CHAPTER-III

METHODS AND PROCEDURES

Method and procedure involves a systematic procedure by which the investigator starts from the initial identification of the problem to its final conclusion. It provides the tools and techniques by which the problem can be solved. 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 main objective of the present investigation is to find out the difference in Physical Fitness components, and SES of weight lifting & power lifting players. 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**

Total 120 (61 weight lifters +59 power lifters) were selected on the basis of position secure by them (first, second and third) in the Haryana senior state, MDU and, KUK weight lifting and power lifting championships, which were held in 2012-2013.

3.2 **Tool Used**

This study has been devoted to study the socio-economic status of weight lifting & power lifting Players and their physical fitness components such as speed, strength, agility, power and endurance. Investigator has 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 (Rajbir Singh, Radhey Shyam and
   Satish Kumar 2005)
2. AAPHER youth Fitness Test (1958)
3. The weight lifters and Power lifters were selected on the basis of
   position won (first, second and third) in the Haryana senior state,
   MDU and, KUK weight lifting and power lifting championships,
   which were held in 2012-2013.

For present study several slandered tests have been used to measure the
performance of various items of test battery. 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 players of the weight lifting & power lifting competition
   who won first, second and third place in the above said different
   championships.

3.3 Description of Physical Fitness Test

3.3.1 Physical fitness test

This test is applied through AAPHER Youth fitness Test battery described
below:

3.3.2 Shot-Put Test

- **Purpose:** To measure the strength ability of the Weight lifters and
  power lifters

- **Equipments:** A marked throwing sector for the shot put event as per
  rules, A measuring steel tape and a shot put of weight sixteen pounds are
  required.

- **Descriptions:** The Shot-Put event was explained and demonstrated
  before the testing commenced. This event is putting the Shot not to
  throw. The shot was put from the shoulder with one hand only. Every
  subject takes a position in the circle to put the shot, it should touch or
  should in close proximity to the chin and the hand should not drop
below this position during the action of shoulders and it should lands between the lines of throwing sector. The every subject should be given three trials, but in all three trials foul, the subject can take three chances until a fair put.

- **Scoring:** Each chance of putting the Shot was measured in meters from the nearest mark of ground touch by shot to the inside of the circumference of the circle. In The final score the best distance was measured to the nearest centimeters and taken for final data. The noted record should be very neat and clean because human error leads towards wrong conclusion to the problem. The test should be conducted in very ideal condition all respect. The health of each athlete should be observed by watching or talking to them for the appearing of them.

**The test to measure the strength in terms of Shot Put**

*Figure no-3.1*
3.3.3 Shuttle Run Test

- **Purpose**: To measure the Agility of subject.
- **Equipments**: Two blocks of wood, 2 inches x 2 inches x 4 inches and a stopwatch. All Players can wear their own choice shoes or can run barefooted.
- **Description**: The two parallel lines were marked on the floor with measurement 30 feet apart from each. Place the both wood blocks behind one of the lines and each player will start from the behind of the other line. He will start to run on the signal ‘ready and go’. The player runs to the blocks and Pick one and runs back to the starting line to place the block behind the line and then he runs back to picks up the second block and then runs back across the starting line to place the second block. This time is taken in seconds from starting to finish. Two trials were allowed to each subject with some rest between.
• **Scoring:** the best time of each subject was recorded of his two trials to the nearest tenth of a second

_The tests for Agility check in terms of Shuttle run_

**Figure no-3.3**

3.3.4 **Standind Broad Jump Test**

• **Purpose:** To measure the Explosive Power Ability

• **Equipments:** Soft Mat, Floor or Outdoor Jumping pit and a measuring tape.

• **Descriptions:** All Players stood behind the starting line, just behind the take off line. The players swing their arms backward and bent the knees. The jump was accomplished by simultaneously extending the
knees and swinging forward the arms. Each Subject was given three trails for the test. The distance is taken from outer age of take off line to the heel or other part of the body that touches the floor nearest to the take off line.

- **Scoring:** The best of the three trials in meter to the nearest cm. has been recorded for this test.

The test of Explosive Power in terms of broad jump

Figure no-3.4
3.3.5 **60 METER DASH RUN TEST**

- **Purpose:** To measure speed Ability.
- **Equipments:** Two Stopwatches or one with a split-second timer.
- **Description:** It is preferable to administer this test in the group of two pupils at one time. They have to take positions just behind the starting line and we will use the commands “Ready?” and “Go!” The starter on starting line and timer on finish line can use the flags for mutual understanding. The score is the time between the starter’s signal and the instant crossing the finish line by player.
- **Scoring:** Record in seconds to the nearest of a second.

The test to measure the speed in terms of 60 meter dash run test.

