

METHODOLOGY

The procedure and methodology are a route and pathway, which leads to the attainment of certain objectives to conduct research work in a professional and justified way. The procedure for this study was adopted after an in depth and critical thinking by considering various aspects of research objectives. In this chapter selection of subject, demographic area of analysis, selection of variables, tools, construction of the questionnaire, collection of data, administration of the questionnaire, Unit of analysis and the statistical procedure for analyzing the data are explained.

3.1 SELECTION OF SUBJECTS

In the present study, a total of 80 male Kho-Kho players were selected from various schools from Tumkur, Bengaluru district (Karnataka), who had participated in the inter-school Kho-Kho tournaments. They were randomly selected as subjects. The age of the subjects ranges from 14 to 18 years.

3.2 SELECTION OF VARIABLES

The selections of variables were made by using the following criteria:

The research scholar went through the scientific literature pertaining to the study from different available library sources and consulted experts from the field of physical education and sports to select the performance related fitness variable and psychological variables with regard to the purpose of the study. Along with the said literature and expert opinion, the administrative feasibility in terms of availability of instruments and expertise for measuring and recording of data was also given due consideration while selecting performance related fitness variables and psychological variables.

Based on the above-mentioned criteria the following variables were selected:

3.3 DEPENDENT VARIABLES

The variables factored in this study are as follows:

Performance related fitness variables

- Agility
- Cardiovascular endurance
- Dynamic balance
- Leg strength
- Reaction time (foot)
- Speed

Psychological Variables

- Achievement motivation
- Aggression
- Anxiety
- Mental toughness
- Self confidence
- Team Cohesion

3.4 INDEPENDENT VARIABLES

The quality of sports is improving every day. At the national and international levels, new records are being set. It's all due to technological and tactical preparation during the training by setting the apt training plans for excel in sports performance.

Several studies show that systematic training of any particular kind is a successful programme for improving results. Proprioceptive training and yoga training enables the

capturing of elastic energy by improving the strength of muscles and tendons in addition to improving the performance of brain-muscle contact.

- Training group I - Proprioceptive training group (PTG)
- Training group II - Yoga training group (YTG)
- Training group III - Proprioceptive and Yoga training group (PYTG)
- Non training group IV - Control group

3.5 RATIONALE FOR SELECTION OF STUDY

Kho-Kho work out is changing rapidly within sports profession; individual training, team or sports club training and an increasingly evident use of innovative equipment for training within schools are heralding a new approach to pedagogy. While analyzing the use of such training in the Kho-Kho could be easily justified, another aspect for selecting this area of study is the personal motivation to understand the idea of professional development. Kho-Kho being an excellent physical sport, works muscles in both the lower and upper bodies, and it utilizes several muscles at the same time. As a result, there are many reasons to strengthen these muscles. Proprioceptive training would naturally lead to a strategic advantage on the Kho-Kho field. Compound exercises are exercises that target several muscle groups at the same time. It is not only the most powerful way to increase the player's strength and power, but it is also the most important for Kho-Kho. Proprioceptive exercises can help to develop better dynamic balance, reaction time (foot), coordination, and agility, which can make a huge difference in player's overall performance. Finally, proprioceptive- exercise training can lower the risk of injury. Improving proprioception in the muscles, tendons, and joints can help an athlete adapt to quick movements or shifts in balance to prevent common injuries and re-injuries like ankle sprains.

Yoga training can help Kho-Kho players to develop better breathing techniques while it improves balance, flexibility, core strength, and even endurance. Holding different poses in yoga will allow to increase mobility throughout player's body evenly and naturally as player master in balancing tension and relaxation.

The present study helps to cultivate a deeper understanding and familiarize the important issues related to the different Kho-Kho training methods. It includes examination into different indicators of quality like validity and reliability along with finding ways to meet the required professional standards with regards to research in sport and exercise sciences.

3.6 TOOLS USED FOR THE STUDY

A research tool is important to all forms of study because it plays a significant role in evaluating the collected data to reach a sound conclusion about the issue pertaining to the study which would eventually aid in providing fair and satisfactory solutions to problems concerned.

3.7 DESIGN OF THE STUDY

The simple random group design was used to split the eighty male subjects evenly into four groups. Four equal groups of twenty each were indiscriminately allocated to the subjects ($n = 80$) based on the initial kho-kho playing ability. The groups were named I, II, III as training groups and Group IV non-training groups respectively. A pre-test was done for all the subjects before the experimental training on selected performance related fitness variables and psychological variables. The groups were assigned as proprioceptive training group (PTG), yoga training group (YTG), combined proprioceptive and yoga training group (PYTG) and control group (CG) in an equivalent manner. Twelve weeks was the

period of research and experimental groups participated in proprioceptive training, yoga training, and mixed training. The post-test was performed after 12 weeks. Early morning from 6.30 am to 8.00 am on alternate days, three days in a week training was given to experimental groups. Control group was prohibited from engaging in other forms of training. The subjects were clarified about testing techniques in detail during the experimentation. A qualified doctor has assessed the medical condition of all the players involved and deemed them healthy and normal. The researcher may manipulate or influence certain conditions or characteristics to establish their connection to the observed phenomena. These are referred to as the independent variables. And as per the modifications made to the independent variables, certain conditions may exist or cease to exist. These conditions are considered as dependent variable.

