Chapter – III

PROCEDURE

In this chapter selection of the subjects, selection of the variables, criterion measures, collection of data, design of the study, administration of coordination ability tests and statistical technique for the analysis of data is described.

SELECTION OF SUBJECTS

For the purpose of the study one hundred twenty female Kabaddi players were selected. Forty subjects were selected from each playing positions i.e. Raider, Corner, Blocker and All-Rounder. Thirty subjects were selected from each levels i.e. National, State and District.

SELECTION OF VARIABLES

The study was taken on the basis of available literature of Coordinative Abilities and their tests findings of the related research studies. Keeping in the mind about specific purpose of the study, the following Coordinative Abilities were selected:

1. Orientation Ability
2. Differentiation Ability
3. Balance Ability
4. Reaction Ability
5. Rhythm Ability

CRITERION MEASURES

Criterion measures for testing the hypothesis were following:

1. The Orientation Ability was measured by using numbered medicine ball run test and was recorded in seconds.
2. Differentiation Ability was measured by using backward medicine ball throw test and was recorded in points.
3. Balance Ability was measured by using long nose test and was recorded in seconds.

4. Reaction Ability was measured by the ball reaction exercise test and was recorded in centimetres.

5. Rhythm Ability was measured by using sprint at given rhythm test and was recorded in seconds.

**COLLECTION OF DATA**

The data was collected from different districts of Uttar Pradesh by approaching different clubs, and stadiums. During data collection trainers / coaches were requested to instruct their players for cooperation for data.

**RELIABILITY OF DATA**

Reliability of data depends upon the instrument’s reliability, tester’s competency, subject’s reliability and reliability of the test. The reliability of these test items were established scientifically by using test-retest method.

**INSTRUMENTS’ RELIABILITY**

The medicine balls, stop watches, Measuring tapes, volleyballs, etc used in the study were obtained from the standard firms which catered to the needs of various research laboratories in India and abroad and their calibrations were accepted as accurate enough for the purpose of this study. Hence, the instruments were considered reliable.

**TESTER’S COMPETENCY AND RELIABILITY OF DATA**

To ensure that the researcher was well-acquainted with the techniques of conducting the tests, she had a number of trials/practice sessions with respective experts. All the measurements were taken by the scholar and her assistants, who were all acquainted with the tests and their testing procedures.

The evaluation of tester competency was made together with the reliability of tests, established by test-retest method whereby consistency of results was obtained by
Product moment correlation. The data was collected from a 10 subjects in test-retest, was computed for each variable and correlations obtained have been presented in Table-1.

Since very high correlations (0.81 to 0.86) were obtained, investigator’s competence to administer the tests and the reliability of tests were established.

Table- 1

<table>
<thead>
<tr>
<th>Coordinative Abilities</th>
<th>Coefficient of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation Ability</td>
<td>86*</td>
</tr>
<tr>
<td>Differentiation Ability</td>
<td>85*</td>
</tr>
<tr>
<td>Reaction Ability</td>
<td>81*</td>
</tr>
<tr>
<td>Balance Ability</td>
<td>82*</td>
</tr>
<tr>
<td>Rhythm Ability</td>
<td>85*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level

From Table-1, it is evident that tester’s reliability was significantly high thus establishing the competence of the scholar to administer the tests.

The correlation coefficients also indicated the reliability of the tests selected as very high correlations were obtained, when the tests were repeated.

SUBJECTS RELIABILITY

The above test-retest coefficients of correlation method also established that subjects’ reliability was significant at .05 level, as the same subjects were used under similar conditions by the same tester and no motivational techniques were used nor any training given.
DESIGN OF THE STUDY

4x3 factorial design was used for the study. Total four playing positions were selected at three levels (National, State and District).

<table>
<thead>
<tr>
<th>Different Playing Positions</th>
<th>Raiders</th>
<th>Corners</th>
<th>Blockers</th>
<th>All - Rounders</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>State</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>District</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>120</td>
</tr>
</tbody>
</table>

ADMINISTRATION OF TEST

The tests were administered with the help of a team testers and research assistants under the guidance and supervision of the experts and the investigators. Different stations as testing spots were arranged in a sequence so that the subjects were able to move from one testing station to the other one by one.

ADMINISTRATION OF COORDINATIVE ABILITIES TEST

The necessary data was collected by administering Coordinative Abilities tests as suggested by Peter Hirtz.

