CHAPTER-III

METHOD AND PROCEDURE

According to the objectives of the study the investigator has planned the entire process of research work in term of method and procedure. To explain the study the investigator has to describe the technique used for collecting data. The methodology and procedure of research study are closely linked with its purpose as they provide a framework within which the goals are to be achieved. The objective of the present investigation is to find out the difference in Physical Fitness, Performance and SES of wrestlers at different levels of participations. Thus, it involved number of steps to complete this investigation. The following design of the study has been systematically planned. The procedure and methodology of the study is as under:-

- Sample
- Tools Used
- Data Collection
- Design of the Study
- Statistical Technique
3.1 SAMPLE

All the 167 women wrestlers who were enrolled in SAI centres of Northern India (Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana and Delhi) constituted the sample for the present study. The detail is shown in table No. 3.0

Table 3.0

State Wise Distribution of Sample of Women Wrestlers

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Centres</th>
<th>No. of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patiala (Punjab)</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Hisar (Haryana)</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Nidani (Haryana)</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Bhiwani (Haryana)</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Meerut (C.C.S. University) (Utter Pradesh)</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>Delhi (including below mentioned)</td>
<td>69</td>
</tr>
<tr>
<td>a)</td>
<td>Chattersaal stadium</td>
<td>13</td>
</tr>
<tr>
<td>b)</td>
<td>Prem Nath Akhara</td>
<td>12</td>
</tr>
<tr>
<td>c)</td>
<td>Chandgiram Akhara</td>
<td>22</td>
</tr>
<tr>
<td>d)</td>
<td>I.G. Stedium</td>
<td>22</td>
</tr>
</tbody>
</table>

Total number of sample = 98 from other district of Haryana, Punjab and Utter Pradesh and 69 from Delhi. Is equals to 167.
3.2 Tool Used

The study in hand has been devoted to studying the socio-economic status of wrestlers and their physical fitness components such as speed, strength, agility, power and endurance. Investigators have applied several tests to measure these elements. In this investigation, the following tools were employed by the investigator for the collection of data:

1. **Socio-Economic Status Scale** (Sunil Kumar Uppadhay and Alka Sexena 2010)
2. **AAPHER Youth Fitness Test** (1958)
3. **Performance Level of the women wrestlers was decided on the basis of their highest performance in the tournament at different levels of participation.**

The study in hands has been devoted to studying the socio-economic status of women wrestlers and their physical component such as speed, strength, agility, power and endurance. Several tests have been used to measure these elements. In this investigation, the physical fitness test battery has been used. While making selection of tests, the investigator has taken following aspects into consideration:

1. To administer the test easily, Investigator has taken into consideration the different levels of participation of the wrestlers in SAI Centres.
2. Only female wrestlers were included in the age limit to 19 to 23 years.
3. The tests battery was used in which suitable space is required.
4. The items of the tests are simple which had done easily by wrestlers without any hesitation and fatigue.
5. The tests required less equipments and the same was easily available in the centres of the collection.

3.3 Descriptions of the Tests

For the purpose of the present investigation, the following tests were used:

3.3.1 Socio-Economic Status

In the present investigation, the investigator has used Uppadhay and Sexena SESS for the purpose of collection of the data. The scale is a reliable & valid scale. Reliability coefficient establish was 0.83 and the Validity computed by correlation with SESS of Shah (1986) was found to be 0.78, hence this questionnaire was significant for the purpose of present research work. On the whole, the questionnaire had 11 items which were concerned with socio-economic background of the wrestlers. It was standardized test and having many possible answers to each question as options for the subjects.
3.3.2 Physical Fitness Test

Physical fitness test applied through AAPHER Youth fitness Test battery described below:

3.3.3 Shot-Put Test

**Purpose:** To measure the strength ability

**Equipments:** A marked circle and sector for the shot put event as per rules, A steel tape and a shot put of eight pounds are required.

**Descriptions:** The event was explained and demonstrated before the testing commenced. The try-out was to put, not to throw. The shot was put from the shoulder with one hand only. At the times the subject takes a stand in the ring to commence a put, the shot touches or is in close proximity to the chin and the hand is not dropped below this position during the action of putting. The shot is not brought from behind the line of shoulders and it lands in between the sector lines marked as landing areas. The subjects were given three trials, but in the event all three trials foul, the subjects were allowed three chances until they make a fair put.

**Scoring:** Each put was measured in meters from the nearest mark made by the fall of the shot to the inside of the circumference of the circle. The final score was the distance of the best put measured to the nearest centimetres.
3.3.4 SHUTTLE RUN TEST

**Purpose:** To measure the Agility Ability.

**Equipments:** Two blocks of wood, 2 inches × 2 inches × 4 inches and stopwatch. Players should wear sneakers or run barefooted.

**Descriptions:** Two parallel lines were marked on the floor 30 feet apart. The width of a regulation volleyball court serves as a suitable area. Place the blocks of wood behind one of the lines. The players start from the behind of the other line, on the signal ‘ready’ and ‘Go’. The player runs to the blocks. Pick one up, runs back to the starting line and place the block behind the line; he then runs back and picks up the second block, which he carries back across the starting line. The scorer has two stop watches or one with a split-Second timer; it is preferable to have two players running at the same time. To eliminate the necessity of returning the blocks after each race, start the races alternately, first from behind one line and then from behind the other. Two trials were allowed with some rest between.