3.8 PILOT STUDY

Twenty subjects took part in the pilot study for fixing the exercise types, training load and the intensities of exercises for the study. An awareness was brought into the subjects with participation in pilot study, the purpose of participation, the methods of performing exercise and for fixing training schedule in school level male Kho-Kho players was performed for a period of one month.

3.9 CRITERION OF MEASURES

The following criterion measures for selected variables were chosen and overlooked in Table - I.

Table-I**NAMES OF VARIABLES, TESTS AND THE MEASUREMENT UNIT**

Sl.No.	Variables	Test	Measurements
Performance related fitness variables			
1.	Agility	Shuttle run test	Seconds
2.	Cardiovascular endurance	12-minute run-walk test	Meters
3.	Dynamic balance	Johnson Modified Bass Test	Score
4.	Leg strength	Bench squat test	Score
5.	Reaction time (foot)	Nelson foot reaction stick test	Seconds
6.	Speed	50 Mts. dash	Seconds
Psychological Variables			
7.	Achievement motivation	Sports achievement motivation questionnaire	Score
8.	Aggression	Sports Aggression Inventory (SAI)	
9.	Anxiety	Sports competition anxiety test	
10.	Mental toughness	Sports mental toughness questionnaire	
11.	Self confidence	Self-confidence questionnaire	
12.	Team Cohesion	Group Environment Questionnaire (GEQ)	

3.10 RELIABILITY OF THE DATA

The reliability of the data was censured by the reliability of the instrument and the reliability of the tester. The results are shown in Table-II.

Table-II

**TEST RE-TEST RELIABILITY COEFFICIENT ON THE SELECTED TESTS
FOR PERFORMANCE RELATED FITNESS VARIABLES AND
PSYCHOLOGICAL VARIABLES FOR THE STUDY**

Sl.No.	Independent Variables	Dependent Variables	Co efficient correlation
1.	Performance Related Fitness Variables	Agility	0.93*
2.		Cardiovascular endurance	0.90*
3.		Dynamic balance	0.96*
4.		Leg strength	0.95*
5.		Reaction time (foot)	0.91*
6.		Speed	0.93*
7.	Psychological Variables	Achievement motivation	0.85*
8.		Aggression	0.75*
9.		Anxiety	0.85*
10.		Mental toughness	0.82*
11.		Self confidence	0.83*
12.		Team Cohesion	0.84*

*Significant

The data were accepted in terms of the tools, tester, and subjects at confidence level of 0.01, since the 'r' values obtained were much greater than the value required, where the table value needed for significance was 0.735.

3.11 INSTRUMENT'S RELIABILITY

The tools/hardware utilized for the gathering of information was acquired from the standard firm which considers the requirement of the different explores being done in India and abroad. The unwavering quality of these polls was guaranteed and aligned by their

makers. Every one of the surveys utilized in the examination to quantify the execution of the subject on various factors were viewed as solid and exact and were guaranteed by the specialists in the field of games brain research.

The surveys chosen for the accumulation of the information for mental parameters are chosen since they are observed to the best and dependable and have been widely utilized in the field of Sports Sciences and Physical Education all through the world.

3.12 COMPETENCY OF TESTER

Several trial sessions in the testing procedures were performed by the researcher so as to understand facilitating technique of the test, standard tests and procedures were used for data collection.

3.13 SUBJECT'S RELIABILITY

During the testing period, no motivational strategies were used. As identical subjects were used by the same tester under comparable conditions the test-retest correlation coefficient was effective.

3.14 VARIABLES FOR THE STUDY

Performance related fitness variables related variables, agility, cardiovascular endurance, dynamic balance, leg strength, reaction time(foot), speed and psychological variables achievement motivation, aggression, anxiety, mental toughness, self-confidence, team cohesion are the selected variables for the study.

3.15 SELECTION OF THE TESTS

3.15.1 Performance related fitness variables

Table-III depicts the selected performance related fitness variables, their reliable tests used for this study are described below.

