CHAPTER III

METHODOLOGY

3.1 INTRODUCTION

This chapter explains about the selection of subjects, experimental design, selection of variables, criterion measures, reliability of the data, orientation of the subject, collection of data, pilot study, training protocol, and statistical procedure used.

3.2 SELECTION OF SUBJECTS

To achieve the purpose of the study the investigator selected 200 subjects as 100 school boys and 100 girls at junior level. 50 boys and 50 girls were beginners who played basketball upto interzonal or interschool level and 50 boys and 50 girls were district level players who played upto district level or divisional level. The age group of the selected subjects was from 12 to 14 years. The subjects were selected from 20 different schools in Tamil Nadu, India.

3.3 EXPERIMENTAL DESIGN

The static group comparison design was used for the purpose of the study. Selected subjects were divided into four equal groups consisting of 50 subjects each. 50 junior boys in beginner group (Beginner Boys Group, BBG), and 50 junior boys in district level group (District Boys Group, DBG). And, the girls also divided into 50 junior girls of beginner group (Beginner Girls Group, BGG) and 50 junior girls of district level group (District Girls Group, DGG).

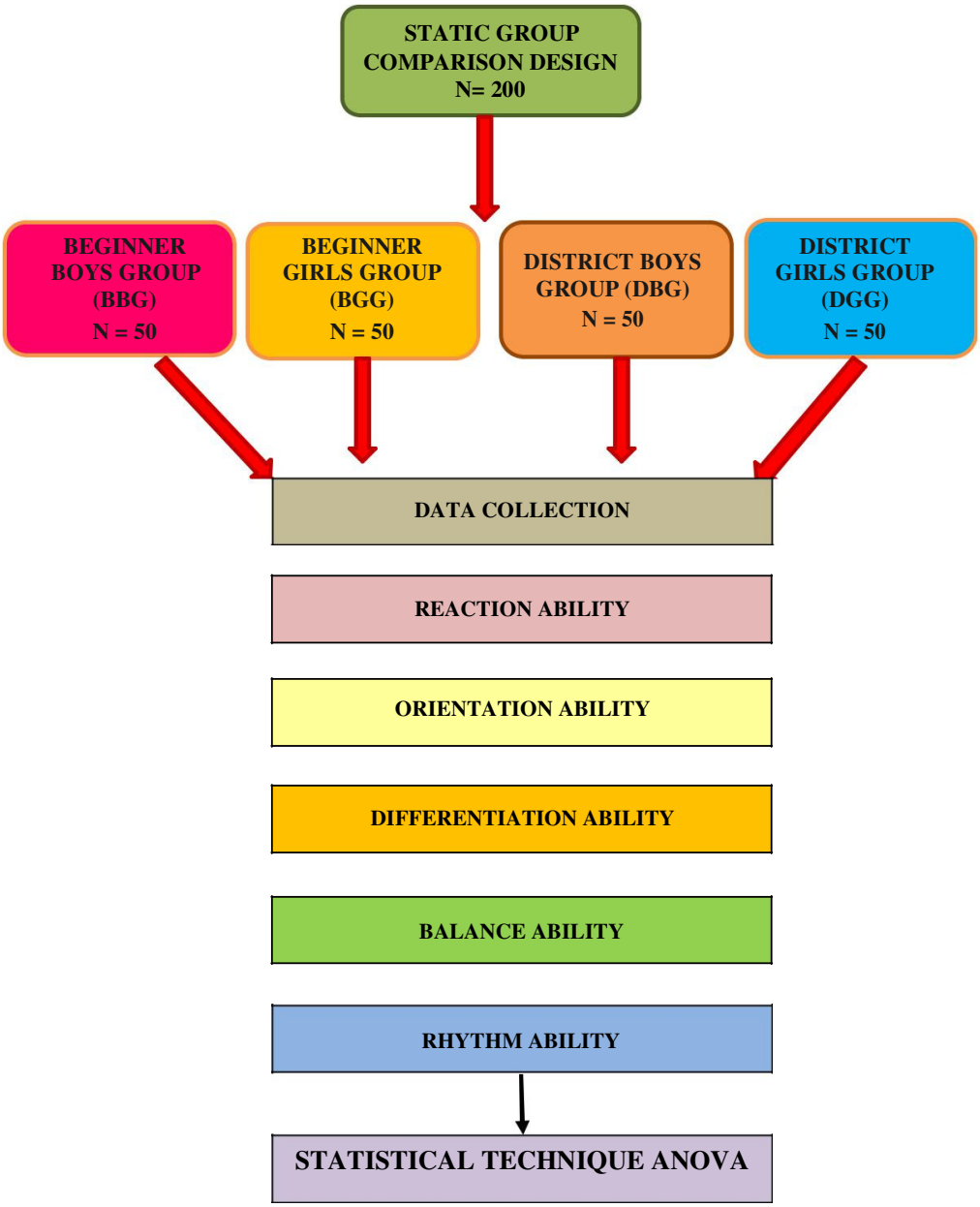

Figure 1 Showing the diagrammatic representation of the research study

3.4 SELECTION OF VARIABLES

The investigator reviewed the available scientific literature pertaining to the selection of variables. The selected co-ordinative ability variables are reaction ability, orientation ability, differentiation ability, balance ability and rhythm ability.

Table I

The Criterion Measures

Variables	Test	Unit
Reaction ability	Ball reaction exercise	Centimeters
Orientation ability	Numbered ball run	Seconds
Differentiation ability	Backward medicine ball throw	Point
Balance ability	Long nose ball walk	Seconds
Rhythm ability	Sprinting at given rhythm	Seconds

3.5 ORIENTATION OF SUBJECTS

Before the collection of the data, the subjects were oriented about the purpose of the study. The investigator explained the procedure of assessing the co-ordinative abilities reaction ability, orientation ability, differentiation ability, balance ability and rhythm ability. The selected subjects had experienced these testing procedures several times before the commencement of the final test.

3.6 RELIABILITY OF DATA

