CHAPTER – III

METHODOLOGY

The highlights of the study are in three phases. In phase I, the explanation and presentation of newly constructed test to find out the subject's reliability and testes' competency were presented. In phase II, the appropriate tests were extracted and compared with the criterion tests and established validity, reliability and objectivity. In phase III, norms were constructed for the newly constructed tests. The detailed procedure of each phase is presented in this chapter.

3.1. PHASE I

In this phase I, selection of tests, description of new tests, selection of subjects, subjects' reliability, instruments' reliability and testers' competency are described.

3.1.1 Construction of New Skill Test

Everything is changing rapidly in the present times. The Field of Games and Sports is not an exception to this phenomenon. The skill test of ability of the volleyball game is outdated and the time has come to find out new test to assess the ability. The newly constructed test must measure the ability of the player in the environment which is very similar tests and gain validity. It should also have a standardized procedure for the administration. Bearing this in mind, a couple of tests of ability are proposed in volleyball. The first two tests are service placements and other two tests are underarm pass skill tests.

3.1.2 Selection of Skills in volleyball for the Construction of skill test1

For this purpose, the research scholar after a careful review and study of the latest literature, consultations with experts, senior coaches, players in the field of Volleyball and with his own experience decided to select service placement skill and underarm pass skill which are considered most important among various skill in the game of Volleyball for the construction of new skill tests. Volleyball is a typical game played in all forms. Playing Volleyball is useful for physical fitness as well as for pleasure and enjoyment. The research scholar with fifteen years of experience as a player has come to a strong decision that the under arm pass and service skill are

important in Volleyball. Hence the researcher has made certain improvisations and standardizations for the above said skills.

3.1.3 Description of New Skill Tests in Volleyball

Volleyball Service Placement Test-1

Objective

To measure the ability to serve the volley ball low and deep into the opponent's court.

Equipment

Well inflated approved size of volleyballs, net, chalk powder, measuring tape and scoring sheets are required for data collection.

Test area

Standard volley ball court.

Description of Markings

The standardized volleyball court is chose. The court is divided into 9 zones, with 3X3 meter square as shown in figure – 1

Administration

The research scholar demonstrated the test to the students with full explanation. The subjects were allowed for a ten minute warming up on the same court. After that, the subjects were asked to stand with the ball behind the baseline On command, the subject served the ball into any one of the target zone over the net without violating the service rules in volleyball.

