

CHAPTER III

METHODOLOGY

Research methodology involves the systematic procedure by which the researcher starts from the initial identification of the problem to its final conclusions. In this chapter, the selection of the subjects, selection of variables, experimental design, pilot study, selection of test, Criterion Measures, reliability of the data, reliability of Instruments, tester's reliability, subjects reliability, training programme, administration of the tests, collection of the data, and statistical technique are presented.

3.1 SELECTION OF SUBJECTS

The purpose of this study was to find out effect of specific skill training and small sided games on selected motor fitness, psychological and skill performance variables among football players. To achieve this purpose of the study, sixty male football players were selected randomly (simple random sample) from varied colleges of affiliated to university of madras, Chennai, Tamilnadu, during the academic year 2017-2018 were selected as subjects. The subjects were selected in the age group of 18 to 23 years. The subjects had past experience of at least four years in playing football and only those who represented open competitions were taken as subjects.

3.2 SELECTION OF VARIABLES

The scientific literature is pertaining to the problem from books, e-books, journals, periodicals, e-resources, unpublished theses and dissertations. Keeping in mind the opinion of the experts, availability of equipment's, acceptability of the subjects and the time to be derived the following variables were selected namely:

3.2.1 DEPENDENT VARIABLES

- **Motor Fitness variables**
 1. Speed
 2. Agility
 3. Leg Strength
 4. Cardiovascular Endurance.

- **Psychological variables**
 1. Sports Achievement Motivation
 2. Team Cohesion
 3. Self Confidence.

- **Skill Performance**
 1. Kicking
 2. Dribbling
 3. Shooting.

3.2.2 INDEPENDENT VARIABLES

GROUP I : Specific Skill Training.

GROUP II : Small Sided Games.

GROUP III : Control group.

