#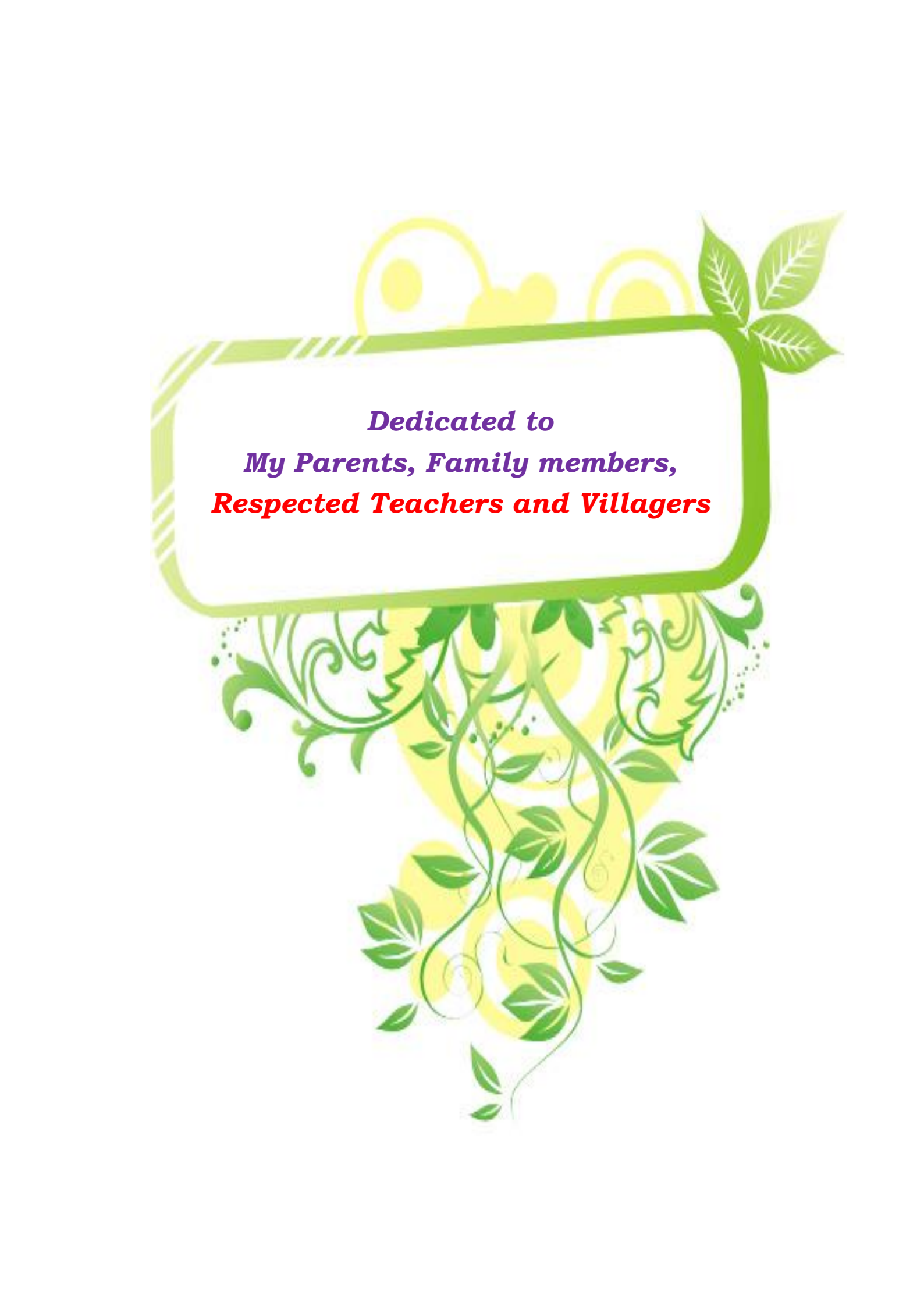 STUDY ON RELATIVE IMPORTANCE OF SOMATOTYPE PSYCHOLOGICAL PARAMETERS AND BASIC SOCCER SKILLS WITH RESPECT TO POSITION OF PLAY

A THESIS SUBMITTED TO THE JADAVPUR UNIVERSITY
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN ARTS

By
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INDIA

SEPTEMBER, 2022

Dedicated to
My Parents, Family members,
Respected Teachers and Villagers

CERTIFICATE

Certified that the Thesis entitled "**STUDY ON RELATIVE IMPORTANCE OF SOMATOTYPE PSYCHOLOGICAL PARAMETERS AND BASIC SOCCER SKILLS WITH RESPECT TO POSITION OF PLAY**" submitted by me for the award of the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the Supervision of **Prof. Ashoke Kumar Biswas,** Department of Physical Education, Jadavpur University, Kolkata and that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere / elsewhere.

Countersigned by the Supervisor   Signature of the Candidate

Dated: Dated:

DECLARATION

I hereby declare that the Ph.D. thesis entitled **"Study on Relative Importance of Somatotype Psychological Parameters and Basic Soccer Skills with Respect to Position of Play"** submitted for the Degree of Doctor of Philosophy in Faculty of Arts, Jadavpur University, is my original work and I declare that I have not committed plagiarism in any form or violated copyright while writing the thesis and have acknowledge the sources and/or the credit of other author wherever applicable. The thesis has not formed the basis for the award of any degree diploma or similar other titles. It has not been submitted to any other University or Institution for the award of any degree or diploma.

Place: (HABIB SK)

Date:

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INTRODUCTION

This chapter has been planned to provide an introduction of the present research work including the background of the study and its relevance for the area of Physical Education and Sports. Along with these the statement of the problem, Purpose of the study, limitation & delimitation of the study, hypothesis, significance of the study and explanation of selected terminologies have also been included in this chapter.

1.1 GENERAL INTRODUCTION

Soccer is one of the most popular sports watched with great interest in all countries of the World. Soccer, more commonly known as simply football is a team game played with a spherical ball between two teams of eleven players each. Soccer is played at a professional level all over the World. Millions of people regularly go to football stadiums to follow their favorite teams, while billions more watch the game on television or on the internet. A very large number of people also play football at an amateur level. According to a survey conducted by FIFA published in 2001, over 240 million people from more than 211 countries regularly play football. Football has the highest global television audience in sports **(www.fifa.com).**

Soccer is a team game. Each team is formed with eleven playing members. These eleven players are placed on the field at eleven well defined positions with specific responsibilities. Though, modern soccer is a team game, the players follow their basic responsibilities even during game situations. Important such positions for the game of soccer are: Goal keepers, Defenders, Midfielders and Forwards. As the demand of the job for different positions differs, it is expected that the players of different positions would vary in their physical structure, fitness level, mental make-up, technical expertise and tactical know-how.

The game is played on a rectangular field. The object of the game is to score goals against opposition by sending the ball beyond the goal line into the opposing goal, usually within a time frame of 90 or more minutes. The dimension of soccer field has been shown in following figure no- 1.

Fig. 01: Dimension of different Soccer Playing Positions

Fundamental position of players and basic skills to be used by there are not same for all. The skills needed for a goal keeper is different from the skills require for midfielder or attacker. Thus soccer players may be of different ability in execution of the fundamental skills because of different demand of position of play.

Football is played in accordance with a set of rules known as the laws of the game. The ball is 68-70 cm (27-28 inch) in circumference and known as the football. The two teams compete to get the ball into the other team's goal (between the posts and under the bar), thereby scoring a goal. Players are not allowed to touch the ball with hands or arms while it is in play, except for the goalkeepers within the penalty area. Players may use any other part of their body to strike or pass the ball, and mainly use their feet. The team that scores more goals at the end of the game is the winner; if both teams have scored an equal number of goals, either a draw is declared or the game goes into extra time or a penalty shootout, depending on the format of the competition. Each team is led by a captain who has only one official responsibility as mandated by the laws of the game to represent their team in the coin toss prior to kick–off and penalty kicks.

Football is governed internationally by the International Federation of Association Football. (FIFA; France Federation Internationale de Football Association), which organizes World Cups for men and women every four years. The men's FIFA World cup has taken place every four years since 1930, with the exception of 1942 and 1946 Tournaments, which were cancelled due to World War II. Approximately 190-200 National teams compete in qualifying Tournaments within the scope of continental confederation for a place in the finals. The final Tournament

held every four years and involves 32 National teams competing over four weeks at present. It is the most prestigious men's football Tournaments in the world, and the most widely viewed and followed sporting event in the World, exceeding the Olympic Games.

1.1.1 HISTORY OF SOCCER

Different variation of soccer is known as soccer codes. Various forms of football can be identified in history, often as popular present games. Contemporary codes of football can be traced back to the codification of these games at English public schools in the eighteenth and nineteenth centuries (Bailey, 1995). The expanse of the British Empire allowed these rules of the football to spread to areas of British influence outside of the directly controlled Empire (Perkin, 1989). By the end of the Nineteenth Century, distinct regional codes were already developed: Gaelic football, for example, deliberately incorporated the rules of local tradition football games in order to maintain their heritage (Reilly and Doran, 2001). In 1888, the football League was founded in England, becoming the first of many professional football competitions. During the Twentieth Century, several of the various kinds of football grew to become the most popular team sports in the world (Bale, 2002).

The first official match between representatives of two nations England and Scotland in 1872 at Hamilton Crescent, Patric, Glasgow (finishing in a 0-0 draw). The following year at the Oval, England enjoyed a 4-2 victory over the travelling Scots. The Scottish football, by the creation of the World's Second National Football Association had been in the world only governing body, through codified football was being played only in the United Kingdom at this stage. With the number of Inter-nation matches increased, as football spread, the need for a global governing body emerged. Initially, it was intended to reflect the formative role of the British in football's history (**www.englandfootballonline.com**).

The need for a single body to oversee football Association had become apparent by the beginning of the 20th century, with the increasing popularity of International fixtures. The English Football Association had chaired many discussions on setting up an International body, but was perceived as making no progress. It fell to associations from seven other European countries: France, Belgium, Denmark, Netherland, Spain, Sweden and Switzerland, to form an International Association.

The Federation International de Football Association (FIFA) was founded in Paris on May 21, 1904. Its first president was Robert Guerin. The French name and acronym has remained, even outside French-speaking countries. The Federation International de Football Association (FIFA) is an association governed by Swiss Law founded in1904 and based in Zurich. It has 209 member associations and its goal, enshrined in its statutes, is the constant improvement of football (**www.fifa.com**).

FIFA organized the World Championship for the first time in 1930 at Montevideo and the Olympics Championship in Uruguay lifted the Jules- Rime Trophy named after the then president of FIFA. Considering the growing popularity of the game delegates from seven Nations Meet on May 21, 1940 to form the Federation International de Football Association (FIFA). (**www.fifa.com**).

1.1.2 SOCCER IN INDIA

Football is India's second most popular sport, next to the game of cricket at present. Traditionally it has enjoyed popularity in the regions as West Bengal, Goa, Kerala, Orissa, and the entire North-Eastern India, especially Assam, Manipur, Mizoram, Nagaland and Sikkim. Dr. T, Ao, the captain of the Indian team in the London Olympics, 1948, and captain of the Mohan Bagan Athletic Club in 1949 hailed from Nagaland.

Football was introduced to India by British soldiers in the Mid-Nineteenth Century. It spread because of the efforts of Nagendra Prasad Sarbadhikari. In 1888 the Durand Cup was founded by then India's Foreign Secretary, Mortimer Durand at Simla, India. The Durand cup is the third oldest football competition behind the FA Cup and the Scottish Cup. It was initiated, as a recreation for British troops stationed in India. Royal Scots Fusiliers won the first edition of the cup by beating Highland Light Infantry 2-1 in the final. In 1893 the IFA Shield was founded as the fourth oldest trophy in the World. Calcutta, then capital of British India, soon became the hub of India Football Sarada F.C was the oldest Indian Football Club (BBC-News).

In 1889 India's oldest current team Mohun Bagan A.C was founded as Mohan Bagan Sporting Club. This was the first club to be under the rule of the Army. Several football clubs like Calcutta FC, Sovabazar and Aryan Club were established in Calcutta during the 1890's. Tournament like the Gladstone Cup, Trades Coochbehar Cup also started around this time.

The first Indian Federation, the Indian Football association, was founded in 1893 but did not have any single Indian in the board (BBC-News. 2012). The Indian national football team is governed by the All India Football Federation (AIFF). Since 1948, the AIFF has been affiliated with FIFA, the international governing body for football. In 1954, the AIFF had become one of the founding members of the Asia Football Confederation (AFC). The team was automatically advanced to play in the 1950 FIFA World Cup (all the other Asian teams withdrew), but they did not attend the tournament in Brazil due to the cost of travels and certain financial crises. India still now won gold medals at two Asian Games (1951 and 1962) and one silver medal at the Asian Cup (1964) (BBC-News).

1.1.3 CATEGORIES OF SOCCER TECHNIQUE

Soccer techniques can be classified on the basis of involved movements. Accordingly, the soccer techniques are classified into two broad groups-

   i)   Techniques involved movement without the Ball and
   ii) Techniques involved movement with the Ball

i) Techniques involved movement without the Ball is as follows-

   a)   Running and changing of direction;

   b)   Jumping and

   c)   Feinting without the ball (Body Feint).

ii) Techniques involved movement with the Ball-

The following eight elements within two groups-

   a)   Kicking;

   b)   Receiving the ball;

   c)   Heading;

   d)   Dribbling

   e)   Feinting

f) Tackling

g) Throw-in and

h) The technique of Goal keeping: defensive and offensive.

All movements within the ball in soccer can be classified into these eight groups.

1.1.4 FORMATION OF SOCCER

Soccer formation describes how the players in a team generally position themselves on the ground. Formation is generally denoted how many players are in each row of the formation. The choice of formation is typically made by the coach and team management. Formation depends on the situation of the game. Mostly used formation have been presenting in following figures no from 2 to 7:
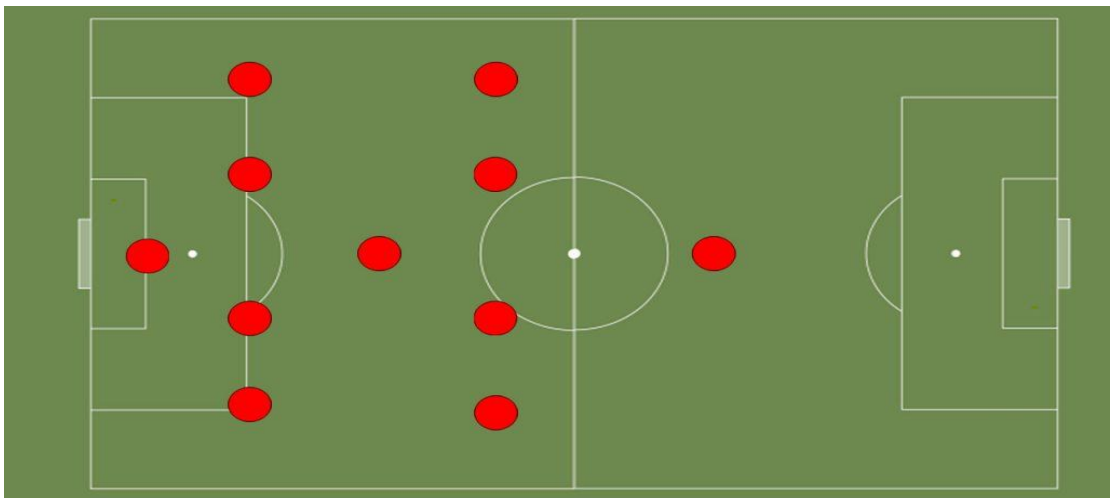
Fig.-2: Soccer formation of -4-1-4-1
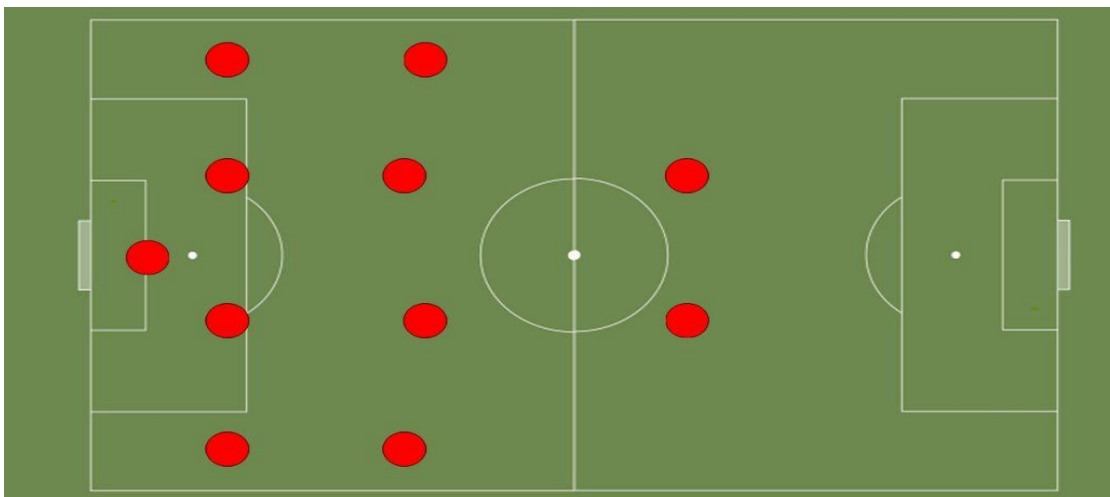
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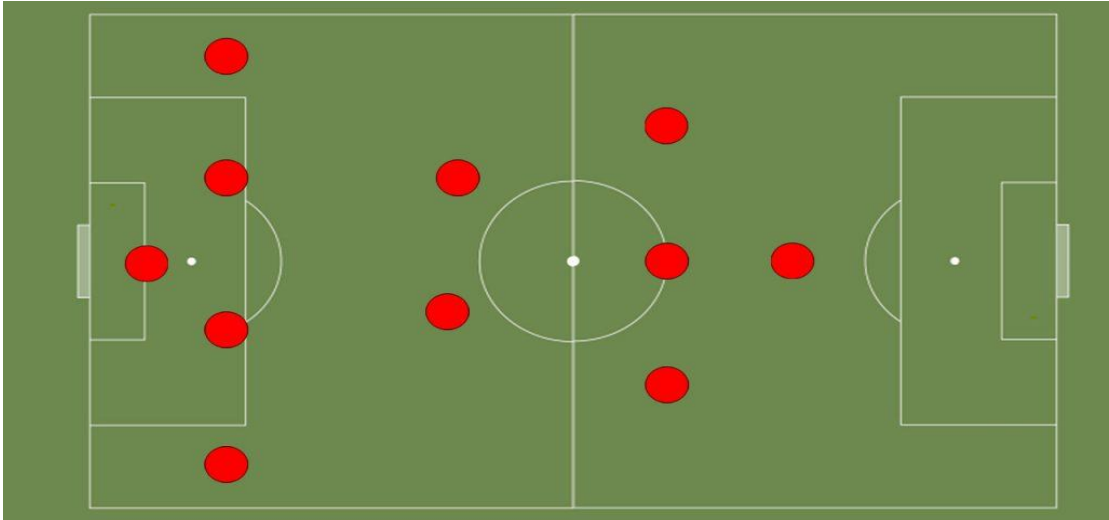
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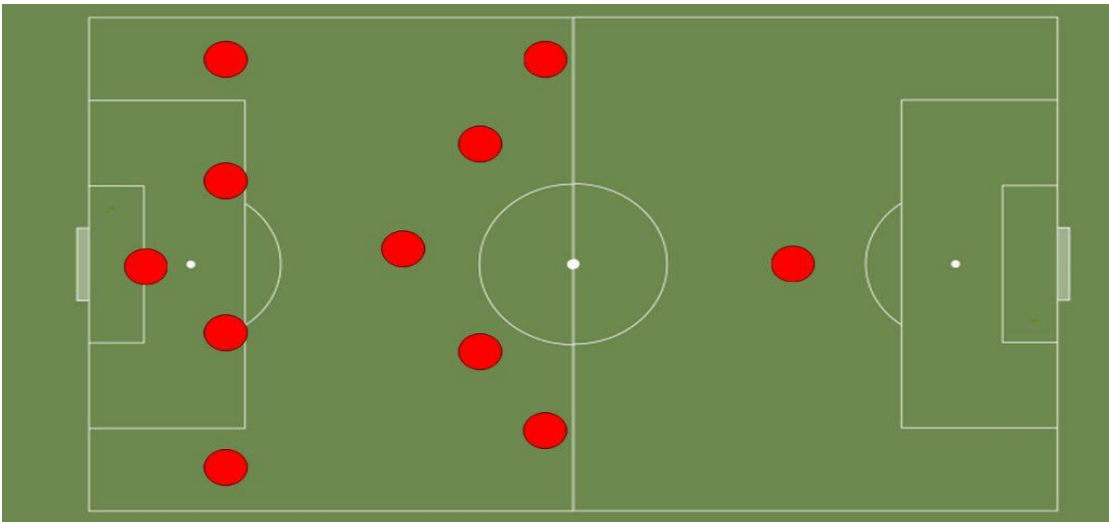
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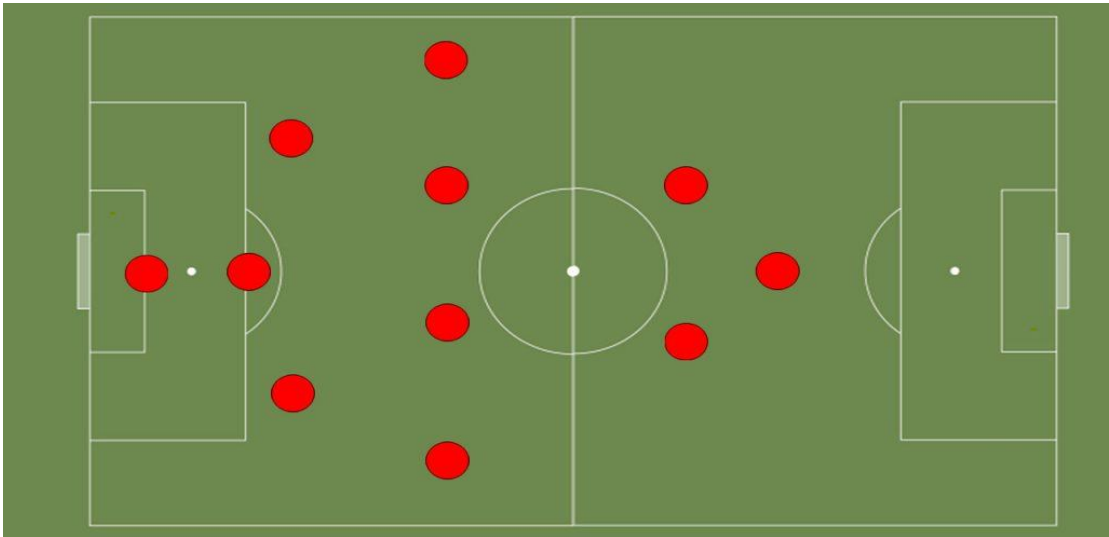
Fig.-6: Soccer formation of -3-4-3
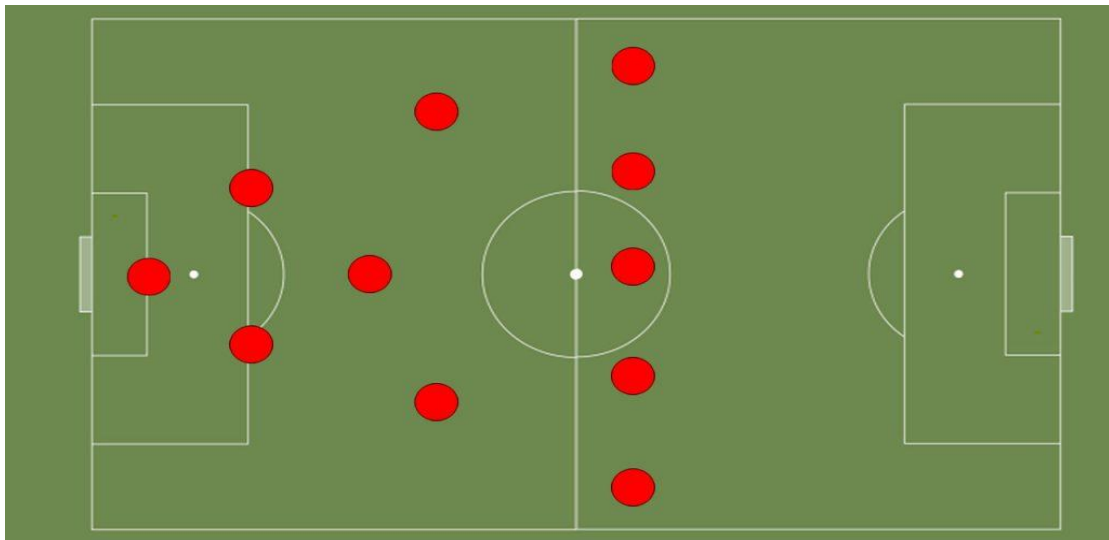
Fig.-7: Soccer formation of -2-3-5

1.1.5 PLAYING POSITION OF SOCCER

Soccer positions are varied as the skills of player and the tactics of the game. Soccer has many different positions and many different names that come along with them. Normally soccer positions can be categorized into four types- Goalkeepers, Defenders, Midfielders and Forwards. Each playing position has specific task from defending against opponent to attacks for scoring.

1.1.5.1 Goal keeper (GK):

The goal keeper is simply known as whom with gloves who keeps the opponents from scoring. He has special position because only he can play the ball with his hands in his own penalty area.

Aside from being the last line of the defense, the goal keeper is the first person in attack. That is why keeper can make good goal kicks and strategic ball throws to teammates are valuable. The Goalkeeper has four main roles saving, clearing, directing the defense and distributing the ball. Saving is act of preventing the ball from entering the net while clearing means keeping the ball away far from the goal area.

The goal keeper has the role of directing the defense, he is the furthest player at the back and he or she can see where the defenders should position themselves. Distributing the ball happens when a goal keeper decides whether to kick the ball or

throw it after making a save, where the keeper throws or kicks the ball is the first instance of attack.

Physical Attributes of Goal Keepers:

There is no perfect shape for a great goal keeper. The ideal Physical attributes for a goal keeper to carry out certain tasks on the play fields during the match as follows.

- Quick vertical movements like leaping forward and backward.
- Diving to the corner of the goal post as quick as possible.
- Agility movement is starting and ready posture.
- Fast direction against the opponent player movement and sudden change of the situation.
- More over strong hand-eye co-ordination for receiving and saving the ball.
- Great in height is helpful for saving the ball high level air ball.
- Large hands for saving and securing the ball.

Technical Attributes of Goal Keeper:

Goal keeper has great ability to serve the ball with top of foot to a desired target.

- To serve the ball and distribute the ball with inside of the both feet.
- Throw the ball accurately to the teammates using of the both hands.
- To receive the ball and distribute the ball with inside of the boat feet.

1.1.5.2 Defender:

A defender's task is the keep the ball away from the keeper prevent opposing attackers from passing or receiving and block shots. Defending requires a player to be well fit, hardworking and quick at anticipating the movement of the opponents. Defenders must protect the keeper; they should think of the goalie as an important are not allowed getting near to goal area. Typically, teams play with four defenders is an advantage to the team.

In a four player defense the centre back is two defenders in the middle. A centre back must be strong, fearless and good at timing tackles. Being tall is an

advantage for a centre back as it allows him to win the ball in air, an essential skill in corner kick situation. A fullback is a defender positioned on the side. They are either classified as left back (LB), or right back (RB). The defenders positioned between them are called centre backs. The full back is tasked to prevent opponents for attacking on the sides. He/she must be quick and must be able to prevent opponents from making a cross. He/she is often assigned to mark opposing winger. Wing back is a full whole length of the play field of football; he/she defends the flanks like in dedicated full back and attacks like a winger. This is most physically demanding position on the field.

Physical Attributes of the Defenders:

There is no perfect body type for the defenders, because there are exceptions to every rule and players defy the odds, but with that in mind these are the attributes that top level professions in this position all have in common.

