Chapter-III

METHODOLOGY

In this chapter, the procedure adopted for the selection of the subject, selection of the variables, criterion variable reliability and data, reliability of investment, competency of tester, reliability of data orientation of the subjects, administration of tests and the statistical procedure used have been described.

3.1 SELECTION OF THE SUBJECTS :

This study was designed to ascertain the level of comprehensive anxiety and self confidence among the national level shooters. Further to study the psycho-physiological variables and also their relationship with Comprehensive Anxiety and Self Confidence of National level shooters. To achieve this purpose, total 40 National level shooters both male and female who represented the state for shooting competition of below 25 meters range shooting were selected as purposive sampling. The age of the subjects ranged between 18 to 35 years. The selected subjects were educated (at least 10th standard) who were fluent in reading English.

3.2 SELECTION OF VARIABLES :

The variables for the present study were selected based on the review of related literature, discussion with the experts, feasibility
criteria, availability of the instruments. The following variables were selected.

I. Psychological variables

1. Sports Comprehensive Anxiety
2. Self Confidence
3. Fine Motor Activity
4. Psychomotor Ability

II. Physiological variables

1. Diastolic Blood Pressure
2. Systolic Blood Pressure
3. Pulse Rate
4. Skin Resistance

3.3 CRITERION VARIABLES:

The researcher has selected the following test items as criterion measures. The chosen tests are highly standardized, appropriate and ideal for the selected variables.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Variables</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sport Comprehensive Anxiety</td>
<td>Measured by administering Sinha’s Comprehensive Anxiety Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Developed by A. K. P. Sinha and I.N.K Sinha) recorded in number.</td>
</tr>
<tr>
<td>2.</td>
<td>Self Confidence</td>
<td>Measured by administering Self Confidence Inventory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Formulated by M. Basavanna) recorded in numbers.</td>
</tr>
<tr>
<td>3.</td>
<td>Fine Motor Activity</td>
<td>Measured by conducting Tweezer Dexterity test recorded in numbers.</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Variables</td>
<td>Measures</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4.</td>
<td>Psycho Motor Ability</td>
<td>Measured by conducting DBDA test recorded in numbers.</td>
</tr>
<tr>
<td>5.</td>
<td>Blood Pressure</td>
<td>Measured by using sphygmomanometer and stethoscope recorded in numbers.</td>
</tr>
<tr>
<td>6.</td>
<td>Pulse Rate</td>
<td>Measured by conducting radial pulse rate with stethoscope recorded in numbers.</td>
</tr>
<tr>
<td>7.</td>
<td>Skin Resistance</td>
<td>Measured by conducted GSR Test in number average.</td>
</tr>
</tbody>
</table>

### 3.4 RELIABILITY OF DATA:

The reliability of data was ensured by establishing reliability of instrument, tester competency and subject reliability.

#### 3.4.1 Instruments Reliability.

The Tweezer Board, Foreseps, psychogalvanicmeter, Stopwatch, sphygmomanometer and Stethoscope used for the study were procured from Medical Hospital and Department of Psychology, Bangalore University and approached the same. The calibration were tested and found to be accurate enough to serve the purpose of the study.

#### 3.4.2 Competency of Tthe Tester.

The operation of sphygmomanometer, stethoscope, tweezer dixerity board, psychogalvanic meter, stop watch was taught by an experienced expert. Investigator learnt the procedure and methods to handle and operate the instruments to administer the tests. Measurements were taken by the investigator himself and also qualified assistants by using the equipments.
3.4.3 Subject Reliability.

The Subject reliability was established by test and retest coefficient of correlation for the scores in each of the criterion measures. The test and retest were conducted under the similar conditions by the same tester on both occasions, no motivational techniques were used.

Table-A

Table showing coefficients of physiological variables

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Test</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Diastolic Blood Pressure</td>
<td>0.89</td>
</tr>
<tr>
<td>02</td>
<td>Systolic Blood Pressure</td>
<td>0.88</td>
</tr>
<tr>
<td>03</td>
<td>Pulse Rate</td>
<td>0.88</td>
</tr>
<tr>
<td>04</td>
<td>Skin Resistance (GSR)</td>
<td>0.87</td>
</tr>
</tbody>
</table>

3.5 ORIENTATION OF THE SUBJECTS:

The Researcher explained the purpose of the study to the subjects clearly, instruction in connection with the testing procedure while administration of Questionnaire and measuring the psychophysiological variables were also explained to the subjects. This was done to ensure proper study and get effective cooperation of the subjects. The aim of orienting the subjects was to ensure reliable data.
3.6  ADMINISTRATION OF TESTS:

3.6.1 Sport Comprehensive Anxiety Test:

Anxiety is most often stimulated by qualities of a person himself rather than by any external events (Shervant 1964). Anxiety is the tendency to view comprehensive situation as treating and to react to them with feeling of apprehension.