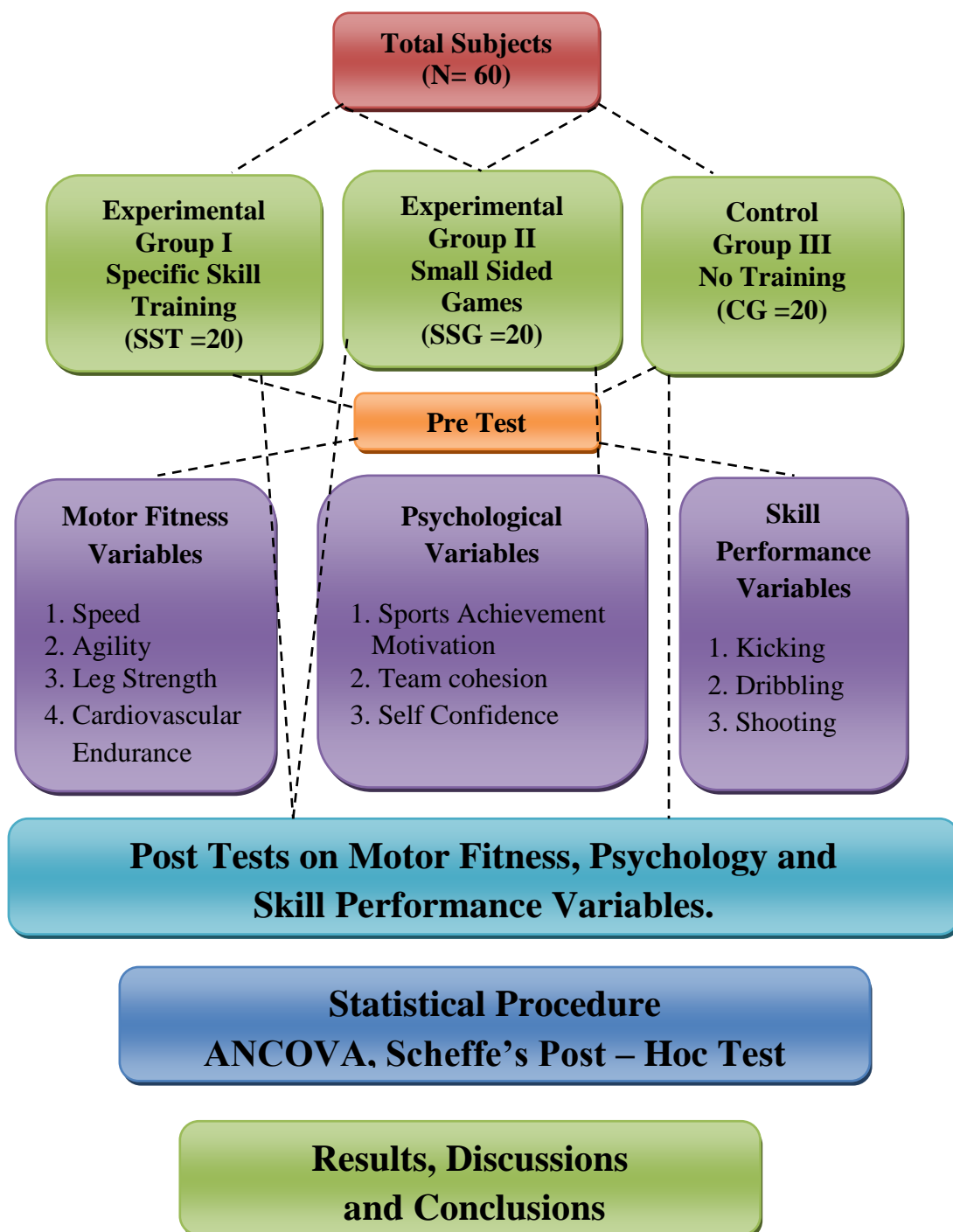
3.3 EXPERIMENTAL DESIGN

This study was conducted to determine the possibility cause and effect of specific skill training and small sided games on selected motor fitness, psychological and skill performance variables among football players. To achieve the purpose of the study, sixty male football players were selected as subjects randomly from varied colleges of affiliated to university of madras. The age of the subjects were ranged from 18-23 years. The selected subjects were randomly (simple random sample) assigned to one of three groups of twenty each, such as two experimental groups and control group. The group I underwent specific skill training and group II underwent small sided games for duration of sixteen weeks and the number of sessions per week was confined to 3 days per week and Group III acted as control. The criterion variables selected for this study were speed, agility, leg strength, cardiovascular endurance, sports achievement motivation, team cohesion, self-confidence, kicking, dribbling and shooting. The selected variables were assessed prior to and immediately after the training period by using the standardized test items. The pre- test and post-test random group was used in this study. The collected data were analyzed statistically through descriptive analysis and analysis of covariance (ANCOVA) to find out the significant difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significant difference, if any between groups. The methodology adopted in the study is given in chart-I as a research flow chart.

The research design of the study is shown in figure I through a diagrammatic representation of the methodology adopted in the study.

FIGURE - I

**FLOW FIGURE DEPICTING THE METHODOLOGY
ADOPTED IN THE STUDY**



3.4 PILOT STUDY

Prior to the formal Experimental sessions, a pilot study was conducted to validate research procedure and the initial capacity of the participants to design the training programme. For the purpose, ten participants were selected at random, underwent specific skill training (SST) and small sided games (SSG) under careful watching the eyes of the investigator. The initial loads of the participants were fixed and the training programmes for experimental group were designed separately based on the performance in the pilot study, while constructing the training programmes the basic principles of sports training were followed during construction of training programme, the individual differences were also considered. The investigator in consultation with the experts constructed the training schedule.

3.5 SELECTION OF TESTS

The present study was formulated to assess the effect of specific skill training and small sided games on selected motor fitness, psychological and skill performance variables such as speed, agility, leg strength, cardiovascular endurance, sports achievement motivation, team cohesion, self-confidence, kicking, dribbling and shooting, among football players.

3.6 CRITERION MEASURES

The investigator analyzed various literatures, has consulted the experts in physical education and selected the test items to collect data on the selected motor fitness, psychological and skills performance variables, which were standardized and most suitable to this study, they are presented in table - I

Table - I

CRITERION VARIABLES AND TESTS

S.NO	VARIABLES	TESTS USED	MEASUREMENT UNIT
MOTOR FITNESS VARIABLES			
1	Speed	50 Yard dash	Seconds
2	Agility	4 x 10 Mts. Shuttle Run	
3	Leg Strength	Standing broad jump	Meters
4	Cardiovascular Endurance	12 min Run and Walk	Meters (VO2 Max)
PSYCHOLOGICAL VARIABLES			
5	Sports Achievement Motivation	Questionnaire developed by Kamlesh M.L	Scores
6	Team Cohesion		
7	Self Confidence	Agni Hotry Rekha's Self-confidence scale	
SKILL PERFORMANCE VARIABLES			
8	Kicking	Warner Test for soccer skills, 1950 as cited in Yobu A 2010.	Scores
9	Dribbling	Morgan Christian General Soccer Ability Test, 1979 as cited in Yobu A 2010.	Seconds
10	Shooting		Scores

3.7 RELIABILITY OF DATA

The reliability of data was established by test-retest method. Sixty subjects were selected from various colleges of the University of Madras, Chennai, Tamil Nadu and they were tested twice by the same tester under the similar conditions on each criterion variable. Intra class correlation was used to find out the reliability of the data with test retest scores on each criterion variable separately.

3.8 RELIABILITY OF INSTRUMENTS

The instruments such as stop watches, 100 meters tape, take off board, cones, balls, hoops and Questionnaires were used for testing the dependent variables. All the instruments were in good condition and purchased from reputed and reliable companies. Their calibrations were tested and found to be accurate enough to serve the purpose of the study.

3.9 TESTER'S RELIABILITY

Under the guidance of professional expert, the investigator had a number of practice sessions to learn the procedures and methods to administer the tests. Experts from football field had assisted the investigator to measure the selected skill performance variables such as kicking, dribbling, shooting. The reliability coefficient of the subjects in motor fitness, psychological and skills performance variables was established by test and retest method.

3.10 QUESTIONNAIRE RELIABILITY

Apart from this, the authors developed questionnaire that found the reliability and validity of the tests and the key for scoring the responses. These were taken as correct and thus the reliability of the questionnaire found by the authors were accepted for the purposes of this study.

The intra class correlation co-efficient obtained for test-retest data are presented in table II

Table - II

INTRACLASS CORRELATION COEFFICIENT OF TEST - RETEST SCORES

S.NO	TESTS/VARIABLES	RELIABILITY OF COEFFICIENT
1	SPEED	0.89*
2	AGILITY	0.87*
3	LEG STRENGTH	0.89*
4	CARDIOVASCULAR ENDURANCE	0.88*
5	SPORTS ACHIEVEMENT MOTIVATION	0.87*
6	TEAM COHESION	0.87*
7	SELF CONFIDENCE	0.87*
8	KICKING	0.88*
9	DRIBBLING	0.87*
10	SHOOTING	0.87*

**Significant at 0.05 level of confidence*

3.11 SUBJECTS RELIABILITY

The intra class correlation value subjects' reliability as the same subjects were used under similar conditions by the same tester. The coefficient of reliability was significant at 0.05 level for the above tests under investigation.