- Quick forward-backward fast explosive step.
- Strong lower strength for defensive tackling and strong upper body strength for challenging the balls in air.
- Need of high level speed for tackling and defending.
- High level of fitness need for long duration of play and good vertical jump for clearing or heading the ball in the air.
- Quick backward movement being able to tackle and track back to chase down attackers or ball.
- Excellent timing and co-ordination in assessing the opponent's movement with tackling.
- Very aggressive and powerful in the field on ground and air.
- High level of speed on forward and backward running with good agility along with the lateral movement (sideward running).

Technical Attributes of the Defenders:

Technically sound heading ability (clearance of the ball using heading, flicking and directional heading).

- A good ability to control and distribute the passes with using of both feet includes passing, clearing and trapping of the ball.

- Strong foot work with the ball for feinting, passing, trapping and kicking.
- Well known knowledge about the stance of the positions, field of play and laws of the game.
- Understanding each player of the team with good sense and make trust worthy to the teammates.

1.1.5.3 Midfielder:

A central midfielder is an essential role in the soccer game. During the game on the field of play stationed at the centre of the play field are call midfielder. The name implies that the runs from his/her own penalty area to the opponent penalty area to fulfil different roles. A box to box midfielder does the following create opportunities for the forwards and stop the attacks, stamina, technical ability and relentless hard work are the attributes of his/her type of midfielders.

The attacking midfielder is an advanced midfielder player who is primarily inclined to attack. He/she must have excellent ball control abilities and tactical awareness. The winger midfielder plays the same role as the attacking midfielder but focuses his attack from the 4-3-3 and 1-5-1. A great midfielder is pure and simple the brain of the team. Arguably the most difficult position in the field of play other than keeper is the player that everything must go through.

Physical Attribute of Midfielder:

The midfielder has strong upper body strength for holding the ball with screening the opponents in the air or ground.
- Strong low centre of gravity for allowing them to all directions, feint off defenders and waiting for teammates to join the attacking.
- Shielding the ball from the defenders.
- Strength and power in both legs for taking long passes and speed passes in air and ground.

Technical Attributes of the Midfielders:

- The good midfielder has such wonderful technical qualities like as good control and foot work on the ball using the both feet in a short and tight space.
- Excellent distribution of the ball by both feet within a small sided and narrowly space to the teammates in long and short passes.

- The agility inside movement like laterally, front and backward with the ball control.

- To create opportunities to the teammates scoring goals.

- The midfielders have gifted technical skills like innovative passes, innovative foot work with balls.

1.1.5.4 Forward (Strikers):

Forwards are the most celebrated players in the team, because they are often the ones who score goals. There are many types of forwards. Accuracy heading ability and ball control are typical qualities of a forward. A forward does not have to do as much work as the midfielder or defence but he must be able convert in to goal when his/her teammates give him/her the ball.

First they score goals through passes from the teammates and second they distract the opponent defenders to give room for the attacking midfielder, wingers or withdrawn strikers to attack.

- A forward must be brilliant at receiving and controlling the ball must be strong and capable of winning the ball, in the air.

- Skills at playing with the back to the goal are a prerequisite.

- A deep lying forward must have excellent passing skills as he is expected to feed the striker and at the same time possess technical abilities with the ball as he/she often receives back passes from the striker.

Physical Attributes of Forwards:

Forwards come in all different type small, quick and speedy ones; tall imposing targets; and a mixture of the two. It is hard to hard to peg one specific set of physical attributes for the positions as they come in all different variations. Here are some common attributes to the best forwards in soccer.

- Strong lower body strength for posting on the last defender and holding the ball.

- Explosive power good in first step to beat the defence and shooting of the ball on the goal.

- Strong in the vertical leaping and jumping ability to tackle the ball in air.

Technical Attributes of the Forward:

- Technically sound in heading the ball to scoring goals from the corners and crosses.

- Excellent foot work with ball on both feet for passing, shooting, dribbling and receiving.

- Constant speed endurance for defeating the defender in their goal area with speed and controlled dribbling.

1.1.6 SOMATOTYPE AND SPORTS PERFORMANCE

Players in one soccer team tend to have varying body composition and body shapes. Soccer players carry their weight over a distance; by so doing they should have a lean body composition in order to achieve a better movement economy. Studies in soccer revealed that most soccer players are ectomorphic-mesomorphs **(Bandyopadhyay, A. (2007) and Gil, S.M, Gil, J, Ruiz, F, Irazusta, A, J, & Irazusta, J. (2007)**. Anthropometry comprises of measurement of physical characteristics such as weight and height, as well as body composition measurements that include percentage body fat (%BF), lean body weight (LBW), body mass index (BMI), limb lengths and girths, as well as limb and body circumferences. Somatotype is a technique used to describe the relative fatness (endomorphy), relative musculo-skeletal robustness (mesomorphy), and the relative linearity or slenderness (ectomorphy) Carter, J.E.L. & Heath, B.H. (1990).

Soccer players usually show a mesomorph trend; however, different trends according to playing positions could be observed. Several authors indicate that goalkeepers usually accumulate higher fat amounts. Thus, somatotype components could be an important factor to locate a player in the field.

Somatotype is the basic classification of physical characteristics and body type. Three components were identified in the classical anthropometric somatotype method of Heath and Carter: relative fatness (endomorphy), musculoskeletal component (mesomorphy), and linearity (ectomorphy). The ideal somatotype for an athlete differs according to the requirements of the particular sport Significant variations were determined in team sports regarding somatotype components, both for the different sports and the different playing positions. The somatotype scores of elite

or professional soccer players were 2.2- 5. 4- 2.2, 2.4- 4. 8- 2.3, 2.70- 4.9. 4- 2.95, and 2.2- 5.4- 2.9, respectively, in studies conducted in South America (Rienzi et al., 2000). Although previous studies have indicated that the somatotype of elite soccer players was dominated by a balanced mesomorph category, the somatotype scores were not homogeneous. The rating is phenotypical, based on the concept of geometrical size dissociation and applicable to both genders from childhood to old age. The Health-Carter method of somatotyping is the most commonly used today. There are three ways of obtaining the somatotype. (1) The anthropometric method, in which anthropometry is used to estimate the criterion somatotype. (2) The photoscopic method, in which ratings are made from a standardized photograph. (3) The anthropometric plus photoscopic method, which combines anthropometry and ratings from a photograph-it is the criterion method. Because most people do not get the opportunity to become criterion ratters using photographs, the anthropometric method has proved to be the most useful for a wide variety of applications, should take triplicate measurements and use the median value.

According to research analyzed of somatotype of athletes from different countries of the world has revealed **Masocha, V and Katanha, A. (2015)** Studied the anthropometric and somatotype characteristics of male provincial youth league soccer players according to their playing positions. No statistically significant differences were observing among playing positions in both anthropometric and somatotype variables. It was concluded that mean somatotype for Zimbabwean youth players was slightly lower than that of players of similar age group around the World. On the others had showed that **(Hazir, 2010)** Turkish soccer players were classified as balanced mesomorphs (4-2, 4-8, 2-3), featuring a performance of a muscle-skeletal component and a balance of fat and linearity components. **Fernandez, V, C., Chinchilla-Minguet, J, L. and Castillo-Rodriguez. (2019)** Somatotype and body composition in young soccer players according to the playing position and sport success. The results showed that meso-endomorphic in goalkeepers, central for external defenders, balanced ectomorph in central defenders, balanced mesomorph in the case of midfielders, and meso-ectomorph in forwards. **(Erceg, Grgantov & Milic, 2013).** Croatian amateur soccer players were classified as endomorph-mesomorph. In comparison to elite soccer players, Croatian amateur soccer players were more endomorphic and less mesomorphic. It is very likely that such body build diminishes

the quality of their performance in competitions. There is currently a lack of studies to showed differences in the somatotypology of soccer players of different countries and our country, which would be examined at the same time and using the same tools. In the present study the relative importance of basic soccer skills with respect to position play was analysed.

Therefore, this study was to identify the somatotyping profile of professional soccer players and to verify differences according to their playing positions. In addition, different equations to determine body composition were applied in order to ascertain which gave similar results for this population.

1.1.7 PSYCHOLOGICAL FACTORS AND SPORTS PERFORMANCE

The word Psychology refers to the study of human behavior and sports psychology denotes a sub category of psychology that deals with the behavior of athletes and teams engaged in competitive sports. Sports psychology is that branch of psychology which is intimately connected with human behavior on the play field, both under practice and competitive situations, with a view to bring about qualitative improvement in performance and maintain the same even during the stresses of competition. It is the study of human behavior in sports settings with an emphasis on the mental aspect of behavior.

''Sports psychology is the application of psychological principles to sports and physical activity at all levels of skill improvement''. Sports psychology is an important ingredient of sports training programme and deals with the way in which various psychological states and straits influence sports performance. It is the application of psychology to the issues and problems in the field of sports as the problems of sports persons are unique, different subtle and complex. Therefore, the main purpose of sports psychology is to understand the behavior of an athlete, to modify it according to the demands of situations and to optimize the benefits for elite performance and excellence.

1.1.7.1 Role of Sports Psychology in Soccer:

Over the last few years, the role of Psychology in professional soccer coaching has risen in importance. The appointment of bill be sick as Psychologist to Derby

Country FC in the English Premier league has not only opened doors but it has shown how this can help understand and improve player performance.

Sports Psychology is playing and ever-increasing role in the influencing soccer performance. As Ajax Football Club in Holland, their selection policy and 18 years old players depends 80% of the time on the intelligence and personality of the footballers! A sports Psychology can identify weaknesses in the Psychological make-up of a player and provide the necessary counselling. So that the player can continuously play his optimal level of performance. Be sick himself mentions that players and coaches must look beyond Physical evaluation to assess underlying mental, emotional and even lifestyle issues.

Testing the personality of the player may prove beneficial. The coach can have an idea of the differences in personality between players and thus learn how to better handle this issue. Tests have shown that successful footballers possess superior mental and emotional health (Less anger, tension and more vigor) than others who may need psychological support/counselling.

Sports Psychology can also measure motivational and attention levels. Studies on Australian football have shown that top teams scored highly in test on factors such as drive, determination, leadership and mental toughness. Similarly, a player's performance can depend on this arousal levels which refer to the level of awakeness, attention and alertness. As arousal levels increase so does the level of performance although there are optimal levels which should not be passed. Again a Sports Psychologist can help find and maintain a player mentally at these optimal levels.

Once a Sports Psychologist has discovered the personality, motivational and attentional styles of a group of players then improvements can be undertaken. Areas such as relaxation and mental imagery (where players picture themselves performing particular skills and actions during a game) can be used Imagery self-hypothesis has been found to be useful as it allows players to narrow their attention and remove distractions. Goal setting concentration and self-confidence sessions can also be implemented.

Keeping the team motivated and preventing players from becoming disheartened, feeling failure and losing self-esteem is vital. Good interesting coaching

solutions can help as well, such as achievement through goal setting, sensation (through stimulating and exciting sessions) and affiliation (feeling of belonging to the club). Any good coach will tell you that team spirit is vital for success.

Studies have also focused on the coach-player relationship. Interesting, Belgium trainers were found not to have sufficient understanding and a bad perception of the soccer player's personality. This could be due to the lack of effort to the Psychological aspects of football in Belgium. Coaches have also been subjects of studies measuring their stress levels. There is a close relationship between the game (greater heart rates at important moments) and high stress levels at certain moments in the season. Coaches like players must learn to evaluate and manage stress in order to ward off health problems.

Davey who has worked with many professional Australian footballers' lists what he feels makes a good player psychologically.

1. Slightly extroverted personally, slightly anxious.
2. His motivation is high to win, confidence, coach ability, conscientiousness and determination.
3. Incentive to achieve excellence & success, likes stressful situations, is aggressive and affiliative.
4. Mood profile is less tense, depressed, angry, fatigued & confused and and shows more mental vigor.
5. He can process information, not over loaded and has high self-esteem.
6. He sets goals, practices relaxation, imagery and self-hypothesis before a game.

A soccer coach or player should never feel any shame in calling in the services of a qualified Sports Psychologist. The line between success and failure is very thin and players who are mentally strong and have the will to win stand a greater chance of tasting success than those simply believing in their Physical and technical ability.

1.1.7.2 Aggression:

Aggression is a part of human behaviour and its necessary for an individual to life and struggle for higher achievement. Struggle for supremacy, dominance and others excellence in sports obviously involve aggression. Aggression, in one from or the others, is any inevitable and inescapable in a sports activity. When hostility text

over assumption, the situations become alumni and its becomes and antisocial behaviour. Aggression may help in the performance of and athletes because it aroused the athlete to put in heart and effort for the success of the team. Athletes must be helped to reduced and control aggression in order to play calmly and perform the best. Appropriate level of aggression, as permitted under the rules governing the game, trend to improve the skills and enhance the effort, and on the other hand, High or low level of aggression will humper and retired the performance in sports.

1.1.7.3 Achievement motivation:

Achievement motivation is associated with goal setting and achieving. Achievement motivated people constantly seek improvements and ways of doing things better. It is also an approach to success or capacity to achieve the goal with approximate approaches or methods.

Motivation is the very heart of the learning process. The vital role of motivation in life and learning is indispensable. Success and achievement in life and learning depends very largely on how much one wants to be succeeding and achieved. There, what causes achievement based mainly on how much a person has his/her motivation. Motivation is the basic drive for all of our actions. It is an indispensable technique for learning. It energies and accelerates the behaviour of the learner. Therefore, Motivation refers to the dynamics of our behaviour, which involves our needs, desires and ambitions in life. It is an essential aspiration of a man to accomplish the target goal through performance or activity.

According to research has identified **Goswami, S., and Sarkar, L, N. (2017)** Psychological characteristics among the players of football in relation to the player position. on the basis of their position of play (defenders, midfielders and forwards). The results revealed that the forward players showed better in aggression and achievement motivation than defender and midfielder players. Finally, it was revealed that the defenders and midfielders football players were similar with regard to aggression and achievement motivation. **Saravana kumar, N & Arjunan, R. (2016)** Psychological variables of Indian University female soccer players at different playing positions. The results revealed significant difference between goal keeper, defenders, mid fielders and forwards on motivation, confidence, anxiety control, mental preparation, team emphasis and concentration dimension of PSIS-Youth. Goal

keeper, defenders, midfielders and forwards were different on psychological characteristics. It also proved that positive aggression can improve performance. **Leuens (2008)** found a strong relationship between the motivational influences on the outcome of athletic performance. According to Tod, Thatcher, & Rahman, (2010) setting a specific goal to achieve is achievement motivation. **Anshel (1997)** reported a remarkable difference in the sport psychological characteristics of successful and less successful athletes, successful athletes show a high level of self-confidence, achievement motivation, mental toughness, intelligence, sociability, creativity, stability and high self-image. Furthermore, researchers indicate that success in sport is a direct outcome of healthy mental skills according to the Mental Health Model (**Gill et al., 2008**). However, not a great deal of research has been conducted on the psychological characteristics of players in different playing positions in team sport.

1.1.8 BASIC SOCCER SKILLS AND SPORTS PERFORMANCE

In the present study 'soccer' has been used to identify the ball game generally understood as Association. It is a form of Soccer played by two teams of eleven players each with a ground ball which may not be handled during play except the goalkeeper. Basic Soccer skills were understood as the basic techniques used by the players during game situation. These include Passing. Dribbling, Shooting, Kicking, Heading, Goalkeeping etc.

1.1.8.1 Passing:

Passing is one of the artistic features of the games, it calls for skillful and unique skills because its success hinges upon the co-operation of at least two players. One player sends it on to one of his teammates who is for the time unmarked. The receiver must position himself to receive the ball and the passer must send the ball to him/her accurately and in the most effective manner.

The two most important techniques in soccer and the two techniques which are used most frequently during the games are those of controlling the ball and passing the ball. On rather more than 80 percentages of occasions he/she will either shoot or dribble. Nothing therefore will destroy a team, or an individual, so quickly as in accurate passing.

1.1.8.2 D**ribbling:**

Dribbling may be as the art of using some part of the foot to control the ball or roll along the ground while running. Soccer dribbling is one of the fundamental skills. Dribbling takes the major role in carrying the ball and scoring a goal in the game of soccer.

The significant of dribbling become reliability when the attack beats an opponent and takes a shoot in the goal. Dribbling can be realized positively and emphasized in the process of technique training as a stronger weapon in the principle of penetration.

1.1.8.3 Shooting:

Shooting is the conscious placing of the ball with some part of the foot. It is the fundamental technical element, since it is required more often to score goals, the primary objective of the game. A player who may not able to master dribbling, feinting or heading will suffer serious disadvantages, but a player who cannot kick or place the ball adequately can hardly be called soccer player at all. To be good shooter, the player must master the skill able technical asset.

1.1.8.4 Heading:

Heading is an essential part of a successful football player. Approximately 20 percent of goals come from headed shots. A player must be able to pass, shoot, clear and even control the ball using their heads, from a standing, jumping or diving position. For example, a central defender must be able to make good head clearances while having the capacity to move forward and score with a header from a corner kick. Younger players are encouraged to start heading the ball early, using a correctly sized ball that is light and smooth to avoid the risk of head injury. Some younger players may be afraid to head the ball for fear of hurting themselves. The coach must dispel this fear, using carefully chosen introductory practices and lots of encouragement.

1.1.8.5 Goalkeeping:

Goalkeeping is the skill of protecting your goal from the shots of opponents. It is perhaps the most important position on the field. A sound confident goalkeeper

does more than just stop shots. The goalkeeper is the source of confidence for the entire team. Goalkeeping is not a position for everyone and takes good concentration and confidence. Make sure that your goalkeeper wants to play in goal and has the strength of character to be successful. Goalkeeping entails some additional safety hazards. It is important that coaches select players who can learn to play this position safely.

According to Past research has already examined that **Joo, C. H. And Seo, D. (2016)** Performance factors of youth soccer players according to position and there were classified into goalkeeper (n=7), defense (n=37), midfield (n=39), and forward (n=18) positions. The results showed that there was no significant difference in aerobic capacity according to position. **Hughes and Colleagues (2012)** concluded that central defenders should perform high in passing and running with the ball, fullbacks in dribbling and running with the ball, midfielders and wingers in passing, dribbling and running with the ball, forwards in shooting. (**Dellal, Wong, Molla & Chamari, 2010**) Midfielders indicated higher juggling ability than all the other positions as well as higher dribbling performance than the full backs. They also performed greater percentage of successful passes and they covered longer distances than players of other positions (**Mohr, Krustrup & Bangsbo, 2005). Salvo, V. D., Baron, R., Tschan, H., Montero, F. C., & Bachl, N. (2007)** study showed that midfielders covered significantly greater distance with the ball than players of any other position, while central defenders covered the shortest distance. However, **Vale and Colleagues (2009)** concluded that there were no significant differences in passing skill of players aged 17-18 years old according to their playing position. On the other hand, **Wong, Chamari, Dellal & Wisloff (2009) & (Reilly, Bangsbon & Franks, 2000)** studies showed that neither player aged 13-15 years old and aged 17-18 years old are different significantly in technical skills according to their playing position. Differences between these conclusions are probably explained by the various positions classifications and technical tests that were used. **Salvo Di et al, as well as Dellal et al (2007)** classified them in central defenders, external defenders, midfielders and forwards. Similarly, **Gioldasis and Bekris (2014)** who examined the anthropometric and fitness characteristics of players according to their playing position divided them in goalkeepers, central defenders, fullbacks, wingers and forwards.

This issue has implications on overall soccer skills. For example, **Malina et at, (2005)** reported no significance differences in ball control, dribbling, passing and shooting in youth soccer players based on position, where as reported by **Lee et al, (2013)** found that long distance kick power was stronger in defenders among middle school players. These differences suggest that different physical training based on position cannot be the only influencing factor. Previous studies have found no significance in physical characteristics or trained ability by position. As an explanation, soccer players generally train using normal exercise routines rather than individualized physical or skillful abilities for specific positions. Therefore, more research would be helpful to develop important physical skills in soccer players categorized by positions.

Success in soccer is dependent upon a variety of factors including the physical characteristics and psychological capacities of the players, their level of skill, their degree of motivation and tactics employed by them against the opposition. Some of these factors are not easily measured objectively, but others can be tested using standardized methods and can provide useful information for coaches.

1.1.9 JUSTIFICATION FOR UNDERTAKING THE STUDY

Research findings indicate that soccer performance is dependent on somatotyping profile, psychological parameters such as Aggression and Achievement motivation etc. and Basic Soccer Skills such as Passing, Dribbling, Shooting, Kicking, Heading and General Soccer Ability. Research findings also indicate that players at different levels and in different playing positions also differed in these parameters. Advanced countries identify the talents giving due considerations to the performance determining factors and then develop the identified talents on scientific lines. No such efforts are being made in our country and hence low standard of soccer and hence we are not able to compete with our Asian counterparts even, leaving aside top South-American, European countries etc. In order to raise the standard of state level soccer it is felt necessary to conduct a research study to identify the parameters of soccer players playing at different positions so that right type of parameters can be selected and scientific training can be given to develop those selected parameters, their fitness level as well as performance level. After reviewing the literature related to above mentioned variables and how the Somatotyping Profile, psychological parameters and

Basic Soccer Skills have impact on the different playing positions of soccer players and their performance, the researcher has decided to undertake the present study.

1.2 STATEMENT OF THE PROBLEM

The present investigation was planned to assess the importance of Somatotype Psychological Parameters and basic soccer skills with position of play. Therefore, the research topic was stated as, **"STUDY ON RELATIVE IMPORTANCE OF SOMATOTYPE PSYCHOLOGICAL PARAMETERS AND BASIC SOCCER SKILLS WITH RESPECT TO POSITION OF PLAY."**

1.3 PURPOSE OF THE STUDY

The purpose of the study was as follows:

i)   The purpose of the study was to analyze and understand the difference if any, among different groups of soccer players on the basis of position of play in selected Somatotyping Profiles and Psychological Parameters.

ii) Basic purpose of the present research work was to study, analyze and understand the relative importance of Basic Soccer Skills with respect to position of play.

iii) Purpose of the study was also to analyze the difference in performance if any, of different soccer groups of players on the Basic Soccer Skills.

1.4 DELIMITATION OF THE STUDY

The study was delimited to the following aspects:

i)   Subject for the study was selected from players having participation of Inter-University Tournaments and Kolkata Football League.

ii) The study was delimited to 120 soccer players only.

iii) These players were classified into four groups on the basis of playing positions: Goal Keepers, Defenders, Midfielders and Forwards.

iv) Among the personal data the Age, Height, Weight, Somatotype were considered as physical characteristics and Aggression and Achievement Motivation were considered as psychological parameters.

v)   For the purpose of measuring the Somatotype, method of skinfold measurements was used.

1.5 LIMITATION OF THE STUDY

Present study was limited to the following conditions:

i)   Dietary habits and other environmental factors related with daily living of the subjects could not be controlled.

ii) Data of all the subjects could not be collected on the same day.

iii) Psychological condition of the subjects during tests could not be controlled.

iv) Time and finance were also limiting factors.

1.6 HYPOTHESES

Present study was based on following hypotheses:

i)   There would be no difference in somatotyping profile among different groups of positional soccer players.

ii) There would be no difference in selected Psychological Parameters (Aggression and Achievement Motivation) among different groups of positional soccer players.

iii) There would be no difference in performance of selected basic soccer skills in Passing, Dribbling, Shooting, Kicking and Heading among soccer players of different positions.

iv) There would be no difference in General soccer ability among different groups of positional soccer players.

1.7 SIGNIFICANCE OF THE STUDY

The results would be great significance for Physical Education and Sports towards the following ways:

i)   The results of the study will help to understand quality of execution of basic soccer skills by different positional players.

ii) The Result of the study will help to understand relative importance of basic soccer skills for different position of play.

iii) The finding of the study will help to compare the Somatotype (Heath & Carter) of soccer players in different position of play.

iv) The study will further help to compare psychological parameters of soccer players among Goalkeepers, Defenders, Midfielders and Forwards.

v) It will be possible to compare the players of different positions in soccer on the basis of their performance in basic soccer skills.

vi) On the basis of the result, game strategy and player's position may be planned effectively in soccer.

1.8 DEFINITION AND EXPLANATION OF THE TERMS

In order to understand the basic concepts of the study, the following terms should be specifically understood as follows:

SOCCER

In the present study 'soccer' has been used to identify the ball game generally understood as Association. It is a form of football played by two teams of eleven players each with a ground ball which may not be handled during play except the Goalkeeper.

SOMATOTYPE

The somatotype is defined as the quantification of the present shape and composition of the human body. It is expressed in the three number rating representing Endomorphy, Mesomorphy and Ectomorphy components respectively.

ENDOMORPH

This characteristically has long, thin muscles or limbs with low amounts of fat storage and is generally called "slim". Ectomorphs do not normally build muscle or store fat.

MESOMORPH

This characteristically has low fat levels, bones which are medium, a solid torso, and shoulders which are wide along with a waist that is narrow and is normally called "muscular". Mesomorphs generally are involved in muscle building but not in storing fat.

ECTOMORPH

This characteristically has increased storage of fat, a large bone structure and a wide waist and is normally called "fat", or "chunky". Endomorphs generally store fat.

SPORTS PSYCHOLOGY

Sports psychology encompasses various branches of psychology as they are related to our ability to understand athlete performance, how to make it better and how to improve exercise programme.

AGGRESSION

Aggression is considered as a psychological trait which involves harmful behaviours of a person towards another one who becomes a barrier for achieving a goal.

ACHIEVEMENT MOTIVATION

Achievement motivation is understood as a dominant motivational orientation in situation characterized by the attainment of clear success or failure. The two primary motives are either to achieve success (Mess) or to avoid failure

BASIC SOCCER SKILLS

Basic Soccer skills are understood as the basic techniques used by the players during game situation. These include Passing. Dribbling, Shooting, Kicking, Heading, Tackling, Throwing and Goalkeeping etc.

POSITION OF PLAY

All the eleven players of a team do not perform similar responsibilities during a game. Each player performs a specific job with respect to the total game of soccer during the play. Accordingly, to the players occupy specific position for performing their duties. Some of such positions are- goalkeeper, defender, midfielder and forward etc. These are understood as the position of play in the present study

CHAPTER-II

Review of Related Literature

2.1 LITERATURE RELATED TO SOMATOTYPE

2.2 LITERATURE RELATED TO PSYCHOLOGICAL FACTORS

2.3 LITERATURE RELATED TO BASIC SOCCER SKILLS
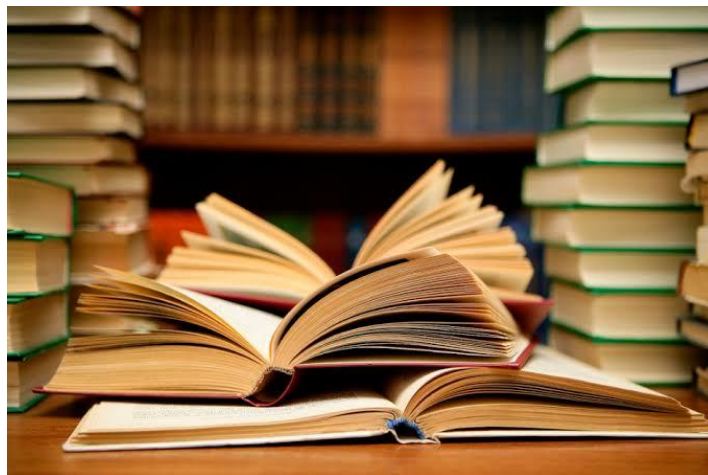
CHAPTER-II

REVIEW OF RELATED LITERATURE

The review of related literature act as a guideline for identifying the general trend in the research work already done in the concerned field or area. This also helps the investigators in formulating the problems and in providing directions to the research undertaken. The review also helped the investigator to develop an understanding regarding the concept of the selected variables and also in developing ideas that contribute to the overall rational and interpretation of data. The known facts build up the construction of new theories and principles. The review of literature serves as a buckle between the old and the new, between the known and unknown. The central persistence of analysis of review and the related literature is not only compilation but an analytical review of various primary and secondary sources. Researcher has searched related information for present investigation from Google Search engine, Google Scholar, Inflibnet Center, Shodhganga, Scopus, Web of Science, PubMed, Taylor & Francis etc. It stimulates and encourages the particulars of the problems and enables the researcher to formulate hypothesis regarding its possible solutions. The enormous efforts have done by the researcher to discover and review the literature associated to present study from various secondary resources i.e. books, journals, periodicals, seminar proceedings such others were reviewed. The relevant studies of Somatotype, Psychological Parameters and Basic Soccer Skills with respect to position of play has been reviewed and summary of this review has been incorporated in this chapter.

