CHAPTER III
METHODOLOGY

3.1 SAMPLE
3.2 RESEARCH DESIGN
3.3 NATURE OF THE VARIABLES
3.4 TOOLS
3.5 PROCEDURE
METHODOLOGY

The next sequential step is to verify the hypotheses is methodology. The systematic and scientific method to be used to find out the results and conclusion. To solve the problem mentioned in chapter I, following steps have been taken to conduct the study.

3.1 SAMPLE :-

"Sampling is taking any portion of a population or universe as representative of that population or universe." (Kerlinger, 1983) For present study stratified sampling method was used because the study was aimed to see the difference between tribal origin soccer players and non-tribal origin soccer players with respect to their anthropometric differences and personality dimensions along with motor fitness. Therefore 100 tribal origin soccer player who are residing in Krida Pansar of Chhattisgarh State which is run by Tribal Welfare Department of Chhattisgarh State. The average age of tribal origin soccer player was 15.19 yrs. These soccer players are getting training and coaching in their premises by the coach appointed by the Tribal Welfare Department. All the sample selected from Krida Pansar (tribal origin) had a experience of representing at least upto the district level competition. Some of them got opportunity to represent at state and national level competition. 100 non-tribal origin soccer players also selected for the study. Sample selected from urban area of Chhattisgarh State. The average age of non-tribal origin soccer players was 15.38 yrs. Non-tribal soccer players are also getting training in their respective schools and clubs. This group of sample also represented at least at the district level competition, some of them
represented division, state and national level competition. The basic difference regarding training; the tribal sample group are getting training with residential facility and the non-tribal sample group are at their home. The possibility of influencing performance due to this factor is already mentioned under the title of limitation.

3.2 RESEARCH DESIGN :-

The quality and scientificness of the research findings depends upon the research design because design generation a disciplined data. Hence research methodologists like Kerlinger (1978), Edwards (1968), Winer (1971), and many more considered research design as a controlled mechanism governed by the principle of "Max Con Min".

The 'max' part of this principle instructs the investigator to go for "Maximization of Systematic Variance", the 'con' segment of the principle asked him to 'exercise control over extraneous (unwanted) variable'; and the 'min' part of this principle motivates him to minimise error variance so as to ensure generalisation. Hence research design is also known as a blue print of the research engineer which tells him what to do and not to do while chalking out the steps to be taken in sequential manner for collecting, analysing the empirical data for the sake of verification of these hypotheses. Hence while selecting suitable research design for the present study hypotheses were taken into the consideration. Therefore, for verification of relation oriented hypotheses and interactional oriented hypotheses stated in chapter I two specific design were selected i.e. correlation design and factorial design.

It was planned that these two designs are enough for analysing data to verify the hypotheses.
3.3 NATURE OF VARIABLES :-

MOTOR FITNESS :-

Motor fitness refers to that neuro-muscular condition that permits strenuous work; the basic components of motor fitness being such factors as strength - primarily as muscular endurance, speed, agility, endurance, power and flexibility. It entails the basic elements of vigorous physical activity. The term "motor fitness" came into being during World War II to describe that condition that (1) involved more than muscular strength and muscular strength as well as systemic endurance (the three aspects that represent the basic connotation of physical fitness) but (2) did not encompass more than basic body coordination and fundamental skills (characteristics of motor abilities and performance tests, such as hand-eye or foot-eye coordination, or balance). Generally tests designed as physical fitness tests are actually tests of motor fitness. Physical fitness is generally used to refer to the functional capacity of the individual for a specific task or mode of living. Motor fitness might be conceived as physical fitness in action involving basically fundamental skills.

Thus motor fitness adds to the components of physical fitness, namely, muscular strength and endurance, and cardiovascular function, the factors of speed, agility, power and flexibility. For clarification purposes these 'additives' are defined as: speed - rapidity of movement to accomplish a specific task, such as the 50-yard dash; agility - ability to change, both rapidly and accurately, the position or direction of the body through large ranges of movement; power (muscular or explosive) - exertion of maximum muscular force in the shortest possible time interval to accomplish a specific task, composed of both speed and strength;
and flexibility - extent of the range of movement of articulating body segments about a joint which is specific to that joint and generalizable only as a profile of the specific joints measured.