3.12 TRAINING PROGRAMME

During the 16 weeks of training period, Experimental group I underwent specific skill training (SST), Experimental group II underwent small sided games (SSG), and group III acted as control group (CG). The control group did not participate in any special training programme apart from their regular activities. The training was given on three alternative days a week and each training session consisted of 90 minutes that includes warm up and warm down sessions. The training was given in the morning between 6.30 a.m. and 8.00 a.m. at The New College Ground, Chennai.

3.12.1 Experimental Group I - Specific Skill Training (SST)

Intensity of the training for the experimental group A namely specific skill training (SST), was fixed at 65% - 70% for one-four weeks, 70% - 75% for five-eight weeks, 75% - 80% for nine-twelve weeks and 80% - 85% Thirteen-sixteen weeks. The investigator personally supervised and ensured proper execution of specific skill training (SST) group along with the help of trained coaches.

3.12.2 Experimental Group II - Small Sided Games (SSG).

(3 v 3, 2 v 2, 4 v 4 and 5 v 5) Two teams of 3 (two, four and five) play while two teams rest. Each group of six (four, eight and ten) players compete in eight short games. The resting and working teams switch between each game. The first four games last 300 second while the last four games last between 210 and 240 seconds. If one team scores they get another ball from their goalkeeper and attack again.

The subjects were carefully monitored and questioned about their health status throughout the entire training programme. There was no report of any injury during the training sessions among the subjects. The subjects had felt muscle soreness and fatigue during the early days, but after a few days it subsided. Attendance was recorded and calculated for all the two experimental groups separately by dividing the total number of training sessions by the number of sessions attended.

Table- III

TRAINING PLAN FOR SPECIFIC SKILL TRAINING GROUP

S.NO	DETAILS	DURATION
1	NUMBER OF WEEKS	16 Weeks
2	NUMBER OF SESSIONS PER WEEK	3 Sessions
3	DURATION OF EACH SESSION	90 Minutes
4	WARMING UP	7 to 10 Minutes
5	REST INTERVAL BETWEEN REPETITIONS	30 Seconds to 1 Minute
6	REST INTERVAL BETWEEN SETS	1 Minute
7	REST INTERVAL BETWEEN DRILLS	30 Seconds to 1 Minute
8	WARM DOWN	7 to 10 Minute

Table- IV

TRAINING SCHEDULE FOR SPECIFIC SKILL TRAINING GROUP.

WEEK	NAME OF THE DRILL	INTEN SITY	REPT.	SET
I Week	<ul style="list-style-type: none"> ❖ Passing Through Opponents. ❖ One-Two with Overlapping Dribbling. ❖ Juggling - Head-Knee. ❖ Numbered Passing. ❖ Progressive Combination Passing I. ❖ Sprint Dribbling with Short Passes. ❖ Straight Passing with Changing Positions II. ❖ Dribbling Techniques and Tricks. ❖ Skills Exercise: Christmas Tree. ❖ Vertical Pass. 	<p style="text-align: center;">65%</p> <p style="text-align: center;">-</p> <p style="text-align: center;">70%</p>	2 Rept.	2 sets
II Week				
III Week				
IV Week				
V Week				
VI Week				
VII Week				
VIII Week				
V Week	<ul style="list-style-type: none"> ❖ Passing Through Opponents. ❖ One-Two with Overlapping Dribbling. ❖ Juggling - Head-Knee. ❖ Numbered Passing. ❖ Progressive Combination Passing I. ❖ Sprint Dribbling with Short Passes. ❖ Straight Passing with Changing Positions II. ❖ Dribbling Techniques and Tricks. ❖ Skills Exercise: Christmas Tree. ❖ Vertical Pass. 	<p style="text-align: center;">70%</p> <p style="text-align: center;">-</p> <p style="text-align: center;">75%</p>	2 Rept.	3 sets
VI Week				
VII Week				
VIII Week				

TRAINING SCHEDULE FOR SPECIFIC SKILL TRAINING GROUP.

WEEK	NAME OF THE DRILL	INTEN SITY	REPT.	SET
IX Week	<ul style="list-style-type: none"> ❖ Passing Through Opponents. ❖ One-Two with Overlapping Dribbling. ❖ Juggling - Head-Knee. ❖ Numbered Passing. ❖ Progressive Combination Passing I. ❖ Sprint Dribbling with Short Passes. ❖ Straight Passing with Changing Positions II. ❖ Dribbling Techniques and Tricks. ❖ Skills Exercise: Christmas Tree. ❖ Vertical Pass. 	75%	3 Rept.	3 sets
X Week				
XI Week				
XII Week				
XIII Week	<ul style="list-style-type: none"> ❖ Passing Through Opponents. ❖ One-Two with Overlapping Dribbling. ❖ Juggling - Head-Knee. ❖ Numbered Passing. ❖ Progressive Combination Passing I. ❖ Sprint Dribbling with Short Passes. ❖ Straight Passing with Changing Positions II. ❖ Dribbling Techniques and Tricks. ❖ Skills Exercise: Christmas Tree. ❖ Vertical Pass. 	80%	3 Rept.	4 sets
XIV Week				
XV Week				
XVI Week				