The necessary work was done before the start of the test. All the tests were administrated and explained to the subjects by the research scholar.
(1) Numbered Medicine Ball Run Test

**Objective:** To determine Orientation Ability of the subjects.

**Equipments:**

1) Five medicine balls each weighing 3 kg.
2) One medicine ball weighing 4 kg.
3) Stop watch
4) Five metallic numbered plates
5) Clapper
6) Pencil, papers and clipboard

**Description:** All the medicine balls weighing 3 kilograms were arranged on an even ground in a semi-circle. The sixth medicine ball weighting 4 Kg. was kept 3 m. away from these medicine balls. Behind all the medicine ball of 3 kg, metallic number plates of 1 square 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 towards the opposite direction. On signal, the subject would turn and run towards the ball, number was called by the tester and touching the medicine ball subject would run back to touch the sixth medicine ball, immediately another number was called. Similarly, three times the number was called by the tester and the subject performed accordingly. Before the actual test, 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 best one was recorded as score.
Fig. 1: Numbered Medicine Ball Run Test

(2) Backward Medicine Ball Throw Test

Objective: To assess the Differentiation Ability of the subjects.

Equipments:

1) A gymnastic mat, size 3 x 6
2) One medicine ball weighting 2kg
3) Five medicine balls weighing 1 kg. each
4) Pencil, papers and clipboard

Description: A gymnastic mat was kept 2 meters away from the starting line. A circle of 40 cm. radius was drawn in the middle of the mat and a medicine ball of 2kg was 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. each) over the head to hit the 2 kg. Ball kept on the mat, one after another by using both the hands. One practice trial was given to all the subjects.
**Instructions:**

1) Only overhead throw was permitted.

2) The students were not allowed to look back.

**Scoring:**

1) Medicine ball touching the mat – 1 point

2) Medicine ball touching the circle line – 2 points

3) Medicine ball touching inside the circle – 3 points.

4) Medicine ball touching the 2kg. Medicine Ball – 4 points.

Points were decided considering the first pitch of the ball. The score of the individual was the total points scored in all the five throws.

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**DIFFERENTIAL ABILITY**

Fig. 2: Backward Medicine Ball Throw Test
(3) Long Nose Test

**Objective:** To determine the Balance Ability of the subjects.

**Equipments:**

1) Balancing beam
2) One medicine ball weighing 2 Kg
3) One medicine ball weighing 1 kg
4) Stop watch
5) Pencil, paper and clipboard

**Description:** A balancing beam of standard size was kept on the floor one and half meters away from the starting line. The subjects were asked to stand behind the starting line with one kilogram medicine ball in 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 kilogram medicine ball which was kept at the other end of the beam, pushed down the medicine ball only by foot and moved back to the starting line without losing the balance over the beam.

**Instructions:**

i) The arm with which the ball is carried should be kept straight.

ii) The medicine ball kept on the balancing beam should be rolled down with either foot.

**Scoring:** Only one chance was given to each subject. The time taken to complete the course was the score. At the same time, the subject who failed to complete the task without losing balance was not given any further trial and no score was awarded.
LONG NOSE TEST

Fig. 3: Long Nose Test

(4) Ball Reaction Exercise Test

Objective: To measure the Reaction Ability.

Equipments:

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

Description: Two wooden planks of 4 meters in length, each kept inclined by a supporting stand having a height of one meter and twenty centimeters, so that it could enable volleyball to roll freely from a height of 1.20 meters. The lower ends of the wooden planks were kept at a distance of 1.5 meters away from the starting line; outer sides of one of the planks were graduated in centimeters.
Volleyball was held by the tester at the top of the planks. The subjects were asked to stand behind the starting line, facing opposite to the planks. 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 trial before actual commencement of the test.

**Instructions:**

1) The ball should be stopped with both the hands.

2) The ball should not be pushed upwards while stopping.

**Scoring:** The score was the distance measured in centimeters from the top of the planks to a point where the subjects stopped the ball. Each participant was given two trials and the best one was recorded as the score.

**REACTION ABILITY**

Fig. 4: Ball Reaction Exercise Test
(5) Sprint at the Given Rhythm Test

Objective: To determine the Rhythm Ability of the subjects.

Equipments:

i) Eleven gymnastic hoops, 1 meter in diameter each

ii) One stop watch

iii) One measuring tape

Description: The subject ran a distance of 30 meters with maximum sprinting speed marked between two lines. The sprinting time of the subjects was taken by stop watch. In the second attempt the subject ran at a particular rhythm with maximum speed through eleven hoops which were arranged systematically. Three hoops were kept in a sequence against each other at a distance of 5 meters from the starting line. Similarly, three hoops were kept at a distance of 5 meters from the finishing line. Five more hoops were kept in a sequence in the middle of the running distance. The subject ran through those hoops, stepping in between each hoop. The scholar explained the test with one demonstration and each subject was given one trial run.

Scoring: The difference between the timing of first and second attempt was taken as the score.
**SPRINT AT GIVEN RHYTHM**

![Diagram of sprint at given rhythm test]

**RHYTHM ABILITY**

*Fig. 5: Sprint at the Given Rhythm Test*

**STATISTICAL TECHNIQUE**

- To compare selected Coordinative Abilities among Raiders, Corners, Blockers, and All-Rounders in Kabaddi, to compare selected Coordinative Abilities among different levels (National, State, District) and to find out the interaction of playing positions and levels, Two way analysis of variance was used.

- The level of significance was set at 0.05.