So conceived, motor fitness encompasses efficient performance under demanding conditions in lifting, carrying, climbing, running, dodging, jumping and swimming. As an area of measurement, motor fitness represents an important consideration of overall appraisal, namely, the functioning of the individual that is fundamental to all physical activity.

**EXTRAVERSION**:

Infact, the Eysenckian extraversion is a well-established personality dimension which refers to extraversion-introversion, the two extreme poles of the continuum, briefly known as extraversion only. Although the terms extraversion-introversion were originally used by C.G. Jung and later on by many other personality psychologists, an attempt has been made to deal with extraversion, as has been viewed by Eysenck. Commenting on the nature of extraversion and introversion as used in his personality theory, Eysenck (1968) says “Terms such as extraversion and introversion are used in our discussion in a sense strictly derived from empirical studies ... we merely wish to point out that our own use of these terms must stand and fall by empirical confirmation and owes more to the work of factor analysis and early experimentalists than to Jung and his followers.”

The beauty of Eysenckian dimension of extraversion is that, he not only attempted to offer a physiological base to his dimension but also specified its behavioural indicators. According to Eysenck (1968) the genotype of extraversion refers to position on the dimensions that are programmed by genes and that
variations in extraversion-introversion reflect individual differences in the functioning of particular activation system-a portion in the brain (Eysenck, 1973), and the best prediction of E (extraversion) scores at the moment is possible in adulthood through paper-pencil devices owing to its phenotypic expression. The phenotype specification of extraversion is that the typical extrovert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He craves for excitement, takes chances, often sticks his neck out, acts on the spur of the moment and generally an impulsive individual. He is fond of practical jokes, always has a ready answer and generally likes chances. He is carefree, easy going, optimistic and likes to 'laugh and be marry'. He prefers to keep moving and doing things. He tends to be aggressive and loses his temper quickly; altogether his feelings are not kept under tight control and he is not always a reliable person. On the other hand, 'the typical introvert' is a quiet, retiring sort of person, introspective, fond of books rather than people. He is reserved and distant except to intimate friends. He tends to plan ahead, looks before he leaps and distrusts the impulse of moment. He does not like excitement, takes matter of everyday life with proper seriousness and likes a well ordered mode of life. He keeps his feelings under control, seldom behaves in an aggressive manner and does not loose his temper easily. He is reliable, somewhat pessimistic and places great value on ethical standards (London and Exner, 1978). In the light of these phenotypic expressions one should not think that every person is either an extrovert or an introvert. The term E is used in Eysenck's theory to mean that there is a continuum from one extreme to the other with majority of people (ambivert) nearer the centre rather than the extreme.
So far as extraversion's relationship with negative mental health is concerned only a limited numbers of studies (Kozeny, 1986 and Levenson, 1988) have been noticed in the last decade. Hence inclusion of extraversion as a dimension of personality specified by Eysenck and study of its bearing upon positive mental health seem quite justifiable in the present investigation.

**NEUROTICISM**

It is another dimension of personality as put forth by Eysenck. Neuroticism is also known as emotionality or stability-instability, and is the close associate of anxiety. While reflecting upon the genotypic level of neuroticism (N), Eysenck (1973) stated that differences between people in emotionality or neuroticism are mediated by inherited differences in the liability and excitedly of the autonomous nervous system. He postulated that people are constitutionally predisposed to react less strongly, less lastingly and less quickly with their autonomic nervous system to strong, painful or sudden stimuli impinging upon the sense organs. These reactions integrated as they are with ongoing activities are experienced by organism as emotions and reacted to accordingly (Eysenck, 1965). Eysenck and Ruchman (1965) pointed out that neuroticism is a trait which forms a continuum from normal to neurotic and while reflecting upon those phenotypic expressions in behaviour of this dimension they mentioned that at one end of it there are people whose emotions are liable, strong and easily aroused; they are moody, touchy, anxious, restless and so forth characterizing the unstable or neurotic type; and at the other extreme there are people whose emotions are stable, less easily aroused; who are calm; even tempered and reliable, representing the normal persons typical of stable type. It means that points near the minus end of the continuum represent poorly integrated, emotionally
unstable, neurotic personalities; and the points near the plus end of the hypothetical continuum represent well integrated, emotionally stable, non-neurotic personalities (Burjorjee & Helode, 1973).