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

3.7 INSTRUMENT RELIABILITY

With respect to the instruments used in measuring the co-ordinative abilities reaction ability, orientation ability, differentiation ability, balance ability and rhythm ability variables certificate of accuracy was obtained from appropriate instrument testing agency. And, also by recalibrating the scale using known amount of variables wherever required is done prior to the testing.

3.8 TESTER'S RELIABILITY

The assistance of two specially trained physical education teachers was sought to administer the various test items. They were oriented about the procedures of measuring and recording the scores in each variable.

3.9 SUBJECT RELIABILITY

The subject reliability was established by test and retest method using co-efficient of correlation for the scores in each of the criterion measures. Re – testing was done within a period one week in each of the variables to get data for calculating test and re-test coefficient of correlation for reliability of the subjects

The obtained values were presented in Table-II. The table shows the very high value of correlations from 0.85 to 0.97 and there by the investigator established competency in conducting the tests as well as the reliability of the instruments.

Table II

Reliability Co-efficient of Test Retest Scores

Sl.no	Variables	Co-efficient of Reliability			
		Beginner Boys	Beginner Girls	District Boys	District Girls
1.	Reaction ability	0.97	0.91	0.89	0.92
2.	Orientation ability	0.96	0.95	0.88	0.87
3.	Differentiation ability	0.95	0.92	0.96	0.91
4.	Balance ability	0.91	0.90	0.92	0.93
5.	Rhythm ability	0.92	0.87	0.85	0.89

r = 0.55 significant at 0.05 level

3.10 COLLECTION OF DATA

The selected subjects were made to perform all the five tests and data were collected and recorded.

3.11 ADMINISTRATION OF TESTS

The necessary data were collected by administering various co-ordinative ability tests as suggested by Peter Hirtz (1985). The necessary markings were done before the start of the test and the scholar strictly followed the specification as mentioned in the test. The entire tests were demonstrated and explained to the subjects by the scholar. They were given a chance to practise and become familiar with the tests and to know exactly what has to be done. There was no time limit in performing the tests but, the subjects were requested to put in their maximum effort.