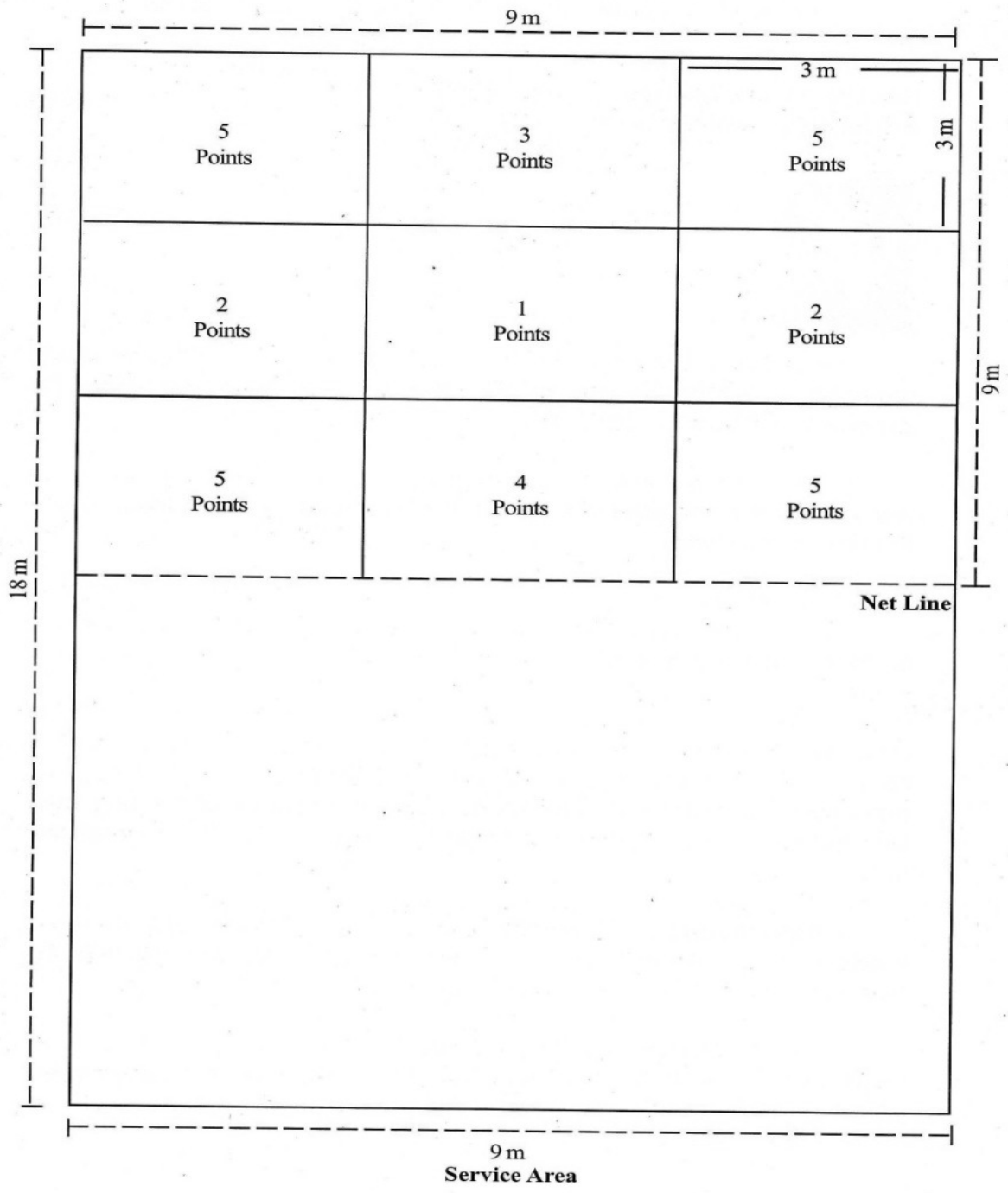
Scoring

The serving target area was divided into 9 zones as shown in figure 1. Three trials were given to the subject. Each trial consisted of 10 number of services. Each service which landed in the target area was counted on the basis of the value of the target area. The ball served on the lines got the maximum points. The service rules were taken into consideration for assessing the ability of the subjects.

The sum of the score of ten services was calculated as the final score of trial and likewise, three trials were given to the trainees. Best trial was taken. The foot faults and landings outside the target area were given zero marks.

FIGURE – 1

NEWLY CONSTRUCTED VOLLEYBALL SERVICE PLACEMENT TEST - I



Volleyball Service Placement Test –II

