Vertical Jump</td>
<td>Cms.</td>
</tr>
</tbody>
</table>

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Reliability of Data

To evaluate the long jump performance and muscular strength, muscular endurance, explosive power, speed, flexibility and agility were tested. The test scores were recorded as initial and final test.

Subject Reliability

The test-retest coefficient of correlation also indicated subject’s reliability as the same subjects were used similar conditions by the same tester.

Orientation of the Subjects

The subjects for this study were oriented properly towards the physical fitness variables and long jump performance. The procedures of taking measurement was also explained and demonstrated. The Athletes were motivated to gain their best during the training period.

Tester’s Reliability

To ensure uniformity and reliability of the testing techniques, the investigation had a number of practical sessions in the testing procedure, all measurement were taken by the investigator.

Collection of Data

The data for the study was collected on the selected subjects of experimental group I and II and control group by the investigator. The subjects were given complete demonstration of the each test and were explained in detail, clear their doubts if any. Two days prior to and after the training test was conducted (pre-test and post-test).

Circuit Training Program

During the training period the experimental groups under went their training program five days a week and 3 days per week for 12 weeks in addition to their
regular activities. The control group did not participate in any specific training. However, they performed education activities. Each training session lasting for 50 minutes including warm-up and warm-down.

![Diagram of Specific Circuit Training]

Table - II

<table>
<thead>
<tr>
<th>S. No</th>
<th>Training Program</th>
<th>Warm-Up</th>
<th>Duration per each station</th>
<th>Interval Between sets</th>
<th>Sets per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>On the spot run with high knee action</td>
<td></td>
<td>10Minutes</td>
<td>60sec</td>
<td>1 4 weeks</td>
</tr>
<tr>
<td>2.</td>
<td>Trunk Bending</td>
<td></td>
<td></td>
<td></td>
<td>3 sets</td>
</tr>
<tr>
<td>3.</td>
<td>Jump and toe touch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Wall Dips</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Vertical Jumping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Sit-ups</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>Step-ups</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>Opposite toe touching</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>Squat thrust</td>
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<tr>
<td>10.</td>
<td>Jump Hang Back</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Stamping with take-off leg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Jumping Jacks</td>
<td></td>
<td></td>
<td></td>
<td>5 12 weeks</td>
</tr>
</tbody>
</table>


Administration of Test

The tests were conducted on the control group and experimental groups I and II students studying in Sri Padmavathi women’s Degree College, Tirupati and Sri Venkateswara University, Tirupati. The description of the test components and the measures are given below.

Sit-Ups

Purpose

To measure the muscular endurance

Procedure

The subjects lay down on the floor in supine position with knee bends. The hands are closed behind the head. On the signal the subjects’ rolls up to touch the knee with the elbow and then lower the trunk to the floor. One point is counted for every time the subject sit-ups and touches the elbow to the knee.

Scoring

Number of sit-ups performed by the subjects for one minute was taken as score and recorded.
Girls Performing Sit Ups
50 Metre Dash

Purpose

To measure the speed.

Procedure

The subjects stand behind the starting line. On the signal (clapper's sound) the subject run as fast as possible to the finishing line. The time taken to finish was taken as the score and recorded. The time was recorded in seconds.

Scoring

The score was the elapsed time recorded in one tenth of second.
Girls Performing 50 mts Dash
Sit and Reach

Purpose

To measure the flexibility of trunk.

Procedure

The subjects were asked to come to sitting position with knees fully extended at the bottom against the lower board of the stool. The hands and arms are stretched forward as far as possible and this position holds for 3 seconds.

Scoring

The maximum distance reached by the subjects in stretching position is recorded as score.
Girls performing Sit and Reach
4 x 10 yard shuttle run

Purpose

To measure agility

Procedure

This test requires the person to run back and forth the between two parallel line as fast as possible. Set up two lines of 10mts of apart or use line markings. Starting at the line on the signal ready go the subject runs to the other line and touch the line and returns to the starting line. Like wise she runs four times.

Scoring

The score was the elapsed time recorded in one tenth of second.
Girls Performing 4 x 10 yards shuttle run
**Vertical jump**

**Purpose**

To measure explosive power.

**Procedure**

The subjects stood with a piece of chalk, one shoulder close to the wall, with heels on the floor, the subjects reaches up as high as possible and makes a chalk mark on the wall this is the baseline. The subjects then crouch and jump high as possible and makes a mark on the wall. The difference between these two lines is the score. Three chances are given out of which the best is recorded in centimeters.

**Scoring**

Three trails will be given, best jump will be recorded as score.
Girls Performing vertical Jump
Lone Jump

Purpose

To measure the long jump performance.

Procedure

The subjects stands his own distance from the pit. On the signal she run fast and take-off from the take-off board and lands in to the pit. Three chances were given, out of which the best is recorded in meters.

Scoring

Three trails were given, best jump was recorded as score.
Girls Performing Long Jump
Experimental Design

The Experimental design used for this study was random group design. In this study 90 women Inter-Collegiate Athletes were randomly selected from S.V. University College and S.P.W. Degree College, Tirupati, Chittoor District A.P., India. They were divided into three equal groups of 30 in each group. This study consisted of two experimental variables such as circuit training five sessions per week and circuit training three sessions per week. Among the three selected groups, group I (n=30) under went circuit training for five sessions per week, group II (n = 30) under went circuit training three sessions per week and group III acted as controlled. Both the experimental groups had under gone respective training program for 12 weeks. The control group was not allowed to participate in any training program other than their regular curriculum.

The subjects of all the three groups were tested on selected physical variables and long jump performance. Two days prior to and after training program

Statistical Technique

The statistical techniques Analysis of covariance was (ANACOVA) used to find out the effect of circuit training program on selected physical fitness components and long jump performance among college women. Pre-test and post-test data were collected on variables. (ANACOVA) analysis of covariance was used to find out the significant mean difference resulting from the circuit training. All the Hypotheses were tested for significance at 0.05 level.