3.12 BALL REACTION EXERCISE TEST

Objective

This test was administered to measure the reaction ability of the subjects.

Equipments

1. Two wooden planks each of 4 m. length.
2. One inflated Volleyball.
3. A supporting stand.
4. Pencil, Papers and Pad.

Figure 2 Ball Reaction Exercise Test

Description

Two wooden planks of four meters each kept inclined by a supporting stand having a height of one meter and twenty centimeters as shown in Fig. 2,that it could enable a volleyball to roll freely from a height of 1.20 mts the lower ends of wooden planks werekept at a distance of 1.5 mts away from the starting line outer side of one of the planks was graduated in centimeters. Volleyball was held by the

tester at the top of the plank. The subjects were asked to stand behind the starting line, facing opposite to the plank.On clapping, the subject took a turn and ran towards the planks and stopped the ball with both the hands which was dropped on the signal. Each subject was given a practice trail before actual commencement of the test.

Instructions

1. The ball should be stopped with both hands.
2. The ball should not be pushed upward while stopping.

Scoring

The score was the distance measured in centimeters. From the top of the planks to a point where the subject stopped the ball. Only two trials were given and the best one was recorded as the score of the subject.

3.13 NUMBERED MEDICINE BALL RUN TEST

Objective of the Tests

To determine orientation ability of the subjects.

Equipments

1. Five medicine balls each weighing 3 kgs.
2. One medicine ball weighing 4 kgs.
3. Stop watch.
4. Clapper.
5. Pencil, Papers and Pads.

Figure 3 Numbered Medicine Ball Run Test

Description

All the medicine balls weighing 3 kgs were arranged as shown in Fig. 3on an even ground in a semi circle with a distance of 1.5 m. between the balls. The subjects medicine ball weighing 4 kgs was kept 3 m. away from these medicine

balls. Behind all the medicine balls of 3 kg.weight, metallic number plates of 1 sq. foot size were kept, from 1 to 5. Before the start of the test the subjects were asked to stand behind the sixth medicine ball facing toward the opposite direction. On signal the subjects turned and ran towards the number called by the tester and touched the medicine ball and run back to touch the sixth medicine ball, immediately another number was called. Similarly, a total of three times the number was called by the tester and the subjects performed accordingly. Before the actual test was administered, one practice trial was given to all the subjects.

Scoring

The time taken to complete the course was noted in seconds. Two trials were given to each subject and the better one was recorded as score.

3.14 BACKWARD MEDICINE BALL THROW TEST

Objective of the Tests

The test was administered to assess the differentiation ability of the subjects.

Equipments

1. A gymnastic mat, size 3x6.
2. One medicine ball weighing 2 kgs.
3. Five medicine balls weighing 1 kg.
4. Pencil, papers and pad.