Objective

To measure the ability to serve the volley ball low and deep into the opponents court.

Equipment

Well inflated approved size of volleyball, standard net, chalk powder measuring tape and scoring sheets were required.

Test Area

Standard volleyball court.

Description of Markings

The standardized volleyball court was chosen. The court was divided into 16 zones with 2.25 meters square as shown in figure-2.

Administration

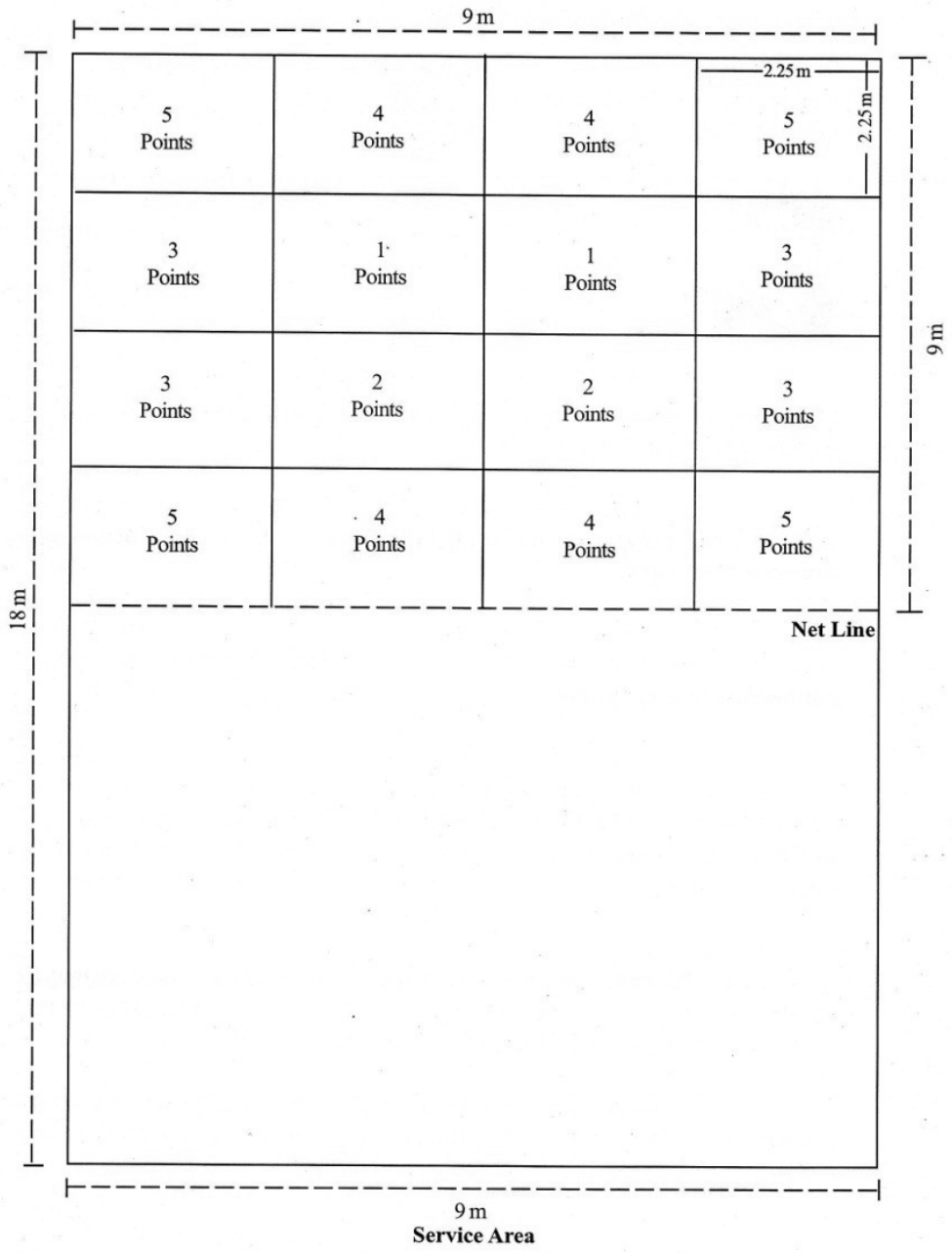
The research scholar demonstrated the test to the students with full explanation. The subjects were allowed ten minute warming up on the same court and asked to stand with the ball behind the base line. On command 'GO' the subject served the ball into any one of the target zone over the net without violating the service rules.

