Chapter-I

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Physical Education, as a part of human education has always existed in the human society in one form or the other. Since time immemorial, even before the dawn of human civilization and culture, physical exercises have been a very important aspects of human existence.

Sports by their very nature are enjoyable, challenging, absorbing and require a certain amount of skill and physique. In the order of human values conquest in the field of sports holds a unique place. It is a combination of success, victory, triumph and domination of some over other team mates and friends.

Sport plays a very prominent role in the modern society. It is important to individuals, a group, a nation and indeed the world. Throughout the world, sport has a popular appeal among people of all ages and both sexes. Much of the attraction of sports comes from the wide variety of experience and feeling that result from participation and also other variables such as success, failure, exhaustion pain, relief and feeling of belonging. Sport can bring money, glory, status and goodwill. However, sport can also bring tragedy, grief and even death.

As the amount of leisure time has increased in modern society time spent on sports has grown, while very few participate at the elite or Olympic level. There are many more who participate at the local or community level, for others involvement in sport is a passive one as spectators, coaches, umpires, teachers or sports writers. Sports have an undeniable role in the society. As society changes
so does sport. Games in the early years were local and informal. The rules were simple and changing according to the number of participating and the local culture and amenities. As cities grew, clubs were formed and interclub competitions began. Eventually cities played against other cities as transportation developed and as the different means of transport such as, steamboats and railways reduced the time to travel long distance. Finally, there were regional, national and international competitions and corresponding governing bodies. All these developments took time and occurred as cities reached a certain stage of development and inventions occurred to make these improvements possible.

Sport is an Institutionalized competitive activity that involves vigorous physical exertion or the use of relatively complex physical skills by individuals whose participation is motivated by a combination of the intrinsic satisfaction associated with the activity itself and the external rewards earned through participation.

Man by nature, is highly competitive and in pursuit of performance he has always been striving to jump higher and farther, to run faster and to demonstrate greater strength and skill. Physical fitness plays emphasis on more and more activity. The preparation of an athlete today for achievement is a complex dynamic matter, characterized by a high level of physical and physiological efficiency and the degree of perfection of necessary skills, knowledge and proper teaching and tactics. An athlete arrives at this state only as a result of corresponding training sports activity directed at steadily enhancing the preparation of an athlete and grooming him for a higher level achievement. Sport is an important ingredient of physical education and is a worldwide phenomenon today. The unprecedented popularity and better organization of sports activities
and competitions would have been impossible without the recognition of the important of sports competitions in the world. The world has realized the importance of sports for the modern civilizations.

In recent times, the field of sports has become popular, since youth in quite large members from developed, developing and under developed countries are participating in large numbers with a recreational and professional approach. The outcome of their quantitative participations is the resultant performance and vast improvement in the sports and games standard. The impact of knowledge of science on sports has raised the standard of sports manifold during the passed century. The improvement in performance as taken place due to the application of the science at various levels, such as improvement in facilities, training methods, conditioning, nutrition, psychological intervention strategies and professionalization of sports itself.

Fitness is a state which often characterizes the degree to which a person is able to function. Ability to function depends upon the physical, mental, emotional, social and spiritual components of fitness, all of which are related to total fitness. While fitness is the maximal, economical and efficient functioning of the body, health is referred to as optimal homeostatic functioning of the body. Fitness is highly required in abundance and in all aspects particularly in football.

**Anthropometry**

Anthropometry like any other area of science depends upon adherence to the particular rules of measurement as determined by national and international standards bodies.¹ There are two ways to appraise anthropometry. One is to compare the absolute value of the data obtained through anthropometric

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measurements, and the other is to transfer the measured data into normalized indices for evaluation.

**Anthropometric Measurements in Sport**

Evaluation of anthropometric characteristics can be done by using two methods, namely direct evaluation and indirect evaluation. Direct evaluation adopts absolute values of the anthropometric data, while indirect evaluation is achieved through converting the anthropometric data into corresponding derived indices.²

In sports related research, anthropometric methods are widely applied in the recruitment of potential athletes. Different sports have different anthropometric characteristics; therefore specific anthropometric variables should be used for talent identification in different sports. For the recruitment of football players, the commonly used anthropometric variables include stature, body weight, leg length, calf and thigh girth.³

There have been numerous studies that attempt to answer the questions on whether the player’s physique is a precondition to gain high performance; whether different sport events have special requirements on player’s physique; and whether there is correlation between player’s physique and the development of physical performance. However, there has been limited information on the anthropometry profile of elite football players in India.