2.1. LITERATURE RELATED TO SOMATOTYPE

Strauss, A., Sparks, M. and Pienaar, C. (2021) Conducted a study to compare the morphological characteristics of South African sub –elite football players according to playing position of 101 sub-elite football players (age: 21.8±2.7 years) with twenty anthropometric sites for body composition and somatotype. The average value of body fat percentage was 20.8. The somatotype of the overall group was 4.0-2.4-2.1. They also found significant differences between goalkeepers and outfield players in morphological characteristics.

Atlı, A. (2021) Compared of certain physical and performance parameters of young football players based on positions and the footballers were divided into two groups as "central" and "wing" positioned players. The average values and comparison results obtained from the physical parameters of the central and wing players have showed that there was a statistically significant difference between central and wing players in terms of height, body weight, fat mass and lean mass parameters, whereas there was no statistically significant difference in age and percentage fat rate.

Kaplanova, A., Sagat, P., Gonzalez, p., Bartik, P. and Znovar, M. (2020) Compared the morphological configuration of men's body of Slovak and Saudi Arabian soccer players and find out the differences between soccer players in different playing positions of 50 Slovak soccer players aged 19-26 years. Heath-Carter method, which was used, categorizes people into 13 groups according to the predominant physical component. The soccer players differed among themselves according to playing positions. Slovak defenders and forwards were balanced mesomorphs, Slovak goalkeepers were endomorphic mesomorphs and central type was the predominant in Slovak midfielders. Almost all Saudi Arabian soccer players were predominantly mesomorph-endomorphs, with the exception of the defenders who were endomorphic mesomorphs.

Cavia, M. M., Moreno, A., Fernandez-Trabanco, B., Carrillo, C. and Alonso-Torre, S. R. (2019) Studied the compare and identify the physical characteristics, body composition and somatotype of professional soccer players and to verify differences according to their playing positions: goalkeepers, defenders, forwards and midfielders on 57 male players of a soccer team of the Spanish Football League One. Twenty-seven anthropometric variables were measured (height and body weight, four bone breadths, eleven girths and ten skinfolds). The differences in morphological characteristics according to the team position were notice only in goalkeepers, especially regarding their weight, abdominal and supra-spinal skinfolds and the percentage of fat tissue.

Fernandez, V, C., Chinchilla-Minguet, J, L. and Castillo-Rodriguez. (2019) Conducted a study on Somatotype and body composition in young soccer players according to the playing position and sport success. The morphology and body composition of U14, U16 and U19 soccer players with the different playing

positions of (goalkeeper, external defender, central defender, midfielder and forward) and a total of 174 male young soccer players. The meso-endomorphic in goalkeepers, defenders, balanced ectomorph in central defenders, balanced mesomorph in the case of midfielders, and meso-ectomorph in forwards and the differences found suggest a marked specialization between the goalkeepers and forwards, establishing significant differences between them.

Noh, J, W., Kim, M, Y., Lee, L, K., Park, B, S., Yang, S, M., Jeon, H, J., Lee, W, D., Kim, J, H., Lee, J, U., Kwak, T, Y., Lee, T, H., Kim, J, Y. and Kim, j. (2017) Investigated the study of somatotype and physical characteristic differences among elite youth soccer players of twenty-two Korean youth soccer player's positions were divided into forward, midfielder, defender, and goalkeeper. The participants' lean body mass, fat free mass, fat mass, and basal metabolic rate were measured and their somatotype determined according to the Heath-Carter method. The defenders were taller than, but otherwise similar in physical characteristics to the forwards and midfielders. The goalkeepers were taller and heavier than the other players; however, their somatotype components were not significantly different. Lean body mass, fat free mass, and basal metabolic rate were significantly higher in goalkeepers than in forwards and midfielders and Lean body mass, fat free mass, and basal metabolic rate values between goalkeepers and defenders showed large differences, so there were not statistically significant.

Masocha, V and Katanha, A. (2015) Compared the study to determine the anthropometric and somatotype characteristics of male provincial youth league soccer players according to their playing positions of sixteen youth players (15.3±0.68 years) were purposively selected through volunteer participation from a club in Mashonaland Central Province of Zimbabwe. Somatotype was calculated using the Heath-Carter (1990) method. No statistically significant differences were observing among playing positions in both anthropometric and somatotype variables except in height. There were mean of anthropometric and somatotype for Zimbabwean youth players was slightly lower than that of players of similar age group around.

Saha, S., Kundu, B. and Mondal, S. (2014) Studied to the morphological, somatotype study was describing, and body composition characteristics of Indian University level football players based upon their field position of 204 male football players from sixteen different Indian universities volunteered for this study and

somatotype (endomorphy, mesomorphy, ectomorphy) and body composition were assessed. Goalkeepers showed higher values for body height, body weight, upper arm girth, more but not excessive body fat. Defenders, midfielders and strikers were ectomorphic mesomorph whereas goalkeepers were endomorphic mesomorph in physique.

Fidelix, Y, L., Berria, B., Ferrari, E, P., Ortiz, J, G., Cetolin, T. and Petroski, E, L. (2014) Examined that study was to identify the morphological configuration of Somatotype of competitive youth soccer players from Brazil of 67 male players aged 15 to 17 years were measurements of body mass, body height, skinfolds, girths and breadths. The goalkeepers were heavier and taller than center backs, midfielders and forward players. The average somatotype for defense, forward and goalkeeper positions was a balanced mesomorph. Midfield players showed ectomorphic-mesomorph characteristics. It was concluded that goalkeepers were characterized as being taller and heavier and that somatotype features of athletes were similar between positions, except for midfield players.

Erceg, M., Grgantov, Z. and Milic, M. **(2013)** Analyzed the positional differences in somatotype characteristics, the Heath-Carter method was used to calculate the somatotype of Croatian amateur senior 40 soccer players. The goalkeepers averagely fit the balanced endomorph category, the defenders, the forwards fit the endo-mesomorph category and the midfielders fit the central somatotype category. The goalkeepers were taller than the midfielders and the forwards, the midfielders were significantly lighter than the defenders and the goalkeepers, and the defenders were more mesomorphic than the midfielders and the goalkeepers. In comparison to elite soccer players, amateur soccer players are less mesomorphic and more endomorphic.

Milic, M. Erceg, M., Grgantov, Z. and Sivrić, H. (2013) Conducted the study was to determine in somatotype components among young soccer players according to player positions of 147 young Croatian soccer players, the participants were divided into 4 groups according to player position: goalkeepers, defenders, midfielders and forwards. There were no significant differences in somatotype according to the criterion of player role. Also, there were significant differences in body height and body mass variables between the goalkeeper position and other positions, as well as in the elbow diameter variable. The hypothesis about the lack of

significant differences in somatotype between player positions among young soccer players is fully accepted.

Saha, S. (2013) Evaluated the Physique and body composition characteristics of athletes determine the success in particular sports events in various ways of 204 Indian University level male football players of 16 different universities and measurement of physique and body composition variables. The mean height and weight of the university level football player was 168.75 cm. and 60.70 kg. respectively. They possessed 9.31 % body fat, 49.64 % skeletal muscle mass and 13.34 % skeletal mass. The mean somatotype of the football player was ectomorphic mesomorphy (2.33-4.63-2.90). The Indian university level football player had inferior height, weight, lean body mass and mesomorphic value of somatotype component than the overseas football player.

Cossio-Bolanos, M., Portella, D. L. and Hespanhol, J.E. (2012) Assessment of body size and composition in soccer players who play in the first league club of Peru of skinfold and body composition sizes were measured in 68 elite soccer players. The average values were compared between four specific positions in the game (goalkeepers, defenders, midfielders, and attackers. There were no significant differences between playing positions in the variables of body weight, height, age, professional experience, body-fat percentage, and fat mass and midfielders showed lower values of fat-free mass in relation to other playing positions, and they are lower and lighter with regard to the goalkeepers.

Makaza , D., Amusa , L. O., Goon , D. T., Tapera , E. M., & Gundani , M. P. (2012). Studied the body composition and somatotype profile of junior Zimbabwean Premier League club junior league football players based in Bulawayo, Zimbabwe. Thirty-one junior soccer players aged 15-19 years participated in the study. Anthropometric variables of stretch stature, body mass, eight skinfolds (triceps, subscapular, biceps, iliac crest, supraspinale, abdominal and medial calf), five girths (arm relaxed, arm flexed and tensed, waist, gluteal, medial calf circumferences), and two bone breadths (humerus and femur) were measured. Derived body composition variables included body mass index, waist hip ratio, percentage body fat, fat mass, fat -free mass, fat mass index, and Fat Free Mass Index. Somatotype components were estimated using the Heath-Carter method. Players were categorised by playing positions of forwards, midfielders, defenders and goalkeepers. There was no

significant difference in body composition among players by playing positions. The players were shorter, lighter and leaner when compared to players elsewhere. There was no significant difference in somatotype among the players for the different playing positions. The mean somatotype is generally similar to players elsewhere though the endomorph (fatness) component was comparatively lower. The Zimbabwean junior soccer players are generally of a smaller body size for all playing positions which can affect their performance.

Orhansup, O., Sagir, M., Zorba, E. and Kishali, N.F. (2010) Compared the study focuses on the characteristics of the somatotypical profiles of high performance, adult, male, Turkcell super league football players in Turkey. The somatotypical values of 24 Gençlerbirlii football team and 24 Gençlerbirliiofta Football Team players are elaborated for this study. Triceps, subscapular, supraspinale measurements and the thickness of calf and skin, humerus bicondylar, femur bicondylar. There were no significant differences were found among the team players.

Hazir, T. (2010) Assessed the physical characteristics of soccer players according to playing level and position of 305 professional male soccer players [Turkish Super League 161 and Turkish First League 144) were involved in this study. The both physical characteristics and somatotype of players were significantly different between playing levels and positions. Although the somatotype of soccer players in both levels was dominated by the mesomorph category, players at the Although the higher playing level were more mesomorphic, and less endomorphic and ectomorphic than players at the lower level at all playing positions.

Carling, C. and Orhant E. (2010) Examined that variations in body composition in professional soccer players: inter seasonal and intra seasonal changes and the effects of exposure time and player position. variations in measure body composition soccer players and groups of (goalkeepers, defenders, midfielders, and forwards). A difference in average %BF and BM values was observed, with substantial differences observed in goalkeepers, lateral midfielders, and forwards. Across all players, there were significant in-season variations in %BF (between start- and mid-season and mid- and end-season, and FFBM (between start- and mid-season and start- and end-season, whereas BM remained unchanged. Further analysis of these fluctuations in %BF and FFBM at different points of the season showed that variations differed across the positional groups, especially in defenders and

midfielders. In contrast, no association was observed between measures and exposure time and no differences were reported across seasons.

Sutton, L., Scott, M., Wallace. and Reilly, T. (2009) Investigated the body composition is a key consideration in the physical make-up of professional soccer players. The soccer players recorded better values than a reference group (n = 24) for all body composition compartments. Percent lean mass and bone mineral density were the variables best able to identify the soccer players (95.5%correctly classified). Differences in body composition were evident between goalkeepers and outfield players, but not between outfield playing positions. No differences were found on the basis of No of international status. The non-Caucasian players demonstrated significantly lower percent body fat (9.2international 9.2+/- 2.0%) than the Caucasian players (10.7 +/- 1.8%). The composition is+/- important for elite soccer players, but that homogeneity between players at top professional clubs results in little variation between individuals.

Gil, S, M., Gil, J., Ruiz, F., Irazusta, A. and Irazusta, J. (2007) Compared the physiological and anthropometric characteristics of young soccer players according to their playing position of 241 male soccer players were classified into the following groups: forwards, midfielders, defenders, and goalkeepers. There were the best performers in all the physiological tests, including endurance, velocity, agility, and power. In contrast, goalkeepers were found to be the tallest and the heaviest players. They also had the largest fat skinfolds and the highest fat percentage, but their aerobic capacity was the lowest. These differences fit with their different workload in a game.

Bandhopadyay, A. (2007) Comparison this studied 50 sedentary males and 128 sports persons (volleyball=82, soccer=46) of 20-24 years were selected from West Bengal, India, to evaluated and compared their anthropometry and body composition. Skinfolds, girth measurements, body fat percentage (%fat), and endomorphy were significantly higher among sedentary individuals, but lean body mass (LBM) and mesomorphy were significantly higher among the sports persons. Soccer and volleyball players were found to be ectomorphic mesomorph, whereas sedentary subjects were endomorphic mesomorph. The soccer and volleyball players had higher %fat with lower body height and body mass than their overseas

ncounterparts. %fat exhibited a significant correlation with body mass index (BMI) and thus prediction equations for %fat from BMI were computed in each group.

Raschka, C and Wolthausen, C. (2007) Compared the study 39 soccer players of the third division as well as 22 handball players of the second division and 17 handball fourth division players (average age 24 years) were examined kinanthropometrically. The group differences are highly significant for the endomorphy. In the somatogramm of Heath & Carter (1967) both ballplayer collectives are settled in the ectomorph mesomorph area. The group differences are here for the endomorphy and mesomorphy highly significant, for the ectomorphy significant. The proportional fat portion is high-significantly lower for the soccer players than for the handball players. All height and longitudinal dimensions as well as the circumferences with exception of the thigh girth were for the larger handball players very too highly significantly higher than for the smaller soccer players, whereby no important proportional differences were registered.

Matkovik, B., Durakovik, M. M, Matkovik, B., Jankovik, S., Ruzic, L., Leko, G. and Kondri, M. (2003) Conducted the study of morphological characteristics and body composition of elite Croatian soccer players with respect to their team position. of 57 soccer players, members of the First Croatian National League and anthropometrical measurement encompassed 13 variables. The goalkeepers were the tallest and the heaviest, and had significantly higher amounts of body fat, whereas the forwards and the midfield players were on the average about 3 cm shorter. The goalkeepers had longer legs and arms, and the largest biacromial. The forwards were the shortest on the average. The lowest values of fat tissue were found in defenders and midfield players. The differences in morphological characteristics according to the team position were noticed only in goalkeepers, especially regarding their height, weight and the percentage of fat tissue.

Bolonchuk, W, W. and Lukaski, H. (1987) Compared this study the body composition and somatotype by anthropometry for 69 collegiate football players were estimated pre and post season. Body weight, percent fat decreased and lean body weight increased. Somatotype changed of preseason mean to postseason mean. The changes in endomorphy and mesomorphy were significant but did not alter the descriptive classification of the mean somatotype.

2.2. LITERATURE RELATED TO PSYCHOLOGICAL PARAMETERS

Kesilmis, I., Tastan, Z. and Toros, T. (2020) Compared the perceived motivational climate and positive feedback by positions in football players of 267 Male footballers who played in football teams in the 2018-2019 season. It was found that there was no significant difference between the positive feedback scores perceived by the players mid and defense positions. But; a significant difference was observed between the positive feedback scores of the players in the offense-defense and mid-attack position.

Urena-Lopera, C., Morente-Oria, H., Chinchilla-Minguet, J, L. and Castillo-Rodríguez, A. (2020) Analyzed the motivation in athletes is a state that fluctuates due to multiple factors that can, in turn, negatively or positively influence sports performance of 141 under 16 (U16) soccer players were selected. The general motivation decreases with the competition, and in particular, the intrinsic motivation, where the precompetitive evaluation is lower than the basal, in both categories. and the extrinsic motivation of external regulation is explained in 26.0% by the academic performance factor. U16 soccer players showed lower levels of motivation at moments prior to the sports competition, and these dimensions of motivation are explained by the category, academic performance, and fat mass.

Mouloud, K. (2019) Examined and described the level of state anxiety among football players according different playing positions of 61 male youth football players (goalkeepers, defenders, midfielders and forwards of age ranged from 16 to 19, from Fanzeres Academy -city of Porto Portugal. There was above moderate level of state anxiety among youth football players and no significant difference in state anxiety among youth football players according playing positions.

Goswami, S., and Sarkar, L, N. (2017) Compared the psychological characteristics among the players of football in relation to the player position. of 45 male players who participated in the All India football competitions and the age levels ranged from 18-25 years. Subjects were divided into three groups on the basis of their position of play (defenders, midfielders and forwards). The self confidence among the players in the different positions defender group is maximum in comparison to that of midfielder and forward groups; forward players showed better in aggression and achievement motivation than defender and midfielder players. Finally, it was revealed

that the defenders and midfielders football players were similar with regard to self-confidence, aggression and achievement motivation.

Abatkun, Z. and Mohan, N. V. (2017) Investigated the study anxiety and Self Confidence level of Ethiopian Sports Academy male soccer players of 150 male soccer players were purposively selected from Ethiopian Youths Sports Academy, Tirunesh Dibaba National Sport Training Center, Ambo FIFA Goal Project and Aribaminch University Soccer Academy and their age ranged from 14 to 19 years. There was no significance mean differences in Anxiety and Self Confidence variables in the four selected group's namely goalkeepers, defenders, midfielders, and striker players of Ethiopian sports academy male soccer players.

Saravanakumar, N & Arjunan, R. (2016) Compared the psychological variables of Indian University female soccer players at different playing positions of 238 female soccer players who have participated in the south-west zone and all India inter-University women football tournament were selected. The psychological characteristics selected were motivation, confidence, anxiety control, mental preparation, team emphasis and concentration. The significant difference between goal keeper, defenders, mid fielders and forwards on motivation, confidence, anxiety control, mental preparation, team emphasis and concentration dimension of PSIS-Youth. Goal keeper, defenders, midfielders and forwards were different on psychological characteristics.

Asamoah, B. and Grobbelaar, H. (2016) Studied the differences in the sport psychological skill levels of team sport athletes (e.g., volleyball, rugby union, netball and field hockey) in different playing positions suggest that each playing position bears unique psychological demands of various psychosocial variables among 263 student soccer players and participants indicated their primary playing position (goalkeeper, defender, midfielder or forward). With regard to mental toughness the defenders scored higher than the midfielders on constancy, whilst the midfielders exerted greater control than the defenders and forwards respectively. No positional differences were evident for the seven psychological skills. The group integration-task scores of the forwards and goalkeepers were higher than that of the midfielders.

Chow, G, M., Murray, K, E. and Feltz, D. L. (2016) Examined the personal and socio environmental factors of players' likelihood to aggress. Participants were

youth soccer players 258 and their coaches 23 from high school and club teams. Using multilevel modelling, results demonstrated that the team norm for aggression at the athlete and team level were significant predictors of athletes' self-likelihood to aggression scores. Further, coaches' game strategy efficacy emerged as a positive predictor of their players' self-described likelihood to aggress.

Amira & Riadh (2015) Investigated the selected Psychological skills of male youth soccer players at different playing positions of 180 male youth Tunisian soccer players between the age of 15 to 19 years from different clubs of 1st and 3rd youth class divisions were selected. The subjects were divided into three playing positions namely (forward, midfielder and defender. The significant difference between basic and psychosomatic subscales scores of the players in different playing positions. Forward players consistently outperformed the other positional groups in motivation, confidence and activation. Defence players outperformed the other positional groups in relaxation while midfield players showed the lowest 40 psychological skill levels.

Singh, M, K. and Dubey, S. (2015) Studied the investigation was an attempt to compared sports aggression and sports competition anxiety between Basketball and Handball Players of 40 male players acted as subjects in this study (25 from each group) from Bilaspur district (C.G.). Age of subject was ranged from 18 to 32 years. There were found that significant difference existed between Basketball and Handball Players with regard to their sports aggression and sports competition anxiety.

Singh, M, C., Singh, T, I., Singh, N, R, K. (2015) Evaluated the sports competitive anxiety among Manipuri male footballers with respect to their playing position, and to find out if there exists any significant difference among Manipuri male footballers with respect to their playing position. The results of the study revealed that anxiety level of Manipuri male footballers is average and there exist no significant difference on anxiety level among the footballers with respect to their playing position.

Meenu and Parul (2014) Compared this study was to find out the comparison of anxiety and aggressive level between handball and basketball male players of Sirsa District. The study was conducted on 48 male sports person and there was age ranged between 18 to 25 years. Aggression – aggression is the injunction of on oversize stimuli either physical, verbal, or gestural upon one person by another. Anxiety – In

its simplest form anxiety may be defined as a subjective feeling of apprehension and heightened. It was found that basketball female players of Sirsa have better in anxiety and aggression level than volleyball female players of Sirsa.

Joostee, J., Steyn B, J, M. and Berg, V, D. (2014) Investigated the psychological skills of African youth soccer players in different playing positions of 152 soccer players between the ages of 14 and 18 years. The significant differences between the subscale scores of the players in different playing positions. Concentration was the only psychological variable associated with performance. The middle four-ranked teams outscored the most successful and least successful teams in relaxation. The study could not confirm the widely acclaimed research assumption that psychological skill demands differ among players indifferent playing positions, nor the positive correlation between psychological skills and team success.

Kurt, C., Catikkas, F., Atalag, O. and Omurlu, K.I. (2012) Investigated the main goal of this study was to determine the effects of positional differences of soccer players on loneliness, self-esteem levels, trait anger and anger expression scores. 443 male soccer players from 7 different cities of Turkey were assessed in terms of loneliness level, self-esteem score, trait anger and anger expression with 3 different playing positions (defense, midfielder and forward). There was no meaningful difference found between groups in terms of either descriptive attributes or loneliness level, self-esteem score, trait anger and anger expression.

Bortoli, L., Messina, G., Zorba, M. and Robazza, C. (2012) Assessed the effects of contextual and individual variables (perceived motivational climate and moral atmosphere, task/ego orientation and perceived competence) on antisocial behavior and emotion-related psycho biosocial (PBS) states as conceptualized within the individual zones of optimal functioning model. Participants the study was 382 young male soccer players, aged from 14 to 16 years, drawn from 27 Italian teams. Results suggest that performance climate and a moral atmosphere, in which aggressive behaviors are encouraged, are likely to determine antisocial behavior and a range of unpleasant PBS states in young sports participants.

Gumusdag, H., Bastik, C., Yamaner, F., Kartal, A. and Unlu, C. (2013) Compared this study the Burnout is a complex syndrome and it can be caused by cognitive, physiological, behavioural and situational influences of excessive stress as

well as personal factors. Participants were 554 professional male soccer players with a mean age of 24.40 + 2.88 years. A hierarchical regression analysis was conducted to predict burnout from anxiety and aggression. There were significant predictors of players` burnout levels. Although aggression levels were insignificant predictor of athletic burnout. The current study has provided a good basis for identifying variables that may be associated with the players.

Coetzee, B., Grobbelaar, H. and Grid, C, C. (2006) Studied the soccer has among the highest participants of all sports in the world, there is a lack of research that pertains to the possible influence that sport psychological skills may have on the performances of soccer players of 36 soccer players of two tertiary institutions completed four sport psychological questionnaires. The successful group obtained significantly higher scores for the striving for success psychological skill compared to the less successful group. The successful group also reached significantly higher concentration, coach ability and mental rehearsal values than the less successful group, who recorded significantly better values in their freedom from worry score. A forward, stepwise discriminant analysis showed that the following skills were the most important discriminators between successful and less successful soccer teams: mental rehearsal (PSI), concentration (ACSI-28 and PSI), peaking under pressure (ACSI-28), goal setting/ mental preparation (ACSI-28), achievement motivation (AMSSE and PSI) and activation control (PSI).

Chantal, Y., Robin, P., Vernat, J-P. and Bernache-Assollant, L. (2005) Investigated the growing body of literature associates sports person ship to athletic aggression. Two cross-sectional studies involving 102 male physical education students (mean age=20.7 years) for Study1, and 202 male athletes (mean age=24.1 years) for Study2. The multiple regression analyses supported the proposed model. Structural equation modelling analyses (which involved the testing of an alternative model) were conducted in Study 2. Analyses yielded convergent results.

2.3. LITERATURE RELATED TO BASIC SOCCER SKILLS

Minlunsingson, L. and Thambalsingh, L. (2021) Analyzed the differences in the whole-body reaction time among the male soccer players of different playing positions (defender, mid-fielder & forward) participating at least in the state league of 45 volunteered soccer players, 18 to 30 years of age. No significant differences were

found among the soccer players of different playing positions in the whole-body reaction time of visual and auditory as the calculated values of F were 0.39 and 0.41 respectively were lesser than the tabulated value F=3.22.

Singh, T. and Singh, L. (2021) Evaluated the Aerobic capacity is the highest amount of oxygen consumed during maximal exercise in activities that use the large muscle groups of 45 players, 15 each defender, midfielder and forward players between 18 to 30 years of age. There were insignificant differences in the means comparison among defender, midfielder and forward as the obtained value of F=2.22, is less than the table value F=3.22. VO2max is considered to be the best indicator of aerobic capacity.

Tendonkeng, J, F., Nguelefack, T, B., Assomo, P, B., Wiliam, N., Guessog, R., Ndongo, J, M. and Temfemo, A. (2021) Compared the physical performances and physiological aptitudes of the soccer players of the first (L1) and second (L2) leagues of the Cameroon professional championship of 175 male professional soccer players. VO2 max of L2 players was better than that of L1 players, as well as the BLA. L2 attackers showed significant higher VO2max compared to L1 players at the same position. The BLA rate was higher in midfielders compared to defenders or attackers in each league. Soccer players of L1 were heavier, taller and had better physical aptitude with lower physiological response compared to those of L2.

Rechenchosky, L., Borges, P, H., Menegassi, V, M., Jaime, M, D, O., Guilherme, J Teoldo, I and Rinaldi, W. (2018) Compared the studied was to analyse the execution efficiency of core tactical principles in young soccer players and compare them among different game positions of 54 Brazilian young soccer players. Midfielders and forwards performed 'offensive unity' more efficiently than defenders. As for defensive principles, defenders presented better performance in 'defensive coverage,' giving support to the first defender. It was the coaches of young regional soccer players carry out activities which allow depth passes to teammates as well as games to promote 'offensive unity' for defenders and 'defensive coverage' for midfielders.

Gioldasis, A., Souglis, A. and Christofilakis, O. (2017) Assessed the technical skills of both male and female players according to their position of 27 females (M= 12.52 ± .51) and 37 male soccer players (M= 12.46 ± .51) who were

members of amateur youth leagues participated in the study. Players were classified according to their playing position into the following groups: central defenders, fullbacks, midfielders, wingers and forwards. Shooting, short and long passing, dribbling, and dribbling after passing abilities were assessed. Although there were not significant differences between players of various positions the central defenders as well as the female players performed significantly lower scores in most of the technical skills.

Slimani, M., Znazen, H., Hammami, A. and Bragazzi, N. L. (2017) Compared the body fat percentage (%) between male soccer players of different competitive levels, playing positions and age groups. Higher body fat % values in goalkeepers than defenders, midfielders and forwards were observed. There was no significant association between % of body fat and age. The body fat % clearly distinguished higher- from lower-level soccer players.

Borges, P, H., Guilherme, J., Rechenchosky, L., da Costa, L, C, A. and Rinadi, W. (2017) Investigated the fundamental tactical principles of the game of soccer represent a set of action rules that guide behaviors related to the management of game space. The sample consisted of 3689 tactical actions performed by 48 soccer players in three age categories: under 13 (U-13), under 15 (U-15), and under 17 (U-17). The principles of "offensive coverage" and "concentration" were performed more frequently by the U-17 players than the U-13 players. The tactical principles "width and length" and "defensive unit" were executed more frequently by younger soccer players. It can be concluded that the frequency with which fundamental tactical principles are performed varies between the gaming categories, which implies that there is valuation of defensive security and a progressive increase in "offensive coverage" caused by increased confidence and security in offensive actions.

McIntyre, M, C. and Hall, M. (2017) Examined the physiological profile, and its relation to playing position, of elite college Gaelic footballers. Of 28 elite Gaelic footballers (12 backs, 12 forwards, and four midfielders). There was general similarity among the members of the team, probably the result of a typical, common training programme. The team means for stature, body mass index and percentage body fat, power output by Wingate test (absolute power and sit and reach test displayed no significant differences when analysed according to playing position. However, midfielders did have significantly larger body mass than backs and greater

maximal oxygen consumption and greater vertical jumping ability than backs and forwards (vertical jump power output, vertical jump. Midfielders also had greater absolute handgrip strength.