No doubt, the concept of negative mental health is closer to the dimension of neuroticism and its allied shade like worry, anxiety, depression and like. However, the survey of the empirical investigations carried out in the last decade has revealed that a few investigators (e.g. Kozeny, 1986 and Levenson, 1988) have attempted to study the linkage between Eysenckian neuroticism and mental health as measured by negative models. Hence inclusion of neuroticism in the present study as one of the independent variables and to see its influence upon positive mental health seem most desirable.

**Anthropometric Dimensions :-**

The scientific specialization of anthropometry is vigorously developed in last few decades. According to sports-scientist it is the application of measurement to the study of human size, shape, proportion, composition, maturation and gross function. Its purpose is to help understand human movement. Sports scientists are working on these in the context of growth, exercise, performance, and nutrition. In the area of sports where human movements are frequently occurred when movement of body parts are equally important; therefore measurement of body segment is essential to analyze sports performance. Further study of specific area, size, shape, proportion and composition are major influencing factors in sports performance. With the help of these components we can understand the effect of different size and shape and proportion of body segment on particular sports skill. We can also judge the effect of exercise on growth and performance too.
3.4 TOOLS:

To conduct the study following tools were used to measure anthropometric dimensions, motor fitness components, personality dimension and skill performance.

(A) Anthropometric Dimensions:

The following anthropometric measurements are taken to assess soccer skill performance.

Body Weight:

Body weight is the nude weight of the body when the bowels are empty. Normally it is not possible to take the nude weight of the body. The body weight has been measured by weighing machine at testing site.

Calf Circumference:

It is the maximum circumference of the lower leg when the calf muscle is relaxed. The subject is in sitting position so that his knee is bent at right angles and his lower leg hanging freely. The measurement is taken at right angles to the axis of the lower leg where it is maximum.

Thigh Circumference:

It is the circumference of the thigh just beneath the gluteal fold with the body weight equally supported by the two leg. It is measured horizontally.

Ankle Circumference:

It is the minimum circumference of the leg taken above the two malleoli. The tape is wrapped around the legs above the malleoli where the minimum circumference is obtained.
Abdominal Circumference :-

It is the circumference of the abdomen at the level of the umbilicus when the abdominal muscles are relaxed. Wrap the tape around the abdomen at the middle of the umbilicus horizontally asking the subject to keep his abdominal muscles relaxed.

Ankle Breadth :-

It is the breadth of the ankle across the two malleoli. The subject should sit on a table with legs hanging freely. The caliper arms are placed on two malleoli and pressure is exerted before taking the measurement.

Sitting Height :

The subject sits on a stool or a table top. His legs hang down freely. The back of the subject be stretched as far as possible. The horizontal bar of the anthropometer rod is brought down so as it touches the highest point on the head.

Height :-

The subject should stand erect on a horizontal surface. Ask him to stretch as much as possible taking care that his heels are touching each other and the horizontal surface. The anthropometer rod is held vertically and the horizontal arm is brought down so that it touches the highest point on the head in the mid-sagittal plane.
(B) EYSENCK'S EXTRAVERSION & NEUROTICISM (J.E.P.I. INVENTORY):