Anthropometric Measurement is defined as a set of noninvasive, quantitative techniques for determining an individual's body fat composition by

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measuring, recording, and analyzing specific dimensions of the body, such as height and weight; skin-fold thickness; and bodily circumference at the waist, hip and chest.⁴

Physical educators have long realized that the performance of men and women is greatly influenced by such factors as age, height, arm length, leg length and body structure. The sculpture of Greece and Rome preserve the ideas of those civilizations concerning the idea proportions of the human figure. It is interesting to see in their sculpture the swing of the pendulum of approval from athletes who were broad shouldered, thick set square cheated and very muscular, to athletes who are leaner, more supple, and whose figure are more representative of the skills of the finer coordination. Since the early times there has been continued use of anthropometric measurement to determine its relationship with performance in different games and sports.

Anthropometric variables such as weight, standing height, sitting height, foot length, fore leg length, thigh length, leg length and shoulder width are related to optimum and skillful performance in team as well as individual sport. Anthropometrical measurement for assessment of physical status was expanded quite naturally to include consideration of body types and the relation of physique to one’s health, immunity from diseases, posture, physical performance and personality qualities. It soon became recognized that a single ideal physique was both impractical and unrealistic. Actually Hippocrates first realized that fact and classified human beings according to two basic physiques – long and thin, or short and thick. Kretschmer, the father of modern body or somatotyping, defined

⁴ www.medicaldictionary.thefreeonlinedictionary.com
three types by adding an in between and referred to them as asthenic (lean), athletic, and Pyknic (heavy).

Height is the measurement of the length of the human body, from the bottom of the feet to the top of the head, when standing erect. When populations share genetic background and environmental factors, average height is frequently characteristic within the group. Exceptional height variation (around 20% deviation from average) within such a population is usually due to gigantism or dwarfism, which are medical conditions due to specific genes or to endocrine abnormalities. In regions of extreme poverty or prolonged warfare, environmental factors like malnutrition during childhood or adolescence may account for marked reductions in adult stature even without the presence of any of these medical conditions. This is one reason that immigrant populations from regions of extreme poverty to regions of plenty may show an increase in stature, despite sharing the same gene pool.

The maximal height that an individual attains in adulthood is not maintained throughout a long life. Depending on sex, genetic, and environmental factors, shrinkage of stature may begin in middle age in some individuals but is universal in the extremely aged. Arm length is measured by reposition the end of the measuring tape to a spot about 5 inches from one end of the rod. Grasp the rod and hold in the arm at about 45 degrees from the midline of the body. The elbow must be extended fully during this measurement. The arm length is the distance from the rod to the acromion process. The acromion process is the bone like protuberance at the edge of the shoulder arm length is advantageous in sports such as handball and basketball. The circumference of the arm at the midpoint is between the acromiale and the radiale when the subject is standing
erect and the relaxed arm is hanging by the side. The circumference of the arm is a measure of the underlying musculature and adipose tissue. Girth measurements combined with skin fold measurements can give a clear picture of changes in tissue composition and distribution of muscle and fat.

**Physical Fitness**

Fitness is a key to enjoy life. Exercise is an important of a total fitness programme. Modern living has taken all the exercise out of our lives and so in order to get fit and have to put it back again, regular exercise is necessary to develop and maintain an optional level of health, performance and appearance. It makes feel good, both physically and mentally. It gives psychological lift and strengthens a sense of accomplishment. Looking young is a reflection of good health. Regular physical exercise enhance the function of the joints, increase the sense of physical well-being and promotes a sense of feeling good, increases physical working capacity by increasing cardiorespiratory fitness, muscle strength and endurance and decreases the risk of serious diseases that could lead to early disability and death.⁵