Joo, C. H. And Seo, D. (2016) Compared performance factors of youth soccer players according to position. A total of 101 high school soccer players were selected and were classified into goalkeeper (n=7), defense (n=37), midfield (n=39), and forward (n=18) positions. All subjects were subjected to the Wingate test for anaerobic capacity, shuttle run test for aerobic capacity, and pass, kick, dribble, and shooting tests for soccer skills. There was no significant difference in aerobic capacity according to position. It was suggested that middle and high school soccer players should improve aerobic, anaerobic capacity, and soccer skills irrespective position to achieve high-level soccer performance.

Marques, M. C., Izquierdo, M. and Gabbett, T. J. (2016) Compared the anthropometric and physical fitness characteristics of the different playing positions in adolescent soccer players. One hundred and sixty-seven young male national level soccer players were tested on anthropometric characteristics and physical performance tests (30 m sprint, ball kicking, overhead medicine ball throw, and countermovement jump). The results demonstrated differences in anthropometric characteristics between positions. Differences were also found in the physical performance tests; forwards performed better in the throwing, countermovement jump, and sprint tests than defenders. Midfielders demonstrated greater countermovement jump performances than right defenders.

Thakur, S, T. (2016) Studied an attempt has been made to study the variation of three forms of visual & auditory reaction times namely i) Simple reaction time ii) Discriminative reaction time and iii) Choice reaction time of Football players with respect to their field playing positions. Football players of various engineering colleges of Hyderabad were classified into four categories namely a) Goal Keepers b) Defenders c) Midfielders and d) Forwards on 20 Goalkeepers and 50 subjects in each other categories. The visual reaction time varies with respect to playing positions of Football players whereas the auditory reaction time has no significant variation. Reaction time is duration between applications of a stimulus to onset of response.

Tierney, P, J., Young, A. Clarke, D. and Duncan, M, J. (2016) Examined the Global Positioning System (GPS) determined movement patterns across the 5 most common playing formations (4-4-2; 4-3-3; 3-5-2; 3-4-3; 4-2-3-1) employed in 11 versus 11 football match play in England of 46 were monitored over the course of a season; total distance, high speed running, high metabolic load distance, high speed accelerations and decelerations data was collected for analysis. It was found that 3-5-2 formation elicited higher, and HMLD) than all other formations and above average Acc and Dec with 4-2-3-1 eliciting the highest Acc and Dec. Positional data showed that CM in 4-3-3 covered >11% TD than in 4-4-2. FW in 3-5-2 covered >45% HSR than in 4-2-3-1. CM in 4-3-3 covered >14% HMLD than in 4-4-2. FW in 4-3-3 performed >49% accelerations than in 4-2-3-1. WD in 3-5-2 performed >20% more decelerations than in 4-4-2.

Fernandez-Navarro J., Fradua, L., Zubillaga, A., Ford, P, R. and McRobert, A, P. (2016) Analyzed this study was to defined and categorized different styles of play in elite soccer and associated performance indicators by using factor analysis. Furthermore, the observed teams were categorized using all factor scores. Data were collected from 97 matches from the Spanish La Liga and the English Premier League from the seasons 2006-2007 and 2010-2011 using the Amisco system. A total of 19 performance indicators, 14 describing aspects of attacking play and five describing aspects of defensive play, were included in the factor analysis. Six factors, representing 12 different styles of play (eight attacking and four defensive), had eigenvalues greater than 1 and explained 87.54% of the total variance. Direct and possession styles of play, defined by factor 1, were the most apparent styles. Factor analysis used the performance indicators to cluster each team's style of play. Findings showed that a team's style of play was defined by specific performance indicators and, consequently, teams can be classified to create a playing style profile. For practical implications, playing styles profiling can be used to compare different teams and prepare for opponents in competition. Moreover, teams could use specific training drills directed to improve their styles of play.

Nilsson, J. and Cardinale, D. (2015) Studied was to determine the magnitude of aerobic and anaerobic performance factors among elite male football players in different team positions of 39 football players from the highest Swedish division classified as defenders and midfield players participated. Average VO2max for the

whole population (WP) was 57.0mL O2.kg-1min-1. The average sprint time (45m) was 5.78± 0.16s. The AP in the Wingate test was 10.6±0.9W.kg-1. The average maximal oxygen uptake among players in the highest Swedish division was lower compared to international elite players but the Swedish players were better off concerning the anaerobic threshold and in the anaerobic tests. No significant differences were revealed between defenders, midfielders or attackers concerning the tested parameters presented above.

Nikolaidis, P., Ziv, G., Lidor, R. and Amon, M. (2014) Studied the inter-individual variability in soccer players of different age groups playing different positions have twofold: (a) to profile physical characteristics and motor abilities of three age groups of soccer players – under 14 years, 14–17, and over 17, playing different positions – goalkeepers, defenders, midfielders, and forwards; and (b) to examined the inter-individual variability among the players in each age group in all physical and physiological measurements performed in the study. Due to the observed large inter-individual variability, the physical and physiological tests should be interpreted with caution when attempting to differentiate between successful and unsuccessful soccer players, as well as when trying to predict future success in soccer.

Lago-Penas, C., Rey, E., Casais, L. and Gomez-Lopez, M. (2014) Conducted the study was to established the anthropometric and physical profiles of elite young soccer players according to their playing position, and to determine their relevance for the selection process of 156 young male soccer players participated in the study. Players were classified into the following groups: Goalkeepers (n=16), Central Defenders, External Defenders, Central Midfielders, External Midfielders, and Forwards. The results showed that heavier and taller outfield players performed better in vertical jumps and sprint tests, whereas leaner outfield players performed better in the Yo-Yo test. Fat percentage of selected players was lower than that of the non-selected ones. The rest of the body components were similar in the selected and non-selected players within each playing position. Moreover, the selected players performed slightly better than the non-selected players in the physical test, but these differences were not statistically significant.

Pantelis, T. Nikolaidis. (2014) Examined the relationship between player position and physical fitness, with an emphasis on anaerobic power, in female soccer players of 54 first league female soccer players were recruited and groups of

goalkeepers, defenders, midfielders and forwards. Significant differences were observed in body fat percentage with goalkeepers being fatter than defenders (mean difference. Positional differences were also found in the sit-and-reach test, in which goalkeepers scored lower than defenders and midfielders. Comparison of fat mass and endomorphy were statistically significant respectively, with goalkeepers showing the highest values; these differences were in the same direction as with body fat percentage. No positional differences were found in the other physical fitness components (aerobic capacity, anaerobic power, and muscle strength). Differences among player positions were observed in body composition (highest body fat percentage in goalkeepers) and flexibility (lowest score in goalkeepers

Ibrahim, B, M., Bougatfa, R. and Mohamed, A. (2013) Investigated was to provide anthropometric, physical and physiological performance characteristics of Tunisian young soccer players and to examine the relationship between selected parameters according to their playing standard position of 100 under 13 year's old (U-13) male soccer players were tested. They were classified according to their playing standard positions (goalkeeper, defender, midfield and forward). The performance abilities between positions in young soccer players appear to be different. Anthropometry can discriminate physical capacities and soccer skills providing a scientific rational behind the coaches' practice of selecting young soccer players.

Lim, K-B., Moon, J-W and Lee, J, H. (2013) Compared the difference in cardiopulmonary endurance among positions in middle school soccer, and to identify the incidence of sports injuries in association with soccer matches and training. Ninety-six (32 forwards, 27 defenders, 29 midfielders, and eight goalkeepers) middle school soccer players (12.77±0.53 years) participated in this study. There was no significant relationship in cardiopulmonary endurance among outfield players. GK were taller and heavier than outfield players. BMI was significantly higher in GK group than midfielder group. They had played soccer for 39.08±20.28 months on average. During matches and training, forwards suffered 13 injuries (36.1%); defenders suffered 10 injuries (27.8%); midfielders suffered 12 injuries (33.3%); and only one GK came down with an injury (2.8%). The most common types of injuries were to knees (36.1%) and ankles (33.3%).

Coopoo, Y. and Mcnaughton, L.R. (2012) Conducted the study in fitness profile of South African Professional Football players using field tests. The field tests

consisted of morphological characteristics, flexibility, agility, muscular endurance, muscular strength, power, speed and anaerobic capacity. The football players were classified according to the following playing positions: goalkeepers, defenders, midfielders and strikers. Results indicated that there were no significantly different results for the fitness test scores for the various playing positions in this sample of subjects. The results confirmed that the conditioning for this group of football players was not specific to the positions that are required in the game situation, e. g. forwards or backs.

Boone, J., Veayens, A., Steyaert, R., Vanden, B, L. and Bourgois, J. (2012), Studied the Physical fitness of elite Belgian soccer players by player position. 289 adults are players from 6 different first division teams. The players were divided into 5 subgroups (goalkeepers, center backs, full backs, midfielders, and strikers) according to their self-reported best position on the field. The results of this study might provide useful insights for individualized conditional training programs for soccer players. Aside from the predominant technical and tactical skills, a physical profile that is well adjusted to the position on the field might enhance game performance.

Dellal A., Owen, A, l., Wong, D, S, P. and Molla, J. (2012) Investigation was to compare the effects of common rule changes on technical and physical demands for elite soccer players in five playing positions during various 4-min small-sided games in comparison to 11-a-side matches. Forty (40) international players classified into five positional roles participated in the study. This study revealed that 4 vs. 4 SSGs played with 1 or 2 ball touches increased the high-intensity running and the difficulty to perform technical actions, being more specific to match demands.

Hughes, M., Caudrelier, T., James, N., Redwood-Brown, A., Donnelly, I., Kirkbride, A. and Duschesne, C. (2012) Analyzed of the study of performance indicators of elite male soccer players by position. In the early spring of 2011, staff from 9 Universities, from all over Europe, brought 51 level 3 Sports Science students to Hungary for an Intensive Programme in Performance Analysis of Sport (IPPAS). The 15 staff, all experts in PA, had a total of over 200 years of experience of PA between them. The most experienced 'experts' (N=5) acted as mentors, introducing the area, defining the aims and managing the groups. The rest (N=10) and the 51 students were distributed evenly as possible across 7 groups, in which their aim was

to define the key PI's for one of the positions in soccer. The positions used were: - Goalkeepers; Full Backs; Centre Backs; Holding Midfield; Attacking Midfield; Wide Midfield and Strikers. In conclusion, 7 sets of KPI'S, were defined for each of these classifications within 5 category sets: Physiological, Tactical, Technical - Defending, Technical - Attacking, and Psychological. These KPI's were different from position to position within the team, particularly for the Goal Keeper. The KPI's for the outfield players were very similar, differing only in their order of importance. This enabled a 'generic' set of skills required for outfield players in soccer.

Khorasani, M., Osman, N. and Yusof, A. (2010) Investigated some selected biomechanical characteristics of lower extremity between professional soccer defenders, midfielders and strikers. The kicking motions of dominant legs were captured from fifteen Olympic professional soccer players, volunteered to participate in this study, using four digital video cameras. There were significant differences between midfielders and defenders in (1) lower leg angular velocity, (2) thigh angular velocity, (3) lower leg net moment, (4) thigh net moment, and (5) ball velocity. There were significant differences between midfielders and strikers in lower leg net moment. There were significant differences between strikers and defenders in; (1) lower leg angular velocity, (2) thigh angular velocity, (3) lower leg net moment, (4) thigh net moment, and (5) ball velocity. The midfielders can perform soccer instep kicking strongly and faster than defenders and there is, however, no significant difference between midfielders and strikers, but midfielders' ball velocity is higher than strikers' ball velocity.

Jonathan, B., Polman, R. and O'Donoghue, P. (2007), Studied the physical demands of different positions in (FA) English Premier League Professional Soccer Players from three positional groups (Defenders, Mid-fielders and Strikers) representing various professional clubs in 2003-2004 season and reported that significant differences existed between Strikers, Mid-field and Defending players in various kinds of body movements with the soccer ball and without soccer ball and have suggested different type of specific conditioning programme for different positions.

Hencken, C and White, C. (2006) Conducted the squad of Premiership soccer players (n=24) provided informed consent to participate in this study. A total of 39 measurements (sectioned as: skinfolds, girths, lengths, and breadths) were made

for each player. Mean calculated scores for playing position were obtained. A multivariate analysis of variance revealed no differences between positions (F =0.783, P=0.688). This study, stature and body mass were not different between strikers, midfielders, defenders, and goalkeepers. Research has suggested that a soccer player's anthropometric dimensions can be a major determinant for success within a playing position. In this study, within-position variation was quite large in some cases, which could indicate that a team that does not have the opportunity to hand-pick players, based on anthropometric characteristics, may be at a disadvantage.

Al-Hazzaa, H, M., Almuzaini, K, S., Al-Refaee, S, S., Sulaiman, M, A., Dafterdar, M, Y., Al-Ghamedi, A. and Al-Khuraiji, K, N. (2001) Examined the aerobic and anaerobic characteristics of Saudi elite soccer players of 23 outfield elite soccer players representing the Saudi national team participated. Cardio respiratory parameters, including maximal oxygen uptake (V O2 max), were assessed by open-circuit spirometry during graded treadmill running. The aerobic power, expressed relative to body mass, of Saudi elite soccer players was in the lower range of values normally reported in the literatures for elite soccer players. Both PP and AP30 were somewhat lower than values previously reported for elite soccer players from other countries.

From the literature reviewed above, it has been detected that no endeavor has so far made to study the Somatotype, Psychological Parameters and Basic Soccer Skills of soccer players at different playing positions, especially in the four groups subjects and their age limit of 18 to 25 years, even though, research studies cited above revealed that there has the possibility of some differences among every soccer player with regard to their playing positions. It has been noticed that the Somatotype, Psychological Parameters and Basic Soccer Skills is highly suitable and authentic to find such playing positions differences. Hence, a solemn attempt has done by the investigator to investigated Somatotype, Psychological Parameters and Basic Soccer Skills of soccer players at different playing positions.

CHAPTER-III

Methodology

CHAPTER-III

METHODOLOGY

In this chapter, the selection of the subjects, Formation of soccer, Criterion measure, instrument & tools used, reliability of data, administration of test for collecting data and statistical procedure used are explained have been presented.

3.1 SELECTION OF THE SUBJECT

The purpose of this study was to analyze the relative importance of Somatotype, Psychological Parameters and Basic Soccer Skills with respect to position of play. To achieve this purpose, one hundred twenty (120) elite soccer players were selected. The subjects had experience of participation in competitive soccer game like Inter-University Tournaments and Kolkata Football League. The age of the subjects ranged between 18 to 25 years. The break-up of number of subjects as per playing position have been presented in Table No-1

Table No-1

Distribution of the subjects on the basis of playing position

Sl.no.	Position of play	No. of players
1.	Goal Keeper	25
2.	Defender	39
3.	Midfielder	26
4.	Forward	30
5.	Total	120

3.2 CRITERION MEASURES

For the present study the parameters for measurement and analysis were selected from three different groups of variables namely Somatotype Profile, Psychological Factors and Basic Soccer Skills.

In personal data measurement were (i) Age, (ii) Height and (iii) Weight.

In somatotype profile the measurement were:

a) Skinfolds: (i) Biceps, (ii) Triceps, (iii) Subscapular, (iv) Supra-iliac, (v) Supra-spinal and (vi) Calf.

b) Girths: (i) Biceps and (ii) Calf.

c) Breadth: (i) Humorous and (ii) Femur.

In selected psychological parameters measurement were: (i) Aggression and (ii) Achievement motivation.

In selected basic soccer skills were (i) Passing, (ii) Dribbling, (iii) Shooting, (iv) Kicking, (v) Heading and (iv) General soccer ability was also considered as a criterion for measurement.

All these measurements were the selected criteria for this study.

3.3 INSTRUMENT AND TOOLS USED

The following instruments and tools used for collecting data in the present study.

i) Digital weighing machine to measure body weight in kg.

ii) Stadiometer to measure standing height in centimetre.

iii) Herpend skinfold caliper to measure different skinfold in millimetre.

iv) Sliding caliper to measure breadth in centimetre.

v) Steel tape to measure girth in centimetre.

vi) Digital stop watch to measure time in second.

vii) Aggression scale (AS) to measure aggression by Dr. Rajeev Luchan Bharwadwaj with 28 questions (2005).

viii) Achievement Motivation Scale (AMS) to measure achievement Motivation by Dr. P.S. Goregaonkar & Dr. R.D. Helode with 40 questions (2002).

ix) Mor-Christian Soccer Skill Test to measure Passing.

x) Mor-Christian Soccer Skill Test to measure Dribbling.

xi) Mor-Christian Soccer Skill Test to measure Shooting.

xii) Warner Soccer Skill Test to measure Kicking.

xiii) Van Rossum and Wijbenga Soccer Skill Test to measure Heading.

xiv) McDonald Soccer Skill Test to measure General Soccer Ability.

3.4 RELIABILITY OF DATA

Reliability of data was ensured by confirming the reliability of instruments and tools and tester's reliability.

Reliability of instruments was guaranteed by the manufacturing companies. The tools used for collecting data were all standard tests having required validity and reliability.

Tester's reliability was ensured by test-retest method.

3.5 PROCEDURE FOR COLLECTION OF DATA

In the present study the data for different variables were collected by the following procedure mentioned below:

3.5.1   PERSONAL DATA

The demographic characteristics of the subjects i.e. Age, Height and Weight were taken into consideration and descriptions are given below.

i) AGE:

Age was calculated from date of birth. School examination certificate was referred for this purpose.

iii) HEIGHT:

Purpose: To obtain the height of a subject.

Equipment: Stediometer.

Method: The subject stood with the heels together and the heels, buttocks and upper part of the back touching the rod putting the scale upon the vertex touching the rod and height was measured. The height was measured in centimeter (cm). Figure no-08.

Score: Score was recorded to the nearest 0.5 cm.

ii) BODY WEIGHT:

Purpose: To obtain the mass of a subject.

Equipment: Digital machine.

Method: The subject stood barefooted on the Centre of the digital weighing machine, with minimal clothing with hands on the sides and not doing any body movements.

He stood in an erect position and his weight was equally distributed on both feet. Figure no-08.

Score: Score was recorded to the nearest 0.5 kg.

Fig. No- 08: Measurement of Height and Body Weight

3.5.2 SOMATOTYPE

Somatotype profile of the subjects was measured using Heath-Carter (1990) method. The formula used were:

a) Endomorphic:

The measurements of endomorphy rating are required: triceps skinfolds, subscapular skinfolds and supra-spinale skinfolds.

Endomorphy= $-0.7182 + 0.1451(x) - 0.00068(x^2) + 0.0000014(x^3)$

Where, x= Triceps + Subscapular + Supra-spinale.

b) Mesomorphy:

The measurements of mesomorphy are required: bi-epicondylar humerus breadth, bi-epicondylar femur breadth, upper arm girth, calf girth, medial calf skinfold and triceps skinfold.

Mesomorphy= [(0.858 x Bi-epicondylar humerus breadth) + (0.601 x bi-epicondylar femur breadth) + (0.188 x CAG) + (0.161 x CCG)] – (height x 0.131) + 4.5.

Where, **Corrected Arm Girth (CAG)** = Upper arm girth (flexed) in (cm) – triceps skinfold/10 (mm) and **Corrected Calf Girth (CCG)** = Calf girth (cm) – medial calf skinfold/10 (mm).

c) Ectomorphy:

The measurements of ectomorphy are required: height-weight ratio.

In this study, Height-Weight Ratio (HWR) was greater than or equal to 40.75; so, the researcher used the as Ectomorphy = 0.732 x HWR – 28.58.

Where, HWR = height / cube root of weight.

The preceding equations, derived from data used by Heath and Carter (1990), using matric units. The equation for endomorphy was third-degree polynomial. The equations for mesomorphy and ectomorphy were linear.

3.5.2.1 DIFFERENT SKINFOLDS

Skinfolds measurement is a common method for determining body fat percentage. The somatotype formula indicates the measurements of following measuring:

Skinfolds: - (i) Biceps, (ii) Triceps, (iii) Subscapular, (iv) Supra-iliac, (v) Supra-spinal and (vi) Calf.

i) BICEPS:

Purpose: To measure the thickness of biceps skinfold.

Equipment: Skinfold caliper

Procedure: When marking the sites for the biceps skinfold, the subjects assumed the anatomical position. The skin of the mid-acromialeradiale site perpendicular to the long axis of the arm around to the front of the arm was held between the thumb and

index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-09.

Scoring: The skinfold thickness was recorded in millimeter.

ii) TRICEPS:

Purpose: To measure the thickness of triceps skinfold.

Equipment: Skinfold caliper

Procedure: The subject was asked to assumed a relaxed standing position with the left arms hanging by the sides. The skin of the mid line of the posterior surface of the arm was held between the thumb and index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-09.

Scoring: The skinfold thickness was recorded in millimeter.

Fig. No- 09: Skinfolds measurement of Biceps and Triceps

iii) SUBSCAPULAR:

Purpose: To measure the thickness of subscapular region.

Equipment: Skinfold caliper

Procedure: The subject was asked to assumed a relaxed standing position with the arms hanging by the sides. The skin of the undermost tip of the inferior angle of scapula was held between the thumb and index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-10.

Scoring: The skinfold thickness was recorded in millimeter.

iv) SUPRA-SPINALE:

Purpose: To measure the thickness of Supra-spinale region

Equipment: Skinfold caliper

Procedure: The subject was asked to assume a relaxed standing position with the arms hanging by the sides with little abduction of right arm. The skin of point at the intersection of two lines i.e., the line from iliospinale to the anterior axillary border and the horizontal line at the level of the iliocristale was held between the thumb and index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-10.

Scoring: The skinfold thickness was recorded in millimeter.

Fig. No- 10: Skinfolds measurement of Subscapular and Supra-Spinale

v) SUPRA-ILLIAC:

Purpose: To measure the skinfold thickness of iliac crest region.

Equipment: Skinfold caliper

Procedure: The subject was asked to assume a relaxed standing position with the right arm folded across the chest. The skin superior to the iliocristale site was held between the thumb and index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-11.

Scoring: The skinfold thickness was recorded in millimeter.

vi) CALF:

Purpose: To measure the skinfold thickness of medial calf.

Equipment: Skinfold caliper

Procedure: The subject was asked to assume a relaxed standing position with the arms hanging by the sides. The subject's feet should be separated with the weight evenly distributed. The skin of the most medial aspect of the calf was held between the thumb and index finger of the left hand and pulled out and measurement was taken with the help of skinfold caliper. Figure no-11.

Scoring: The skinfold thickness was recorded in millimeter.

Fig. No- 11: Skinfolds measurement of Supra-iliac and Calf

3.5.2.2 DIFFERENT GIRTH (Biceps and Calf)

i) BICEPS:

Purpose: To measure the circumference of the arm perpendicular to the long axis of the arm at the level of the peak of the contracted Biceps bronchi, when arm was raised anterior position to the horizontal position.

Equipment: A measuring tape

Procedure: The subject was asked to assume a relaxed standing or seated position with the left arm hanging by the side. The subject's right arm was raised anteriorly to

the horizontal position with forearm supinated and flexed at about 45-90° to the arm. The subject was asked to contact the arm as strongly as possible and hold it while measurement was being made at the peak of the biceps bronchi or at the level of the Mid acromiale-radiale landmark. Figure no-12.

Scoring: The circumference was recorded in centimeter.

ii) CALF:

Purpose: To measure the maximum circumference of calf.

Equipment: A measuring tape and chair

Procedure: The subject was asked to assume a relaxed standing position with the arms hanging by the sides. The subject was asked to take feet apart with weight evenly distributed. The tape was passed around the calf and then the tape slide in the middle of the leg and then the measurement was taken. Figure no-12.

Scoring: The circumference was recorded in centimeter.

Fig. No- 12: Girth measurement of Biceps and Calf

3.5.2.3 DIFFERENT BREADTH (Humerus and Femur)

i) HUMERUS:

Purpose: To measure the breadth of the humerus.

Equipment: Sliding caliper and Chair.

Subject position: The subject assumes a relaxed standing or seated position. The right arm is raised anteriorly to the horizontal position and the forearm is flexed at right angles to the arm.

Method: The distance is measured between the medial and lateral epicondyles of the humerus. With the small sliding caliper gripped correctly, using the middle finger to palpate the epicondyles of the humerus, starting proximal to the sites. The bony points first felt are the epicondyles. Place the caliper faces on the epicondyles and maintain strong pressure with the index finger until the value is read. Because the medial epicondyle is normally lower than the lateral epicondyle the measured distance may be somewhat oblique. Figure no-13.

Scoring: Obtained value (in cm) was the score.

ii) FEMUR:

Purpose: To measure the breadth of the femur.

Equipment: Sliding caliper and Chair.

Subject position: The subject assumes a relaxed seated position with the palms resting on the thighs. The right leg is flexed at the knee to form a right angle with the thigh.

Method: The distance is measured between the medial and lateral epicondyles of the femur. With the subject seated and the caliper in place, use the middle finger to palpate the epicondyles of the femur beginning proximal to the sites. The bony points first felt are the epicondyles. Place the caliper faces on the epicondyles and maintain strong pressure with the index finger until the value is read. Figure no-13.

Scoring: Obtained value (in cm) was the score**.**

Fig. No- 13: Breadth measurement of humerus and Femur

3.5.3 PSYCHOLOGICAL PARAMETERS

In this study, the psychological parameters of the subjects were measured through Aggression and Achievement motivation. Appropriate questionnaires were used to measure and predict the psychological status of the subjects. The subjects were asked to co-operate whole-heartedly. There was no right or wrong statement for any individual. What a subject felt could opt in that option and their observation to be kept confidential and also to be used for research purpose only.

3.5.3.1 AGGRESSION:

Purpose: To measure the level of Aggressiveness of soccer players.

Tools Used: Questionnaire developed by Dr. Rajeev Luchan Bharwadwaj (2005)

Validity: 0.83

Reliability: 0.86

Procedure: The subjects (Soccer Players) were distributed questionnaire in a Hall room. The time was allotted 15 minutes. After explaining the purpose of the test, the subjects were instructed to answer the question according to their knowledge and

understanding of each questions. When the time was up the questionnaires were collected from them.

Score: The scoring of aggression scale is very easy and of quantitative in nature. There were 28 questions each having the five options. The scores were accordingly divided into five categories as per their answer. The maximum score of a question was five (5) and minimum score was one (1). Thus the maximum total score was 140 and minimum total score was 28.

3.5.3.2 ACHIEVEMENT MOTIVATION:

Purpose: To measure the level of Achievement Motivation of soccer players.

Tools used: Questionnaire developed by Dr. P.S Goregaonkar & Dr. R.D Helode (2002)

Validity: 0.67

Reliability: 0.58

Procedure: The subjects (Soccer Players) were distributed questionnaire in a Hall room. The time was allotted 20 minutes. After explaining the purpose of the test, the subjects were instructed to answer the question according to their knowledge and understanding of each questions. When the time was up the questionnaires were collected from them.

Score: The scoring procedure of the Achievement Motivation Scale (AMS) is very simple. There were 40 questions each having the five option. The scores were accordingly divided into five as per answer. A question maximum score was five (5) and minimum score was one (1) possible. Thus the maximum total score was 200 and minimum total score was 40.

3.5.4 PERFORMANCE IN BASIC SOCCER SKILLS

3.5.4.1 PASSING:

Passing skill test was measured by Mor-Christian soccer skill test (Validity-0.9, Realibility-0.98)

Purpose: To measure passing ability.

Field Marking: A goal of 1-yard-wide and 18 inches high was prepared by placing two sticks with a rope used as crossbar. Two football spots were placed at a

45-degree angle from the middle of the goal line, and one was placed at a 90-degree angle from the goal line. All three football spots were located 15 yards from the goal.

Procedure: From each of the three spots subjects executed four passes into the goal [12 passes in all]. Subjects were allowed to use their preferred foot when passing. Two practice passes were allowed from each spot. Figure no-14.