Table- V

TRAINING SCHEDULE FOR SMALL SIDED GAMES GROUP

WEEK	NAME OF THE GAMES	VARIATION IN GIRD SIZE	DURATION
I WEEK	Warming up	35 x 25 Yards	90 minutes
II WEEK		36 x 30 Yards	
III WEEK		40 x 32 Yards	
IV WEEK		44 x 36 Yards	
V WEEK	Warming up	32 x 24 Yards	90 minutes
VI WEEK		36 x 28 Yards	
VII WEEK		40 x 32 Yards	
VIII WEEK		44 x 36 Yards	
IX WEEK	Warming up	28 x 24 Yards	90 minutes
X WEEK		32 x 28 Yards	
XI WEEK		36 x 32 Yards	
XII WEEK		40 x 36 Yards	
XIII WEEK	Warming up	21 x 11 Yards	90 minutes
XIV WEEK		24 x 14 Yards	
XV WEEK		27 x 17 Yards	
XVI WEEK		30 x 20 Yards	

3.13 TEST ADMINISTRATION

- Motor Fitness Variables

3.13.1 SPEED: 50 Yards Dash.

Purpose : To measure the speed of the subjects.

Equipment: An area on track with a starting and finishing line, with a distance of 50Yards and two stop watches.

Procedure: After a short warm-up period, the subjects take a position behind the starting line. Best results were obtained when two students ran at the same time for competition. On the command of "go", the subjects ran across the finish line as fast as possible to cover 50 yards distance. One trial was permitted.

Scoring: The score was the elapsed time between the starting signal and the instant, the subject crossed the finish line, recorded in 1/100th of a second (Yobu A., 2010).

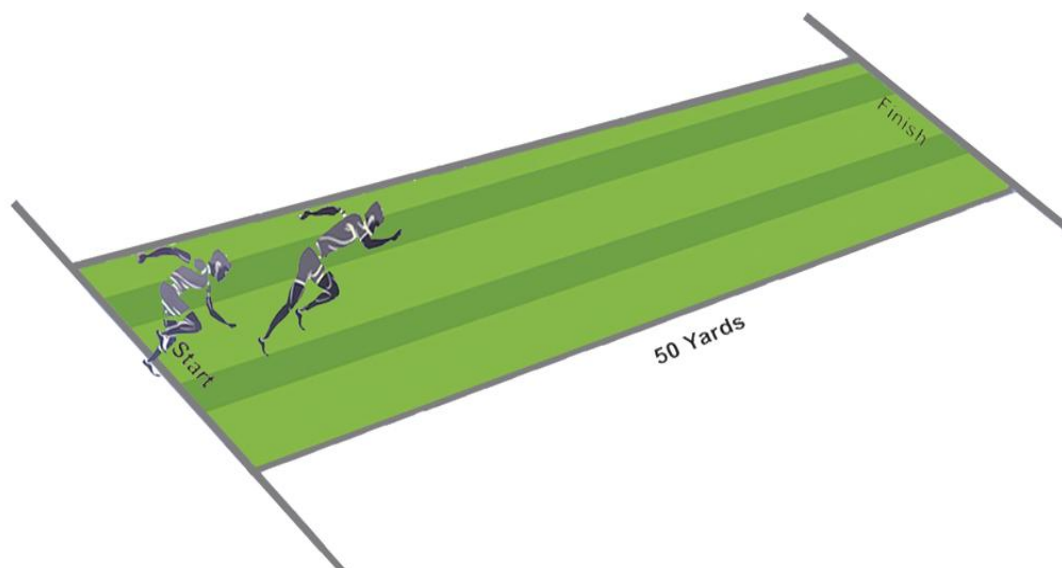


Figure II : The Marking of 50 Yards Run Test

3.13.2 AGILITY: 4 x 10 Yards Shuttle Run.

Purpose: To measure the agility of the subjects.

Equipment: Two lines parallel to each other are placed on the floor 10 yards apart, a stop watch, a whistle and two wooden blocks (2" x 2" x 4").

Procedure: Two parallel lines were drawn on the floor 10 yards apart. The blocks were placed behind one of the lines. The subjects were instructed to start from behind the other line. To start the shuttle run a whistle was blown and the subject ran to the blocks, picked up one block, ran back to the starting line and placed the block on the ground beyond the line. Then the subject ran back and picked up the other block and ran across the starting line as fast as possible. The stop watch was started as the whistle blew and stopped when the subject crossed the starting line.

Scoring: Two trials were permitted and the best time was recorded as the score in seconds (Yobu A., 2010).