Table -III

**THE LIST OF SELECTED PERFORMANCE RELATED FITNESS VARIABLES
AND THE TESTS USED FOR THE STUDY**

Sl.No.	Variables for Test	Test items
1.	Agility	Shuttle run test
2.	Cardiovascular endurance	12-minute run-walk test
3.	Dynamic balance	Johnson modified bass test
4.	Leg strength	Bench squat test
5.	Reaction time (foot)	Nelson foot reaction test
6.	Speed	50 Mts. dash

3.15.2 Psychological related Variables

Table-IV depicts the selected psychological variables, their reliable questionnaire used for this study are described below.

Table -IV

**THE LIST OF SELECTED PSYCHOLOGICAL VARIABLES AND THE TESTS
USED FOR THE STUDY**

Sl.No.	Variables for Test	Test items
1.	Achievement motivation	Sports achievement motivation questionnaire
2.	Aggression	Sports Aggression Inventory (SAI)
3.	Anxiety	Sports competition anxiety test
4.	Mental toughness	Sports mental toughness questionnaire
5.	Self confidence	Eric self-confidence questionnaire
6.	Team Cohesion	Group Environment Questionnaire (GEQ)

3.16 ORIENTATION OF SUBJECTS

Participants of the research as subjects were briefed regarding the importance of involving in the test procedures for collecting data, imparted knowledge regarding various measures used for the facilitation of the different tests and for better performance the subjects were cheered and motivated during the tests and training programme.

3.17 TESTER'S COMPETENCY

The researcher had adequate number of trials for procuring data for current research with respect to selected variables with the support and supervision of experienced physical education experts. It is pivotal for the researcher to acquaint himself/herself with the different kinds of instrument for the purpose of investigation. Therefore, in order to ensure the reliability of the measurement taken and to establish competency, the researcher underwent training under subject experts in performance related fitness variables and psychological areas. The test-retest method was used for ensuring testers competency.

3.18 COLLECTION OF DATA

The researcher conducted the valid tests, and their respective scores were recorded by following procedure. The subjects were made aware of the purpose of the test and were motivated to co-operate fully to make the test successful. The test procedure and test equipment were followed throughout the work out duration. The observed values were recorded for the subjects for the study for four groups. The relevant data regarding performance related fitness variables of Kho-Kho players were collected personally and with the help of experts and special trained physical education teachers, for the psychological variables the researcher administered the questionnaire before competition.

The observed values of initial and final test for all selected variables were statistically applied for further progression of study.

3.19 ADMINISTRATION OF TRAINING PROGRAM

Proprioceptive training, yoga training and combined training are various training modalities used for improving power and explosiveness in different sports categories (Chu, 1998). When used with a periodized training program and training techniques improvement in skill performance, increase in strength and agility, muscular hypertrophy, improve joint awareness, and overall proprioception can occur for athletes' various major games and other sporting events.

A 12-week proprioceptive training program, yoga training program, and combined training program were developed. Prior literature and research works discussed the intensity and volume which drew the outline for the training program. The pilot study determined the training volume. A short orientation and an exhibit of each activity were given to them before finishing each training session.

The training was imparted as follows:

1. Proprioceptive Training Group-I were taking part in proprioceptive training exercises for three days a week i.e., Monday, Wednesday, Friday for total twelve (12) weeks.
2. Yoga Training Group-II underwent yogic practices alternate days for three days (Monday, Wednesday, and Friday) single sessions in a week for total twelve (12) weeks.
3. Combination of proprioceptive training and yoga training Group-III -proprioceptive training and yogic practices on alternate days for three days (Monday, Wednesday, and Friday) in a week along with Group-I and Group II for total twelve (12) weeks.
4. Control Group-IV did not participate in any fitness training during the study period.

3.19.1 TRAINING SCHEDULE

Table V

12 WEEK PROPRIOCEPTIVE TRAINING PROTOCOL OF THE STUDY

Sl.No.	Types of Exercises	Week	1-3	4-6	7-9	10-12
		Set	2	2	2	2
		Warm-up for 10 minutes				
1.	Single leg stance while swinging the raised leg (flexed knee)	Reps.	12	15	18	20
2.	Forward & Backward leg swing with knee extended on single leg stance	Reps.	12	15	18	20
3.	Cross leg swings	Reps.	12	15	18	20
4.	Single foot side to side ankle hop	Reps.	12	15	18	20
5.	Side to Side ankle hop	Reps.	12	15	18	20
6.	Runners Pose	Reps.	12	15	18	20
7.	Partial Squats	Reps.	8	10	12	12
8.	High Bench Step ups	Reps.	10	12	15	18
9.	Split squat jump	Reps.	8	10	12	15
10.	Double leg Stance on wobble board (Eyes open)	Duration	30 sec.	45 sec.	60 sec.	90 sec.
	Rest between exercises		15-30 sec.	30-45 sec.	30-45 sec.	45-60 sec.
	Rest between sets		1 min	2 min	3 min	4 min
	Cool down for 10 minutes					