Scoring: One point was awarded for each successful pass. Balls that hit the goal sticks were considered successful. The final score was the total of 12 pass trials.
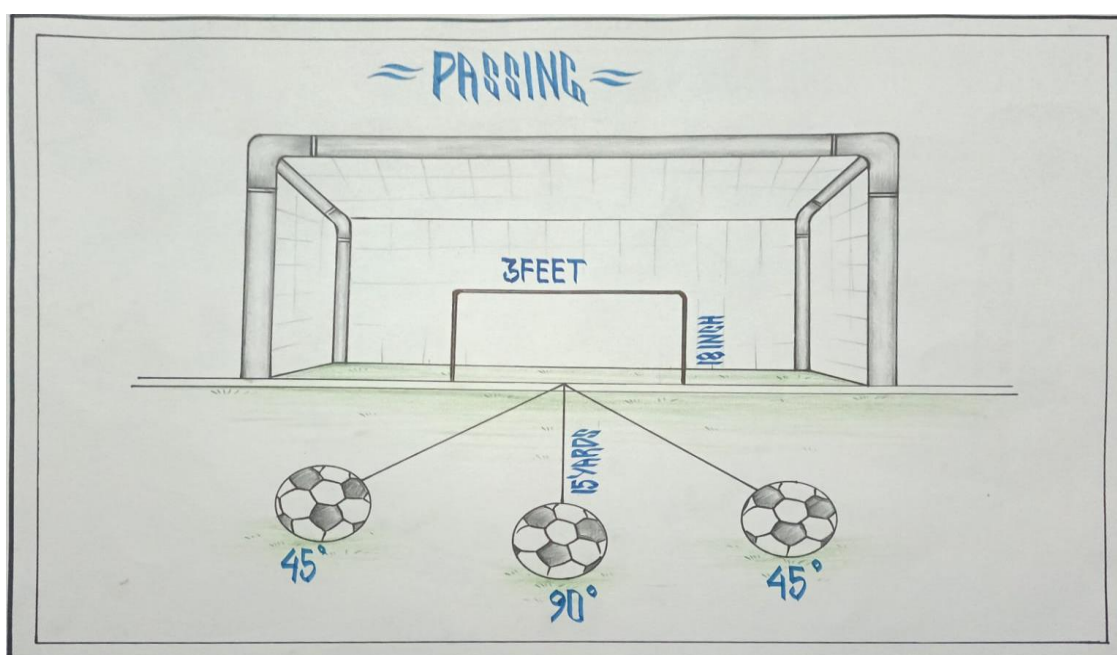
Fig. No- 14: Ground measurement for Passing Test

3.5.4.2 DRIBBLING:

Dribbling skill test was measured by Mor-Christian soccer skill test (Validity-0.73, Realibility-0.80)

Purpose: To measure Dribbling ability.

Field Marking: A round course with a 20-yard diameter was measured and marked. Twelve 18 inches' cones are located around the circle at 5 yards' intervals. A 3-foot stating line was marked perpendicular to the outside of the circle.

Procedure: On the "go" signal, the subjects dribble a ball, which has been placed on the starting line, around the course. The subject dribbles between the cones as quickly as possible and back to the starting line. Three trials were allowed, the first

clockwise, the second counter clockwise, and third in the direction of the subject's choice. Figure no-15.

Scoring: The final score was the combined time of the two best trails.
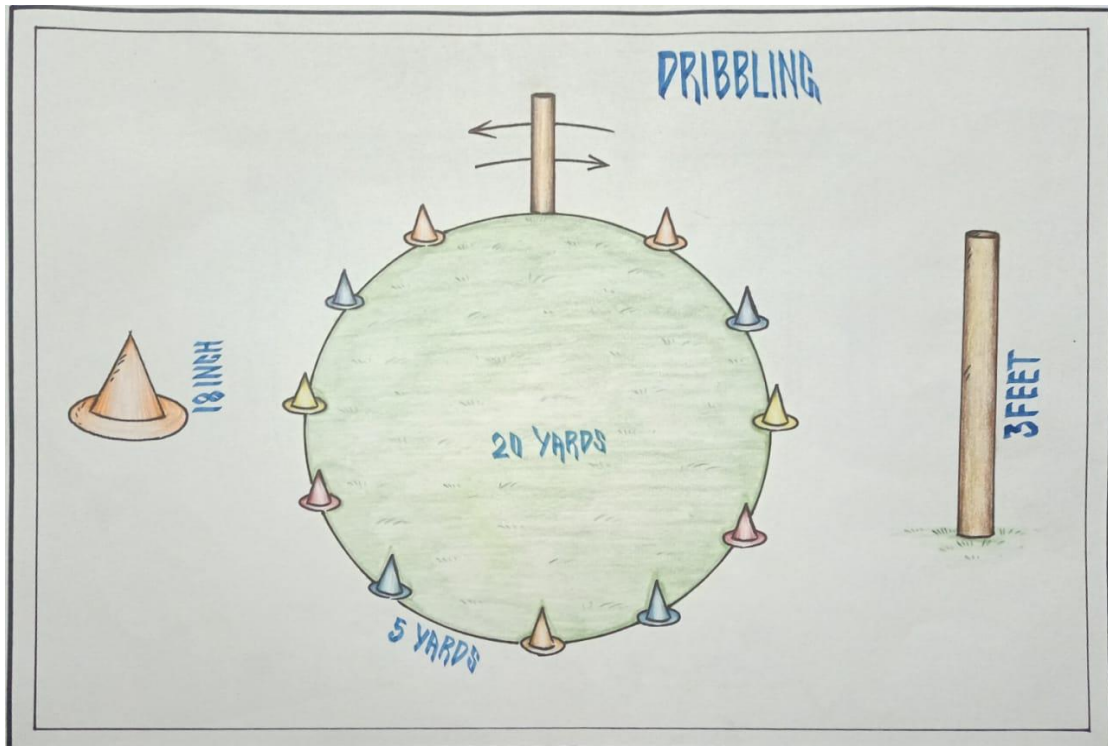
Fig. No- 15: Ground measurement for Dribbling Test

3.5.4.3 SHOOTING:

Shooting skill test was measured by Mor-Christian soccer skill test (Validity-0.78, Realibility-0.96)

Purpose: To measure shooting ability.

Field Marking: Two ropes suspended from the crossbar 4 feet from each goal post divide 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 from the parallel to the goal. Figure no- 10.

Procedure: From behind the restraining line, the subject shoots stationary ball towards the target. The preferred foot could be used. Four practice trails were allowed followed by four consecutive attempts at each of the four target areas [a total of 16 shot trails]. Figure no-16.

Scoring: Ten points were awarded for shots going through a proper target, and 4 points were awarded for shots going through a wrong target. The final score was the total of 16 trials.
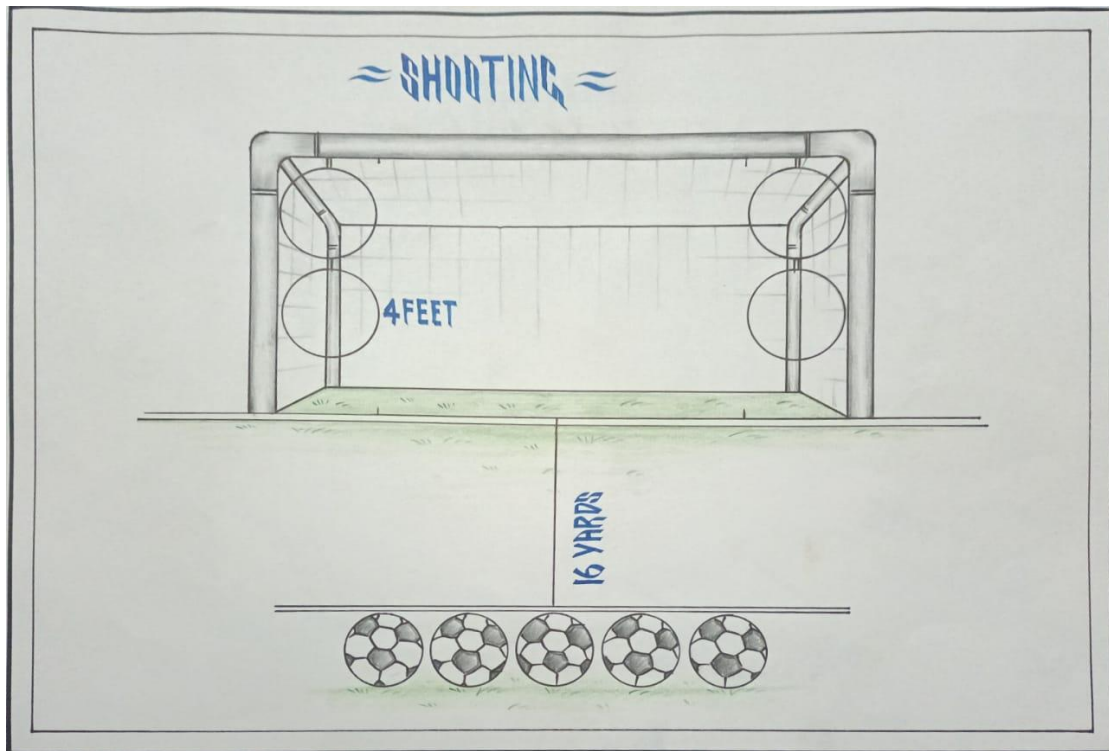
Fig. No- 16: Ground measurement for Shooting Test

3.5.4.4 KICKING:

Kicking for Distance- (Right and Left foot) This skill test was measured by Warner's Soccer Skill Test.

Purpose: To measure Kicking ability for distance with degree of accuracy using the right foot and left foot.

Equipment: Soccer ball, dust, nail and rope.

Procedure: The subjects ran to kick a stationary ball. The ball must stay within a lane that the 25 yards wide. The distance between kicking line and landing point of the ball was measured. Three trials were given. The subjects took a running start and kick this ball first with right foot and then with left foot as far as possible down this marked off lane. It was measured at the first bounce. Out of three trials the best performance was counted. Teammates helped to retrieve and spot the balls. In the present study

maximum distance covered by the strong foot was considered as kicking for distance. Figure no-17.
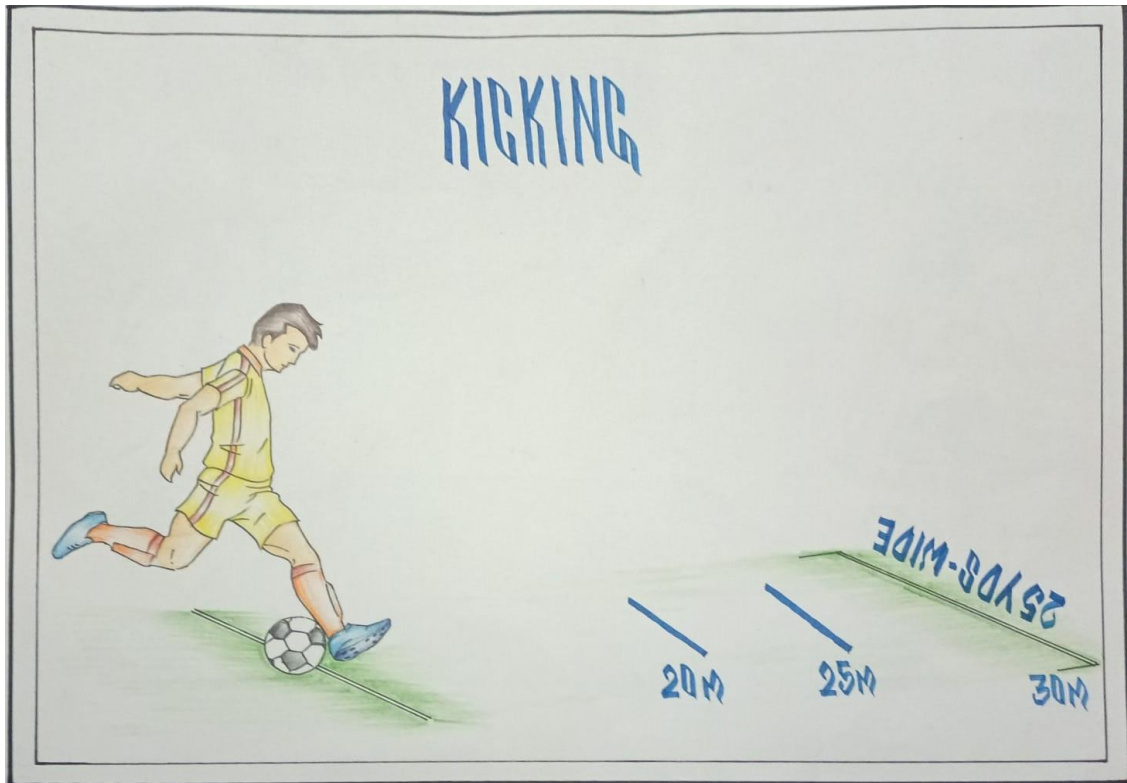
Fig. No- 17: Ground measurement for Kicking for distance

V) HEADING:

Ball control with the Head was measured by Van Rossum&Wijbenga soccer skill test (1993).

Purpose: To measure the Ball control with the Head.

Equipments: Ball, Dust, nail and rope

Procedure: Within a 9x9 metre square field, the player has to keep the ball in the air using only the head. The score recorded was the number of hits of the ball before it fell to the floor. Counting will be stopped when the ball touches the floor, the participant moved out from the square or he touched the ball with any part of the body except head. One trial will be administered, although the participant will be allowed to start the trial again if he failed to contact the ball three times in the initial attempt. Figure no-18.

Fig. No- 18: Ground measurement for Heading Test

VI) GENERAL SOCCER ABILITY (MCDONALD):

General soccer ability skill test was measured by McDonald soccer test.

Purpose: This test is designed to measure general soccer ability, through mainly trapping skill and is appropriate for most levels.

Equipment requirement: A wall, 30 feet wide and 11.5 feet high, 3 soccer balls and stopwatch.

Procedure: A soccer ball is placed on a line, marked 9 feet away parallel to wall from and parallel to wall as starting line. Another two soccer balls are placed 9 feet behind the line in the centre of the test area. On the signal, "go" the player kicks the ball against the wall as many times as possible in 30 seconds. In the event of a wild kick, the player may either retrieve the original ball or use one of the two spare balls. All kicks must perform from the ground behind the restraining line. The test is repeated with the times. Figure no- 19.

Scoring: The subject is given four attempts of 30 seconds each and final test score is provided by the sum of kicks of the three best trails.
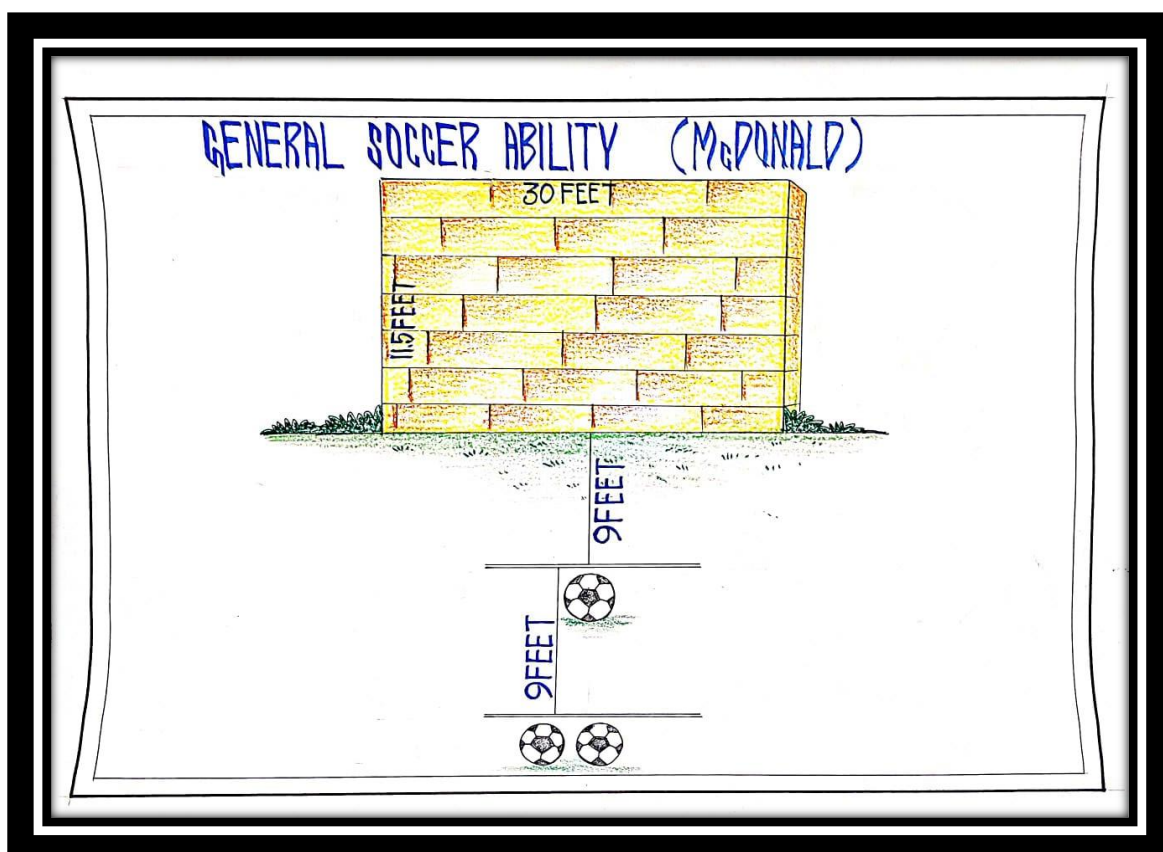
Fig. No- 19: General Soccer Ability (McDonald)

3.6.5 MEASUREMENT OF RELATIVE IMPORTANCE OF BASIC SOCCER SKILLS WITH RESPECT TO POSITION OF PLAY BY JUDGES RATING

The relative importance of basic soccer skills with respect to the position of play was analyzed taking opinions from experts. There were nine experts selected from qualified soccer coaches having the experience of coaching of University teams.

On the basis of their experience, the judges assigned marks out of 100 for each skill for each of the positions of soccer for overall performance. For example- each of the judges marked each of the selected soccer skills out of 100. Thus the percentage of importance of selected fundamental soccer skills of Passing, Dribbling, Shooting, Kicking and Heading was measured.

3.6 PROCEDURE FOR ANALYZING DATA

The collected data were analyzed using standard statistical procedure.

Mean, SD, standard error, maximum and minimum values were calculated as descriptive statistics.

Differences among group means were analyzed for testing statistical significance using the technique of analysis of variance (ANOVA). Exact location of the difference between mean values was identified using least significance difference (LSD) as post-hoc test.

CHAPTER-IV

Analysis of Data, Results And Discussion

4.1 THE DATA

4.2 RELIABILITY OF DATA

4.3 PRESENTATION OF DATA

4.4 THE RESULTS

4.5 DISCUSSION OF THE RESULTS

4.6 TESTING OF HYPOTHESIS

CHAPTER-IV

ANALYSIS OF DATA, RESULTS AND DISCUSSION

In this chapter the collected data and their statistical analysis have been presented. The results obtained from statistical analysis of data and the discussions on the results have also been presented in this chapter. Testing of hypotheses initially framed on the basis of results obtained have also been incorporated in this chapter.

4.1 THE DATA

Purpose of the study was to analyze the relative importance of Somatotype, Psychological Parameters and Basic Soccer Skills for different positions of play in Soccer. So, the Personal data, Somatotype profile, Psychological Parameters and performances of different groups of subjects in selected basic soccer skills were the data for the present study. There were five different basic soccer skills selected for this study- the Passing, Dribbling, Shooting, Kicking, and Heading. Performances of the subjects in each of these skills were assessed using standardized tests. In addition to this, the General Soccer Ability and importance of basic soccer skills in Judges Rating of different groups of soccer players was also assessed using McDoland soccer skill test. The performance scores of different groups of subjects, thus obtained, were analyzed.

4.2 RELIABILITY OF DATA

Reliability of data was ascertained by conforming (i) Tester's reliability and (ii) Reliability of tests. Testers' reliability was assessed by test re-test method. Each test used for measuring performance in different selected Somatotype, Psychological parameters and basic soccer skills was standardized test with required validity and reliability. Hence the collected data were valid and reliable.

4.3 PRESENTATION OF DATA

There were four different groups of soccer players as subjects in this study and they were classified on the basis of position of play in game situation. They were (i) Goal Keepers, (ii) Defenders, (iii) Mid-Fielders, and (iv) Forwards. To understand the basic nature of these groups of subjects their personal data were included as Age, Height and Weight. Somatotype profile was assessed by Endomorphy, Mesomorphy

and Ectomorphy. Psychological Parameters of Aggression and Achievement Motivation of the subjects were also assessed. The selected basic soccer skills were (i) Passing, (ii) Dribbling, (iii) Shooting, (iv) Kicking for distance and (v) Heading. In addition to this General Soccer Ability and importance of basic soccer skills in Judges Rating of different groups of soccer players were also assessed for inter group comparison. The data indicating performance of four different groups of subjects in each of the Somatotype, Psychological Parameters and Basic Soccer Skills and their statistical analysis have been presented one by one in the following sections.

4.3.1 PERSONAL INFORMATION OF THE SUBJECTS (AGE, HEIGHT AND WEIGHT)

Personal data of the subjects were analyzed for Age, Height and Weight

4.3.1.1 Presentation of Personal information of the subjects:

Mean and Standard deviation (SD) of Age, Height and Weight for four different groups of subjects in soccer players have been presented in Table-2.

Table-2

Mean and SD of Age, Height and Weight of different groups of subjects

Soccer Group	No of Subjects	Mean and SD		
		Age (Yrs)	Height (Cm)	Weight (kg)
Goal keepers	25	22.56±1.87	172.44±6.58	65.10±4.75
Defenders	39	22.33±1.81	170.22±6.38	61.68±7.29
Mid-fielders	26	22.58±2.08	168.00±5.28	60.36±6.81
Forwards	30	22.27±1.91	165.90±6.52	55.04±4.28
Total	120	22.42±1.89	168.29±11.05	60.45±6.94

Above table no-2 represents the Mean and Standard Deviation of Age, Standing Height and Body Weight of four groups of subject of different positions of soccer players. From the table it was seen that the mean and SD values of age of the subjects of different groups were 22.56 ± 1.87 yrs., 22.33 ± 1.81 yrs., 22.58 ± 2.08

yrs. and 22.27 ± 1.91 respectively. Considering height, the values were 172.44 ± 6.58 cm, 170.22 ± 6.38 cm, 168.00 ± 5.28 cm and 165.90 ± 6.52 cm and for weight the values were 65.10 ± 4.75 Kg, 61.68 ± 7.29 Kg, 60.36 ± 6.81 Kg and 55.04 ± 4.28 Kg respectively.

Considering the total number of subjects of all positions, the mean & SD values of age, height and weight were 22.42 ± 1.89 yrs., 168.29 ± 11.05 cm and 60.45 ± 6.94 Kg respectively.

It appears from the table values that all the four groups of soccer players were almost similar in age. Mean values of height of the groups indicate that the group of Goal-keepers was the tallest (172.44±6.58 cm) and the group of Forwards was the shortest (165.90±6.52 cm) among the groups. The mean values of weight of the groups indicate the similar pattern. The Goal-Keepers appeared to be the heaviest (65.10±4.75 kg) and the Forwards appeared to be the lightest (55.04±4.28 kg).

Regarding the nature with respect to age, height and weight of different positions of soccer players, all values of mean and SD have been presented in the following graphs.
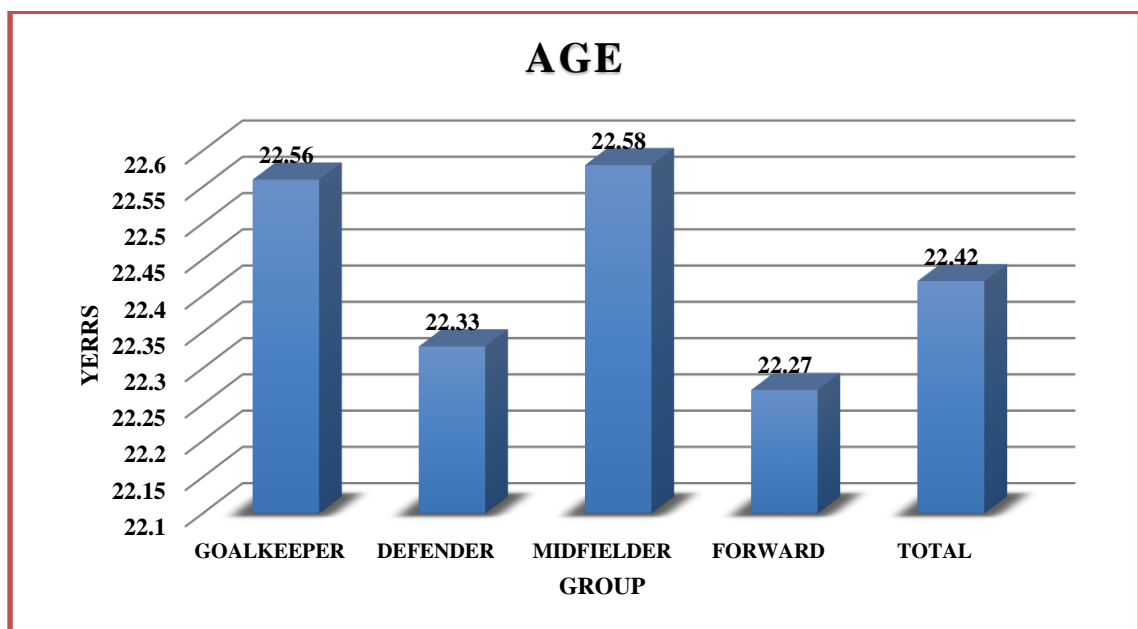
Fig. No- 20: The nature of the Age of the subjects of different positions of soccer players
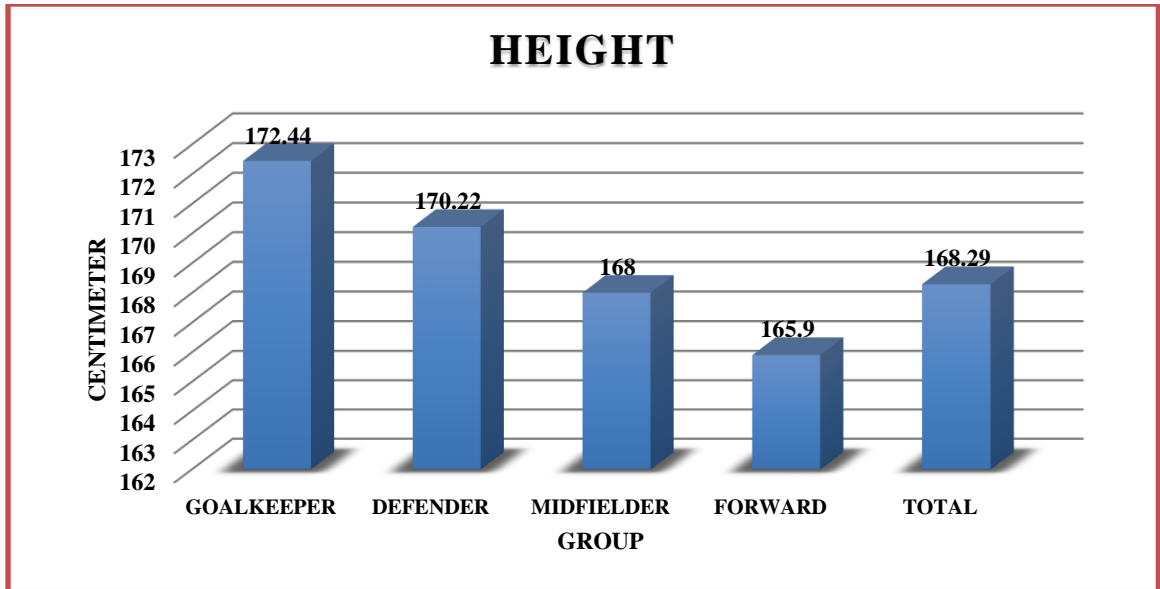
Fig. No- 21: The nature of the Height of the subjects of different positions of soccer players
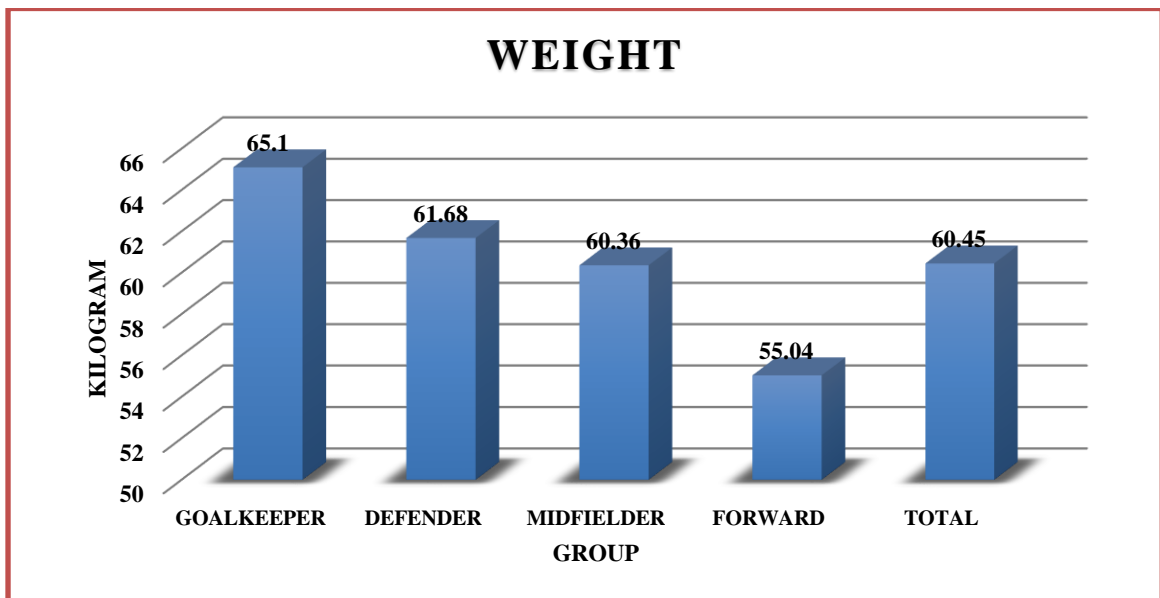
Fig. No- 22: The nature of the Weight of the subjects of different positions of soccer players

4.3.2 ANALYSIS OF SOMATOTYPE

Somatotype of data were analyzed for (i) Endomorphy, (ii) Mesomorphy and (iii) Ectomorphy separately.