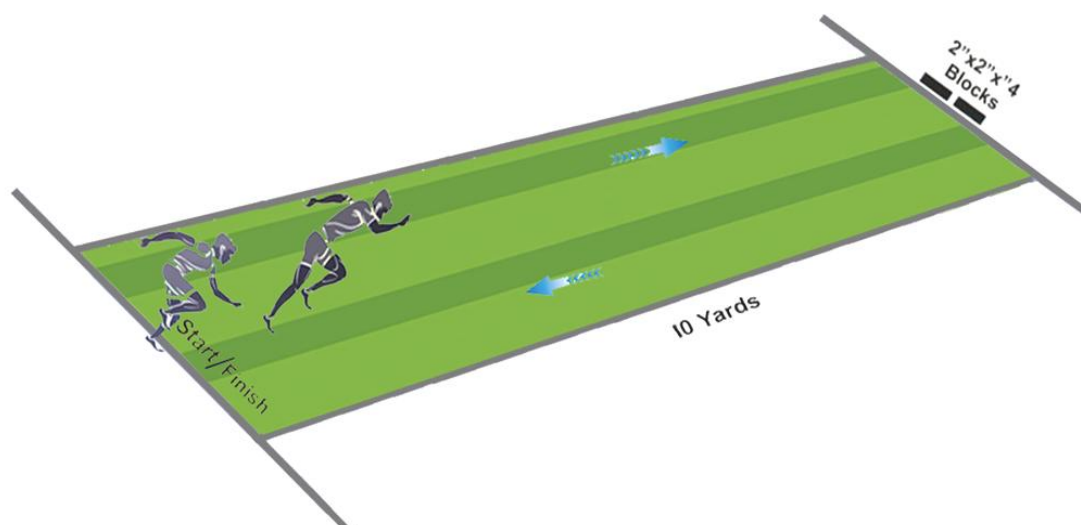


Figure III : The Markings of 4x10 Yards Shuttle Run Test.

3.13.3 LEG STRENGTH: Standing Broad Jump.

Purpose: To measure the leg explosive power of the subjects.

Equipment: An outdoor jumping pit and a measuring tape.

Procedure: The subjects stood with their feet apart and toes just behind the take off line. Prior to jumping, the arms were swung backward and the knees bent. The jump was done by extending the knees and swinging the arms forward simultaneously. Measurement was taken from the take off line to the heel or part of the body that touches the floor nearest the take off line. Three trials were permitted. Best performance was taken in to account.

Scoring: The distances of all jumps were measured and the best one was recorded in meters and centimeters (Yobu A., 2010).

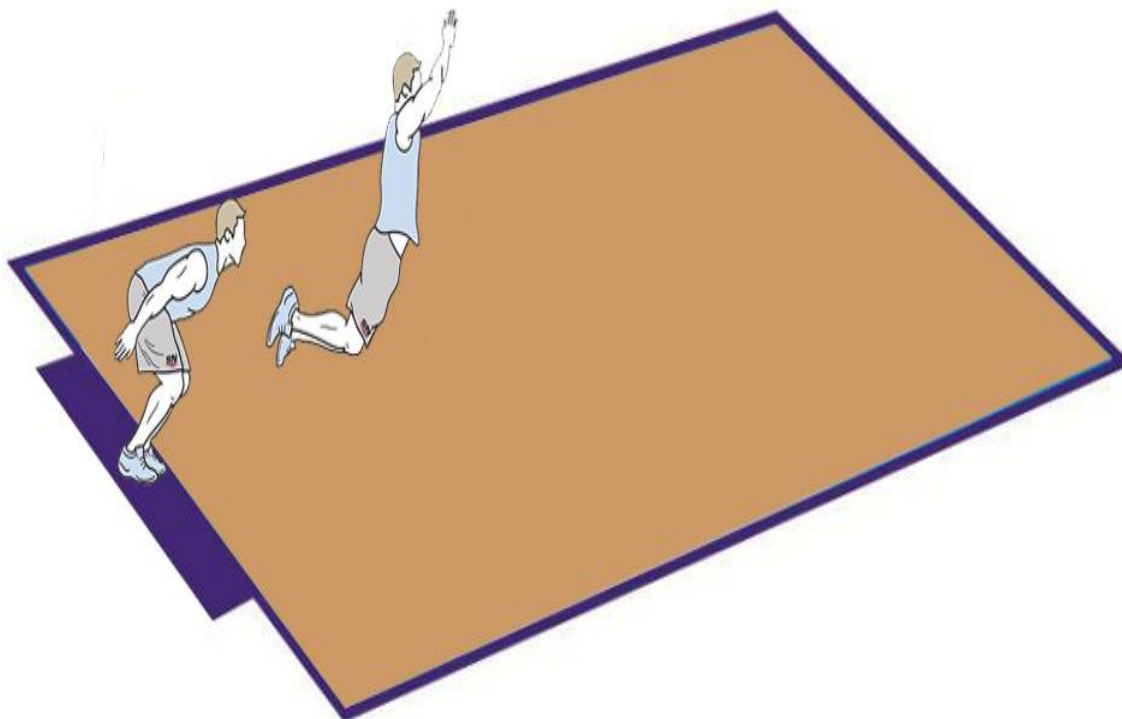


Figure IV : The Markings of Standing Broad Jump Test.

3.13.4 CARDIOVASCULAR ENDURANCE:

12 Minutes Run / Walk Test.

Purpose: To measure cardiovascular endurance of the subjects.

Equipment: A 400 m track with markings, cones, a measuring tape and a stop watch.

Procedure: The test was administrated on an outdoor standard 400 m track. The cones were placed at 50mts intervals in the track to measure the distance easily. The subjects could run individually or in a group. The subjects were instructed to complete as many laps as possible on the track during the 12 minutes test period, with an emphasis on pacing oneself throughout the duration of the test. The administrator called out the time elapsed at 3, 6 and 9 minutes and verbally encouraged the subjects. When the subjects ran, the test administrator counted the laps an individual completed during the 12 minutes test period. At the end of the 12minutes, the test administrator blew the whistle and the subjects were stopped from their running. The administrator recorded the distance covered by each subject during the test.

Scoring: The distance covered by the subjects in 12 minutes were recorded in meters (Yobu A., 2010).