Scoring

The serving target area was divided into 16 zones as shown in figure 2. Three trials were given to the subject. Each trial consisted of 10 services. Every service landed in the target area was counted on the basis of the value of the target area. The ball served on the lines got the maximum points. The service rules were taken into consideration for assessing the ability of the subjects. The sum of the scores of ten services was calculated as the final score, and likewise three trials were given to the trainees. Best trial was taken. The foot faults and ball landing outside the target area were given zero marks.

FIGURE – 2

NEWLY CONSTRUCTED VOLLEYBALL SERVICE PLACEMENT TEST - II



Underarm pass (Wall Volleyball) Test –I

Objective

To evaluate the ability, accuracy and speed with which a player can volley (underarm) the ball against a wall within the target area.

Equipment and Markings

On a solid smooth wall a line of 2 meters was drawn at the height of 2.43 meters. Similarly, another line of 2 meters was drawn at the height of 2.73 meters. The space between the two parallel lines was considered as the target area. A restraining line was marked at a distance of 1 meter away from the wall as shown in figure 3. A stop watch, a scoring sheet and 3 volley balls were required test station.

Directions

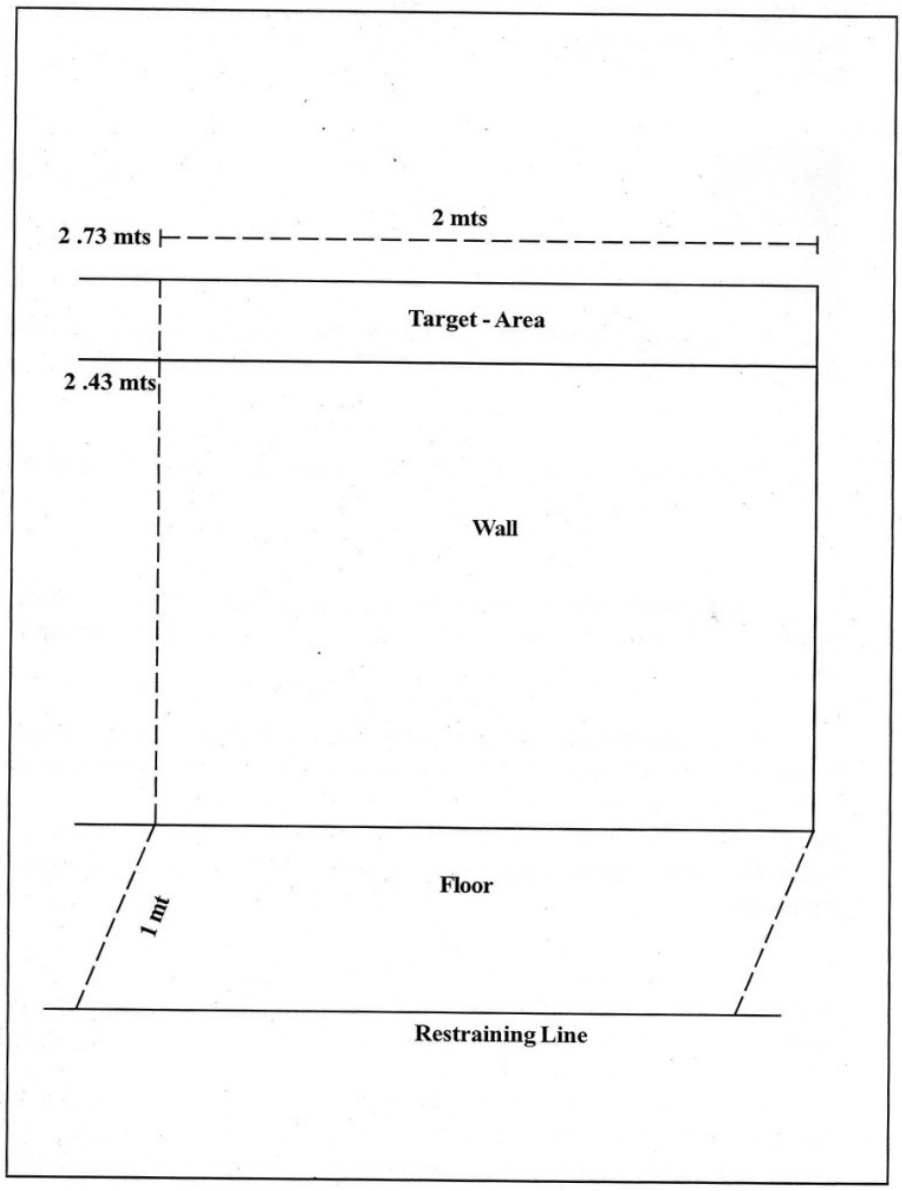
The research scholar demonstrated the test to the subjects with full explanation. The subjects were allowed 10 minute warming up on the target area. The player with volleyball in his hands was standing behind the 1 meter restraining line in a ready position. On command ‘Go’ the ball was tossed against the wall marked by the 2.43 to 2.73 meters in between the target area. On rebound, the ball was again volleyed against the wall on the target area repeatedly. If the ball goes out of control, it must be retried by the subject and put into play again from behind the 1 meter restraining line.

Scoring

The total number of legal volleys executed within 60 seconds was considered as the score. Each subject was given three trials. The tosses were not counted as score.

FIGURE – 3

NEWLY CONSTRUCTED UNDER ARM PASS (Wall volley) test -I



Underarm pass (Wall Volley) Test –II

Objective

This test was to measure the ability and speed with which a player can volley the ball against a wall.

Equipment and Markings

On a solid smooth wall, a line of 2.43 meters is drawn. Similarly another line of 2.93 meters is drawn. The space between these two parallel line has been considered as a target area. A restraining line was marked at a distance of 1 meter away from the base of the wall as shown in figure 4. A stop watch, a scoring sheet and 3 Volley balls were required for each test station.