Hardayal Singh⁶ expressed that exercise has shown to improve health prospects in various ways. It helps to reduce body fat and overall weight and reduce blood pressure. Exercise ensures better digestion, respiration and efficient blood circulation. Proper exercise programme can reduce the probability of injuries among older people as well as back injuries among certain occupational group. Exercise tolerance is increased, risk factors are controlled and even

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progression and regression of coronary artery disease can be influenced by training and diet. Psychological effects include lessened depression and reduced anxiety. Regular physical activity is important for maintenance of health and may lead to a better quality of life. Training has to be followed not less than two to three hours per week in at least three sessions at an intensity corresponding to 60 to 85% of maximum heart rate achieved in a symptom limited maximum exercise test. Cardiac patients at high risk should exercise at lower intensities. Exercise occupies a leading role in keeping persons fit. It will be quite difficult to adjust one’s life in term of stress, diet, sleep and so on without proper exercise. Exercise means using and tuning the body. Exercise builds and maintains physical fitness.

**Importance of Physical Fitness**

Every individual must know the need of physical exercise. Physical fitness is the capacity of a person to function steadily and smoothly when a situation arises. Physical exercises makes one mentally sharpen, physically comfortable and ease with his body and better able to cope with the demands that everyday life makes upon him. Increased physical fitness not only improves health but improves performance at work.

**Speed**

Speed is the quickness of movement of a limb, whether this is the legs of a runner or the arm of the shot putter. Speed is an integral part of every sport and can express as any one of, or combination of, the following: maximum speed, elastic strength (power) and speed endurance.
Speed abilities are trainable to a very limited extent due to its marked dependence on the functioning of the central nervous system. In practice, therefore, speed performance are commonly improved not directly by improving the functioning of central nervous system but indirectly by improving the various factors on which the speed performance depends. It is, therefore, of great practical importance to know the factors which determine speed performance.7

**Agility**

Agility is the ability to change direction of the body and its parts rapidly. Agility is a combination of several athletic trails including strength, reaction time, speed of movement, power and co-ordination. Agility is very important in all activities involving quick changes in direction are fundamental to foot performance in practically all court games such as basket ball, tennis, badminton, volley ball and in many field games such as hand ball, football, speed ball and basket ball. These games require running agility. Agility either general or specific can be improved by increasing the athletic components.8

**Leg Explosive Power**

Strength is the ability to overcome resistance or to act against resistance. Strength should not be considered a product of only muscle contractions. It is in fact, a product of voluntary muscle contractions caused by the neuro-muscular system. Strength, or the ability to express force, is a basic physical characteristic that determines performance efficiency in sports. Strength is a conditional ability

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that is, it depends on the energy liberation processes in the muscle. Strength is also perhaps the most important motor ability in sports as it is a direct product of muscle contractions. All movements in sports are caused by muscle contraction and, therefore, strength is a part and parcel of all motor abilities, technical skills and tactical actions. Strength and strength training, therefore, assume high importance for achieving good performance in all sports.

Leg strength has been considered as the most important conditional ability. It has been the most significant factor to enhance sports techniques and performance. Since all sports movement are created by the contraction of muscle, therefore, leg strength is an important component of various conditional abilities, skills and tactical actions.9

**Muscular Strength and Endurance**

Muscular endurance is very important for people playing sports and who have to sustain an activity for long periods of time. Muscular endurance is determined by how well slow twitch muscle fibers are developed. There are generally two types of muscle fibers in the body, slow twitch and fast twitch. Slow twitch muscle fibers cannot exert as much force as fast twitch, but can sustain an effort over a much greater period of time. Fast twitch muscle fibers can exert a great amount of force but for a very limited amount of time. Therefore, slow twitch equals endurance, while fast twitch equals strength. It is important to pay attention to muscular endurance if play any sort of sports, or are involved in any sort of physical activity that lasts for quite a while.

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Muscular strength is much different from muscular endurance. Strength is a measure of how much force the muscles can exert, while endurance is the measure of how many times the muscles can repeat a specific exertion of force. Unlike muscular endurance which is controlled by slow twitch fibers, strength is determined by fast twitch fibers which focus more on quick bursts of energy rather than long, drawn out ones.