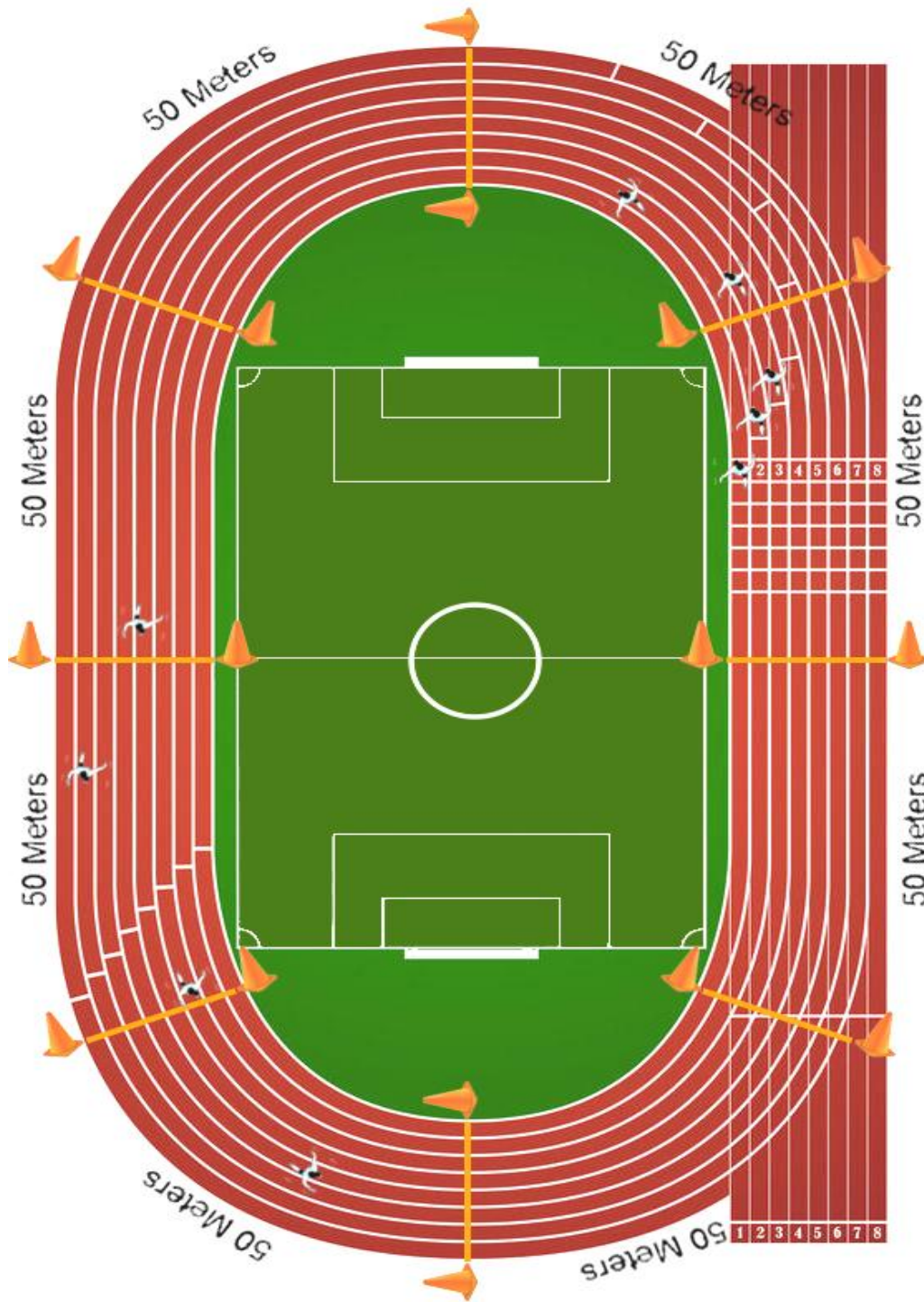


Figure V : The Markings of 12 Minutes Run / Walk Test

3.13.5 SPORTS ACHIEVEMENT MOTIVATION TEST

The standard psychological tool devised by **Kamlesh** consists of 20 incomplete statements, which could be completed by choosing either of the two proposed parts against each statement. The subjects were asked to tick (v) the second part, which in their opinion fits in best with the first part. The investigators revalidated the inventory by administering it on 50 men players of football from university level.

Scoring: This inventory was scored with the help of a scoring key, a score of two being given for the correct answer and zero for wrong answer. The item which was left unanswered was not taken for consideration. The score was added and it was considered as individual score. The range of score is 0 to 40. The larger the score the higher the sports achievement motivation of the subject.

Scoring key: 1-a, 2-b, 3-a, 4-a, 5-b, 6-b, 7-b, 8-b, 9-a, 10-a, 11-a, 12-a, 13-a, 14-b, 15-b, 16-a, 17-a, 18-a, 19-b, 20-a In the above, the number 1 to 20 denotes the statements and the letters 'a' and 'b' denote correct answer. Correct answer for each statement as indicated above will be awarded '2' marks and incorrect answers for each statement will be awarded '0' mark. High score indicates high motivation in their achievement. (**Schuler, H. 2004**)

3.13.6 TEAM COHESION

Team Cohesion was assessed with the Group Environment Questionnaire. The Group Environment Questionnaire was derived from Carron et al.'s conceptual model of team cohesion that views cohesion as a multidimensional construct. The investigator used this questionnaire on the subjects to assess the perceptions of the team.

