Chapter II
CHAPTER-II

METHOD AND PROCEDURE

Edwards (1956) believes that researches should be well planned and must be carried out using sound means and techniques for investigations. Scientists ascertain facts and analyse them in an unbiased manner to draw conclusions. Research design obviously plays a significant role in inference making, using behavioural observations on a limited number of subjects and making decision or predictions about the behaviour of the large group represented by these subjects. Mohsin (1984) opines that “research design depicts the plan which states the relation between observed facts and events on the basis of which conclusion could be drawn.” Further elaborating Ferguson (1981) asserts that several methodological approaches and designs have been developed but the choice of appropriate design depends upon the special characteristics of the sample, nature of measuring instruments and restraints regarding the manipulation of variables being studied. Thus, the aims of the study, the variable under investigation and the nature of data govern the choice of method.

The present study has been designed to study the relationship between attitude towards physical education, motor fitness, academic anxiety and academic achievement of class XI and XII students. The components of motor fitness as described earlier include 600-yd run/walk, 50-yd dash, shuttle run, standing broad jump, pull up and sit up. The most appropriate technique of measuring motor fitness is considered to be AAPHER Youth fitness test as described by Allen &
James (1979) and methods followed for carrying out the scientific work in hand has been described in this chapter.

DESIGN OF THE STUDY

A status-quo study has been designed to find out the attitude of school students towards physical education in relation to their motor fitness, academic anxiety and academic achievement.

SAMPLE

Random sampling technique was used to select 600 students consisting of equal number of male and female students from government and private schools of Chandigarh to act as subjects for the study. All the students belonged to XI and XII classes. There was a specific reason to consider XI and XII class students only because the subject of physical education starts only in these classes. Further data on 300 students consisting equal ratio of boys and girls who opted physical education as an elective subject were taken. Similarly 300 subjects including boys and girls were considered who did not opt physical education as an academic subject.

The break up of subjects is given below:

<table>
<thead>
<tr>
<th>Physical Education</th>
<th>Govt. Schools</th>
<th>Private Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>Opted as a subject</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Not Opted as subject</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

Approximately ten percent of total population of students of class XI and XII acted as subjects for the study.
TOOLS USED

1) **Edginton Attitude Scale**

   Edginton attitude scale (1965) measures attitude towards physical education. It is a likert type 6-point scale having 66 items. Half of the items are negatively and half positively worded. It has a split half reliability coefficient of .79. The discriminatory values of the items range between .30 to .90. The test is considered to be valid. Other researchers have also reported that it is sufficiently reliable and valid measure of attitude towards physical education (Thomas, 1996). [Appendix 2].

2) **AAPHER Youth Fitness Test Battery**

   AAPHER youth fitness test battery was used to evaluate the motor fitness of the subjects. The test battery consists of following items.

   A) 600-yd Run/walk  
   B) 50-yd dash  
   C) Shuttle Run  
   D) Pull Up  
   E) Standing Broad jump  
   F) Sit up
AAPHER Youth fitness test: Abilities that item measure

<table>
<thead>
<tr>
<th>S.no.</th>
<th>Items</th>
<th>Abilities measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>600-yd run/walk</td>
<td>Cardio respiratory endurance</td>
</tr>
<tr>
<td>B</td>
<td>50-yd dash</td>
<td>Speed</td>
</tr>
<tr>
<td>C</td>
<td>Shuttle run</td>
<td>Speed and agility (Coordination abilities)</td>
</tr>
<tr>
<td>D</td>
<td>Pull-up (boys) or Flexed arm hangs (girls)</td>
<td>Strength and endurance of arm and shoulder girdle.</td>
</tr>
<tr>
<td>E</td>
<td>Standing broad jump</td>
<td>Explosive power of leg extensor</td>
</tr>
<tr>
<td>F</td>
<td>Flexed leg sit up</td>
<td>Strength and endurance of abdominal and hip flexion muscles</td>
</tr>
</tbody>
</table>

3) Academic Anxiety Scale

To measure academic anxiety Singh and Gupta (1984) Academic Anxiety Scale was used. It has twenty items, sixteen items positively worded and four items negatively worded. A score of one is assigned on yes/no responses. A low score obtained indicates low academic anxiety.