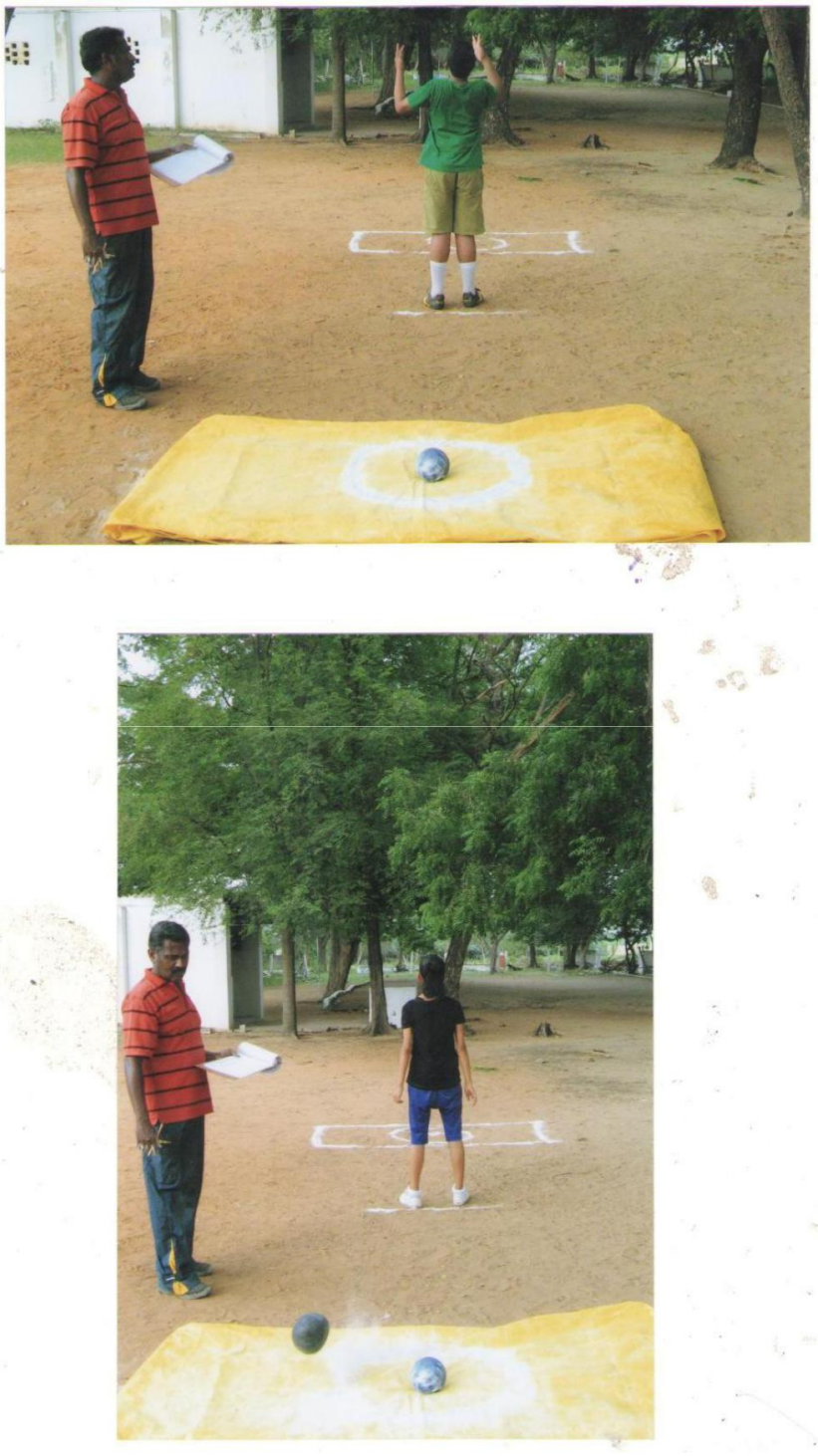

Figure 4 Backward Medicine Ball Throw Test

Description

A gymnastic mat was kept 2mts away from the starting line as shown in Fig. 4. A circle of 40 cm radius was drawn in the middle of the mat and a medicine ball of 2 kgs kept at the center of the circle. The subjects were asked to stand behind the starting line facing the opposite direction. They were asked to throw five medicine balls (1kg) over the head to hit the 2 kgs ball kept on the mat, one after another by using both the hands. One practice trial was given to all the subjects.

Instructions

1. One overhead throw was permitted.
2. The students were not allowed to look back.

Scoring

1. Medicine ball touching the mat = 1 pt.
2. Medicine ball touching the circle line = 2pts.
3. Medicine ball inside the circle = 3 pts.
4. Medicine ball touching the ball (2kg medicine ball kept at the center of the circle) = 4 pts.

Points were decided considering the 1st pitch of the ball. The score of the individuals was the total points scored in all the five throws.

3.15 LONG NOSE TEST

Objective

The test was administered to measure the balance ability of the subjects.

Equipments

1. Balancing beam.
2. One medicine ball weighing 2 kg.
3. One medicine ball weighing 1kg.
4. Stop watch.
5. Pencil, papers and pad.