**Scoring:** The best time was recorded of the two trials to the nearest tenth of a second.
3.3.5 STANDING BROAD JUMP TEST

Purpose: To measure the Explosive Power Ability.

Equipments: Mat, Floor or Outdoor Jumping pit and measuring tape.

Descriptions: Players stood behind the starting line with the feet several inches apart and the toes just behind the take off line. Preparatory to jumping, the players swing the arms backward and bent the knees. The jump was accomplished by simultaneously extending the knees and swinging forward the arms. Subjects were allowed three trials. The take off line to the heel or other part of the body that touches the floor nearest the take off line has been measured.

Scoring: The best of the three trials in feet and inches to the nearest inch has been recorded.
3.3.6 60 METER DASH RUN TEST

**Purpose:** To measure Speed Ability.

**Equipments:** Two Stopwatches or one with a spilt-second timer.

**Description:** It is preferable to administer this test to two pupils at a time. Have both take positions behind the starting will use the commands “Ready?” and “go!” The later will be accompanied by a downward sweep of the starter’s arm to give a visual signal to the timer, who stands at the finish line. The score is the amount of time between the starter’s signal and the instant player crosses the finish line.

**Scoring:** Record in seconds to the nearest tenth of a second.
3.3.7 **NINE MINUTE RUN/WALK TEST**

**Purpose**: To measure Endurance Ability.

**Equipments**: 400 meter Standard Track.

**Description**: The subjects used a standing start. At the signal ‘ready’ and ‘go’, the subject started running for 9 minutes. The subjects were asked to run continuously at an even pace for 9 minutes on the track. They were further instructed to run in the innermost lane of the track. However, they were allowed to walk in between when unable to run. The test was conducted on 6 to 10 players at a time. But the subjects had to covered/completed the time.

**Scoring**: The total distance covered in kilometers by the players after 9 minutes was the final score.
3.4 RELIABILITY OF THE TEST

To establish the reliability of the test of the physical fitness test battery test-retest method was used. For physical fitness test, it is not possible to form parallel test because it is difficult to establish high inter-correlations or to split the test into parts, therefore, the method used here is relevant and most appropriate. The reliability of the test for the present investigation was established through test-retest method because all these were concerned with the physique of the wrestlers. To test the reliability, 20 samples were used from different centres. The test-retest coefficients for these different tests are given in Table 3.1.

**TABLE- 3.1**

**Reliability Coefficients of the Tests**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the Test</th>
<th>N.</th>
<th>Reliability coefficient of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shot Put</td>
<td>40</td>
<td>0.91</td>
</tr>
<tr>
<td>2</td>
<td>60mt Dash Run</td>
<td>40</td>
<td>0.95</td>
</tr>
<tr>
<td>3</td>
<td>4X10mt Shuttle Run</td>
<td>40</td>
<td>0.87</td>
</tr>
<tr>
<td>4</td>
<td>Standing Broad Jump</td>
<td>40</td>
<td>0.91</td>
</tr>
<tr>
<td>5</td>
<td>9min Run/Walk</td>
<td>40</td>
<td>0.97</td>
</tr>
</tbody>
</table>
Almost all the tests have shown reliability above 0.85. Such high reliability is also required for the test because they measure physical fitness components of the personality (Guilford, 1957) otherwise such tests are required to have one to one reliability on the test-retest technique but because of the gap of one month between the two tests the external and internal changes might have occurred within the wrestlers that is why the reliability might have fallen a little less.

To see the internal consistency of the tests, t-test was employed. It was found that ‘t ’- ratio was not significant for any of the tests. Therefore, the test for the present investigation may be taken up as the reliable and stable tools for measuring physical fitness.

3.4.1 Socio-Economic Status

In the present investigation, the investigator used Uppadhay and Sexena SESS for the purpose of collection of the data. This is a reliable & valid scale. Reliability coefficient establish was 0.83 and the Validity computed by Correlation with SESS of Shah (1986) was found to be 0.78.
3.5 ADMINISTRATION OF THE TEST

The investigator kept in mind the following important points before administering the tests:

1. All the tests were conducted in the morning and evening due to availability of wrestlers practicing in Akharas and centers of wrestling.

2. The tests were conducted during the regular practice days and coaching camps, because it was easy to contact the wrestlers.

3. Wrestlers were asked to perform the test in proper kit.

4. All tests were applied in sequence on all the selected wrestlers and there were no let up.

5. Only the standard equipments were put into use as per the requirement.

6. To avoid any distraction, the tests were not taken on any bad weather days.

3.5.1 For Performance Levels

The performances of wrestlers have been noted on scale and consider highest performance of participations. Following are the marks that have been given to the participants according to their performance:

International- 15
National- 10
State- 5
Junior National- 5
No Performance- 0

3.6 DATA COLLECTION:

The data of the study were collected by the investigator, with the help of sports coaches, physical education teachers and professional person of this field. Help was also sought from the DPE’, In-charges and Guru’s of various Akharas of the wrestling centers under SAI at the time of the administering the physical fitness tests in different SAI Centers. The standard equipments of these centers were used for the purpose.