Test retest reliability coefficient on a sample of 100 subjects with 14 days gap was found to be 0.60. Split half reliability coefficient (n=100) for another sample was 0.65.
The academic anxiety scale for children was validated against simple anxiety test, Neuroticism scale of MPI and CAAT. The following results were obtained.

<table>
<thead>
<tr>
<th>Test</th>
<th>Criterion</th>
<th>Correlation</th>
<th>N</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Anxiety Scale (AASC)</td>
<td>Neuroticism Scale</td>
<td>0.31*</td>
<td>100</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>Sinha Anxiety Scale</td>
<td>0.41*</td>
<td>100</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td></td>
<td>CAAT</td>
<td>0.57*</td>
<td>100</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

*Significant

The test was found to be reliable and valid. [Appendix 3].

**SCORING PATTERN**

**Edginton Attitude Scale**

The scoring pattern given by the authors is a self-evaluation questionnaire of 66 statements in which 33 are positive and 33 are negative responses.

The subjects respond to each statement using a six point likert scale varying from.

i) 1 (Very strongly agree for negative statement and very strongly disagree for positive statement)

ii) 2 (Strongly agree for negative statement and strongly disagree for positive statement)
iii) 3 (Agree for negative statement and disagree for positive statement)

iv) 4 (Agree for Positive statement and disagree for negative statement)

v) 5 (Strongly disagree for negative statement and strongly agree for positive statement)

vi) 6 (Very strongly agree for positive statement and very strongly disagree for negative statement) in order of intensity of feeling.

The minimum pole of response stands at 66 and maximum pole at 396. Score above 264 would indicate an attitude on favourable side. Each item is scored separately and then summed up to get a total score.

[Appendix 2].

AAPHER Youth Fitness Test

The items of the test were grouped on the basis of time, distance covered and number of repetitions. 600 yd run/walk, 50 yd dash, shuttle run and hanging up (in case of girls) were scored against the time the subjects clicked. The score of standing broad jump was calculated according to the distance covered during the jump by the individual. The score of pull-ups and sit-ups were obtained by counting the number of repetitions.

Academic Anxiety Scale

The maximum possible score of this test is 20. Each item of the test is scored either 1 or 0. There are two types of items positive and negative. All positive items, which are endorsed by the subjects as “yes”, and all negative items, which are endorsed by the subjects as ‘No’, are given a score of 1. A score of zero is awarded to all other answers. Thus
high score on the test indicates high academic anxiety and low score on the test indicates low academic anxiety. [Appendix 3].

Academic Achievement

Marks of annual examination of Xth and XIth classes were considered as the academic achievement of the subjects.

ADMINISTRATION OF MOTOR FITNESS TEST AND COLLECTION OF DATA

A) 600 YARD RUN/ WALK

Equipment used: Stopwatch

Description

The test was conducted on 100-yd track marked by researcher. Instructions were given to all the subjects about start, finish and the laps they have to complete. Five subjects ran at a time. The subjects took standing start. At the signal “on your marks” and the sound “go” the subjects started off. At the finish line 4 to 5 students helped the researcher to find out the positions of subjects. The timing was noted down according to the position of the subjects. The subjects were permitted to complete the test by running or walking or both. Time was recorded in minutes and seconds as one’s score.
B) 50 YARD DASH

**Equipment used:** Measuring Tape, Stopwatch and a Clapper

**Description**

One subject runs at a time. He took position behind the starting line. The researcher stood at the finish line with stopwatch. The physical education teacher of the school gave the command “on your mark” and flag down with command “go” simultaneously. The researcher started the watch as the flag lowered and stopped the watch when the subject crosses over the finish line. Time taken by the subject was recorded.