Figure no-3.5
3.3.5 Nine Minute Run/Walk Test

- **Purpose:** To measure Endurance Ability.
- **Equipments:** 400 meter Standard Track.
- **Description:** The subjects used a standing start for this nine minute run/walk. The command is used for the subject on starting line ‘ready’ and ‘go’, then subject started running for 9 minutes. The subjects were asked to run continuously at an even pace for 9 minutes on the track, however they were instructed to run but when unable to run they were allowed to walk to complete the total distance in nine minutes. The test was conducted on five players at a time.
- **Scoring:** The total distance covered by each player in kilometers was the final score after 9 minutes run / walk.

*The test to measure the Endurance Ability in terms of nine minute run/walk test*

**Figure no-3.6**
3.4 Reliability of The Test

To find the reliability of this test of the physical fitness test battery, test-retest method was used. For all physical fitness test, it is very difficult to form parallel test because it is difficult to find high inter-correlations or to split the test into various parts, therefore, the method used is relevant and most appropriate for this physical fitness test. The reliability of the test for the present study was made through test-retest method because all these were related with weight lifting & power lifting games. To test the reliability, 20 samples were used of different weight categories of both games. The test-retest coefficients for these different tests are given in Table 3.1

Reliability coefficients of the Tests Weight Lifters and Power Lifters

Table- 3.1

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the Test</th>
<th>Numbers</th>
<th>Reliability coefficient of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shot Put</td>
<td>20</td>
<td>0.92</td>
</tr>
<tr>
<td>2</td>
<td>60 mts Dash Run</td>
<td>20</td>
<td>0.94</td>
</tr>
<tr>
<td>3</td>
<td>4X9 mts Shuttle Run</td>
<td>20</td>
<td>0.86</td>
</tr>
<tr>
<td>4</td>
<td>Standing Broad Jump</td>
<td>20</td>
<td>0.90</td>
</tr>
<tr>
<td>5</td>
<td>9minut Run /Walk</td>
<td>20</td>
<td>0.93</td>
</tr>
</tbody>
</table>

All the above tests had shown reliability above 0.85, Such high reliability is required for the test to measure physical fitness components of the personality ,otherwise such tests are required to have one to one reliability on the test-retest technique.

To check the internal consistency of the tests, t-test was employed. It was found that ‘t’– ratio was not significant for any of the above tests. Therefore, this is reliable and stable test for measuring physical fitness in the present investigation

3.4.1 Reliability coefficients of Socio-Economic Status Scale

In the present investigation, the investigator used Rajbir Shing, Radhey Shyam and Satis Kumar Socio Economic Status Scale(2005) for the purpose of collection of the required data. This is a reliable & valid scale. The Coefficient
of stability was found 0.653 and the administration of this scale after a gap of 30 days the Coefficient of stability was 0.944. For internal consistency Cronbach alpha was calculated on normalized (with a mean of 50 and SD 10) T scores (N=500) and was found to be 0.791. The coefficient of correlation between self and other’s rating was r=0.98.

3.5 Administration of The Test

The following important point’s investigator kept in mind before administering the tests:

1. All the tests were conducted in their practice place because it was difficult to test just after their competition in various tournaments. They were easily available at their practice centers of weight lifting & power lifting.

2. All weight lifting & power lifting players were asked to perform the test in proper kit and all tests were applied in sequence on all the selected subject of weight lifting & power lifting game.

3. For the various tests items standard equipment's were put into use as per the requirement.

4. To avoid any distraction, the said tests were not taken in adverse weather days.

3.5.1 Performance Levels in selected competition

The performances (position in the competition) of weight lifting & power lifting players had been noted in the following competitions

1. M.D.U. Rohtak weight lifting & power lifting (Male) competitions (28/1/2013 to 31/1/2013) held at sports complex of the university.

2. K.U.K weight lifting & power lifting (Male) competitions (6/2/2013 to 7/2/2013) held at YIET Ghadoli YNR.

3. Haryana Senior State Power Lifting Championship (Men) held at Rajput Dharamshala, Bhiwani (20/7/2013 to 21/7/2013)

4. Haryana Senior State Weight Lifting Championship (Men) held at Yamuna Nagar on (2/1/2014 to 3/1/14) this championship was held after two years gap due to dispute of state federation.
3.6 Data Collection

The investigator collected the data, with the help of various sports coaches, physical education teachers and the professional persons of the weight lifting & power lifting field. The standard equipment were used for the purpose.

3.7 Design of the Study

The investigator divided this study into two phases for better results.

1. Pilot study was the first phase to see the feasibility of the tests on the weight lifters and power lifters of Haryana State and to get guidelines for the final study.