Table VI

12 WEEK YOGA TRAINING PROTOCOL OF THE STUDY

S.No.	Asanas Name	Week 1-3		Week 4-6		Week 7-9		Week 10-12	
		Pose Duration	Set	Pose Duration	Set	Pose Duration	Set	Pose Duration	Set
		Sec.		Sec.		Sec.		Sec.	
	Warming Up (Neck to toe stretching) (5 min)								
1.	Vrikshasana	30	4	30	5	45	4	60	4
2.	Vajrasana	30	4	30	5	45	4	60	4
3.	Tadasana	45	4	45	5	60	4	60	5
4.	Paschimouthanasana	20	4	30	4	45	3	45	4
5.	Halasana	30	4	30	5	45	4	60	4
6.	Bhujangasana	30	4	30	5	45	4	60	4
7.	Dhanurasana	20	4	30	4	45	3	45	4
8.	Naukasana	20	4	30	4	45	3	45	4
9.	Sarvangasana	30	4	30	5	45	4	60	4
10.	Bhunaman Vajrasana	30	4	30	5	45	4	60	4

Table VII

12 WEEK COMBINED TRAINING PROTOCOL OF THE STUDY

Proprioceptive Training	Weeks	Days	Warm-up	Reps.	Rest B/w Reps. (Sec.)	Set	Rest B/w Set (min.)	Cool Down
	1,2,3	M,F,W,M,F	10 Mins.	12	15-30	2	1	10 Mins.
	4,5,6	W,M,F,W		15	30-45	2	2	
	7,8,9	M,F,W,M,F		18	30-45	2	3	
	10,11,12	W,M,F,W		20	45-60	2	4	
Yoga Training	Weeks	Days	Warm-up	Duration	Set	Rest B/w Set (sec.)	Cool Down	
	1,2,3	W,M,F,W	10 Mins.	30	4	30	10 Mins.	
	4,5,6	M,F,W,M,F		60	3	30		
	7,8,9	W,M,F,W		90	2	45		
	10,11,12	M,F,W,M,F		120	1	-		

TABLE VIII
WEEKLY SCHEDULE FOR COMBINED TRAINING

Week	Monday	Wednesday	Friday
1st week	Proprioceptive Training	Yoga Training	Proprioceptive Training
2nd week	Yoga Training	Proprioceptive Training	Yoga Training
3rd week	Proprioceptive Training	Yoga Training	Proprioceptive Training
4th week	Yoga Training	Proprioceptive Training	Yoga Training
5th week	Proprioceptive Training	Yoga Training	Proprioceptive Training
6th week	Yoga Training	Proprioceptive Training	Yoga Training
7th week	Proprioceptive Training	Yoga Training	Proprioceptive Training
8th week	Yoga Training	Proprioceptive Training	Yoga Training
9th week	Proprioceptive Training	Yoga Training	Proprioceptive Training
10th week	Yoga Training	Proprioceptive Training	Yoga Training
11th week	Proprioceptive Training	Yoga Training	Proprioceptive Training
12th week	Yoga Training	Proprioceptive Training	Yoga Training

3.20 TEST ADMINISTRATION

3.20.1 AGILITY

4 x 10 Meter shuttle run. - Wood, R. J. (2010).

Purpose

To assess the ability to change body position and direction while running.

Equipment

Two wooden blocks of 2 inches by 4 inches and stopwatches.

Procedure

Two parallel lines were marked on the floor 10 meters apart. Two wooden blocks were placed on the opposite side of the starting line. The subject was asked to stand behind the starting line. On the signal

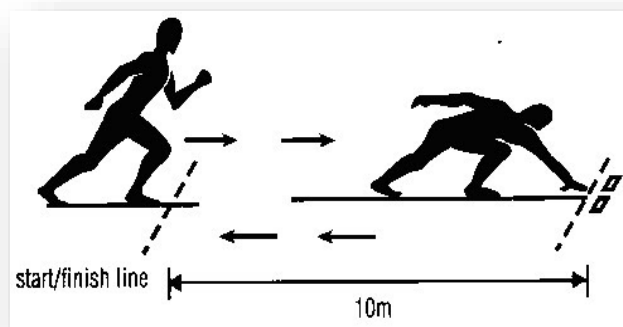


Figure 2 - 4 X 10 M. Shuttle run Test

"start", the subject ran to the blocks picked one up, ran back to the starting line and placed the block behind the starting line, he then ran back and picked up the second block which he carried back across the starting line. The subjects must place the block with hand on the starting line and they were not permitted to through the block to place the block. Restart was conducted to the subjects whoever violated the rules of the test. Two trials were given and the best trial was taken into account.

Scoring: The score was the elapsed time taken from the start of the signal and end of the completion of the course to the nearest one tenth of the second as the performance of the subject. (Yobu, 2000)

3.20.2 CARDIOVASCULAR ENDURANCE

12 minutes run and walk test. - Cooper, C. B., Storer, T. W. (2001).