For the purpose of tapping extraversion, neuroticism and L dimension of Eysenck's personality theory, the J.E.P.I. inventory developed by B.I. Eysenck has been preferred. This inventory measures extraversion (E), neuroticism (N) along with an element of social desirability known as faking through its lie sub-scale by a questionnaire method. The original inventory is in English and it is basically meant for junior population. It was decided to go for a Hindi version of Eysenck's J.E.P.I. inventory prepared by (Helode, 1985). This Hindi J.E.P.I. inventory comprises of in all 50 items of which 20 items are for tapping E, 20 items for measuring N, and 10 items are for measuring tendency to tell a lie (L). So as reliability and validity of this Hindi J.E.P.I. is concerned, it can be said that the inventory is highly reliable and valid. The split half reliability have been found as E .767, N .835, and L .754. The concurrent validity against original J.E.P.I. - E Vs. E .456, N Vs. N .465, L Vs L .565. This Hindi J.E.P.I. inventory is given in the appendix.

(C) COOPER MOTOR FITNESS TEST (1963):

Cooper test is a three item battery consisting of the vertical jump (J), Chinning (C) and 100 yard Shuttle run (R). In the shuttle run, the subject covers a 25 yard course four times.

The test is intended to measure the ability of the individual to perform fundamental motor skill such as jumping, chinning, running and dodging, which involve the basic elements of power, speed, agility and endurance.

This is the modified, well-known JCR test for school boys and girls.
(D) WARNER’S SOCCER SKILL TEST :-

To measure the fundamental skills of soccer, selected items of the Warner’s Soccer Skill Test (1950) was administered to assess soccer skills.

TEST DESCRIPTION :-

(i) Kicking For Distance, Left Foot :-

Purpose :-

The purpose of this test was to measure the kicking ability of the subjects in terms of distance.

Procedure :-

A line “AB” at 25 yards in length was drawn to serve as kicking line. Another restraining line “CD” parallel to the kicking line of 25 yards at a distance of 65 yards from the kicking line was drawn. Two lines AC and BD were drawn to join these two parallel lines at both ends. Specification of Kicking of distance test has been depicted in Fig. 1.

The test was administered to one subject at a time. Subject was asked to stand behind the kicking line. The soccer ball was placed on the centre of kicking line and on the signal “ready go“ the subjected was allowed to kick the ball as far as possible after taking a maximum approach run from behind the kicking line by using his foot as he liked.

Score :-

The distance was measured in meter and centimeter from the kicking line to the point of first bounce. Three trials were given to each subject and the best of three was recorded as score.
FIG. 1
SPECIFICATION OF KICKING FOR DISTANCE SKILL TEST
(ii) **Kicking For Distance, Right Foot** :-

This test is administered exactly like Item (A) except that the right foot is used instead of left. (Fig. 1)

(C) **Throw-in for Distance** :-

The purpose of this test was to measure the throw in ability of the subjects in terms of distance.

Two straight lines were drawn 25 yards apart and parallel to each other. Another line was drawn to join these two parallel lines at one end which was used as restraining line. From the restraining line distance were marked at five yards with the interval of one yard along the parallel line. Specification of throw-in for distance test has been depicted in Fig. 2.

The test was administered to one subject at a time. Subject was asked to stand behind restraining line. On the signal “ready go”, the subject was allowed to throw the ball as far as possible after taking a maximum approach run from behind the restraining line.

**Score** :-

Three trials were given to each subject and the best of three was recorded in meter and centimeter as score.

(D) **Dribbling the Ball** :-

The purpose of this test was to measure the ball controlling ability of the subjects.

Five javelins, Soccer balls, measuring tape, Stopwatch, Score sheet etc.
Five javelins were placed in a straight line five yards apart from each other on a smooth, firm ground, five yards away from the throwing line. On the signal "ready," the thrower would start running towards the throwing line. On the signal "go," the thrower would throw the javelin, keeping the body low and the javelin over the head. The javelin must cross the restraining line in front of the signal. The javelin must go over the restraining line, and the best of the three throws was recorded. The javelin must land beyond the restraining line, and the second as a second attempt.

**FIG. 2**

**SPECIFICATION OF THROWING FOR DISTANCE SKILL TEST**
Five javelins were placed in a straight line five yards apart from each other. A restraining line drawn on the ground five yards away from the five obstacle. Specification of dribbling the ball test has been depicted in Fig. 3.