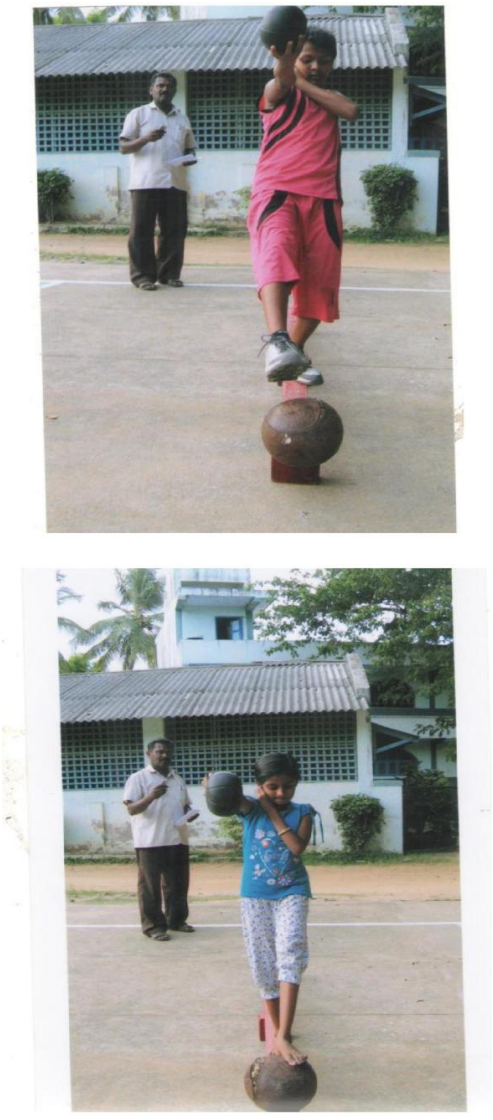

Figure 5 Long Nose Test

Description

A balancing beam of standard size was kept on the floor, one and half meter away from the starting line as shown in Fig. 5. The subject was asked to stand behind the starting line with one kg. Medicine ball on his strong hand fully stretched forward and the other hand holding the opposite ear lobe. On clapping, the subject moved over the balancing beam towards the 2 kgs medicine ball which was kept at the other end of the beam, pushed down the medicine ball with any of back to the starting line without losing the balance. Each subject was given only one chance.

Instructions

1. The arm with which the ball is carried should be kept straight.
2. The medicine ball kept on the balancing beam should be rolled down with either foot.

Scoring

The time taken in seconds to complete the course was taken as the score. At the same time the subjects who failed to complete the task were not given further trial and no score was awarded.

3.16 SPRINT OF GIVEN RHYTHM TEST

Objective

The test was administered to determine the rhythm ability of the subjects.

Equipments

1. Eleven gymnastic hoops each 1m. in diameter.
2. One stop watch.
3. One measuring tape.

Figure 6 Sprint of Given Rhythm Test

Description

The subject had to run a distance of 30mts with maximum sprinting speed marked between two lines. The sprinting time of the subject was taken by stop watch. In the second attempt the subject had to run at a particular rhythm with maximum speed through eleven hoops which were arranged systematically as show in Fig. 6. Three hoops were kept in a sequence adjacent to each other at a distance of

5mts away from the starting line. Similarly three hoops were kept at a distance of 5mts from finishing line. Five more hoops were kept in a sequence in the middle of the running distance. The subject had to run through these hoops stepping between each of them adjusting to the new self-rhythm. The research scholar explained the test along with one demonstration and each subject was given one trial run.

Scoring

The difference between the timings of 1st and 2nd attempt was taken as the score

3.17 STATISTICAL TECHNIQUE

To characterize elite basketball players to their standard human performance measures by selected co-ordinative abilities, mean and standard deviation were used.

To compare the selected co-ordinative abilities among basketball player belonging to four levels (beginner (interschool/interzonal) level junior boys and girls, state level boys and girls), one way Analysis Of Variance (ANOVA) was used and the level of significance was fixed at 0.05 level. To find out the significant difference among the mean Scheffe's Post-hoc test was administered.