Aim

To measure endurance of subject

Equipment

Stopwatch, Clapper or whistle, marking powder, measuring tape.

Procedure

In the track subjects run or walk on command of order, on mark, go. The tester starts the watch and keeps informing them of the timing after every round. The subjects are permitted to run or walk for 12

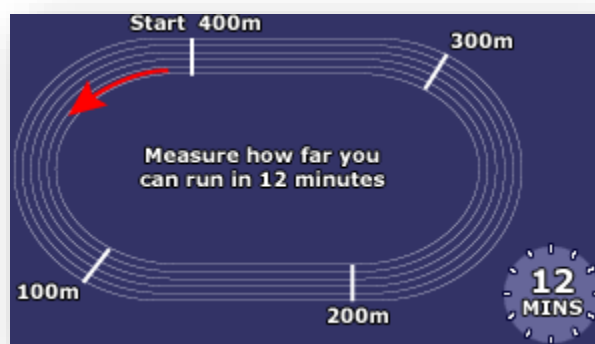


Figure 3 - 12 Minutes run/walk Test.

minutes. If possible, lap scorer should be used, or subject can also keep the record. After 12 minutes are over, the tester ordered to stop, and the subjects stopped wherever they were.

Scoring

The total number of rounds plus additional distance covered by each subject recorded by the tester or the assistant and converted in meters.

3.20.3 DYNAMIC BALANCE

Johnson Modified Bass Test - (Johnson & Leach, 1968)

Objective: To measure ability to jump accurately & maintain balance. It is suitable for girls & boys aged 12 years & above.

Equipment required: Stopwatch, $\frac{3}{4}$ inch wide colored marking tape & yardstick.

Test Administration: Eleven pieces of colored marking tape of $\frac{3}{4}$ x 1-inch size are cut & pasted on the floor at starting point. The starting line of 15 inches & total 10 blocks of $\frac{3}{4}$ x 1 inch was placed on the ground. One block was placed in center of the starting line, two other blocks were placed at the distance of 90 inches & 180 inches from the block placed at the center of starting line. Four blocks were placed both the sides of central point of the central line at the distance of 30 inches, then after 60 inches gap again four blocks were placed both side of the central point of the center line at distance of 30-30 inches. After marking the required area, the tester gave the instructions &

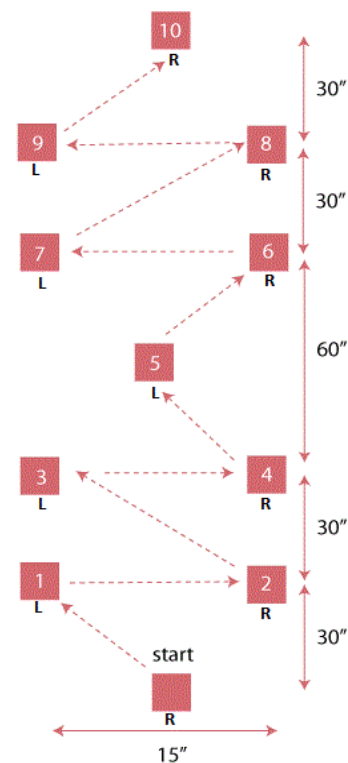


Figure 4 - Modified Bass Test

demonstration with the help of a trained helper with good dynamic balance. The subject was asked to stand on his dominant foot on the starting tape marked & asked to start leaping on the first tape marked with alternate foot. The subject was required to maintain a steady balance on the ball of the leaping foot as long as possible up to a maximum of 5 seconds, again subject was asked to leap with other foot on the second tape marked. Subject repeated

the process up to the last (10th) tape mark. The subject was instructed that the foot must cover the tape mark completely in such a way that it should not be visible to the tester.

Scoring: Maximum score 100 (5 points for correct landing at each tape mark and 1 point for every second of maintaining balance on the ball of the concerned foot up to a maximum of 5 seconds).

Points for correct landing = $5 \times 10 = 50$

Maximum points for maintaining balance at each spot - $5 \times 10 = 50$

Total Maximum score = $50 + 50 = 100$ points.

Penalties: If subject lands improperly on the landing tape mark or did not cover the tape marked or failed to stop on landing spot or touches the heel on the floor, he got 0 point out of 5 points of landing. The subject was allowed to reposition himself after a false landing for the 5 seconds balance points through hopping & continued the test.

3.20.4 LEG STRENGTH

Bench squat Test - Devinder K Kansal (2021)

Objective

To measure the strength of the legs and back on lowering to and arising from sitting position.

Equipment and Materials

An adjustable bench and fold up mats, seat level adjusted to lower patella (Kneecap) level. A barbell, weight plates and a thick towel to pad bar was used.