Scoring: The questionnaire consists of 18 items scored on a 9- point scale ranging from 1 ('strongly disagree') to 9 ('strongly agree'). The questionnaire measures four dimensions of team cohesion. ATG-T - Individual attraction to the Group Task 2,4,6, and 8 are scored from (strongly disagree =9 to strongly agree = 1). ATG-S - Individual attractions to the Group social item 5 and 9 are scored from strongly disagree =1 to strongly agree= 9. On the other hand item 1,3 and 7 are scored from strongly disagree =9 to strongly agree= 1. GI-T - Group Integration Task item 10,12 and 16 are scored from strongly disagree =1 to strongly agree= 9. On the other hand item 14 and 18 are scored from strongly disagree =9 to strongly agree= 1. GI-S -Group Integration Social item 15 is scored from strongly disagree =1 to strongly agree= 9. On the other hand item 11, 13, and 17 are scored from strongly disagree =9 to strongly agree= 1. The ATG-T and GI-S subscales consist of 4 items each, whereas the ATG-S and GI-T subscales have 5 items each. Each factor is summed and then average is taken for individuals and then the team. Items with are reverse scored. (Albert Carron, et al., 1985).

3.13.7 SELF CONFIDENCE

Name of the Questionnaire: **Agni Hotry Rekha's** Self-confidence scale

Procedure: This consists of 56 statements. It includes both positive and negative statement. Each item has the response category, which is true or false. Do not omit any statements.

Method of Scoring: The inventory can be scored by hand. The responds were made to '√' the appropriate number which situated their attitude. The subjects need to choose either 'Y' or 'N'. A separate scoring method was followed for positive and negative statements. The score obtained for both positive and negative statements were added and it was treated as individual score. The total score constitutes the Self Confidence score. (**Pestonjee, D. M. (1997)**).

Negative statements question numbers are - (1,5,7,8,9,10,11,12,14,15,16,17,18,19,20, 22,23,25,26,28,33,34,35,36,37,38,43,44, 45, 49,51,52,53,54,55.)

Positive statements question numbers are - (2,3,4,6,13,21,24,27, 29, 30, 31,32,39,40 41,42,46,47,48,50,56.)

3.13.8 KICKING

Purpose: To measure the kicking ability for distance with a degree of accuracy by using right or left foot.

Field Marking: The test was administrated in a football field. The cones were placed at 5 meters intervals in the 25m wide lane to measure the distance easily.

Procedure: The subjects were asked to take a running start and kick the ball with right or left foot as far as they can. The ball must stay within the lane that is 25 m wide. The distance the ball advanced in the air was measured. Three trials were allowed and the best one was recorded as score.

Scoring: Measure the distance of the kick to the first bounce. Record the best of 3 kicks measured to the nearest meter (**Baumgartner, T. A.,1987**).

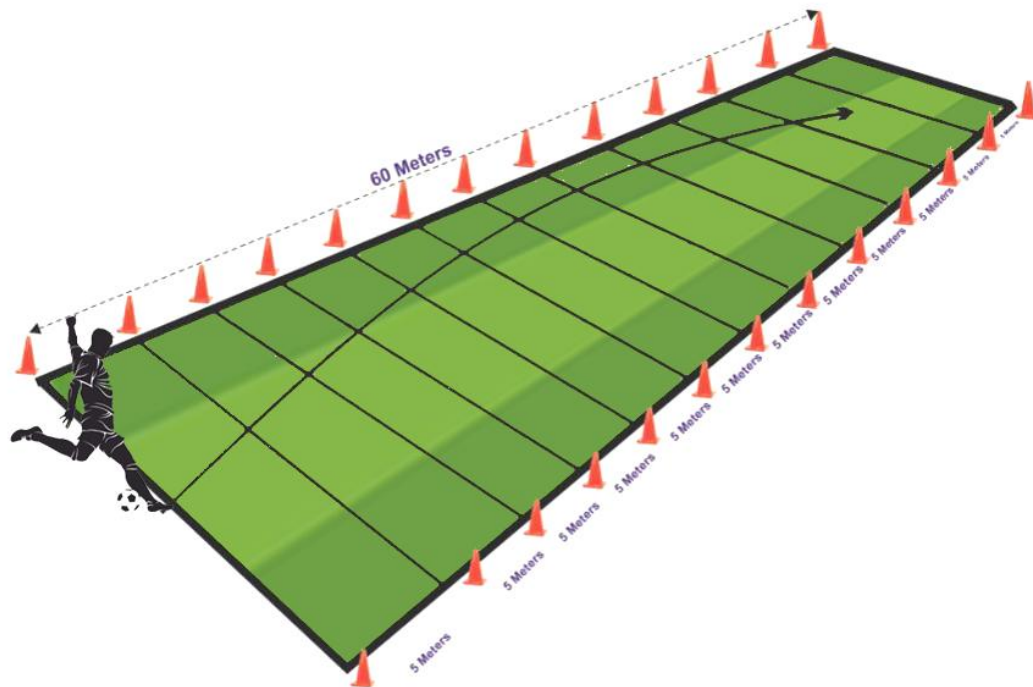


Figure VI : The Markings of Kicking for Distance Test.

3.13.9 DRIBBLING

Purpose: To measure the dribbling ability of the subjects.

Field Marking: A circular course with a 20 yards diameter was measured and marked. Twelve 18 inches cones were located around the circle at 5 yards intervals. A 3 feet starting line was marked perpendicular to the outside of the circle.

Procedure: On the signal “go”, the subjects dribbled a ball which was placed on the starting line around the circular course. The subjects dribbled between the cones as quickly as possible and go back to the starting line. Three trials were allowed. The first trail was performed in a clockwise direction, the second in counter clockwise direction and the third in the direction of the subject’s choice.