Directions

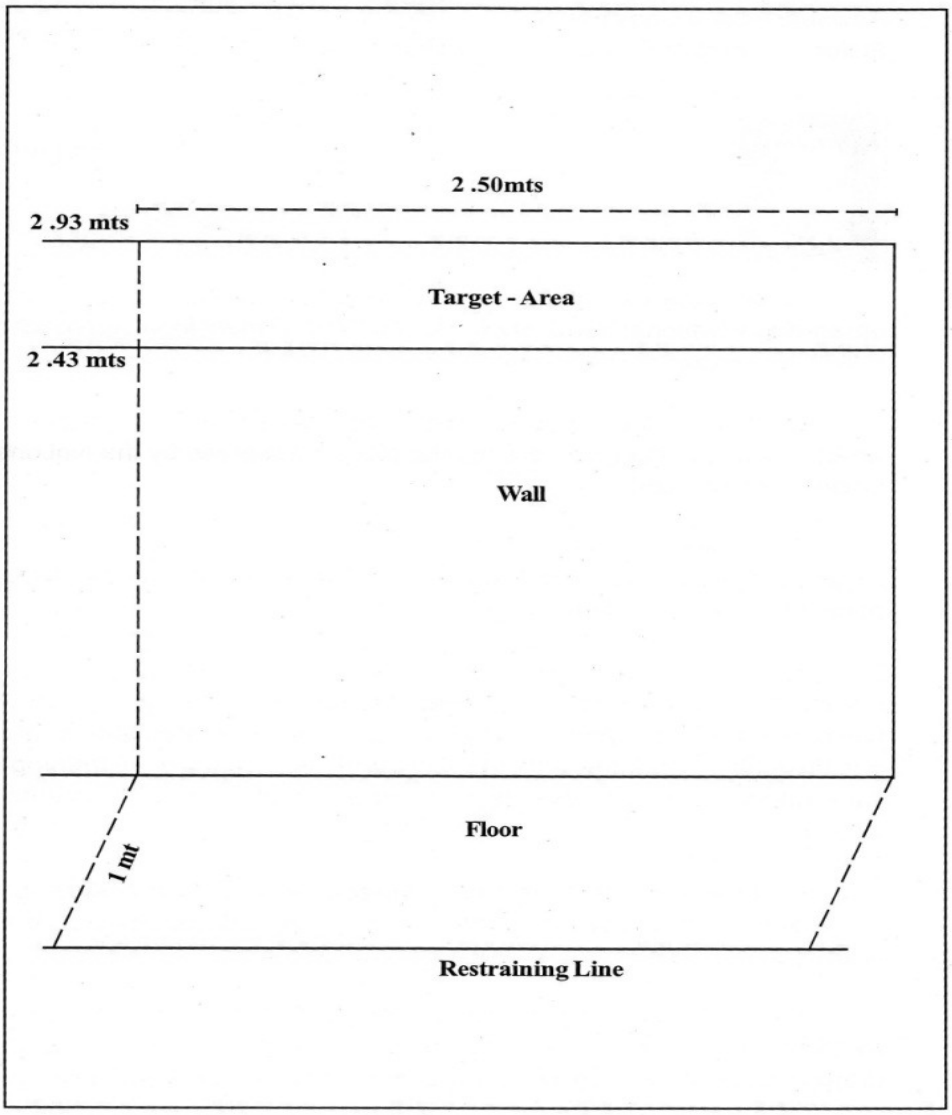
The research scholar demonstrated the test to the subjects with full explanations. The subjects were allowed 10 minute warming up on the target area. The player with volleyball in his hands stand behind the 1 meter restraining line in a ready position. On command 'Go' the ball was tossed against the wall, marked by the 2.43 to 2.93 meter in between the target area. On the rebound, the ball was again volleyed against the wall on the target area repeatedly. If the ball goes out of control, it must be retried by the subject and put into play again, behind the 1 meter restraining line.

Scoring

The total number of legal volley executed within 60 second seconds was considered as the score. Each subject had three trials. The tosses were not counted as score.

Figure - 4

NEWLY CONSTRUCTED UNDER ARM PASS (Wall volley) test – II



3.2 SELECTION OF SUBJECTS

To achieve the purpose of the present study, thirty inter – Collegiate women Volleyball player in Tamilnadu state were selected as subjects at random and their age was between 18 and 25 years. After selecting the subjects, the four newly constructed tests were explained and administered to all the subjects.

3.3 SUBJECT'S RELIABILITY

In order to determine the subject's reliability, thirty inter – Collegiate women Volleyball players were selected at random as subjects. The four newly constructed tests were conducted and recorded thrice, under similar conditions by the investigator. These tests were administered on two days. On the first day, service placement skill test was conducted and on the second day, the underarm pass skill test was conducted. These tests were repeated on subsequent days in the same order. In order to determine the subject's reliability for the newly constructed test, the test and re-test procedure was adapted by the investigator for thirty subjects.

3.4. INSTRUMENT RELIABILITY

Standard Indian made stop watches were used after careful testing. A standardized and well inflated volleyball approved by the Volleyball Federation of India was used for the conduct of the test and they were considered reliable. Standardized volleyball court with full markings according to the latest changes in service area rules was used to administer the test and for the collection of data.

3.5. TESTER'S COMPETENCY

The testers, competency was established together with the reliability of the data. Even though the investigator is quite familiar with the techniques for conducting these test, the assistance of three experienced coaches was utilized. Each tester was directed to get himself acquainted with or briefed on the procedure of conducting and scoring the selected new skill test. Competency was demonstrated in the form of objectivity co – efficient based on test – retest correlation with the test given to the same subjects (30 numbers) by two different testers. The tester's competency was computed by using the Intra – Class Correlation Baumgartner (1992)

TABLE – I

TESTERS' COMPETENCY IN NEWLY CONSTRUCTED SKILL TEST IN VOLLEYBALL

Sl.No	Name of the Test	Co – Efficient of Correlation
1	Service Placement Test – I	0.91
2	Service Placement Test – II	0.93
3	Under arm Pass(Wall Volley) Test-I	0.91
4	Under arm Pass(Wall Volley) Test-II	0.91