Subject was asked to stand behind restraining line. On the signal "ready go", the subjected start dribbling from the restraining line and finishing after crossing through all five obstacles, keeping to the fixed direction and path of dribbling and by crossing the restraining line. The time-keeper start stop watch on the signal "ready go" and stopped as the subject crossed the restraining line with the ball.

Three trials were given to each subject and the best of three was recorded to the nearest 1/10th of a second as a score.

(E) Kicking for Accuracy :-

The purpose of this test was to measure kicking for accuracy ability of the subjects in terms of total points taken by him from the target.

A penalty spot was marked infront of the goal at a distance of 12 yards. Target zones were marked at the cross bar of the goal, which was divided into 10 segments. Each segment was 1 yard width and numbered from the centre to the ends on both sides from 2 to 8 and top of both corner 10 as it is shown in the figure. As kicking at the centre of the goal area is comparatively easy, more credit was given for kicking at right or left extremes and top corner of the goal. Two points were awarded for kicking at the middle, eight points were for kicking at extreme ends and 10 points were awarded at the top corners on either
FIG. 3
SPECIFICATION OF DRIBBLING THE BALL SKILL TEST
side. Specification of kicking for accuracy test has been depicted in Fig. 4.

A soccer ball was placed on the penalty spot and the subject was asked to stand behind the penalty spot. On the signal "go", the subject kicks the ball at the goal with an intention of getting maximum credit of 10 points. No point was awarded when the ball went wide from the goal. Three traits were given to each subject.

The kicking for accuracy ability of the subject was measured in terms of total points scored by him from target zone. Average of three trails was recorded as the score of the subject.

3.5 PROCEDURE :-

The soccer players selected for above mentioned study from various Krida Parisar of Chhattisgarh State and educational institutions from urban areas of Chhattisgarh State were subjected to the aforementioned tools on the playfields of the institutions. First of all anthropometric measurements has been taken of all subjects after the interval of 10 minutes. The JEPI inventory was administered to each subject. After the rest of 10 minutes, three items of motor fitness test was administered to each subject as instructions given by the author. After sufficient rest, Warner Soccer Skill Test item was administered on each soccer player one after another according to instructions given by author.

The response given on the JEPI Hindi version inventory was scored with the help of three scoring keys prescribed by the author. Numerical weightage of "1" was given to each response matching with the key answer, while a weightage "0" was given to the unmatched response. The obtained score in case of each
subject, on each of these dimensions of personality.

The performance obtained by motor fitness score on three items were recorded under - 1. pull-ups, 2. shuttle run, 3. vertical jump. To obtain total motor fitness score linear transformation method was adopted. In this method highest and lowest marks of all the fitness components were marked out and

and anthropometric measurements in the level of each member of sample of 200 cases. It was decided to evaluate measured anthropometric variables statistically.

FIG. 4
SPECIFICATION OF KICKING FOR ACCURACY SKILL TEST
subject, on each of three dimensions of personality.

The performance obtained by motor fitness score on three items were recorded under - 1. chin-ups, 2. Shuttle run, 3. Vertical jump. To obtain total motor fitness score linear transformation method was adopted. In this method highest and lowest limit of all the fitness components was traced out and numerical weightage was given in the ranking system. In the shuttle run item, first ranking was awarded to lowest timing given by the subjects and next ranks has been awarded to those who took more time to complete given task.

Soccer skill performance has been observed by five items namely; kicking (left & right), throwing, dribbling, and kicking for accuracy. To assess total soccer playing ability, linear transformation method was adopted. Maximum numerical weightage was given to soccer players who performed maximum in kicking, throwing, and accurate kicking, while maximum numerical weightage was given who took less time in performing dribbling ability.

All scores namely motor fitness, E, N, L, Soccer Skill Ability, and anthropometric measurements in the case of each member of sample of 200 cases to verify the research hypotheses appropriate statistical treatment was given to the data.