Scoring: The final test score was the combined time of the two best trials
(O'Sullivan, J. 2013)

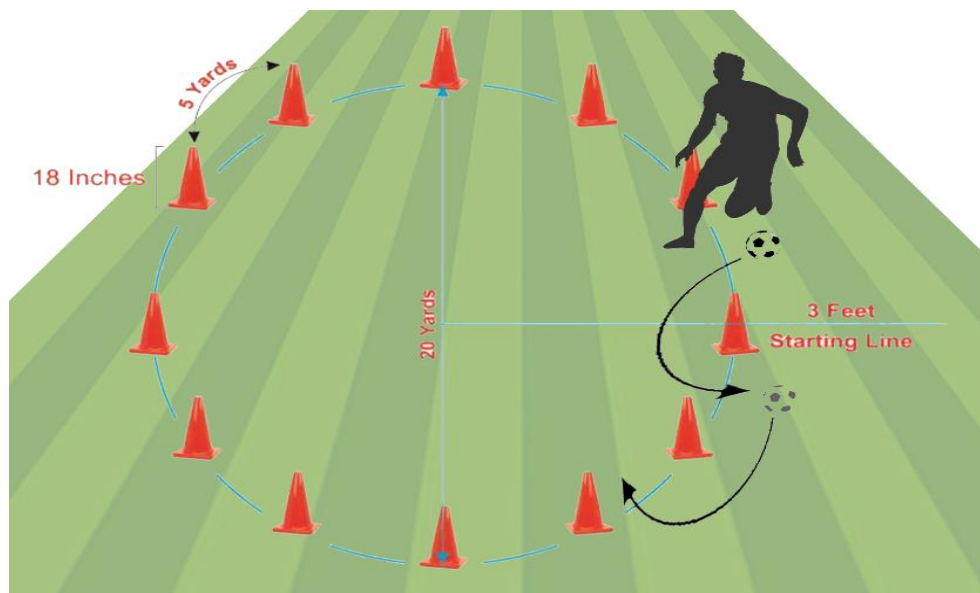


Figure VII : The Markings of Dribbling Test

3.13.10 SHOOTING

Purpose: To measure the shooting ability of the subjects.

Field Marking: Two ropes suspended from the goal cross bar 4 feet from each goal post which divided the soccer goal into two scoring areas. Each scoring area was further divided into two circular targets by two hoops 4 feet in diameter. A restraining line was marked 16 yards parallel to the goal.

Procedure: From the restraining line, the subjects shot stationary ball towards the target with their preferred foot and the ball was placed any point along the restraining line. Four practice trials were allowed and followed by four consecutive attempts at each of the four target areas, a total of 16 trials.

Scoring: Ten points were awarded for shots going through a proper target, and four points were awarded for shots going through a lower target when aiming at the upper target. The final score was the total of 16 trials (Morgan Christian General Soccer Ability Test, 1979 (Peterson, C., 2004)

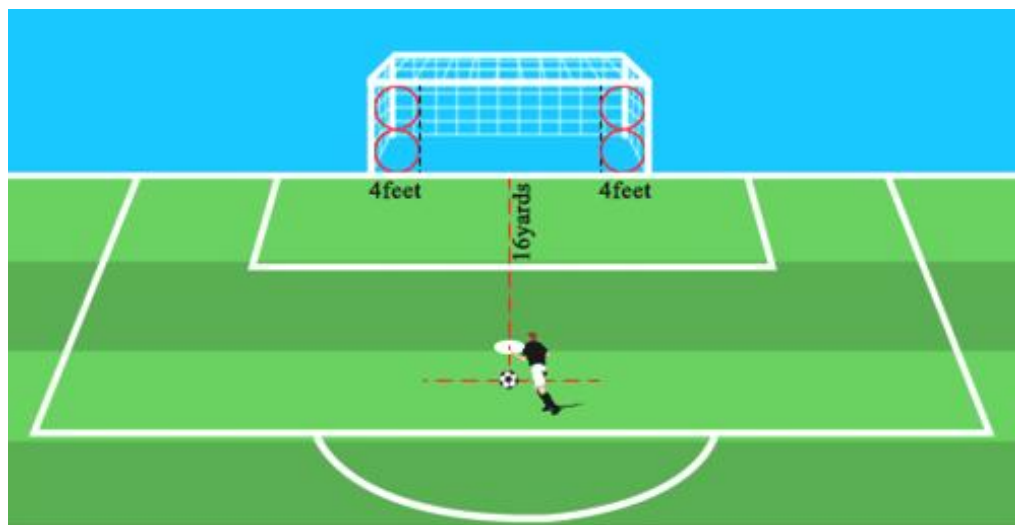


Figure VIII: The Marking of Shooting Test.

3.14 COLLECTION OF DATA

The data on the selected motor fitness, psychological and skill performance variables were collected prior to the commencement of experiment (pre test) and after sixteen weeks of training period (post test). Both the pre and post tests were administered under identical conditions, with same apparatus, testing personal and testing procedures.

3.15 STATISTICAL TECHNIQUES

The experimental design used in this study was purposive random group design involving sixty subjects, who were divided at random into three equal groups of twenty each. The data collected from the experimental I, II and control groups on selected dependent variables was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the three groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). The pre test means of the selected dependent variables was used as a covariate. Since three groups were involved, whenever obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 level for significance.