3.6 TEST ADIMINSTRATION

The administration of four newly constructed skill test and collection of data are as above. The investigator selected appropriate measurement techniques for administration of fundamental skills. All the necessary equipment were collected and appropriate markings were done on the court. The entire test was clearly indicated. The skill tests (Figure I to Figure IV) were conducted for each subject individually. The assistance of three well-trained and experienced coaches in the field of volleyball was utilized in administering the tests, in order to have the accuracy of data. As far as the assistant the testers were concerned they were very clearly oriented towards these test administrations. The testers were tested and their scores on the two trials were correlated by using Intra-class correlation to get the tester's competency. The data was collected during the competition period. This period was said to be the best for collection of data of the player's performance. The performance of the players during the said period was expected to be at the peak level on account of the inter-collegiate level tournament.

The responses of the subjects to the tests were fairly good during the period of collection of data. The tests were administered both in the morning and evening sessions. Further, with the view of getting a correct data and to ensure the maximum cooperation, the purpose and significance of the present study was well explained to the subjects. Before administering the tests the subjects were asked to do proper warm-up both in general and in specific format.

Administration of each skill test was done with adequate explanation. The subjects were allowed to practice once for each test. The collected data on newly constructed skill tests from the thirty subjects were processed by test – retest, two Intra-Class Correlation to estimate the reliability of the test. The details of the same are given in tables in Chapter IV.

3.7 PHASE II

3.7.1. Extracting the Most Appropriate Tests

In Phase II, the newly constructed test which were most appropriate was compared with criterion test. Test reaching above the Value of 0.09 in reliability in a test of two were considered and extracted. In such a way, service placement test I and underarm pass (wall volley) test I were selected.

3.7.2. Selection of subjects

To establish the validity, one hundred and twenty inter- collected Volleyball women players were chosen. The method used in selection of samples was the same as in the earlier phase of the present study.

3.7.3 Selection of Criterion Test

For the construction of new skill test which assesses the skill performance ability, the prime duty of the investigator is to choose a criterion test for which validity, and reliability have already been established. Then only the investigator can establish the validity and reliability for the newly constructed skill test within the criterion test.

As the investigator wanted to reinforce the findings, he had selected two tests, first the Brumbach Fore arm (Under arm) Pass wall test and the second Glady's Scott and Esther Franc's Service placement test. The method of conducting the test, equipment, collection of data, procedure and ground markings and all other details are given below.

The criterion test chosen for this study were

Barambah Fore arm (Under arm) pass wall volley test and

Gladys's Scott and Esther French's service placement test

The validity and the reliability have already been obtained for Glady's Scott and Esther Service placement skill test.

Validity : 0.62

Reliability : 0.89

Objectivity : Nil

3.7.4. Description of Criterion Tests in Volleyball

Criterion Test – 1

(Glady's Scott and Esther French's Service Placement Test)

Objective

To measure the serving ability with which a player can serve a ball against the target area.

Equipment and Materials

Three Volleyball, net, measuring tape, chalk powder, scoring sheet and a standard volleyball court.

Directions

A ten minute warm- up period was permitted. The subject was standing behind the end line in the service area, with a volleyball and serve into the marked court over the net as shown in the figure. 5. The ball should be hit or bat over the net fulfilling the service rules. The foot fault, the ball served out of the target area was scored as zero.