C) SHUTTLE RUN

**Equipment used:** Two Batons and a Stopwatch

**Description**

Two parallel lines 30 feet apart were marked on the ground. Two batons were placed on one of the lines. The subjects started from behind the other line. On the signal “Ready, Go” the subjects runs to the batons, picks up one, runs back to the starting line and puts the baton on starting line. He then runs back and picks up the second baton, which he carried back to the starting line. Two trials were allowed with an interval during which another pair of students was tested. Best time of the two trials was recorded.
D) SIT-UP

Equipment used: Stopwatch and mats

Description

The subjects were asked to assume a supine lying position on the floor with knees bent to an angle a little less than 90 degrees, hands held behind the neck. A partner held down the feet. The subject brought his head and elbow forward in a Curl-up motion, after touching the knee subject has to go back to his starting position. The finger remains locked behind the neck throughout the exercise. The subjects were given only 60 seconds to perform the sit-ups. Number of correctly executed sit-ups performed in one minute was recorded as the score.

E) STANDING BROAD JUMP

Equipment used: Measuring tape and jumping pit

Description

The subject stood behind the starting line with feet comfortably apart and the toes just behind the take-off line. Preparatory to jump, the subject swings the arm backward and bent the knees. Simultaneously extending the knees and swinging forward the arms accomplished the jump. Three trials were allowed. Measurements were taken from the take off line to that part of the body that touched the pit nearest to the take off line. Running or stepping was not permitted. The best out of three trials was recorded as his score.
F) PULL-UP (For Boys)

Equipment used: Horizontal bars

Description

The horizontal bar was high enough so that the subject could hang with his arms and legs fully extended and his feet were off the floor. The subjects were asked to use the over handgrip. After assuming the hanging position the subject raised his body by his hands until his chin crosses over the bar and then lowered his body to a full hang as in the starting position. The exercise was repeated as many times as possible. Only one trial was allowed unless it was obvious that the subjects had not a fair chance. The swing of the body was not allowed during the execution of the movement. The raising of the knees and kicking of the legs were not permitted.

The number of completed pull-up was recorded as one’s score.

G) FLEX ARM HANG (for girls)

Equipment used: Horizontal bar and a Stopwatch

Procedure

The flex arm hang was substituted for the modified pull-up. It is a more efficient and reliable measure of arms and shoulder girdle strength for girls. The subject raises her body off the floor to a position where the arms are flexed.

Rules

(i) Bar was gripped overhead.

(ii) The head was in line with the body and not tilted backward.
(iii) Swinging was not allowed.

The time elapsed to the nearest second from the time, the girl assumes the hanging position until she is no longer able to maintain the chin above the bar, is the score.

CONDUCT OF TEST AND COLLECTION OF DATA

The researcher individually collected the data from selected schools. The subjects were contacted through the physical education teacher of each school and the procedure was explained. On the first visit to the school the selected subjects were seated in a classroom. The purpose of the research and its significance in teaching learning process was explained to them. An assurance of sincere and honest co-operation was obtained from the subjects. The questionnaire were distributed to them and the instructions were explained in detail as laid down in the manual of the scale so that no doubt was left in the minds of the subject for giving their candid responses to the questionnaire. Duly filled response sheets of each questionnaire were collected back by the investigator.

The second and third visit was on the following working days of the school to conduct motor fitness test. Motor fitness test was staggered to two days. The first three items were conducted in one group and the remaining three in the second group.

Academic achievement was taken from the school records of the subjects, which was based on the academic results of their Xth and XIth classes.
HYPOTHESES

a) There would be significant relationship between academic anxiety and attitude of student towards physical education.

b) There would be significant relationship between motor fitness and attitude of students toward physical education.

c) There would be significant relationship between academic achievement and attitude towards physical education.

d) There would be no significant difference between male and female students in their attitude towards physical education.

e) There would be no significant difference in the attitude of student opting and not opting physical education as an elective subject.

f) There would be no significant difference in attitude towards physical education between the students studying in Government and Private schools.

STATISTICAL DESIGN

Product moment coefficient of correlation was used to find out relationship of attitude towards physical education with motor fitness, academic anxiety and academic achievement. Analysis of variance was used to find out significant difference between various groups of subjects as per the explanation given earlier in this chapter. t-test was applied to test the hypotheses.