**Purpose:**

To measure the level of anxiety of the subject.

**Procedure:**

The level of anxiety is measured by administering Sinha’s comprehensive anxiety test. This test has been development by A. K. P. Sinha and L.N.K. Sinha. This is a self reporting paper and pencil test widely used in research in psychology and education.

The Subject were assembled and briefed on the subjective of the test and mode of answering. They were asked to fairy quick in answering without much deliberation on any time. All the items were to be answered. The subjects were answered by tick the each item as reflective of their feeling and behavioral pattern.

**Scoring:**

The test papers were manually scored with ‘Key’ of the test. The score as recorded in numbers as evaluated from the scoring key of the test. The scoring procedure is simple. For any response indicated by an ‘yes’ a score of one, and for every ‘no’ response a score of zero is awarded. The sum total of all positive responses gives the total anxiety score of an individual.
3.6.2 Self Confidence.

The self confidence inventory has been designed to estimate the level of self confidence among adolescents adults. Self concept is a characteristic or an aspect of self concept and should not be confused with the self-concept itself, in general, self confidence refers to an individual’s perceived ability to act effectively in a situation to overcome obstacles and to get things so all right. According to Smith (1962), self confidence in perception qualities such as confident, valuable, stable, satisfied, smart, active and popular etc.

Purpose:

To assess the individual's perceived ability to act effectively in a situation.

Procedure:

Self confidence inventory was standardized by Basavanna M. (1971) the inventory is used to measure the level of the self administering inventory scale with 100 items. There is no fixed time limit. Orderly an individual takes 20 minutes to complete the inventory. Each item has a response category and true or false a score of one is awarded for all the positive items answered negatively and the negative items answered positively a score zero awarded for all the positive items answered positively and the negatively items answered negatively.

Scoring:

The Score was recorded in numbers as evaluated from the scoring key of the test. Lower the score higher would be the level of self confidants and Vice- versa.
Researcher administering the Sports Comprehensive Anxiety and Self Confidence questionnaire from the subjects.
3.6.3 Fine Motor Activity (Tweezer Dexterity Test).

In general experience with the O’Connor finger and Tweezer Dexterity suggests that wrist and finger dexterity is likely is likely to be important during the period of initial adjustment to fine manual jobs and the it is likely to be related to success on the job when people with approximately equal amount of technical understanding or trade knowledge are compared. A high score indicates aptitude for work requiring precision in the use of small hand tools (O. Connor, 1920).

Purpose:

To assess the wrist and finger dexterity and the subject.

Procedure:

Subjects were asked to made sit comfortably on a table with the tweezer dexterity board placed in front of the subject. The tray containing more than a 100 pins were places on the side of the side of the preferred hand. The subject were instructed to pick up one at a time with the help of the tweezer and start to fill the holes in the board initially left for the right- handed person (top right for left-handed). The holes were filled in row-wise. This was noted accurately for fill in all the 100 holes and subject was allowed to fill in two rows for practice and only one trial was given.

Scoring:

Score was simply the number of seconds lapsing between placement of the first and last pins, and refer the time in seconds to O’ Connor Norms and locate the Standard score by Check centile rank for interpretation.
Researcher administering the Fine Motor Activity (Tweezer Dexterity) during Competition
3.6.4 Psychomotor Ability (DBDA– PM)

This test consists of a page full of figures. Each figure is a circular dot surrounded by double rectangular outlines. The subjects were to draw a line freehand all the way around between the inner and the outer squares and then draw a circle around the dot.

**Purpose**: 
To assess the psychomotor ability (free handling) of the subjects

**Equipment**: 
Ability graph sheets, writing materials (sharp pencil) and stop-clock.

**Procedure**: 
The instructions for administration of the test of DBDA-PM were given and handed over the graph sheet for the subjects. The graph sheet consists of a page full of figures. Each figure is a circular dot surrounded by double rectangular outlines. The subjects were asked to draw a line freehand all the way around between the inner and the outer squares and then draw a circle around the dot with in 5 minutes.

**Scoring**: 
Subjects score were the numbers of figures with correctly drawn lines.
Researcher administering the Psychomotor Ability test (DBDA) during competition
3.6.5 Blood Pressure.