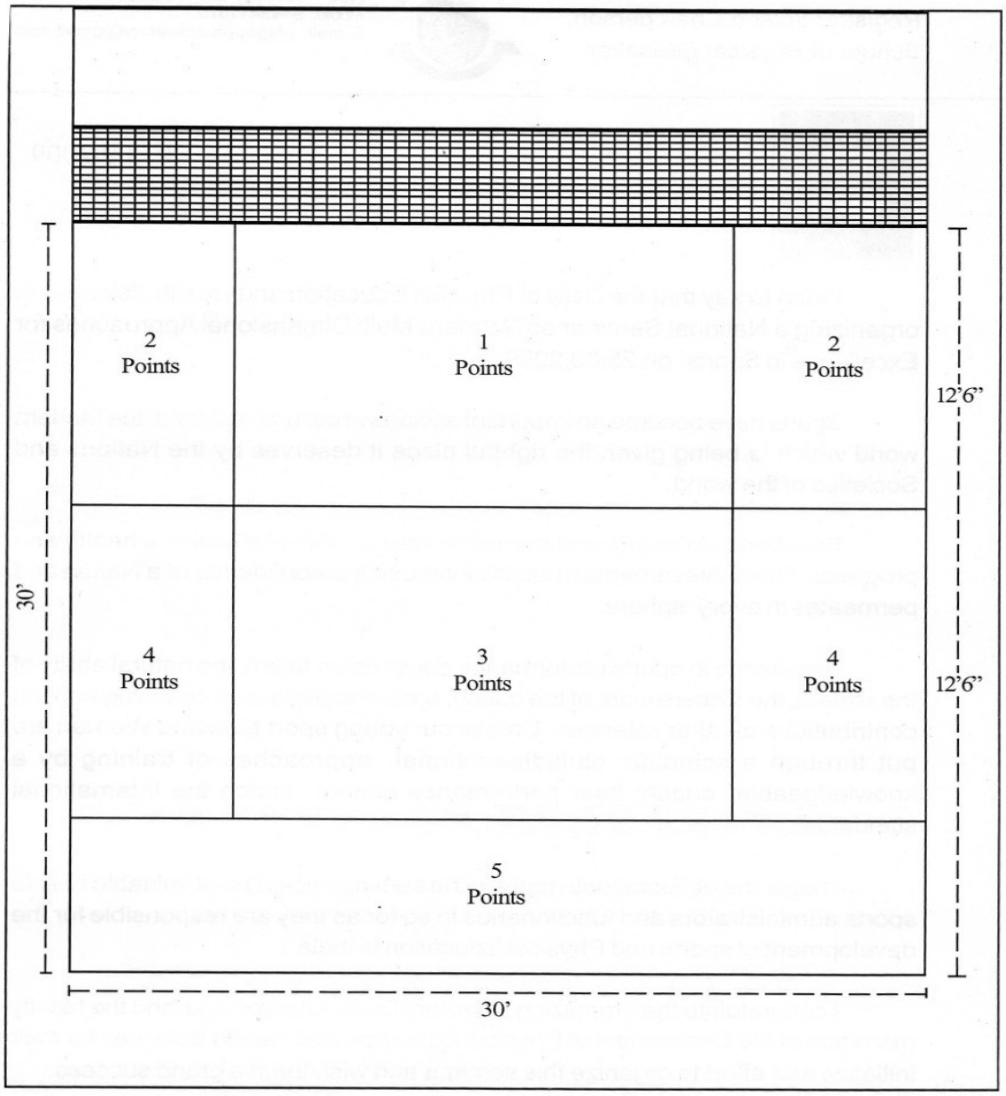
Scoring

The score was in the point value of the target area in which the ball was served. Each member was given three trials consisting of ten services. The test score was the sum of scores of the ten services served in each trial.

FIGURE – 5

CRITERION TEST –I

SCOTT AND ESTHER FRENCH'S SERVICE PLACEMENT TEST



3.7.5. Criterion test - II

(Barambah Fore arm (Underarm) pass Wall volley Test)

Objective

This test was to measure the ability and speed with which a player can volley (underarm) volleyball against a wall.

Equipment and Materials

A solid smooth wall with a 2.54 meters and one inch thick line was marked parallel to the ground at a height of 2.44 meters (8feet) above the ground. A stop watch, scoring sheet, 3 volleyballs were required for each test station.

Direction

The player with volley ball in hand stands ready facing the wall. On command ‘go’ the ball was tossed against the wall into the area marked by the 2.54 meter line. On the rebound the ball was again volleyed by underarm into the wall above the line drawn at a height of 2.44meter from the floor as shown in the figure 6.