2. Final studies were designed to establish norms and standard for the weight lifters and power lifters of Haryana State. The performance level of these players in the form of position secured in selected competitions of Haryana State and SES was also studied. For the purpose of this study, the weight categories of weight lifting & power lifting players were divided in three groups’ i.e. heavy, middle and light weight categories as per their body weight registered in various competitions. Thus, in this study the variables of the area and SES were differentiated into three categories (low, middle and high) so to compare SES and physical fitness of the weight lifters and power lifters of Haryana State.

This was a survey type study which was conducted on the weight lifters and power lifters of Haryana State belonging to different Socio-Economic Status. The Socio-Economic Status was divided on basis of SES Scale constructed by Rajbir Shing, Radhey Shyam and Satis Kumar Socio Economic Status Scale (2005). The physical fitness qualities of the weight lifting & power lifting players were measured by using the AAPHER fitness test battery consisting of 5 items to measure, Speed, Strength, Agility, Power and Endurance. One hundred twenty weight lifters and power lifters of Haryana state were the subjects for the present investigation. The weight lifting & power lifting games are based on strength. The lifters selected for this study were position holders (first, second and third) in Universities and state competitions,
therefore all were having many years training experience of weight lifting &
power lifting games, as a result of this different physical fitness qualities have
been developed in them due to nature of their activities. All weight categories
were divided in to three weight categories as given below.

**Total weight categories of weight lifters and Power lifters are arranged in
three Weight Categories:**

**Light Weight Category**  **Middle Weight Category**  **Heavy Weight Category**

- **Light Weight Category:** In the Light weight category, the weight lifters
  of 56 kg and 62 kg weight category were included & in power lifters, the
  weight category of 59 kg was included.

- **Middle Weight Category:** In the Middle weight category, the weight
  lifters of 69 kg and 77 kg category were included & in power lifters the body
  weight categories of 66 kg, and 74 kg were included.

- **Heavy Weight Category:** In the Heavy weight category, weight lifters of
  85 kg, 94 kg, 105 kg and +105 kg category were included & in power lifters the
  body weight categories of 83 kg, 93 kg, 105 kg, 120 kg and +120 kg category
  were included.

**The Socio-Economic Status of weight lifters & power lifters was divided
into three categories:**

<table>
<thead>
<tr>
<th>Socio-Economic Status</th>
<th>High</th>
<th>Middle</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>SES</td>
<td>SES</td>
<td>SES</td>
<td></td>
</tr>
</tbody>
</table>

- **High SES:** The weight lifters & power lifters who have scored 60 or above
  were included in this category.

- **Middle SES:** The weight lifters & power lifters players who have scored
  between 40 to 59 were included in this category.
- **Low SES:** The weight lifters & power lifters who have scored below 40 were included in this category.

**Design of the Study of Physical Fitness and SES of Weight Lifters**

Table 3.2

<table>
<thead>
<tr>
<th>Category</th>
<th>Light Weight category</th>
<th>Middle Weight category</th>
<th>Heavy Weight category</th>
<th>Lifters</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Middle</td>
<td>8</td>
<td>12</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>Low</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>18</td>
<td>29</td>
<td>61</td>
</tr>
</tbody>
</table>

Total number of sample = 61

Thus, out of a total sample of 61 Weight lifters were selected for this study, 14 belonging to Light weight, 18 belonging to Middle Weight and 29 Belonging to Heavy weight categories. 8 of these weight lifter had Low SES, 33 had Middle SES and 20 had High SES, the total sample is shown in table no. 3.2

**Design of the Study of Physical Fitness and SES of Power Lifters**

Table 3.3

<table>
<thead>
<tr>
<th>Category</th>
<th>Light Weight category</th>
<th>Middle Weight category</th>
<th>Heavy Weight category</th>
<th>Total Power lifters</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1</td>
<td>2</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Middle</td>
<td>5</td>
<td>14</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>Low</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>17</td>
<td>33</td>
<td>59</td>
</tr>
</tbody>
</table>

Total number of sample = 59

Thus, out of a total sample of 59 Power lifters were selected for this study, 9 belonging to Light weight, 17 belonging to Middle Weight and 33
Belonging to Heavy weight categories, 4 of these power lifters had Low SES, 39 had Middle SES and 16 had High SES.

3.8 **Statistical Techniques**

The main objectives of the study were to find out the differences in SES and physical fitness components of weight lifters & power lifters of different weight category. As two independent variables with three levels each were involve in the design of the study. So, two way Analysis of Variance techniques were used for this purpose. Further, to find out the difference in the SES of weight lifting & power lifting players t-test was taken as a proper analysis technique to find out the difference in physical fitness components in relation to SES of Light, Middle and Heavy weight, weight lifters & power lifters. After this methodological description, the analysis and interpretation of this study has been presented in next chapter.