4.3.2.1 Endomorphic Component:

Table no-3 representing the Mean, standard deviation, minimum and maximum values of endomorphic component for four different groups of subjects in soccer players.

Table-3

Mean & SD, Minimum and Maximum values of Endomorphic component for four different groups of subjects.

Soccer Group	No. of Subjects	Mean & SD	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	3.17± 0.79	0.48	1.65	4.45
Defenders	39	2.97± 1.01	0.41	1.51	5.25
Mid-fielders	26	2.96± 0.86	0.49	1.50	4.86
Forwards	30	2.53± 1.22	0.36	1.33	7.98
Total	120	2.90± 1.09	0.22	1.33	7.98

From table no-3 represents the mean, standard deviation, minimum and maximum values of endomorphic component of the subjects of four different groups. It was seen that the mean and SD values were 3.17 ± 0.79 for Goalkeepers with minimum and maximum values of 1.65 and 4.45, for defenders the values were 2.97 ± 1.01, 1.51 and 5.25. The said values were 2.96 ± 0.86, 1.50 and 4.86 for Midfielders and 2.53 ± 1.22, 1.33 and 7.98 for Forwards respectively.

From the said table it was seen that the highest score in endomorphic component was for goalkeepers with the mean and SD value of 3.17 ± 0.79 and the lowest endomorphic component score was for forwards with the mean and SD value of 2.53 ± 1.22. The mean, SD, minimum and maximum of endomorphic component score of all the subjects of four different groups was 2.90 ± 1.09, 1.33 and 7.98.

To know the nature of the endomorphic component the Mean values of different groups of soccer players have been presented in the form of following bar diagram of Fig. No-23

Fig. No- 23: Endomorphic scores of different groups of soccer players

It appears from the table no-3 that the mean values of endomorphic component for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table-4 presents the results.

Table-4

Testing of significance of the difference among the mean values of Endomorphic components

Condition	Sum of squares	df	Mean square	F-value	Level of Significance
Between groups	6.166	3	2.055	2.077	F-value is lower than the required table value for being not significant at 0.05 level
Within groups	114.81	116	.990		
Total	120.98	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

Table value indicates that the calculated value of F was lower than the required table value for being statistically significant at 0.05 level. So, it is understood that there was not statistically significant difference in endomorphic component among different groups of subjects.

4.3.2.2 Mesomorphic Component:

Mean, standard deviation, minimum and maximum values of mesomorphic component for four different groups of subjects in soccer players have been presented in Table-5.

Table-5

Mean & SD, Minimum and Maximum value of Mesomorphic component for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	3.25± 1.19	0.24	0.74	6.19
Defenders	39	3.34± 1.12	0.18	0.96	5.57
Mid-fielders	26	3.37± 1.04	0.20	0.23	5.01
Forwards	30	2.98± 1.04	0.19	1.33	7.98
Total	120	3.24± 1.09	0.10	0.23	7.98

An appraisal of table no-5 revealed the Mean, Standard Deviation, minimum and maximum values of Mesomorphic component of the subject of four different groups of soccer players. The mean and SD values were 3.25± 1.19 for Goalkeepers with minimum and maximum values of 0.74 and 6.19, for Defenders the values were 3.34±1.12, 0.96 and 5.57. The said values were 3.37±1.04, 0.23 and 5.01 for Midfielders and 2.98±1.04, 1.33 and 7.98 for Forwards respectively.

Considering the total number of subjects of all positions, the mean, SD, minimum and maximum values were 3.24± 1.09, 0.23 and 7.98. It was also clear from the above table that the highest Mesomorphic component was for midfielders group with the mean and SD value of 3.37± 1.04 and the lowest score was for forwards with the mean and SD value of 2.98± 1.04.

The Mesomorphic component of the mean value of different groups of subjects have been presented in the form of following diagram of Fig. no-24
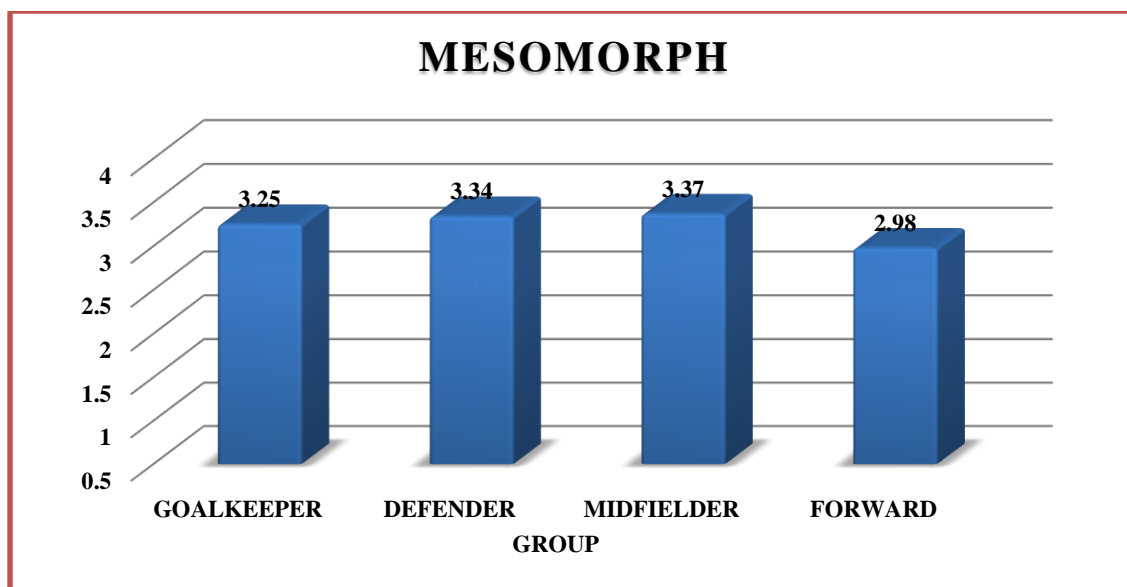
Fig. No- 24: Mesomorphic score of different groups of soccer players

It appears from the table no-5 that the mean values of mesomorphic component for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table-6 presents the results.

Table-6

Testing of significance of the difference among the mean values of Mesomorphic component

Condition	Sum of squares	df	Mean square	F-value	Level of Significance
Between Groups	2.901	3	0.967		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	139.55	116	1.203	0.804	
Total	142.45	119			

F- value for 0.05 level of confidence with df (3, 116) - 2.68

Table value indicates that the calculated value of F was lower than the required table value for being statistically significant at 0.05 level. So, it is understood that there was not statistically significant difference in mesomorphic components among different groups of subjects.

4.3.2.3 Ectomorphic Component:

Mean and Standard deviation, minimum and maximum values of ectomorphic component for four different groups of subjects in soccer players have been presented in Table-7.

Table-7

Mean & SD, Minimum and Maximum values of Ectomorphic component for four different groups of subjects.

Soccer Group	No. of Subjects	Mean & SD	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	2.82±1.10	0.22	1.04	5.38
Defenders	39	3.04±1.15	0.18	0.50	5.27
Mid-fielders	26	2.84±0.98	0.19	1.13	5.11
Forwards	30	3.36±0.92	0.17	1.57	5.58
Total	120	3.03± 1.06	0.10	0.50	5.58

From above table no-7 showed the mean, standard deviation, minimum and maximum values of ectomorphic component of the subjects of four different groups. The mean and SD values were 2.82±1.10 for Goalkeepers with minimum and maximum values of 1.04 and 5.38, for defender values were 3.04±1.15, 0.50 and 5.27. Considering midfielders and forwards the said values were 2.84±0.98, 1.13 and 5.11 and 3.36±0.92, 1.57 and 5.58 respectively.

From the above table it was seen that the highest score in ectomorphic component was for forwards with the mean and SD values of 3.36±0.92 and lowest values were for goalkeepers with the mean and SD value of 2.82±1.10. The mean, SD, minimum and maximum values of ectomorphic component of all the subjects of four different groups were 3.03± 1.06, 0.50 and 5.58.

The mean value of ectomorphic component of different groups of subjects have been presented in the form of following diagram of Fig. no-25
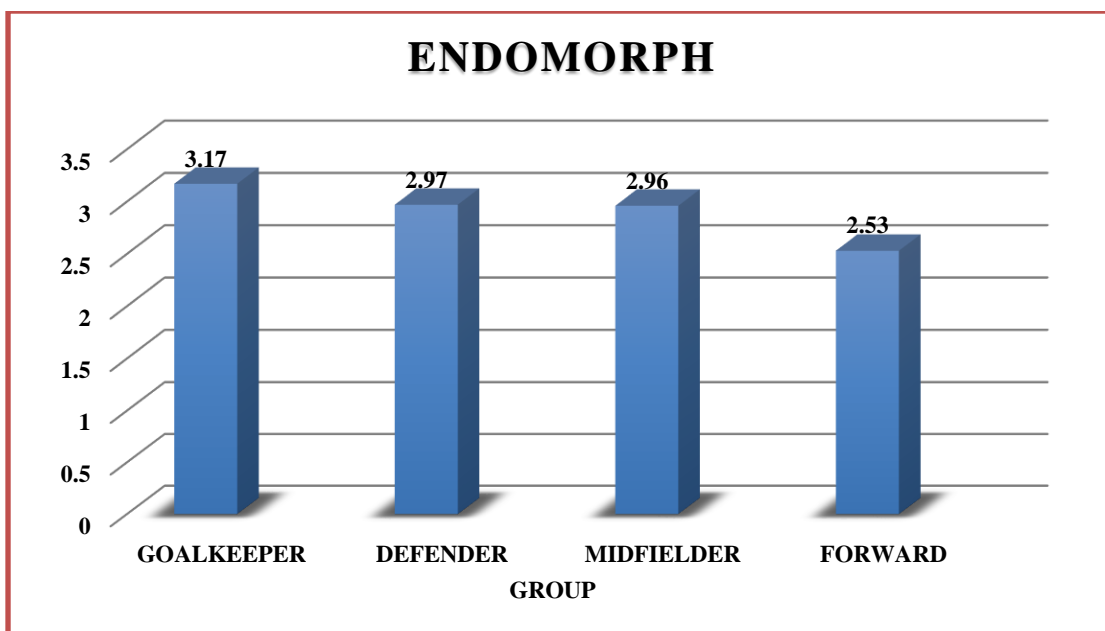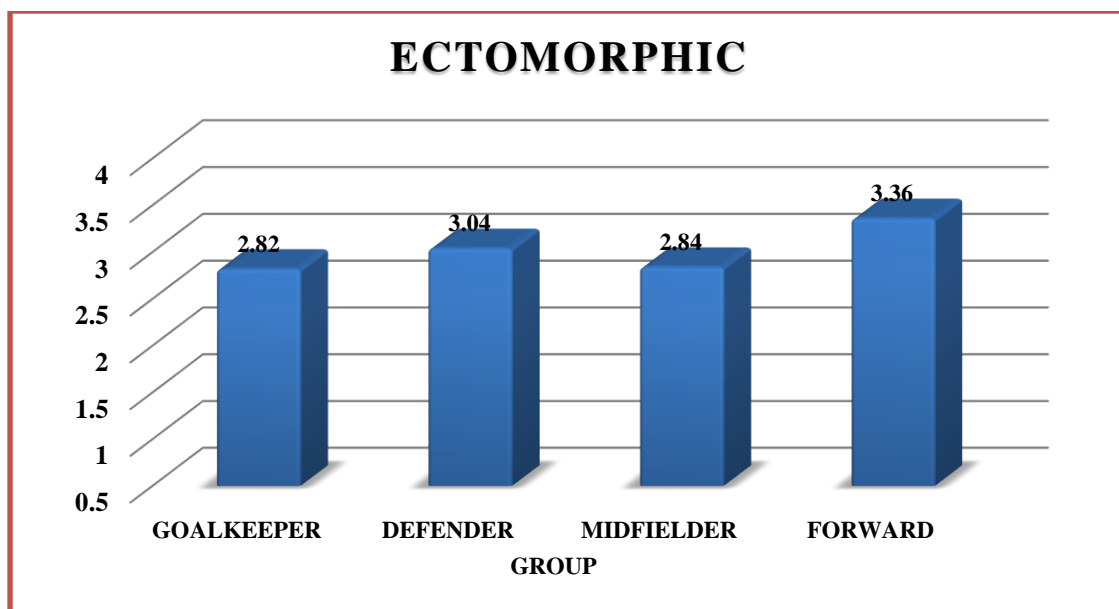
Fig. No- 25: Ectomorphic score of different groups of soccer players

It appears from table no-7 that the mean values of somatotype in ectomorphic component for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table-8 presented the results.

Table-8

Testing of significance of the difference among the mean values of Ectomorphic component

Condition	Sum of Squares	df	Mean square	F-value	Level of Significance
Between Groups	5.369	3	1.799		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	128.58	116	1.108	1.623	
Total	133.98	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

Table value indicates that the calculated value of F was lower than the required table value for being statistically significant at 0.05 level. So, it is understood that there was not statistically significant difference in ectomorphic component among different groups of subjects.

4.3.3 ANALYSIS OF PSYCHOLOGICAL PARAMETERS

4.3.3.1 Aggression:

Mean, standard deviation, minimum and maximum of the score of aggression for four different groups of subjects in soccer players have been presented in Table-9.

Table- 9

Mean & SD, Minimum and Maximum values of aggression for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (Score)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	71.60± 6.84	1.36	64.00	84.00
Defenders	39	69.56± 7.63	1.22	55.00	86.00
Mid-fielders	26	73.61± 9.90	1.94	58.00	100.00
Forwards	30	76.80± 12.67	2.31	62.00	99.00
Total	120	72.67± 09.78	0.89	55.00	100.00

It was seen from above table no-9 that the mean, standard deviation, minimum and maximum values of aggression score of the subjects of four different groups were 71.60 ± 6.84, 64.00, 84.00 for goal keepers, 69.56 ± 7.63, 55.00, 86.00 for defenders, 73.61 ± 9.90, 58.00, 100.00 for midfielders and 76.80 ± 12.67, 62.00, 99.00 for Forwards respectively.

Considering the total number of subjects of all positions, the mean, SD, minimum and maximum scores were 72.67± 09.78, 55.00 and 100.00 respectively. It was also clear from the above table that the highest aggression score was for forwards group with the mean and SD values of 76.80 ± 12.67 and the lowest score mean values was for defenders with the mean and SD value of 69.56 ± 7.63.

The mean scores of aggressions for different groups of soccer players have been presented in the following bar diagram of Fig. No-26. From the following figure the nature of the aggression of four different groups may be understood properly.
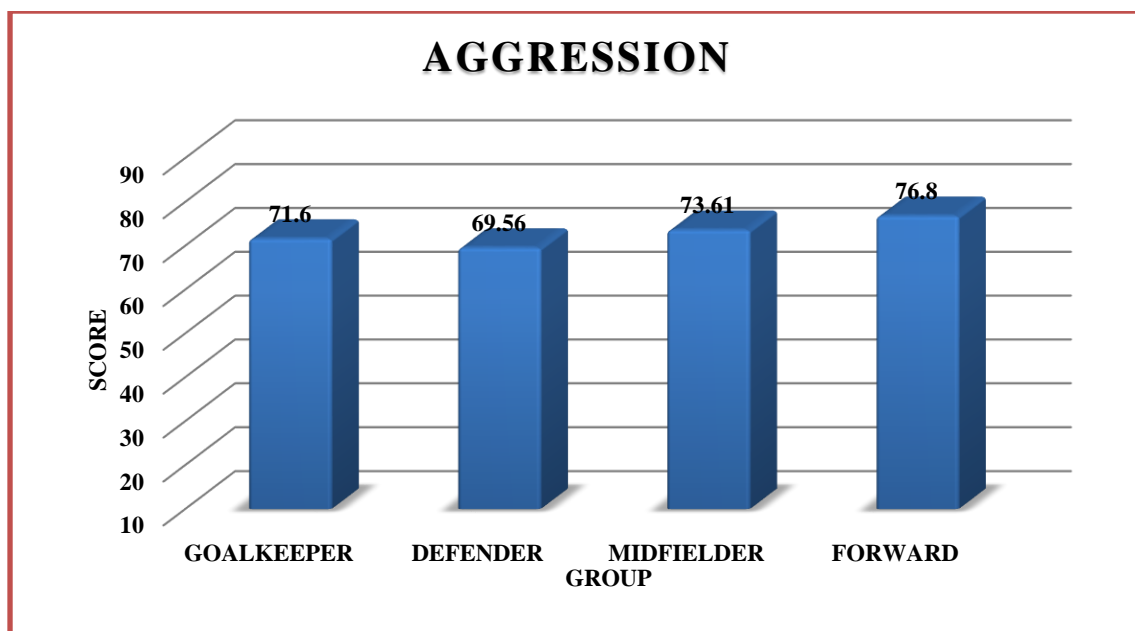
Fig. No- 26: Aggression scores of different groups of soccer players

It appears from the table-9 that the mean values of aggression for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table -10 represents the results.

Table-10

Testing of significance of the difference among the mean values of Aggression.

Condition	Sum of Squares	df	Mean square	F-value	Level of Significance
Between Groups	939.781	3	313.260	3.476*	F-value is greater than the required table value for being Significant at 0.05 level
Within Groups	10454.544	116	90.125		
Total	11394.325	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

Table value observed that the calculated value of F was higher than the required table value for being statistically significant at 0.05 level. So, it is understood that there was statistically significant difference in Aggression among different groups of subjects.

In order to find out the exact location of the statistically significant difference in mean scores of different groups of subjects, LSD was used as post hoc-test. Table-11 shows the results.

Table-11:

Testing of exact location of difference among means of different groups of subjects in aggression by LSD

Aggression	Group mean				Mean difference	Std Error	Level of Significance
	Goal keepers	Defenders	Mid-fielder	Forward			
	71.60	69.56			2.04	2.43	0.404
	71.60		73.62		-2.02	2.66	0.450
	71.60			76.80	-5.20	2.57	0.045
		69.56	73.62		-4.06	2.40	0.095
		69.56		76.80	-7.24	2.30	0.002
			73.62	76.80	-3.18	2.54	0.213

From the above table values it was clearly indicating that the group of forwards had greatest mean value of aggression. This group of forwards was higher in aggression score than all other groups of soccer players considered in this study. It is also noted the Aggression score of Forward was significantly higher than those of Goal Keepers and Defenders. For all other values the mean differences were not statistically significant.

4.3.3.1 Achievement Motivation:

Table no-12 representing the Mean, SD, minimum and maximum score of achievement motivation for four different groups of subjects in soccer players.

Table-12

Mean & SD, Minimum and Maximum score of Achievement Motivation for four different groups of subjects.

Soccer Group	No. of Subjects	Mean & SD (Obtained Mark)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	182.80± 17.44	3.49	160.00	198.00
Defenders	39	174.92± 17.68	2.83	146.00	200.00
Mid-fielders	26	179.61± 06.63	1.30	169.00	194.00
Forwards	30	173.10± 12.71	2.32	154.00	197.00
Total	120	177.12± 14.95	1.36	146.00	200.00

An appraisal of table-12 revealed the mean, standard deviation, minimum and maximum score of achievement motivation of the subjects of four different groups. The said values were 182.80, ±17.44, 160.00, 198.00 for Goalkeepers, for defender's values were 174.92, ± 17.68, 146.00, 200. For midfielders and forwards the said values were 179.61± 06.63, 169.00, 194.00 and 173.10± 12.71, 154.00, 197.00 respectively.

From the said table it was also seen that the highest score in achievement motivation was for goalkeepers with the mean and SD value of 182.80 and 17.44 and the lowest score in Achievement motivation was for forwards with the mean and SD values of 173.10 and 12.71. The mean, SD, minimum and maximum of Achievement motivation scores of all the subjects of four different groups were 177.12, ± 14.95, 146.00 and 200.00.

The mean scores of achievement motivation of different groups of subjects have been presented in the form of following diagram of Fig. No-27
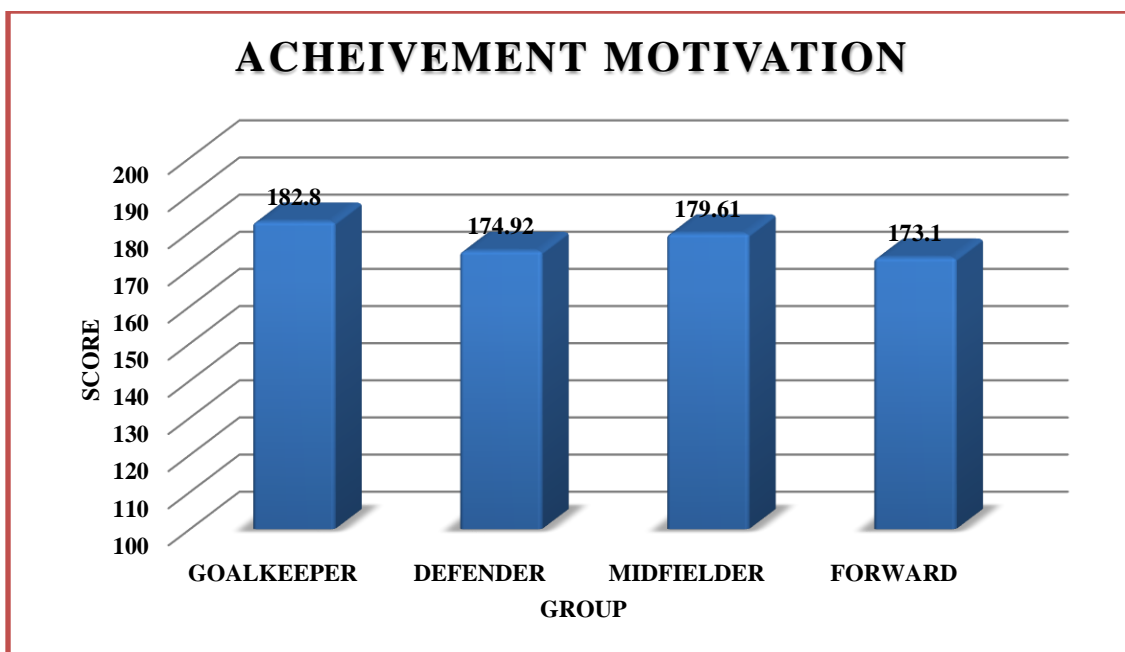
Fig. No- 27 Achievement Motivation scores of different groups of soccer players

It appears from the table no-12 that the mean values of achievement motivation for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table -13 presented the results.

Table-13

Testing of significance of the difference among the mean scores of

Achievement Motivation.

Condition	Sum of squares	df	Mean square	F-value	Level of Significance
Between Groups	1641.502	3	547.167		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	24971.623	116	215.273	2.542	
Total	26613.125	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

Table value indicates that the calculated value of F was lower than the required table value for being statistically significant at 0.05 level. So, it was understood that there was not statistically significant difference in Achievement Motivation among different groups of subjects.

4.3.4 PERFORMANCE ANALYSIS FOR BASIC SOCCER SKILLS:

The data performing of performance of different groups of soccer players for selected Basic Soccer Skills have been presented in following sections.

4.3.4.1 Passing:

Mean, standard deviation, minimum and maximum values of passing of four different groups of subjects in soccer players have been presented in following table no-14.

Table-14

Mean & SD, Minimum and Maximum value of Passing for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (No. of Pass)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	8.16± 1.70	0.34	5.00	11.00
Defenders	39	8.26± 1.48	0.24	6.00	11.00
Mid-fielders	26	8.80± 1.20	0.23	6.00	11.00
Forwards	30	8.37± 1.24	0.23	5.00	10.00
Total	120	8.38± 1.42	0.13	5.00	11.00

Above table no-14 showing the results of performance scores of passing for four different groups of soccer players. The values mean, standard deviation, minimum and maximum were 8.16, $\pm$ 1.70, 5.00 and 11.00 (No. of Passes) for Goalkeepers, 8.26, $\pm$ 1.48, 6.00, 11.00 (No. of Passes) for Defenders. For midfielders

and for forwards the said values were 8.80, ± 1.20, 6.00, 11.00 (No. of Passes) and 8.37, ± 1.24, 5.00 and 10.00 (No. of Passes) respectively.

The mean, SD, minimum and maximum values of performance in Passing of all the subjects of all the four groups were 8.38± 1.42, 05.00 and 11.00 (No. of Passes). The highest score in performance in passing was for mid-fielders with the mean and SD values of 8.80 and 1.20 (No. of Passes) and the lowest performance values in Passing was for goal-keepers with the mean and SD values of 8.16 and 1.70 (No. of Passes). So, it was understood that all the four groups were near about similar in performance of passing.

To know the exact status of the performances in passing for different groups of soccer players all mean values have been presented in the following bar diagram of Fig. No-28
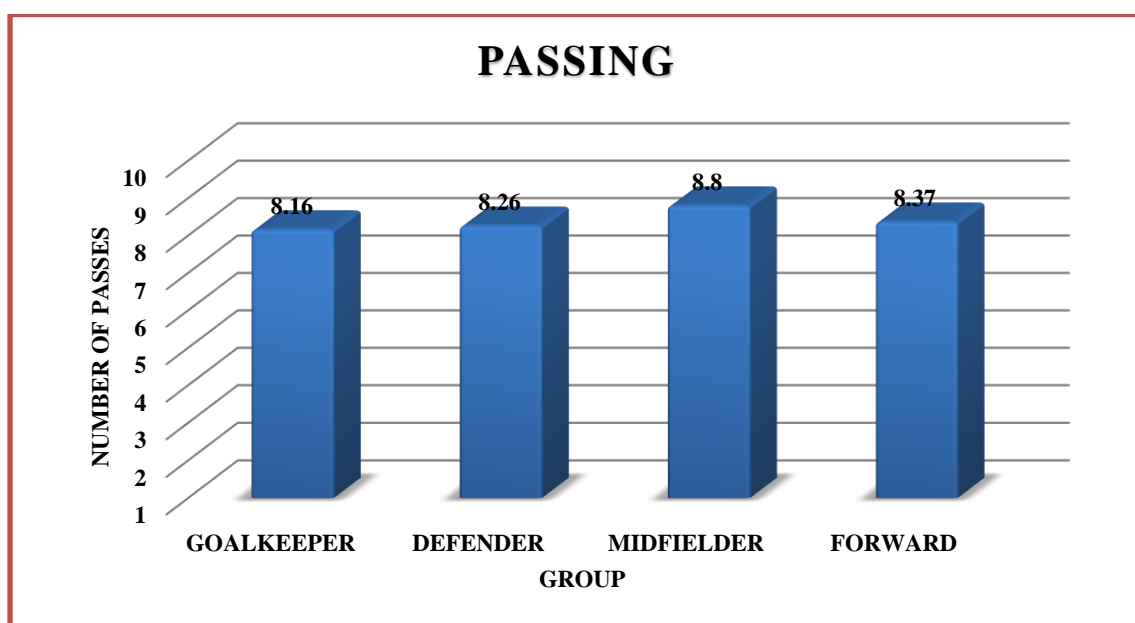
Fig. No- 28: Passing scores of different groups of soccer Players

It appears from the table no-14 that the mean values of performance in passing for different groups of subjects were different. So, it was also felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance showing in the following Table-15.