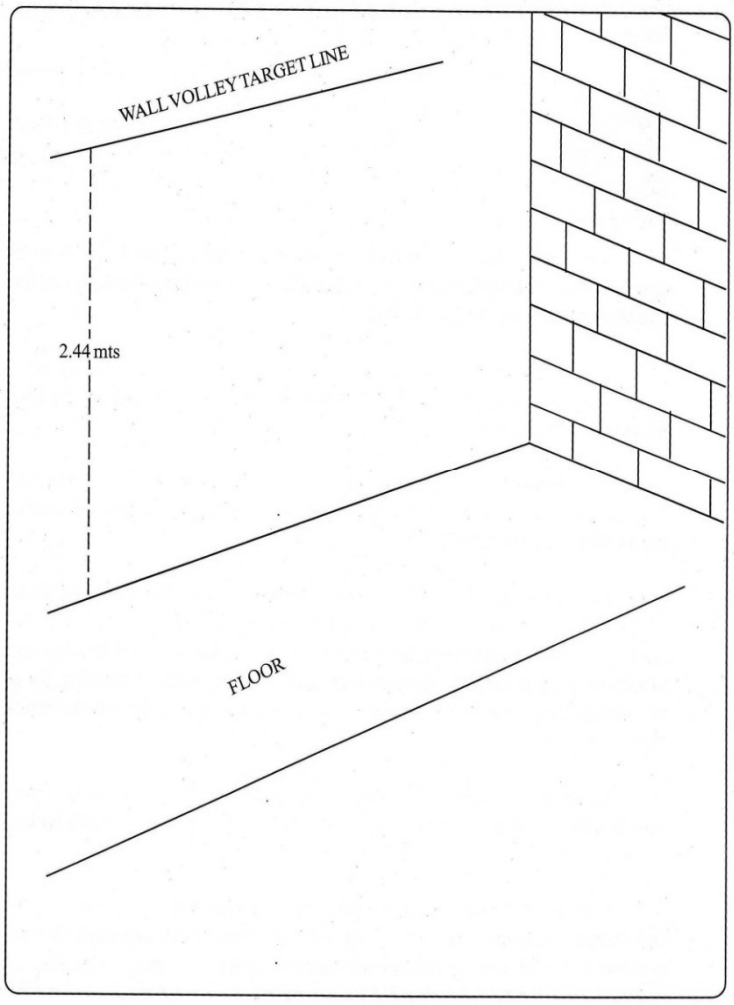
Scoring

The total number of legal volleys executed within sixty seconds was considered as the score. Each subject had three trials. The tosses were not counted as score.

FIGURE – 6

CRITERION TEST – II

BRUMBACH FORE ARM (UNDER ARM) PASS WALL VOLLEY TEST



3.8. THE RELIABILITY OF THE NEWLY CONSTRUCTED TESTS

The reliability may be explained as the consistency of the test in measuring a phenomenon. There are many methods in the literature to ascertain the reliability of a test which is best suited for testing that measures this sports skill is test-retest method. The reliability of the newly constructed tests was established by test- retest method. Bosco and Gustafson (1983) are of the opinion that ,"the coefficient calculated by test-retest method, otherwise called intra Class Correlation, often termed as the coefficient of stability may establish the reliability. It is derived from the correlation of scores obtained by subject on two or more administrations of the tests in identical condition on successive days."

3.9. THE VALIDITY OF NEWLY CONSTRUCTED TEST

Bosco and Gustafson (1983) defined the Validity as an estimate to the degree to which a test measures the factor or factors for which it is designed. He suggested four ways to determine the validity depending upon the nature of the test, the validity of an acceptable criteria and the use to which to the test results will be subjected.

The four types of Validity are as follows:

1. Constructed validity
2. Content validity
3. Concurrent validity
4. Predictive validity.

The investigator in this study has used the concurrent validity among the four validity methods, because the newly constructed test was proposed as a substitute for the criterion test namely,

Brumbach Fore Arm (Under Arm) pass wall volley test and

Glady' s Scott and Esther French's Service placement test.

Safrit (1988) defines that, “the concurrent validity measures as the degree to which a test correlates with the criterion test that has been already established as valid test of the attribute or interest”. As explained by Clarke and Clarke (1982), the best of the scores of the constructed test are correlated with the best scores or the criterion test by applying the Pearson’s Product Moment Correlation as Suggested in calculated concurrent validity. The above correlation analysis was made for each test and for total samples.

3.10 OBJECTIVITY OF THE NEWLY CONSTRUCTED TEST

The objectivity of the newly constructed test was established by correlating the scores measured by different raters. This correlation coefficient scores indicate the degree of agreement between the two raters that give the objectivity of the test.

3.11. RELLIABILITY OF DATA

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

3.12. ORIENTATION OF SUBJECTS

To orient and obtain full co-operation from the subjects, the researcher explained the tests verbally in detail, then demonstrated the test and the test procedure so that there was no ambiguity in their minds regarding the efforts required by them. Some of the subject was utilized as models for the demonstration.

3.13. COLLECTION OF DATA

Data were collected on the newly constructed tests for service placement and underarm pass form 100 subjects. Validity and objectivity were established for the newly constructed tests. There after norms were compiled.

3.14. PHASE III

Construction of Norms

After establishing the reliability, validity for under arm pass skill and service placement in volley ball , norms were constructed for the above said skill test with 100 inter-collegiate women Volleyball players as subjects.

3.15. STATISTICAL TECHNIQUES EMPLOYED

The following statistical techniques have been used in the present study at various stages. Pearson's Product Moment Correlation was used to correlate the criterion test score and the constructed test score to establish the validity of the test and to verify the instrument's reliability and to examine the objectivity.

Two-Way ANOVA intra Class Correlation Coefficient was applied in testing the reliability of the test items. One – Way intra class correlation was used to verify the tester's reliability. (***Thirumalaisamy, 1998***).

To construct the norms for the newly constructed test, Hull scale statistical techniques were used. (Baumgartner & Jackson, 1982).