**Flexibility**

Flexibility is definitely one of the most important aspects of fitness and has a very substantial role in every other part. It is extremely important to maintain a high flexibility, as it will reduce the risk of injury in any sport tenfold and will also improve performance.

**Cardiovascular Endurance**

Cardiovascular endurance is the most important aspect of fitness. It is basically how strong the heart is, which can potentially add years to life. The heart is the most important muscle in the human body and if it is kept healthy then can avoid numerous health problems. Another reason that cardiovascular endurance is important is because the heart controls the oxygen flow to all the muscles- meaning cardiovascular health has a direct impact on the performance, both endurance and strength wise.

Endurance, like strength, is a conditional ability. It is primarily determined by energy liberation processes. The ability of the human body to maintain a certain level of energy production forms the physiological basis of endurance. Due to its high importance for health and training and competition and also due to its physiological determinants, which can be relatively easily
studied, it is an ability which has been studied in great detail and depth by the physiologists. Endurance is directly or indirectly of high importance in all sports.

Clarke and Clarke (1987)\(^\text{10}\) define endurance as the ability to resist fatigue. “Endurance is the ability to do sports movements, with the desired quality and speed under conditions of fatigue”. The endurance training results in the improvements of functioning of various organs and systems of the human body. This, in turn improves the ability to recover quickly from training and competition load.

**Psychology**

The word psychology come from the Greek word psycho, means mind or soul and logs mean science. So the word psychology is the science of the mind and soul. Psychology is the science of the mind and soul. Psychology is the study of human nature scientifically and rather than formulate condition. Psychology plays a major role in sports and in closely associated with psychological components.

Sports psychology is defined as the scientific study of human behaviour in sport. Like the other discipline within sports and exercise science, sports psychology can be applied to varied skilled movement physical activities and exercise programmes, such as corporate fitness, exercise rehabilitation and health oriented exercise programmes as well as traditional physical education and competitive athletics.\(^\text{11}\)

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Sport psychology focuses on the mental and behavioral processes of human within the socio-cultural context of competitive sport. Within this lies social behavior such as achievement or competition and associated thoughts and feelings: anxiety, aggression, self-esteem, and motivation. Sport psychology, as the systematic scholarly study of human thought, emotion, and behavior in sport contexts, consists of four main areas: personality and sport participation, motivational processes, interpersonal and group processes, and intervention techniques to enhance sport performance and personal development. In the present study Achievement Motivation, Aggression and Self confidence were considered to know the relationship with game performance of football players.

**Achievement Motivation**

Motivation means move to achieve. In psychology the term motivation or motive refers to activation from within in the organism. The motivation is termed as the urge to push towards a specific goal. Motivation is a concept invented to describe the psychological state or the organism as it is affected by various influences. A person is motivated when he desires some goal, a goal that will meet his need or satisfy his interest. Many psychologists believe that all behaviors are motivated, although it is extremely difficult to isolate specific motivational variables.

According to Alagaonkar, (1997)\(^\text{12}\) motivation as a personality characteristic related to the general state of arousal and subsequent level of attention paid to a problem or task facing of an individual. Level of achievement motives is positively related to success. Achievement related motives may be more successful in predicting behavior in sports selling.

In modern competitive sports, psychological preparation of an athlete or a team is as much important as technique of the different skills of the game on a specific line. Motivation is a complex process that influences individuals to begin, pursue, and persist in an activity. In football, nothing can affect performance as dramatically as a sudden loss of motivation. Without the motivation to succeed a player cannot survive the challenges soccer can throw up. If the team or player is going through a bad patch then motivating the players becomes especially important. However, an excessively motivated player may be nervous and take risks.

**Aggression**

Any action intended to cause injury or anxiety has been described as aggression. Psychologists like Mc Dougal who has given so much importance to natural instincts have pleaded that aggression is being created through instincts. Buris Husman (1955)\(^{13}\) says, “Aggression is behaviour which is developed through training”. The purpose of such aggression the achievement of the end product, namely physical or psychological injury

The main function of emotion is to provide mental power to physical actions. They cover all the bodily controls. As soon as a certain physical action is over or the purpose is served or the thinking is changed emotions get over, like some of elastic things. The concept is known as homeostasis. Aggression is also a time being emotion. Perhaps it might be such a status of the organism with its body mind and spirit, which make him work more enthusiastically. So the level of aggression needs to be of some specific limits.