Directions

After adjusting the desired amount of weight on the bar, two assistants placed the bar upon the shoulders (and behind the neck) of the student as he stood near the edge of the bench. With the feet at a comfortable distance apart and a firm grip of the hands on the bar, the student lowered to an erect sitting position on the bench. Then, without rocking back and forth, the student returned to the standing position. After that the two assistants removed the weight. The performer re-adjusted the weights if he wanted to add more weight.

General Directions

Students were familiar with the exercises prior to testing on each test item and the students were allowed for two trails. Students were warmed-up before the test. Two sets of weight were made available.

Scoring

The total weight of the barbell (including the collars) satisfactorily lifted is recorded. Only the better lift of two trials was recorded. The students' strength score was divided by his body weight to calculate relative leg strength.

Safety

Two assistants who stood at each end of the barbell, were ready to catch the bar in the event that the performer over leans or starts to fall.

Additional points

1. The performer sat at the near edge of the bench so that he would not have to rock and forth to get up.
2. The seat level of bench was adjusted to the lower patella level before the squat was executed.

3.20.5 REACTION TIME (Foot)

The Nelson Foot Reaction Time (FRT) - Devinder K Kansal (2021)

Objective:

The purpose of the test was to measure the reaction time of foot movement in response to visual stimulus. The test is suitable for both boys & girls aged 5 years and above.

Equipment required:

Reaction timer scale, table or bench and wall space. The Reaction Timer is based on the law of constant acceleration of free-falling bodies & consists of a stick that is scaled to read in time (accurate up to 0.005 seconds) as calculated by the given formula:

$$\text{Reaction time (Sec.)} = \frac{\sqrt{2 \times \text{Distance the stick (Timer) falls (In feet)}}}{32 \text{ (Acceleration due to gravity)}}$$

Test Administration: =

After giving the explanation and demonstration of the test, the subject was asked to sit on the table which was about 1 inch away from the wall. The subject placed his foot 1 inch away from the wall while resting the heel 2 inches away from the edge of the table. The tester held the reaction timer scale near the wall so that it hung in between the wall & the foot of the subject, the subject was asked to look at the concentration zone & react as soon as the timer scale was dropped. The subject was asked to hold the scale with the big toe of both feet. Twenty trials were given to the subject.

Scoring: The reaction time of each trial is recorded from the line just above the end of the big toe when it holds the stick. The averages of the middle 10 trials were taken as the score of the subject ignoring five fastest & five slowest trials.

3.20.6 SPEED

50 Mts. dash test - Mackenzie, B. (2015).

Aim

To measure speed of the subjects.

Equipment

Minimum 60 meters open space, stopwatch, clapper or whistle, marking powder, measuring tape.

Procedure

The subjects (four at a time) stood behind the starting line. On getting the starting signal (whistle), the subjects ran as fast as possible across the finish line which was at a distance of 50 Mts.

Scoring

The elapsing time from the starting signal until the runner's torso crossed the finish line was recorded to the nearest one hundredth of a second as the final score.

3.20.7 ACHEIVEMENT MOTIVATION

Sports Achievement Motivation Test: - Kamlesh. (1988).

Sports Achievement Motivation Test by Dr. M.L. Kamlesh inquires an important question for a player as well as a student “What you wish to Achieve in your sports Career”. This test is meant to make one self-understand this proposition as well as to know how one moves in this direction. The test consists of incomplete statements which can be completed by choosing either of the two proposed parts against each statement. The subjects were asked to tick (✓) to second part, which in their opinion fits in the best, in the first part.

Scoring

The Sports Achievement Motivation Test is a self-evaluation questionnaire of twenty statements. It includes positive and negative statements, response value which extends from 0 to 40. Each statement carries a maximum score of two and the minimum zero. When the subject ticks the high pole part, they were given two points and when they touch the low poles, they earn zero.

Scoring Key: 1a, 2b, 3a, 4a, 5b, 6b, 7b, 8b, 9b, 10a, 11a, 12a, 13a, 14b, 15b, 16a, 17a, 18a, 19a, 20a

The items 1, 3, 4, 9, 10, 11, 12, 13, 16, 17, 18 and 20, if the respondent answers "a" he/she scores 2 points, if the answer is "b" he/she gets only zero point.

The items 2, 5, 6, 7, 8, 14, 15 and 19, if the respondent answers "b" he/she scores 2 points, if "a" he/she gets only zero point. A subject scoring below 24 marks, could be characterized as low in sports achievement motivation. Those scoring below 30 marks but above 24 marks as moderate and those scoring above 30 marks as highly motivated as suggested by Dr. Kamlesh.