Table-15

Testing of significance of the difference among the mean values of Performance in Passing

Condition	Sum of Squares	df	Mean square	F-value	Level of Significance
Between Groups	6.57	3	2.19		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	233.80	116	2.02	1.09	
Total	240.37	119			

F- Value for 0.05 level of confidence with df (3, 116) -2.68

From the table value of F- ratio, it was understood that the differences among the mean performances of different groups of soccer players considered in the present study was not statistically significant.

4.3.4.2 Dribbling:

Table no-16 represents the Mean, Standard deviation, minimum and maximum scores in Dribbling of four different groups of subjects in soccer players.

Table-16

Mean, SD, Minimum and Maximum values of Dribbling for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (Time in Second)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	35.42± 3.50	0.70	30.37	44.39
Defenders	39	33.43± 3.36	0.54	28.26	41.12
Mid-fielders	26	32.14± 2.74	0.53	27.45	38.10
Forwards	30	32.79± 3.10	0.57	27.56	41.33
Total	120	33.42± 3.36	0.31	27.45	44.39

It was seen from above Table-16 that the mean, standard deviation, minimum and maximum scores of the of dribbling of the subjects of four different groups values in terms of second were 35.42, ± 3.50, 30.37 and 44.39 (time in Sec) for Goalkeepers, whereas scores for defenders were 33.43, ±3.36, 28.26 and 41.12 (time in sec). In case of midfielders said values were 32.14, ±2.74, 27.45 and 38.10 and 32.79, ±3.10, 27.56 and 41.33 (time in sec) for Forwards respectively.

Considering the total number of subjects of all positions, the said values for different groups were 33.42, ± 3.36, 27.45 and 44.39 (time in sec). It was also clear from the above table that the highest score in dribbling was for midfielders group with the mean and SD value of 32.14 and 2.74 (time in sec) and the lowest score was for Goalkeepers with the mean and SD value of 35.42 and 3.50 (time in sec).

The mean values of Dribbling for different groups of soccer players have been presented in the following bar diagram of Fig. No-29. From the following figure the nature of the dribbling of four different groups may be understood properly.

Fig. No- 29: Dribbling scores of different groups of soccer players

It appears from the table no-16 that the mean values of performance in dribbling for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table no-17 presents the results.

Table-17

Testing of significance of the difference among the mean values of performance in Dribbling

Condition	Sum of Squares	df	Mean square	F-value	Level of Significance
Between Groups	154.63	3	51.54	5.020	F-value is greater than the required table value for being Significant at 0.05 level
Within Groups	1191.00	116	10.26		
Total	1345.64	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

From the table value of F- ratio, it was understood that the differences among the mean performances of different groups of soccer players in dribbling considered in the present study was statistically significant. So it was understood that there were statistically significant differences among mean values of performance scores of different groups of subjects in dribbling.

In order to find out the exact location of the statistically significant difference in mean scores of different groups of subjects, LSD was used as post hoc test. Table no-18 shows the results.

Table-18

Testing of exact location of difference among means of different groups of subjects in Dribbling by LSD

Performance in dribbling	Group mean				Mean difference	Std Error	Level of Significance
	Goal keepers	Defenders	Mid-fielder	Forward			
Time in second	35.41	33.48			1.93	0.82	0.02
	35.41		32.14		3.28	0.89	0.00
	35.41			32.79	2.62	0.86	0.00
		33.48	32.14		1.34	0.81	0.10
		33.48		32.79	0.69	0.77	0.37
			32.14	32.79	0.65	0.85	0.44

Above table values clearly indicates that the group of Goal keepers had greatest mean value of dribbling time. This group of goal keepers had lowest performance in dribbling than all other groups. It was also seen that the inter-group differences in dribbling performance for all groups was not statistically significant except goalkeepers. So, other groups were almost similar in performance in the basic soccer skills of dribbling.

4.3.4.3 Shooting:

Table no-19 showing the Mean, Standard deviation, minimum and maximum performance of shooting (point) for four different groups of subjects in soccer players.

Table-19

Mean, SD, Minimum and Maximum scores of Shooting for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (Point)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	108.64± 14.90	2.98	88.00	142.00
Defenders	39	112.51± 19.26	3.08	94.00	142.00
Mid-fielders	26	115.69±11.64	2.28	94.00	148.00
Forwards	30	114.60±11.65	2.12	88.00	130.00
Total	120	112.91±15.20	1.35	94.00	148.00

An appraisal of table no-19 revealed the mean, standard deviation, minimum and maximum in point values of shooting of the subjects of four different groups. The said values were 108.64, ±14.90, 88.00, 142.00 (Points) for goalkeepers, for defenders the values were 112.51, ±19.26, 30.00, 142.00 (points). Considering others positions of midfielders and forwards the said values were 115.69, ±11.64, 94.00, 148.00 (points) and 114.60±11.65, 88.00, 130.00 (points) respectively.

From the said table no-19 it was also seen that the highest score in Shooting was for midfielders with the mean and SD values of 115.69 and 11.64 (points) and the

lowest score in shooting was for goalkeepers with the mean and SD value of 108.64 and 14.90 (points). The mean, SD, minimum and maximum score of Shooting values of all the subjects of four different groups were 112.91, ±15.20, 94 and 148 (points).

To know the nature of the shooting the Mean values of different groups of soccer players have been presented in the form of following bar diagram of Fig. No-30.
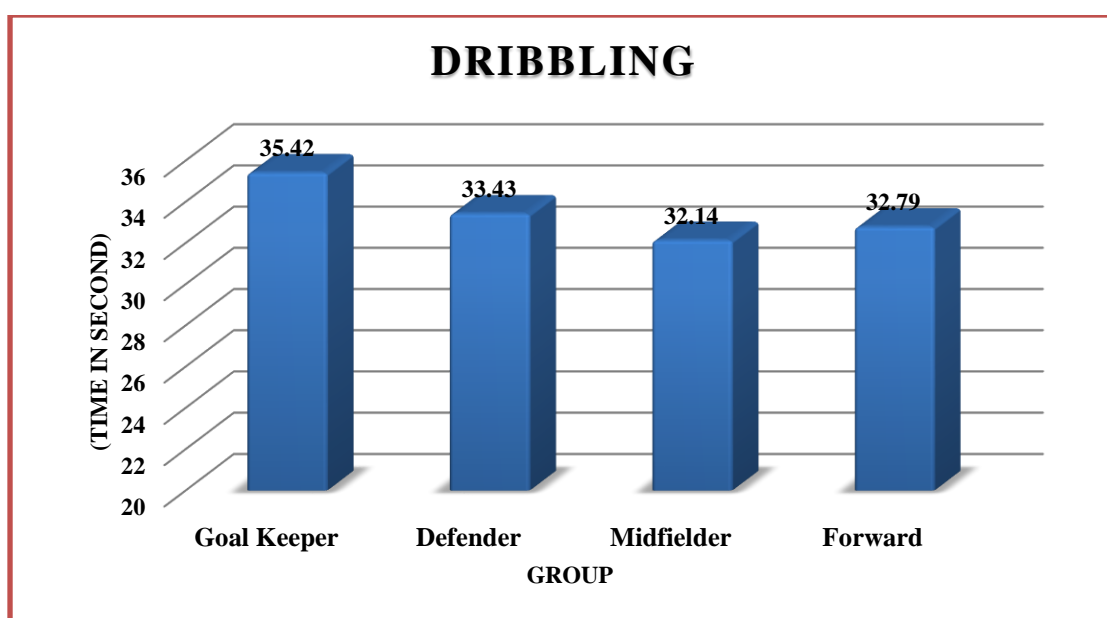

Fig. No- 30: Shooting scores of different groups of soccer Players

It appears from the table no-19 that the mean values of performance in Shooting for different groups of subjects were different. So, it was also felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Following Table-20 representing the results.

Table-20

Testing of significance of the difference among the mean values of Performance in Shooting

Condition	Sum of squares	df	Mean square	F-value	Level of Significance
Between Groups	748.92	3	249.64		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	26754.24	116	230.64	1.08	
Total	27503.17	119			

F-Value for 0.05 level of confidence with df (3, 116) - 2.68

From the table value of F- ratio, it was understood that the differences among the performances in shooting of different groups of soccer players considered in the present study was not statistically significant.

4.3.4.4 Kicking

The following table no-21 showing the Mean, Standard deviation, minimum and maximum scores of kicking in meter for four different groups of subjects in soccer players.

Table-21

Mean & SD, Minimum and Maximum values of Kicking for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (Meter)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	42.48± 7.39	1.48	25.00	61.00
Defenders	39	44.61± 6.01	0.96	32.00	57.00
Mid-fielders	26	41.69± 5.06	0.99	28.00	51.00
Forwards	30	43.13±4.82	0.88	32.00	52.00
Total	120	43.16± 5.91	0.54	25.00	61.00

From table- 21 the values of mean, standard deviation, minimum and maximum scores of performance in kicking were 42.48, ±7.39, 25.00 and 61.00 meter) for goalkeepers, and 44.61, ± 6.01, 32.00 and 57.00 (meter) for defenders. For other two positions the all values were 41.69, ± 5.06, 28.00 and 51.00 (meter) for midfielders and 43.13, ± 4.82, 32.00 and 52.00 (meter) for forwards respectively.

Considering all subjects for four groups the mean, SD, minimum and maximum scores of performance in kicking were 43.16, ± 5.91, 25.00 and 61.00 (meter). The highest performance score in kicking was for defenders with the values of 44.61 and 6.01 (meter) and the lowest performance score in kicking was for midfielders with the mean values of 41.69 and 5.06 (meter). So, it was understood that all the four groups were near about similar in performance of kicking.

To know the exact status of the performances in Kicking for different groups of soccer players all mean values have been presented in the following bar diagram of Fig. No- 31.
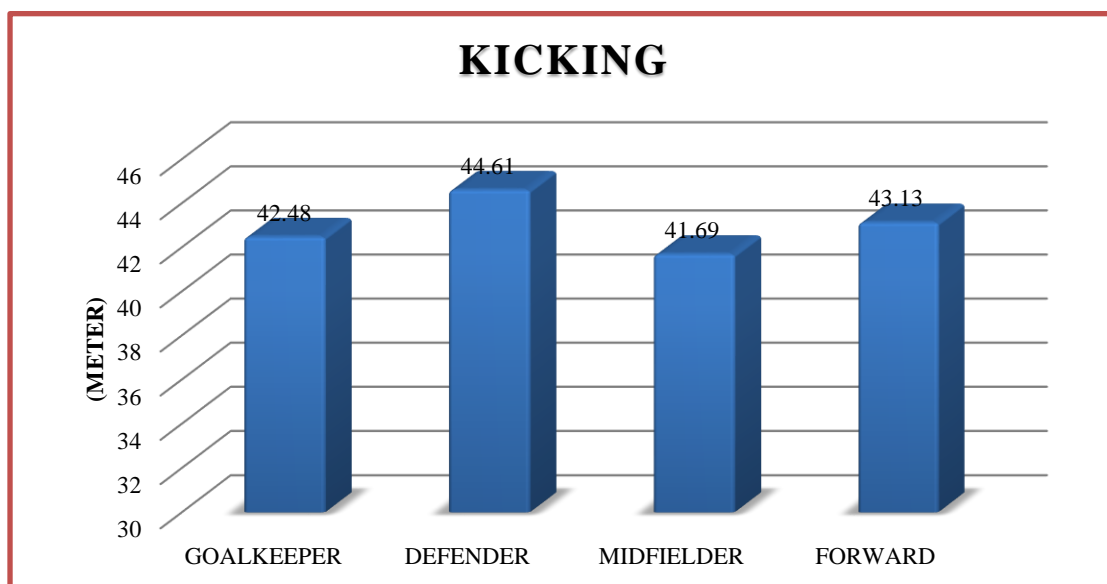
Fig. No- 31: Kicking scores of different groups of soccer Players

It appears from the table no-21 that the mean values of performance in kicking for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. table-22 representing the results.

Table- 22

Testing of significance of the difference among the mean values of performance in Kicking

Condition	Sum of squares	df	Mean square	F-value	Level of Significance
Between Groups	150.19	3	50.06	1.451	F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	4002.47	116	34.50		
Total	4152.67	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

From the table value of F- ratio, it was understood that the differences among the performances in kicking of different groups of soccer players considered in the present study was not statistically significant.

4.3.4.5 Heading:

Table no-23 represents the Mean, standard deviation, minimum and maximum scores in Heading of four different groups of subjects in soccer players.

Table-23

Mean & SD, Minimum and Maximum scores of Heading for four different groups of subjects.

Soccer Group	No. of Subjects	Mean & SD (No. of Head)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	15.00± 10.15	2.03	5.00	46.00
Defenders	39	17.62± 10.41	1.67	6.00	64.00
Mid-fielders	25	16.16±07.38	1.48	6.00.00	38.00
Forwards	30	15.13±05.64	1.03	6.00.00	35.00
Total	120	16.13± 09.72	0.80	5.00	64.00

It is seen from above table- 23 that the scores of mean, standard deviation, minimum and maximum of the performances of Headings of the subjects of four different groups were 15.00, ± 10.15, 5.00 and 46.00 (No. of head) for Goalkeepers, 17.62, ± 10.41, 6.00 and 64.00 (No. of head) for defenders, 16.16, ± 07.38, 6.00 and 38.00 (No. of head) for Mid-fielders and 15.13, ± 05.64, 6.00 and 35.00 (No. of head) for Forwards respectively.

Considering the total number of subjects of all positions, the mean, SD, minimum and maximum values were 16.13 ± 09.72, 5.00 and 64.00 (No. of head). It was also clear from the above table that the highest score in Heading were for defenders group with the mean and SD values of 17.62 and 10.41 (No. of Head) and the lowest score was for Goalkeepers with the mean and SD values of 15.00±10.15 (No. of Head).

To know the nature of the status of the performances of Heading the mean scores for different groups of soccer players have been presented in following bar diagram of Fig. No-32.
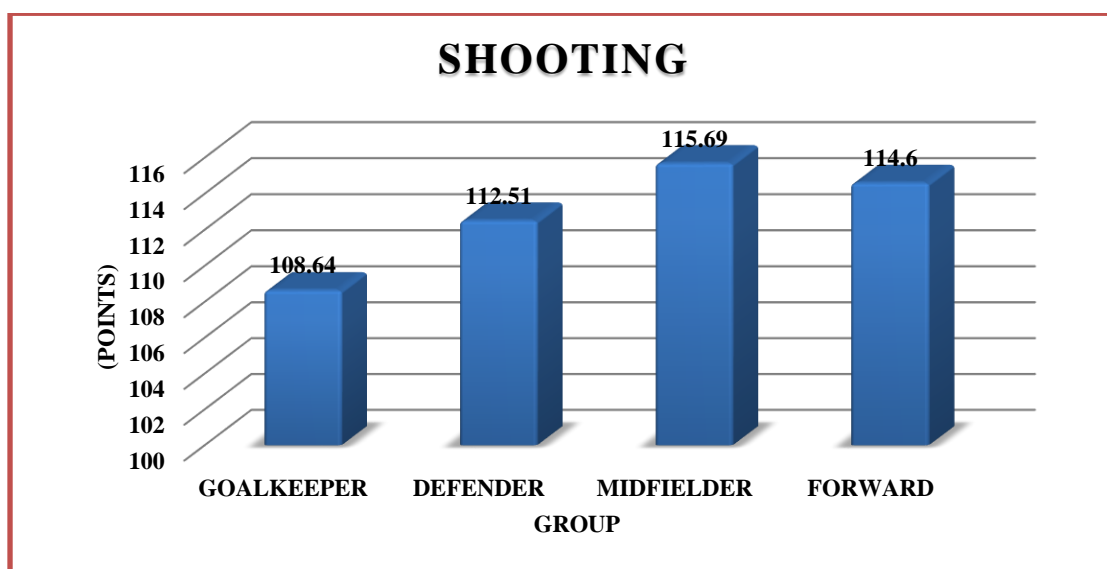

Fig. No- 32: Heading scores of different groups of soccer Players

It appears from the table no-23 that the mean values of performance in Heading for different groups of subjects were different. So, it was felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table-24 presenting the results.

Table-24

Testing of significance of the difference among the mean values of performance in Heading

Condition	Sum of Squares	df	Mean square	F-value	Level of Significance
Between Groups	147.791	3	49.264	0.642	F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	8820.06	116	76.696		
Total	8967.85	119			

F- Value for 0.05 level of confidence with df (3, 116) -2.68

From the table value of F- ratio, it is understood that the difference among the mean performances among the performances of different groups of soccer players considered in the present study was not statistically significant.

4.3.5. PERFORMANCE ANALYSIS OF GENERAL SOCCER ABILITY

In addition to basic soccer skills, the General Soccer Ability and judges rating by the experts also have been assessed and compared.

4.3.5.1 General Soccer Ability:

The following table no-25 showing the Mean, standard deviation, minimum and maximum scores in performance of general soccer ability (No. of kicks) for four different groups of subjects.

Table-25

Mean & SD, Minimum and Maximum values of General Soccer Ability for four different groups of subjects

Soccer Group	No. of Subjects	Mean & SD (No. of Kicks)	Std. Error of Mean	Minimum	Maximum
Goal keepers	25	25.24± 2.39	0.48	21.00	31.00
Defenders	39	24.97± 2.55	0.41	19.00	30.00
Mid-fielders	26	25.27± 2.52	0.49	19.00	30.00
Forwards	30	25.57±1.99	0.36	6.00	35.00
Total	120	25.24± 2.36	0.22	5.00	35.00

An appraisal of table-27 revealed the mean, standard deviation, minimum and maximum scores in performance of General Soccer Ability of the subjects of four different groups. The mean and SD values were 25.24 ±2.39 with minimum and maximum values were 21.00 and 31.00 (No. of kicks) for Goalkeepers, for Defenders values were 24.97, ± 2.55, 19.00 and 30.00 (No. of kicks) as mean, SD, minimum and maximum respectively. The said values were 25.27± 2.52, 19.00 and 30.00 (No. of

kicks) for Midfielders and 25.57±1.99, 6.00 and 35.00 (No. of kicks) for Forwards respectively.

From the said table it was seen that the highest score in general soccer ability was for forwards with the mean and SD value of 25.57 and 1.99 (No. of kicks) and the lowest score of 24.97 and 2.55 (No. of kicks) for defender. The mean, SD, minimum and maximum score of the performance in general soccer ability of all the subjects of four different groups were 25.24± 2.36, 5.00 and 35.00 (No. of kicks).

To know the nature of the general soccer ability the Mean values of different groups of soccer players have been presented in the form of following bar diagram of Fig. No-33.

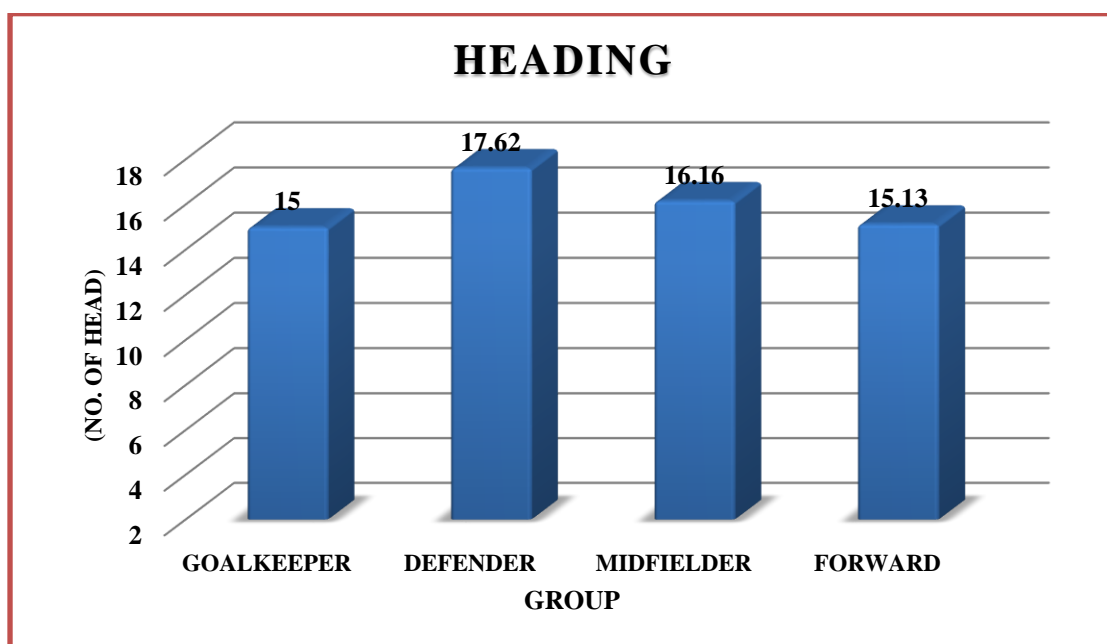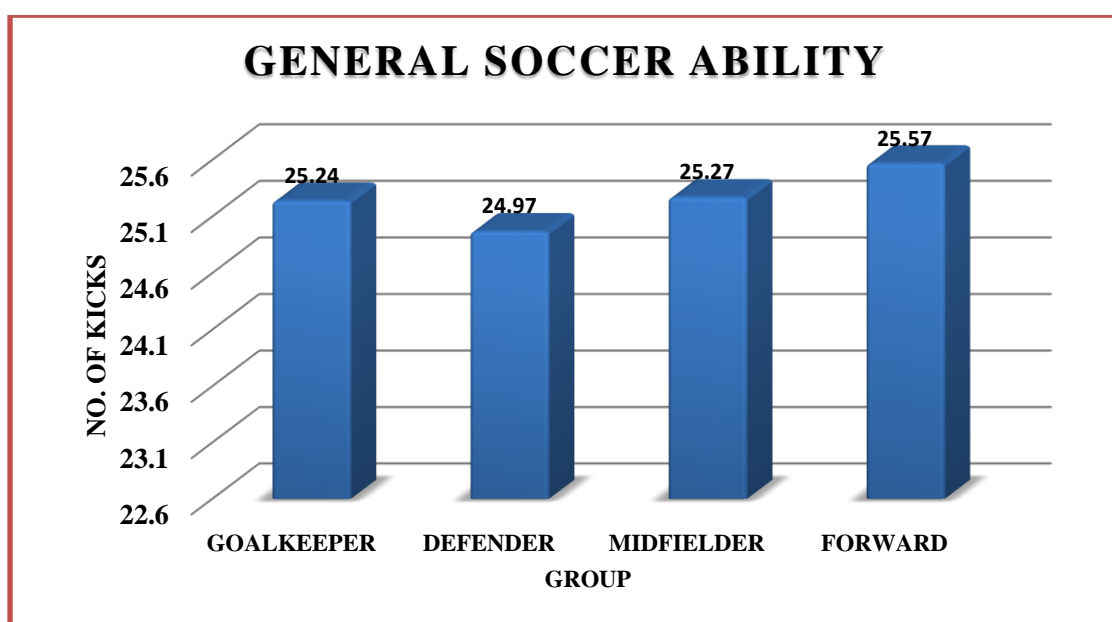**Fig. No- 33: General Soccer Ability scores of different groups of soccer Players**

It appears from the table no-25 that the mean values of performance in General Soccer Ability for different groups of subjects were different. So, it was also felt necessary to test the statistical significance of the differences among these mean values. This was tested by using the process of Analysis of Variance. Table-26 presents the results

Table-26

Testing of significance of the difference among the mean values of performance in General Soccer Ability

Condition	Sum of Squares	df	Mean Square	F-value	Level of Significance
Between Groups	5.975	3	1.992		F-value is lower than the required table value for being not Significant at 0.05 level
Within Groups	658.01	116	5.673	0.351	
Total	663.99	119			

F- Value for 0.05 level of confidence with df (3, 116) - 2.68

From the table value of F- ratio, it is understood that the differences among the mean performances of different groups of soccer players in general soccer ability was not statistically significant.

4.3.5.2 Analysis of relative importance of basic soccer skills with respect to position of play by Judges Rating:

In addition to statistical analysis of data for analyzing relative importance of basic soccer skills with respect to position of play, there was an attempt to understand the situation by using judges rating. Nine experts were selected from the pool of qualified coaches with experience of coaching Inter University Level and Kolkata 1st Division of soccer teams. On the basis of their experience, the judges assigned marks out of 100 for each skill for each of the positions of soccer for overall performance. For example- each of the judges marked each of the selected soccer skills out of 100. Thus the percentage of importance of selected basic soccer skills of Passing, Dribbling, Shooting, Kicking and Heading was considered. Table- 27 showed the results.

Table-27

Mean values of Judges Rating for four different groups of subjects.

Groups ➡ Skills	Goalkeeper (Score)	Defender (Score)	Midfielder (Score)	Forward (Score)
Passing	59.0	72.7	82.7	75.0
Dribbling	48.0	64.4	78.8	81.8
Shooting	56.1	71.4	81.6	85.5
Kicking	77.1	81.3	76.8	71.6
Heading	50.7	80.2	79.5	83.0
Mean	58.2	74.0	79.8	79.4

From above table no-27 the group of Goalkeepers were rated with lowest percentage score by the experts except Kicking, the group of Defenders were rated with highest percentage score for Kicking, the group of Midfielders were rated with highest percentage score for Passing and the group of Forwards were rated with highest percentage score for Dribbling, Shooting and Heading. Considering overall performances of basic skills was rated lowest for Goalkeepers and very high for both Midfielders and Forwards.

Regarding the nature with the mean values of performance in relative importance of basic soccer skills with respect to position of play by Judges Rating for different groups of soccer players have been presented in following bar diagram of Fig. No-34.

BASIC SOCCER SKILLS WITH RESPECT TO POSITION OF PLAY BY JUDGES RATING
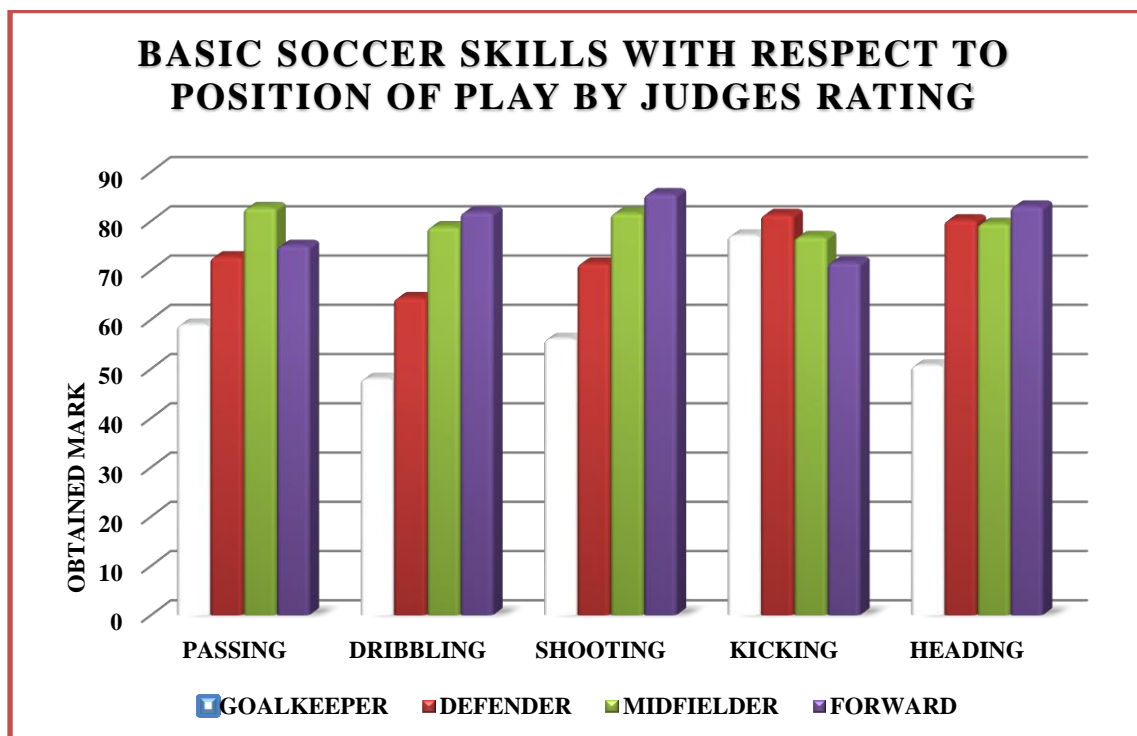
Fig. No- 34: Scores of different groups of Soccer Players in Experts Rating.