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Aggression is as old as the human race. Aggression is the frequency and intensity of feeling angry, combined with the violence one exhibits when angry. Literal meaning of aggression is ‘to move towards with intention to hurt or harm’ Aggressive behaviour is an overt verbal or physical act that can psychologically or physically injure another person or oneself. Aggressive behaviour has been associated with destructive acts, prejudice speech, drug and alcohol addiction, sports and exercise and so forth.

Self Confidence

Sports psychologists define self confidence as the belief that one can successfully perform or desired behaviour. The desired behaviour might be kicking a soccer goal, staying on an exercise regimen, recovering from a knee injury, serving an ace, or hitting a home run. But the common factor is that one believes that he will get the job done. It is important to make a final comment about defining self confidence. Specifically, some evolving and recent research (Koole and Pelham) has revealed that like many other current personality constructs, self confidence may be multi dimensional, consisting of several aspects. Specifically, there appear to be several aspects, there appears to be several types of self confidence within sport including the following:

1. Confidence about one’s ability to execute physical skill
2. Confidence about one’s ability to utilize psychological skill (e.g. imagery, self-talk).
3. Confidence in one’s level of physical fitness and training status
4. Confidence in one’s learning potential or ability to improve one’s skill (Koole and Pelham, 2003)\(^\text{14}\)

The most important elements in successful football performance is the level of self-confidence. When players are confident they can perform at their best level and it is rare for successful players to have a persistent lack of confidence. Developing a good general state of confidence is vital for withstanding and recovering from setbacks such as a defeat or a poor performance. There are many characteristics which reflect a player's confidence and this can be observed during training and games through body language and verbal comments.

Players must always look at the positive side of things, be correctly prepared, committed, see situations as challenges not problems and trust themselves. Making sure of a correct lifestyle will also help maintain confidence. A coach can heavily influence player confidence through a positive philosophy as well as providing demanding yet attainable goals in training and competition. For this reason, it is important to understand the relationship of anthropometrical, psychological and physical fitness variables with performance of football players.

**Football**

Football is essentially a team game. It has developed into fast and highly skillful areas. In football, generally players are divided into two categories. Offensive and defensive players are meant for scoring by combining their techniques, tactics and efforts and different times.

All physical and anthropometric measures are required for offensive and defensive football players without which it is impossible for a player to play efficiently. It may be said that the dominance of different fitness factors varies from players to players. Generally it is assumed that defensive football players
should be tall and heavy with more muscular power, whereas ideal offensive players should be short, light, agile, fast and have more endurance. Offensive players need agility to dodge the opponents, the speed to reach the ball, the strength for performing the skill efficiently and good height and weight to keep themselves steady in the field.

A football player needs ‘speed’ to reach the ball quickly and to penetrate through the defense, on the other hand the defender needs speed of recovery to guard his goal and even the goal keeper needs speed of movement to control the ball as quickly as possible, specially in a one to one situation, speed is the most important factor to decide who will beat whom in the struggle for possession of the ball. Strength deserves considerable attention for football players. Players need to produce power when kicking a ball, throwing the ball for a long distance or taking a powerful shoot at the goal. While accelerating quickly or jumping, football players can and must work for improving their strength and power to play more effectively.  

In football, it is vital that the players should have endurance. It is useless to dominate a match in the beginning because the players with superior skill may lose it as in the long run they become exhausted and can no longer perform well. A lack of endurance results in fatigue which diminishes several elements of good performances such as timing, coordination, reaction time, general alertness and concentration. Since increased endurance delays the onset of fatigue, it improves the overall performance during the match.  