3.20.8 AGGRESSION

Sports Aggression Inventory (SAI) - Kumar A & Shukla S (1998)

For the measurement of Sports Aggression, Sports Aggression Inventory (SAI) developed by Anand Kumar & P.S. Shukla (1988) was used. English version of the SAI was used to measure the sports Aggression of the player. The Inventory consists of 25 statements and each statement carries 1 mark of which 13 are positive and 12 are negative. The maximum score which can be obtained is 25 and the minimum is Zero. The responses are in yes or no, the instructions emphasized to give participants themselves as to judge their behavior during play situation. In this average score more than 7 focuses on extreme aggression. The inventory assumes high reliability as it is evident from split half reliability 0.84 and test - retest reliability 0.86.

3.20.9 ANXIETY

Sports Competition Anxiety Test (SCAT) – (Martens, 1977)

Sports Competition Anxiety Test, the tool used was the adult form of Sports Competition Anxiety Test (SCAT) developed by Martens (1977) to measure the level of competitive anxiety among athletes. The test consists of 15 statements related to competitive situation, which the athlete answers by making a Tick Mark (✓) corresponding the "hardly ever", 'sometimes' or 'often' for each item. There are five items which are spurious. Therefore, only ten are to be scored to yield a competitive anxiety measure, Martens (1977) reported the test-retest reliability to be .77 across age, sex and time. The internal consistency for the test was found to be .96. The range of anxiety levels recommended for athletes are as follows: -

TABLE IX

Sports Competitive Anxiety Test

S.No.	Range of scores	Interpretation
1.	1-10	Low Anxiety level
2.	11-20	Optimum Anxiety level
3.	21-25	Above Average Anxiety level
4.	Above 25	Extreme Anxiety level

Scoring Method

The procedure for scoring SCAT was as follows for each item one of three responses are possible: (a) Hardly ever, (b) Sometimes, and (c) Often. The 10 test items

are 2, 3, 5, 6, 8, 9, 11, 12, 14 and 15. The spurious items: 1, 4, 7, 10 and 13, were not scored.

Items 2, 3, 5, 8, 9, 12, 14 and 15 were scored according to the following key: -

1 = Hardly ever

2 = Sometimes

3 = Often

Items 6 and 11 were scored as follows:

1 = Often

2 = Sometimes

3 = Hardly ever

If a person deleted 1 of 10 test items, his prorated full-scale score was obtained by computing the mean score for the 9 items answered, which was considered against the deleted item. When two or more items were omitted, the respondent's questionnaire was invalidated. The range of scores on SCAT is from 10 (low competitive A-trait) to 30 (high competitive A-trait).

3.20.10 MENTAL TOUGHNESS

The Sports Mental Toughness Questionnaire (SMTQ)

The SMTQ (Sheard et al., 2009) was used to evaluate the participants' mental toughness. The 14-item SMTQ provides a global measure of mental toughness (i.e., the sum of the subscales scores), as well as three subscales encapsulating confidence, constancy, and control. The participants had to respond to items on a four-point Likert-type scale ranging from "not at all true" [1] to "very true" [4]. Scores on the scale range from 14 to 56. Sample items included "I interpret threats as positive opportunities" (confidence); "I give up in difficult situations" (constancy); and "I am overcome by self-doubt" (control). Confirmatory factor analysis (CFA) has provided support for the three subscales and the global measure of mental toughness. Additionally, Sheard et al. (2009) revealed support for the internal reliability of the SMTQ subscales with Cronbach α 's of greater than 0.72.

Interpretation of Overall Score of Mental Toughness Overall Score:

Code 01: 14 - 25: Need to start putting more time into the mental training area.

Code 02: 26 - 40: Average to moderate skill in mental toughness.

Code 03: 41 – 56: Strength in overall mental toughness.

3.20.11 SELF CONFIDENCE

Self Confidence Inventory - (Basavanna M. 1975)

It was a generalized phenomenological construct. It encompasses numerous areas of a person's self-experience and his perceived adequacy or otherwise thereof. The inventory consists of 100 items that square measure positive and negative in their nature. The inventory was primarily self-administrative since all directions were given on the first page. The subject must give his response on a separate answer sheet.

Scoring

All the positive items answered negatively, and the negative items answered absolutely got one mark for each. The positive items answered positively, and negative items answered negatively will be scored 0 for each. This evaluation procedure yielded a total score of subjects for their self-confidence. A higher score indicates a higher level of self-confidence and vice versa.

There are 68 items that are negative statements. They are 1 to 10, 16 to 25, 31 to 40, 46 to 55, 61 to 70, 76 to 85, and 91 to 98. The remaining 32 items are positive items, they are 11 to 15, 26 to 30, 41 to 45, 56 to 60, 71 to 75, 86 to 90, 99 and 100. Positive items are scored as 1 for true and 0 for false, at the same time negative items are scored as 0 for true and 1 for false.