3.7 Design of the Study:

The study was divided into two phases namely, pilot study and final study. The pilot study was conducted to see the feasibility and possibility of the tests on the women wrestlers of sports authority of India and to seek guidelines for the final study. And the final study was designed to establish norms and standard for the women wrestlers of sports authority of India. The performance level and SES was also studied. For the purpose of study, the wrestlers consisted of three groups i.e. High, Middle and Low Weight.
These were categorized on the basis of performance level and weight of wrestlers. Thus, in the study the variables of the area and SES were differentiated into three categories so as to see their effect on performance level and physical fitness of the women wrestlers of the SAI.

The present investigation was a survey type study and the survey was conducted on the women wrestlers of SAI Centre of Northern India belonging to different Socio-Economic Status. The Socio-Economic Status was divided on basis of SES Scale of Uppadhay & Sexena. The physical fitness qualities of the wrestlers were measured using the AAPHER fitness test battery consisting of 5 items to measure; Speed, Strength, Agility, Power and Endurance and different level of participation of tournament. One hundred sixty seven women wrestlers of the above were the subjects of the present investigation. These wrestlers were regularly practicing in these centres and were having many years training experience of wrestling, as a result of which different physical fitness qualities have been developed in them. All the subjects of the study were selected from the centres of SAI. There are ten recognized categories of women wrestlers. As sufficient numbers of wrestlers in each of these categories were not available, they were categorized into three broad categories as follow:
**Weight Categories**

<table>
<thead>
<tr>
<th>Light weight Category</th>
<th>Middle Weight Category</th>
<th>Heavy Weight Category</th>
</tr>
</thead>
</table>

- **Light Weight Category**: In the Light weight category the wrestlers with the body of 54 kg were included.

- **Middle Weight Category**: In the Middle weight category the wrestlers with the body between 55 to 63 kg were included.

- **Heavy Weight Category**: In the Heavy weight category the wrestlers with the body of 64 kg or above were included.

The Socio-Economic Status of wrestlers was divided into three categories:

**Socio-Economic Status**

<table>
<thead>
<tr>
<th>High SES</th>
<th>Middle SES</th>
<th>Low SES</th>
</tr>
</thead>
</table>

- **High SES**: The wrestlers who have scored 61 or above were included in this category.

- **Middle SES**: The wrestlers who have scored between 41 to 60 were included in this category.

- **Low SES**: The wrestlers who have scored 40 or below were included in this category.

The total sample is shown in table no. 3.2
Table 3.2

Design of the Study of Physical Fitness and SES

<table>
<thead>
<tr>
<th>Category</th>
<th>Light Weight</th>
<th>Middle Weight</th>
<th>Heavy Weight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>10</td>
<td>8</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Middle</td>
<td>37</td>
<td>27</td>
<td>21</td>
<td>85</td>
</tr>
<tr>
<td>Low</td>
<td>15</td>
<td>25</td>
<td>17</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>60</td>
<td>45</td>
<td>167</td>
</tr>
</tbody>
</table>

Total number of sample = 167

Thus, out of a total sample of 167 women wrestlers which were selected for this study, 62 belonging to Light Weight, 60 belonging to Middle Weight and 45 Belonging to Heavy Weight categories. 57 of these wrestlers had Low SES, 85 had Middle SES and 25 had High SES.

The performance levels

The performance level of wrestlers was divided into five categories:

Performance Levels

<table>
<thead>
<tr>
<th>Inter-National</th>
<th>National</th>
<th>State</th>
<th>Junior National</th>
<th>No Participation</th>
</tr>
</thead>
</table>

The divisions of score of socio-economic status at performance levels of the wrestlers are below in table 3.3.

The total sample is shown in table 3.3
Table 3.3

Design of the study of performance and SES

<table>
<thead>
<tr>
<th>SES</th>
<th>International</th>
<th>National</th>
<th>State</th>
<th>Jr. National</th>
<th>No Participation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Middle</td>
<td>19</td>
<td>25</td>
<td>23</td>
<td>13</td>
<td>3</td>
<td>83</td>
</tr>
<tr>
<td>Low</td>
<td>11</td>
<td>27</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>59</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>58</td>
<td>39</td>
<td>17</td>
<td>13</td>
<td>167</td>
</tr>
</tbody>
</table>

3.8 STATISTICAL TECHNIQUES

The main aims of the study were to find out the differences in performance level and physical fitness components of wrestlers of different weight category and socio-economic status. As two independent variables with three levels each were involve in the design of the study. So, two way Analysis of Variance techniques were applied for this purpose.

Further, to find out the difference in the SES of wrestlers t-test was taken as a proper analysis technique. To find out the differences in the performance level and physical fitness components in relation to SES of Light, Middle and Heavy weight wrestlers. After this methodological description, the analysis and interpretation of the data has been presented in its proceeding chapter-IV.