Blood pressure is the pressure the force exerted by the blood on the walls of an artery, as it is pushed through the circulatory system during the course of the cardiac cycle, the arterial blood pressure is constantly changing.

Purpose:

The purpose of this test was to measure systolic and diastolic blood pressure of the subject.

Equipments:

Sphygmomanometer, stethoscope and a comfortable chair.

Procedure:

The subject was asking to sit on a chair comfortably while taking blood pressure the subject’s right arm was completely made bare to make certain that clothing does not press the blood vessels. The instrument was kept at the level of heart. The blood pressure measurement was taken with the subjects in the sitting position the forearm was kept straight and relaxed position. The cuff was wrapped round the arm evenly with the lower edge approximately one inch above the anticubital space. The stethoscope receiver was placed firmly over the brachial artery in anticubital space. The cuff was inflated until artery collapsed fully to the extent that no pulse beat was heard.
When no pulse beat was heard, the pressure was slowly released till the first sound of the pulse was heard. This was the systolic blood pressure. When the pressure was further released gradually, the sound of the pulse was reduced in intensity and quality. This recording was the diastolic blood pressure.

**Scoring:**

Both the recording was in millimeters of mercury (mm of Hg).

Researcher measuring Blood Pressure by the physician before competition
3.6.6 Pulse Rate:

The pulse rate is basically a person’s heart rate. An artery presses against a bone close to the surface of the skin and as such can be easily felt through the skin as the heart pumps blood through these arteries; so the pulse rate is simply the heart rate as it pumps blood through these arteries.

Purpose:

To record the pulse rate of the subject per minute.

Equipment:

Stethoscope and stop watch.

Procedure:

To measure the pulse subject were asked to sit on the chair comfortably. The chest piece of the stethoscope was placed on the wrist (radial pulse). The pulse rate was recorded by hearing the sound of the radial pulse at wrist for one minute.

Scoring:

The number of the sound beats (pulse rate) per minute was recorded in numbers.
Researcher measuring Pulse Rate by the physician before competition
3.6.7 Galvanic Skin Resistance (GSR).

GSR refers to the electrical resistance of the skin as detected in a sensitive Galvanometer. GSR is an index of generalized activation of the physiological system under Observation, measured in ohms. It detects the absolute value of electrical conductance across a given area of skin. Darrow’s (1934) study has indicated a linear relationship between the rate of secretion of the sweat glands and electrical skin conductance. Hence, when a person is anxious, there will be an increase in GSR and the display on the instrument will be low. A decrease in GSR indicates increased relaxation. In the light of the above findings, the GSR instrument was used in the present study to assess the extent to which the subjects were relaxed.

Description of Material:

In the present study, the Medicaid System’s digital GSR instrument was used. The system consists of a main instrument measuring 15x15x5 cm in length, width, and height respectively. It has two electrical wires connected to two round shaped silver plated electrodes, each of 0.5 cm radius, and 0.5 cm thickness. There is a main switch on the front board and an electronic digital display board. The accessories required for the use of GSR instrument is surgical spirit, cotton and conductance jelly.
**Procedure:**

The Subject was seated comfortably in a chair. The third and the fourth fingers of her/his dominant hand were cleaned with surgical spirit and cotton. The conductance jelly is applied on the electrode and kept for a minimum of two minutes. After that, the electrodes were tied on the fingers. The subject was instructed not to move his/her body, especially the hand and fingers. After giving instructions and clarifying all doubts, the instrument was switched on. The researcher made sure that the subject could not see the GSR ratings. The researcher noted down the GSR ratings indicated on the digital board every fifteen seconds. The session lasted for three minutes. Thus there were 12 recordings per session.

**Scoring:**

The researcher recorded the GSR level of each subject and an average score for the session (12 recordings) was calculated to get the GSR level. A similar procedure was followed for before and competition time assessment.
Researcher administering the GSR test during competition
3.7 STATISTICAL PROCEDURE.

The present study plays attention mainly on to access the level of sports comprehensive anxiety, Self confidence and psycho physiological variables of the national level shooters (both Male and Female) for this purpose the statistics tools used for this study is as follows:

Initially to get a feel for the data, some descriptive statistics like mean and standard deviation were computed for all the variables. Then to answer the main objectives of the study i.e., to see the behaviour of the shooters before and during competition, paired sample t-test was conducted. The t-test was carried out at 5% as level of significance.

Further to study about the relationship between Self Confidence and Anxiety, and other variables in the study, Pearson’s Coefficient of Correlation was computed. The same was even tested for their significance using t-test at 5% as level of significance.