Weightage one is assigned to each score. The minimum score is one and the maximum is hundred lower the score, higher will be the level of self-confidence and vice-versa. If the score is above 50, the level of self-confidence is normal. Score 26-50 indicates a moderate lack of self-confidence and the score of 13-25 as mild lacking Score from 0 to 12 indicates severe lack self-confidence.

3.20.12 TEAM COHESION

Group Environment Questionnaire (GEQ) - Carron (1985)

The team cohesion was assessed by using the Group Environment Questionnaire (GEQ) designed to measure Individual players' perceptions of team cohesiveness was developed and standardized by Carron et al. (1985) was being administered to each subject to know the team cohesion of Kho-Kho players.

The GEQ of Carron et al. (1985) which measures the athletes' perceptions of their team's cohesion. The GEQ is a self-report questionnaire is made of 18 items, out of which four items are related to individual attraction to group-task (items 2, 4, 6, and 8); five items are related to individual attractions to group social (5,9,1,3, & 7); five items are related to group integration task (10,12,14,16 and 18); and finally, four items are related to group integration-social (11, 13, 17 and 15). Members were requested to respond to all 18 statements about their team on a nine-point scale, which is anchored at the two extremes by "strongly disagree" and "strongly agree". The score on any specific scale was computed by obtaining the sum of response scores for a subject from the pertinent set of items. Higher scores reflect stronger perceptions of cohesiveness. Individual attraction to group-task is a composite measure of individual team member's feeling about their personal involvement with group task, productivity, goals, and objectivity.

Individual attraction to group- social is a composite measure of individual team member's feelings about personal involvement, desire to be accepted, and social interaction with the group. The statements related to individual attraction to group measure the individual's assessment of his personal involvement with the group-task and group social aspects. For example, response to the statement "I don't like the style of play on this team"

indicates the level of involvement with group-task and response to the statement "some of my best friends are in this team" suggests the level of involvement with group-social. Group integration-task is a measure of the individual team member's feelings about the similarity, closeness, and bonding within the team around the group's task. Group integration-social is a measure of the individual team members' feelings about similarity, closeness, and bonding within the team around the group as a social unit. The statements related to group integration measure the individual's assessment of the group in terms of its coherence around task and social activities. For example, response to the statement "Our team is united in trying to reach its goals for performance" indicates individual's feelings about group integration-task and response to the statement "Members of our team do not stick together outside of practices and games" indicates individual's feelings about group integration social.

Responses of the subjects selected for this study were scored according to the answer keys suggested by the authors.

For individual attraction to group-task, items 2, 4, 6, and 8 were scored from strongly disagree = 9 to strongly agree = 1.

For individual attractions to group-social, items 5 and 9 were scored from strongly disagree = 1 to strongly agree = 9. On the other hand, items 1, 3 and 7 are scored strongly disagree = 9 to strongly agree = 1.

For group integration task, items 11, 12 and 16 were scored strongly disagreed to strongly agree = 9. On the other hand, items 14 and 18 were scored from strongly disagree = 9 to strongly agree = 1.

For group integration-social, item 15 was scored strongly disagree-1 to strongly agree = 9. On the other hand, items 11, 13 and 17 were scored from strongly disagree = 9 to strongly agree = 1. Group Environment Questionnaire (GEQ) was administered in the evening of the previous day of the match to measure team cohesion.

3.21 STATISTICAL PROCEDURE

The data on the pre-test and post-test scores were collected for all groups for each variable. Appropriate statistical techniques were used to the collected data. The collected data and statistical method applied are given below.

Descriptive Statistics: The descriptive statistics, measure of central tendency, and measure of dispersion, which helped to describe a data distribution, were calculated for analyzing the data.

Analysis of Variance (ANOVA): It is for analyzing the mean difference of different groups with respect to each variable by pre-test and post-test scores.

Analysis of Covariance (ANCOVA): It is used to find the significant adjusted post-test mean difference between groups with respect to each variable selected for study, when the effect due to primary pre-test scores is rejected, the analysis of the post-test scores of the groups might show a statistically significant difference in post-test means of each variable selected for the study. Based on this, the researcher could conclude for now that training has made a positive impact in the selected criterion variables. But mere comparison of the post test scores could not, however, firmly confirm that all the groups differ significantly because other intervening variables that could potentially affect the experiment might be in play here. Therefore, to get a trustworthy result, it is imperative to analyse the scores

using the technique of analysis of covariance, rather than analysis of variance. By considering scores of pre-tests as covariate, the impact of the different types of training was determined.

Post Hoc Test: Scheffe's test helps to understand the significant pair of means.

Paired Sample t-test: A parametric test to know the significance of means between two groups after a treatment effect.

Value: The level of significance was chosen to be at 1% or 5% and if the calculated P-value (Probability of Type I Error, in statistical terminology) is less than 0.01 or 0.05, it signifies that significant mean difference between the groups exists statistically.