4.4. THE RESULTS

In the present study the differences among four groups of positional soccer players for Somatotype Profile, Psychological Parameters and Performance in five Basic Soccer Skills were analyzed and compared. The groups were also tested for General Soccer Ability, inter-group comparison and judge's ratings. On the basis of analysis and discussion of data, following results were obtained.

4.4.1 SOMATOTYPE

In present study the somatotype of different groups of subjects were analyzed. Results obtained through analysis of data revealed the following:

i)   Values of the somatotype profile of four different groups- Goalkeepers (3.17, 3.25, 2.82), Defenders (2.97, 3.34, 3.04), Midfielders (2.96, 3.37, 2.84) and Forwards (2.53, 2.98, 3.36).

ii) Inter group analysis of somatotype profile revealed no significant inter-group differences among the somatotype components.

4.4.2   PSYCHOLOGICAL PARAMETERS

i)   In Aggression the group of Forwards was significantly higher than the group of Goalkeepers and Defenders.

ii) In Achievement Motivation there was no significant difference among the selected groups of positional soccer players.

4.4.3   PERFORMANCE IN BASIC SOCCER SKILLS

i)   In passing the performance of all the four different groups of positional soccer players were above average. The performance of mean values was 8.16 ±1.70 (No. of Passes) for the group of Goal Keepers, 8.26±1.48 (No. of Passes) for Defenders, 8.80±1.20 (No. of Passes) was for Mid-fielders and 8.37±1.24 (No. of Passes) for Forwards.

ii)   There were no statistical significant differences among the groups of positional soccer players in basic soccer skill of passing.

iii) In dribbling the performance of all the four different groups of positional soccer players was measured in time (second). The mean performance scores were 35.42 ±03.5 (second) for the group of Goal Keepers, 33.43

±03.36 (second) for Defenders, 32.14 ±2.74 (second) for Mid-fielders and 32.79 ±3.10 (second) for Forwards.

iv) With greatest time taken to complete the specific task of dribbling, the group of Goal keepers appeared to be lowest in performance in this basic soccer skill of dribbling. All other groups were significantly higher in performance than the group of goal keepers. The group of Mid-fielders appeared to be the best of all groups in performance in dribbling.

v) In shooting the performance of all the four different groups of positional soccer players were above average. The mean performance scores were 108.64 ±14.90 (points) for the group of Goal Keepers, 112.51±19.26 (points) for Defenders, 115.69±11.64 (points) was for Mid-fielders and 114.60±11.65 (points) for Forwards.

vi) There were no statistical significant differences among the groups of positional soccer players in the basic soccer skill of shooting.

vii) In kicking for distance the performance of all the four different groups of positional soccer players was measured in meter. The mean performance was 42.48 ±1.70 (meter) for the group of Goal Keepers, 44.61 ±6.01 (meter) for Defenders, 41.69 ±5.06 (meter) for Mid-fielders and 43.13 ±4.82 (meter) for Forwards.

viii) There were no statistically significant differences among the groups of positional soccer players in the basic soccer skill of kicking for distance.

ix) In heading the performance of all the four different groups of positional soccer players was measured in number of headings continuously in a single trial. The mean performance scores were 15.00 ±10.15 (No. of Head) for the group of Goal Keepers, 17.62±10.41 (No. of Head) for Defenders, 16.16±07.38 (No. of Head) for Mid-fielders and 15.13±05.64 (No. of Head) for Forwards.

x) There were no statistically significant differences among the groups of positional soccer players in the basic soccer skill of heading.

xi)   Finally, the results revealed that the performance of dribbling as basic soccer skill was significantly lower for the group of Goalkeepers than other three groups- Defenders, Midfielders and Forwards.

4.4.4 GENERAL SOCCER ABILITY

i)   In General Soccer Ability the performance of all the four different groups of positional soccer players was tested using Mc Donald Soccer Ability Test and measured in number of kicks within 30 second of time. The mean performance scores were 25.24 ±2.39 (No. of Kicks) for the group of Goal Keepers, 24.97±2.55 25.24 ±2.39 (No. of Kicks) for Defenders, 25.27±2.52 25.24 ±2.39 (No. of Kicks) for Mid-fielders and 25.57±1.99 25.24 ±2.39 (No. of Kicks) for Forwards.

ii)   There were no statistically significant differences among the groups of positional soccer players in General Soccer Ability.

4.4.5 JUDGES RATINGS

i)   It is such that the group of Goalkeepers was rated with lowest percentage score by the experts except Kicking.

ii) The group of Defenders were rated with highest percentage score for Kicking.

iii) The group of Midfielders were rated with highest percentage score for Passing.

iv) The group of Forwards were rated with highest percentage score for Dribbling, Shooting and Heading, and

v) Overall importance of basicl skills was rated lowest for Goalkeepers and very high for both Midfielders and Forwards

4.5 DISCUSSION ON THE RESULTS

Present research study focused on analyzing the relative importance of Somatotype Profile, Psychological Parameters and Basic Soccer Skills with respect to position of play. The performances of different groups of positional soccer players viz. Goal-keepers, Defenders, Mid-fielders and Forwards in somatotype profile viz. Endomorphy, Mesomorphy and Ectomorphy, Psychological parameters viz.

Aggression and Achievement Motivation in five basic soccer skills viz. Passing, Dribbling, Shooting for accuracy, Kicking for distance and Heading for number of times in a single trial were measured and statistically analyzed for checking inter-group variation.

Results of Somatotyping profile indicates that Goal keepers are Endomorph-Mesomorph; Defenders are Ectomorph– Mesomorph, Midfielders are slightly more Mesomorphic and Forwards are slightly more Ectomorphic, Forwards are significantly higher than Goalkeepers and Defenders in aggression. But Achievement motivation there was no significant difference among different groups of positional soccer player in Achievement Motivation.

Results of the study have indicated that the group of Goalkeepers exhibited significantly lower performance in dribbling than all other groups of positional soccer players. This study clearly indicates that the relative importance of dribbling as a basic soccer skill in lesser for Goal keepers than all other positional players in the game of soccer. This might be due to the fact that during game situation, the Goal-keepers very rarely require to dribble the ball. Most of the time the Goal-keeper remains inside the penalty box and is allowed even to handle the ball. He does not need to cross over the opponent with ball, which is the purpose of dribbling.

But, results indicated that the group of Goalkeeper's performed at per other groups of positional soccer players because the difference in performance of this group in all other four basic soccer skills was not statistically significant. This might be due to the fact that the Goal-keepers also require to use other basic soccer skills like passing, shooting for accuracy, kicking for distance and even juggling the ball with head.

Results also reported that there was not statistically significant difference among all the four groups of positional soccer players in the selected basic soccer skills except the dribbling as discussed above.

This might be due to the two reasons. Firstly, the modern game of soccer is based on the concept of 'Total game/ total football'. Though the players excepting the Goal-keepers are arranged in different positions of the field with some basic responsibility, everyone needs to play everywhere and perform all types of positional requirements most of the time during game situation. So, modern soccer compels

different groups of positional players except Goal-keepers to be equally competent in all the basic soccer skills.

Secondly, in the performance structure of the game of soccer, the basic skills like passing, dribbling, kicking, heading etc. are of fundamental importance. So, everyone intends to play soccer need to learn the basic soccer skills perfectly and practice them for better performance. So, except Goal-keepers all other positional soccer players develop mastery on the basic soccer skills.

These have been reflected in the another result of the present study regarding the inter-group difference in Basic Soccer Ability of different groups of positional soccer players. The results indicated that the inter-group difference in basic soccer ability was not statistically significant.

In order to substantiate the results of the present study, the researcher conducted a small survey with the experts for their opinion on the issue of relative importance of basic soccer skills with respect to position of play. The experts were qualified soccer coaches. In results the group of Goal-keepers was adjudged as the lowest performing groups for all the selected basic soccer skills except kicking for distance. The results also indicated significant difference in performance of passing, dribbling, shooting and heading among four groups of positional soccer players.

Further research on this issue would clarify the results.

4.6 TESTING OF HYPOTHESES

Present study was based on four hypotheses. According to the first one there would be no difference in relative importance of somatotype with respect to position of play. The results of the study proved that there was no statistically significant difference in Somatotype profile among different groups of soccer players. So, on the basis of results of the study the first hypotheses were accepted.

In the second one, there would be no difference in relative importance of psychological parameters (Aggression and Achievement motivation) with respect to position of play. The results of the study proved that the group of Forwards was significantly higher in aggression than the groups of Goalkeepers and Defenders. So, the formulated hypotheses were not accepted for this psychological parameters of aggression. But the results indicated that the inter group difference in achievement

motivation was not statistically significant. So, the hypotheses were accepted for the psychological parameters of achievement motivation.

The third hypotheses were that there would be no difference in relative importance of basic soccer skills with respect to position of play. The results of the study proved that the group of Goal keepers was significantly lower than all other groups of positional soccer players in performance of basic soccer skills. So, on the basis of results of the study the third hypothesis was not accepted.

The fourth hypothesis of the study assumed that there would be no difference in General Soccer Ability for different groups of positional soccer players. The results of the study confirmed that the inter-group difference in General Soccer Ability of four different groups of positional soccer players was not statistically significant. So, on the basis of results of present study the fourth hypothesis has been accepted.

CHAPTER-V

Summary, Conclusion & Recommendation

5.1 SUMMARY

5.2 CONCLUSION

5.3 RECOMMENDATION

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY

Soccer is a team game. Each team is formed with eleven playing members. These eleven players are placed on the field at eleven well defined positions with specific responsibilities. Though, modern soccer is a team game, the players follow their basic responsibilities even during game situations. Important such positions for the game of soccer are: Goal keepers, Defenders, Midfielders and Forwards. As the demand of the job for different positions differs, it is expected that the players of different positions would vary in their physical structure, fitness level, mental make-up, technical expertise heath tactical know-how.

On this proposition there have been a number of studies. On the basis of results some studies have reported that the players of different positions of play differ in body height and weight, body composition; motor fitness, self-confidence and aggression; and in performance of basic soccer skills. But, some other studies have reported results differently.

Depending on this knowledge base regarding intergroup variation in different performance factors for soccer, present study was planned to analyse the somatotyping profile, selected psychological parameters and basic soccer skills of different groups of soccer players selected from different positions of play. It was believed that the results would help to understand the relative importance of somatotype, psychological parameters and basic soccer skills with respect to position of play in a soccer game.

A total of one hundred twenty soccer players were selected as subjects for the study. Among them there were twenty-five Goal Keepers, thirty-nine Defenders, twenty-six Midfielder and rest thirty Forwards. The subjects were selected on the basis of purposive sampling principle. The subjects had the experience of participation in Intervarsity tournaments and Kolkata Football league tournaments.

Somatotyping profile was selected as one of the criteria for measurement and it was measured by Heath Carter method. Aggression and Achievement motivation

were selected as the psychological criteria. Aggression was measured using the questionnaire developed by Bharwadwaj and Achievement motivation was measured using the questionnaire developed by Goregaonkar and Helode. Performance in selected basic soccer skills were measured by using following standardized soccer skill tests- Mor-Christian Soccer Skill tests for passing, dribbling and shooting; Warner Soccer Skill test for kicking; Rossum and Wijbenga Soccer skill for heading. The general soccer ability was tested using McDonald Soccer Skill test.

Collected data were analysed using appropriate statistical methods. Mean and standard deviation were calculated as the measure of central tendency and variability. Statistical significance of the difference among the mean values of different groups was tested using the technique of Analysis of Variance. Exact location of the difference was tested using post-hoc test.

On the basis of results of the study the conclusions were drawn.

5.2 CONCLUSION

On the basis of results obtained in the present study, following conclusions were drawn:

i) Somatotyping profile indicates that Goal keepers are Endomorph-Mesomorph; Defenders are Ectomorph– Mesomorph, Midfielders are slightly more Mesomorphic and Forwards are slightly more Ectomorphic in nature.

ii) Forwards are significantly higher than Goalkeepers and Defenders in aggression. But there was no significant difference among different groups of positional soccer player in Achievement Motivation.

iii) Among the basic soccer skills, Goal-Keepers are lowest in performance ability in dribbling than all other groups of positional soccer players – Defenders, Mid-Fielders and forwards.

iv) There was no significant difference among different groups of positional soccer player's viz. Goal-Keepers, Defenders, Mid-Fielders and forwards in basic soccer skills viz. Passing, Shooting, Kicking and Heading.

v) There were no significant differences among different groups of positional soccer player's viz. Goal-Keepers, Defenders, Mid-Fielders and forwards in General Soccer Ability.

5.3: RECOMMENDATION

On the basis of results obtained and conclusions drawn in this investigation, following recommendations were made for future investigation and practical application.

5.3.1 For Practical Application:

Results of the present study may be used for selection of positional players and their training for the similar team games.

5.3.2 For Future Investigation:

i) Similar studies may be planned to analyse the relative importance of basic soccer skills with respect to position of play for similar other team games like field hockey, cricket etc.

ii) Future studies may be planned to analyse the somatotyping profile and body composition of the players with respect to position of play for similar other team games like field hockey, cricket etc.

iii) Similar studies may be planned to analyse the selected psychological parameters with respect to position of play for similar other team games like field hockey, cricket etc.

iv) Similar future studies may also be conducted with female players of similar team games

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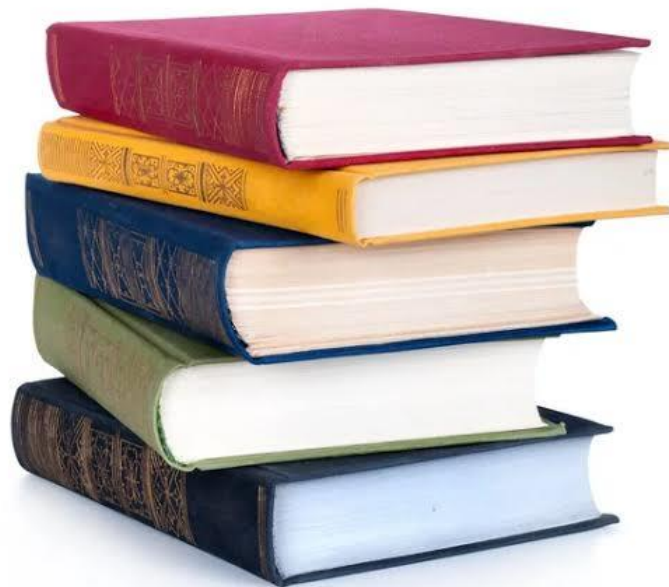
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Appendices

SAMPLE SCORE SHEET: PERSONAL DATA FOR DIFFERENT POSITION OF SOCCER PLAYERS

Sl. No	Name	Age (Years)	Height (Cm)	Weight (Kg)
1.	Subject-01			
2.	Subject-02			
3.	Subject-03			
4.	Subject-04			
5.	Subject-05			
6.	Subject-06			
7.	Subject-07			
8.	Subject-08			
9.	Subject-09			
10.	Subject-10			
11.	Subject-11			
12.	Subject-12			
13.	Subject-13			
14.	Subject-14			
15.	Subject-15			
16.	Subject-16			
17.	Subject-17			
18.	Subject-18			
19.	Subject-19			
20.	Subject-20			
21.	Subject-21			
22.	Subject-22			
23.	Subject-23			
24.	Subject-24			
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120.	Subject-120			

SAMPLE SCORE SHEET: SKINFOLD MEASUREMENT FOR DIFFERENT POSITION OF SOCCER PLAYERS

Sl.No	Name of Players	Skinfold(mm)					
		Biceps	Triceps	Subscapular	Supra iliac	Supraspinale	Calf
1.	Subject-01						
2.	Subject-02						
3.	Subject-03						
4.	Subject-04						
5.	Subject-05						
6.	Subject-06						
7.	Subject-07						
8.	Subject-08						
--	-----------						
120.	Subject-120						

SAMPLE SCORE SHEET BREADTH & GIRTH MEASUREMENTFOR DIFFERENT POSITION OF SOCCER PLAYERS

Sl.No	Players Name	Breadth(cm)		Girth(cm)	
		Humorous	Femur	Biceps	Calf
1.	Subject-01				
2.	Subject-02				
3.	Subject-03				
4.	Subject-04				
5.	Subject-05				
6.	Subject-06				
7.	Subject-07				
8.	Subject-08				
--	-----------				
120.	Subject-120				

SAMPLE SCORE SHEET: BASIC SOCCER SKILLS FOR DIFFERENT POSITION OF SOCCER PLAYERS

Sl.No	Players Name	Passing	Dribbling	Shooting	Kicking	Heading
1.	Subject-01					
2.	Subject-02					
3.	Subject-03					
4.	Subject-04					
5.	Subject-05					
6.	Subject-06					
7.	Subject-07					
8.	Subject-08					
--	-----------					
120.	Subject-120					

SAMPLE SCORE SHEET: GENERAL SOCCER ABILITY FOR DIFFERENT POSITION OF SOCCER PLAYERS

Sl.No	Players Name	General Soccer Ability
1.	Subject-01	
2.	Subject-02	
3.	Subject-03	
4.	Subject-04	
5.	Subject-05	
6.	Subject-06	
7.	Subject-07	
8.	Subject-08	
--	-----------	
120.	Subject-120	

SAMPLE OF PSYCHOLOGICAL QUESTIONNAIRE

Aggression Scale

By

Dr. Rajeev Luchan Bhardwaj

Name……………………………………………………………………….

Player Position……………………………………………………………

Date of Birth……………Education……………………………

University/Club………………………………………...............

Sl.No		Statements	Remarks
01		**Whether your friends or relative in meeting you-**	
	A	Avoid in excess.	
	B	Avoid much.	
	C	Avoid generally.	
	D	Generally do not avoid.	
	E	Avoid in excess.	
02		**I take….in debating with others without need-**	
	A	Excessive pleasure.	
	B	Much pleasure.	
	C	Pleasure normally.	
	D	No pleasure.	
	E	Not the least pleasure.	
03		**To hear and read the story of revolutionary heroes-**	
	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	

	E	Like the least.	
04		**To obey the rules of the society-**	
	A	Do not consider necessary always.	
	B	Do not consider necessary.	
	C	Consider necessary off and on.	
	D	Consider necessary.	
	E	Consider necessary always.	
05		**To drive fast or to sit in the driven car without much need of the occasion.**	
	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Like the least,	
06		**To retort the others provoking answer, I….**	
	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Like the least,	
07		**To return a below in lieu of slap, I….**	
	A	Consider very much appropriate.	
	B	Consider much appropriate.	
	C	Consider appropriate normally.	
	D	Consider less appropriate.	
	E	Consider least appropriate.	

		In the event of a work against my wishes, I ….	
08	A	Lose my temper in excess.	
	B	Lose my temper very often.	
	C	Lose my temper occasionally.	
	D	Do not lose my temper normally.	
	E	Never lose my temper.	
		Action of violence in the programs of T.V, I….	
09	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Do not like at all.	
		During the sleep the dreams of strife and violence, I….	
10	A	Have in excess.	
	B	Have very often.	
	C	Have occasionally.	
	D	Do not have generally.	
	E	Do not have at all.	
		How to improve the present social system around us? This point….	
11	A	Is the most important for me	
	B	Is the important for me	
	C	Is the important normally for me	
	D	Is less important for me	
	E	Is not at all important for me	
		In order to achieve my goal (right or wrong), I….	
12	A	Remain always eager.	
	B	Remain eager.	
	C	Occasionally remain always eager.	

	D	Hardly remain eager.	
	E	Never remain eager.	
13	**To have a meeting with the battle warriors and horrible fighting's, I….**		
	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Do not like at all.	
14	**For the selfish interest of others, I….**		
	A	Become a tool always.	
	B	Become a tool generally.	
	C	Become a tool occasionally.	
	D	Do not become a tool angry normally.	
	E	Never become a tool.	
15	**Finding that my things are not properly placed, I….**		
	A	Become angry in excess.	
	B	Become much angry occasionally.	
	C	Become angry occasionally.	
	D	Do not become a tool angry normally.	
	E	Do not become angry at all.	
16	**To break or to through away the inanimate object, I….**		
	A	Like very much.	
	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Do not like at all.	
	To hunt the animals and birds without much cause, I….		
	A	Like very much.	

17	B	Like much.	
	C	Like normally.	
	D	Like less.	
	E	Do not like at all.	
18	**In teasing and torturing others, I….**		
	A	Find delight in excess.	
	B	Find delight.	
	C	Find delight normally.	
	D	Do not Find much delight.	
	E	Find no delight at all.	
19	**While bring confronted with partiality, I….**		
	A	Become very much angry.	
	B	Become angry.	
	C	Become angry normally.	
	D	Do not become angry generally.	
	E	Do not become angry at all.	
20	**How the opponent should be tortured? This thought, is….**		
	A	Always present in my mind.	
	B	Generally present in my mind.	
	C	Occasionally present in my mind.	
	D	Not present in my mind.	
	E	Never present in my mind.	
21	**To obey the elders I….**		
	A	Do not like at all.	
	B	Generally do not like.	
	C	Occasionally do not like.	
	D	Like normally.	
	E	Like always.	

		To hear others in loud tone, I….	
22	A	Do not like at all.	
	B	Do not like normally.	
	C	Tolerate some times.	
	D	Tolerates very often.	
	E	Tolerate always.	
		To tell faults of elders while they are at faults, I….	
23	A	Consider very much necessary.	
	B	Considernecessary.	
	C	Consider necessary normally.	
	D	Consider less necessary.	
	E	Do not consider necessary at all.	
		While failing to take revenge with the opponent, I….	
24	A	Shout and murmur for a long time.	
	B	Shout and murmur for quite some time.	
	C	Shout and murmur normally.	
	D	Shout and murmur a tittle.	
	E	Hardly shout and murmur.	
		In the interest of the nation, even the deeds going against public interest, I….	
25	A	Accept very easily.	
	B	Accepteasily.	
	C	Accept normally.	
	D	Hardly accept.	
	E	Do not accept at all.	
		If a small event of tussles appears on the road, I….	
	A	Begin to irritate in excess.	
	B	Begin to irritate.	

26	C	Begin to irritate normally.	
	D	Hardly irritate.	
	E	Never irritate.	
27	**If I get angry on others I….for my on loss-**		
	A	Never care.	
	B	Do not care normally.	
	C	Do not care occasionally.	
	D	Care less.	
	E	Least care.	
28	**In the unnecessary disputes of the society, I….**		
	A	Participate very often.	
	B	Participate often.	
	C	Participate occasionally.	
	D	Hardly participate.	
	E	Do not participate at all.	

SAMPLE OF PSYCHOLOGICAL QUESTIONNAIRE
Achievement Motivation
by
Dr. P.S. Goregaonkar & Dr. R.D. Helode

Name……………………………………………………………………….

Player Position………………………………………………………….

Date of Birth……………………….. Education……………………….

University/ Club………………………………….........................

1- Fully True	2- Partially True
3- Undecided	4- Partially False
5-Totaaly False	

Sl. No	Statements	1	2	3	4	5
1	I consider my success as the result of my efforts.					
2	Whatever task is assigned to me, I try to see that it is completed with high excellent.					
3	I usually keep on with work until it is finished.					
4	I generally set realistic goals for myself.					
5	I consider low ambition as a crime.					
6	My every move is goal directed.					
7	I want to excel in all walks of life.					
8	I am known as "hard task master".					
9	I am always hopeful of success.					

10	Failure does not discourage me.					
11	I enjoy competitive situation.					
12	I want to achieve more and more.					
13	I have a strong desire for unique accomplished.					
14	I indulge in self-competition.					
15	I do not hesitate to take risk if it brings success to me.					
16	I prefer and seek tasks which have a great degree of personal responsibility.					
17	I remain curious to know the results of my efforts.					
18	I always need precise feedback (knowledge of results) about my success or failure.					
19	I believe in attacking the problem from different angles so as to ensure success.					
20	There is no place for the word "impossible" in my dictionary.					
21	Whatever I do, I do it with full involvement.					
22	I cannot tolerate lazy workers.					
23	I am having enough self-confidence.					
24	I consider getting promotion or salary rise, as the reword of my work.					
25	I do not allow my-self to be lazy.					
26	I have long term career plans.					

27	I develop career plans & achieve my goal.					
28	I consider vertical achievement as the real one.					
29	I always compare my past with the present and try to create a better future for my-self.					
30	I have ample competitive spirit.					
31	I can tolerate any type of stress for the sake of hitting at my goal.					
32	I compare my present position with others and try to surpass them.					
33	I think twice before I act.					
34	Whatever I determine to achieve, I achieve it.					
35	Even my sacrifice have long term 'meaning'					
36	I have enough social inside.					
37	I have known as a person on firm determination.					
37	If do not achieve anything new from time to time, I become restless.					
39	I consider self-help as the best help.					
40	Failures act as a source of motivation to me.					

Participation in Workshop

Research Methodology Course in Social Sciences for PhD Students
Sponsored by
ICSSR-NERC, Shillong
Organised by
Department of Management, North-Eastern Hill University
Tura Campus, Tura-794002, Meghalaya

CERTIFICATE

This is to certify that Prof./Dr./Mr./Ms. ....HABIB SK.......................................from
....JADAVPUR UNIVERSITY.....................participated/acted as Resource Person in
the Ten Days (24th May - June 2, 2016) Research Methodology Course in Social Sciences for PhD
Students, Organised by the Department of Management, North-Eastern Hill University, Tura
Campus, Tura-794002, Meghalaya (India) and sponsored by Indian Council of Social Science
Research-North Eastern Regional Centre, Shillong, Meghalaya, India.

Given this on the Second day of June Two Thousand and Sixteen.

(Prof. G. Singaiah)
HOD & Campus In-charge

(Dr. Abhigyan Bhattacharjee)
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Participation in Workshop

UNIVERSITY GRANTS COMMISSION
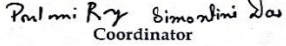Human Resource Development Centre (HRDC)
Jadavpur University
Kolkata

UGC Sponsored Short Term Course

This is to certify that................*Habib Sk*...
(Name of the Participant)

.............*Physical Education*............................., of....*Jadavpur University*.................................
(Department/School)   (Institution / Organization)

has participated in the short term course entitled as **Research Methodology in Social Sciences** from November 20 – 26, 2019.

Director
November 26, 2017

Coordinator

Participation in Seminar

National Seminar
On
"QUALITY TEACHER EDUCATION IN THE ERA OF INNOVATION"
Organised by
SHYAMANGINI KUNDU COLLEGE OF EDUCATION
In collaboration with **DALI KUNDU P.T.T.I.**
Recognized by: N.C.T.E   Affiliated By: WBUTTEPA
VILL + P.O. + P.S.-SALAR, DIST-MURSHIDABAD, PIN-742401

DATE -17th AUGUST 2018

This is to certify that Prof./Dr./Mr./Ms ...HABIB SK... of ...JADAVPUR... UNIVERSITY... acted as a Resource person / Chairperson / Presented a paper (Single/Joint)/Participated in the Seminar. Title of the paper is ...Analysis of difference in performance in selected Soccer skills among players of different position.

Dr. Aravind Kr. Sukla
Principal & Convenor
S.K.C.E.

Prof. (Dr) Renu Nanda
HOD, Department of Education
University of Jammu

Shri Amar Chand Kundu
Founder and President
S.K.C.E & D.K.P.T.T.I.

Prof. (Dr) Madan Mohan Chel
Head, Department of Education
Seacom Skills University