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16 Ibid., Pp.194-195.
Agility plays a vital role in football because when a football player participates in the game of football, he has to change directions and movement of various parts of the body while dribbling the ball, tackling the opponent and the goalkeeper to save the goal.\textsuperscript{17}

Sports scientists and physiologists have been of the view that anthropometrics and physical fitness components of an athlete have a lot to do with the performance, more than the techniques and tactics of the players or the team. The research findings show that a high level of technique perfection alone has nothing to do with the success in the competitive sports. Most of the games demand a greater amount of speed, strength, endurance, flexibility, coordination and maximum fitness of the organism.\textsuperscript{18}

Football is the most popular and most attended spectacular game in the world. It is not merely a game; it is a part of one’s life. It is a vigorous, fast and skilled game for the well conditioned sportsmen, who must possess strength, speed, agility, balance, flexibility, endurance, coordination and many other undefined qualities required for dribbling, kicking, passing and shooting at the goal. For playing better football, physical fitness is needed, but there is need for good height and weight that constitute good strength.

In the modern game of football a team may be defending with 6, 7 and 8 players at one time and then setting up counter attack with 4, 5, and 6 players the next time. The modern systems expect that the midfielder player to have exceptional stamina with high skill. The defender must be possessed with a


dense of great anticipation for tackling an opponent. The attackers should have
the quality to penetrate and dodge the defenders with a great control for shooting
at goal.

Football game has two main systems namely the defense zone system and
the man for man system. The zone plays calls for each player to guard a definite
area. Any opponent who enters this particular area, with or without the ball,
becomes his responsibility. The zone play requires a high degree of
understanding between the defenders. This is especially so when attacking
players pass from one zone to another. The zone system reverts to man for man
in the penalty area, where the vast majority of goals are scored. The nearer the
goal the tighter must be the guarding. However when the defenders are out
numbered, the defenders cannot guard man-for-men. Even then, the man with
the ball can be closely guarded in many cases.

Man-for-man guarding calls for a players to follow his assigned opponent
whenever he goes in the field of play. This is as per the strict interpretation of
man-for-man guarding. Well organized teams will place a tighter guard on the
opponent in possession of the ball, while continuing to play under zone system
with the remaining defenders, who, in turn, will place defensive cover on the
non-ball side(s). In essence, a degree of man-to-man defence is mixed with zone
defence system.\textsuperscript{19}

In the modern game, it is imperative that the midfield players work as unit
and cover as much ground as possible. To achieve this, dual defensive and
attacking functions the players must strike a sensible midfield balance. Since

\textsuperscript{19} Bobby Moffat. \textit{Intermediate Soccer.} Mountain View, Anderson World, Inc., 1982,
Pp.44-45.
some midfielders attack more than others, they must aim at a high percentage of completed passes, besides a good amount of attacking runs (often without the ball) and shoot at goal. The others who are not so adept at going forward, they should compensate through defensive availability. An optimum mixture of both attacking and defensive midfielders is beneficial for the team.20

Attacking play, like soccer, has witnessed tremendous change in the last few decades. The attacker does not passively wait at the up field for the ball to come for him to score goal, he has to create openings for his team mates. He has a defend when necessary, as well as score goals. By all definition the modern striker is for more of a team player than in years past, which is good because the work load becomes more evenly distributed.21

The score goal, the team in possession must seek to advance toward (attack) their opponent’s goal with the ball. Advancement without penetration, however, is usually in effective, because the attacking team fails to pressure their opponents by getting man or the ball behind defenders, thereby attempting to take them out of immediate play.22

Penetration with the ball is an important aspect of the game that every team must work at. Without penetration, a team becomes fairly easy to guard, because the ball will usually be played in front of the opposition defenders, enabling them to easily see the man and the ball in front of their goal. They are

21Ibid., P.86.
22Ibid.
not turned and pass in front of them offer time for defensive organizations and consolidation. But penetration is not easily obtained.\textsuperscript{23}

Unfortunately Indians still believe in magic formulas for transforming limited trained (technically as well as tactically) players into World class champions. This limitation can only be reached through proper selection of players and research findings.

Football is a fast moving field game involving players of varying body types. It requires a unique mix of physical, mental and technical skills. The success or failure of an individual athlete/player depends on the blending of physical ability, conditioning, training mental preparation and the ability to perform well under pressure.\textsuperscript{24} Athlete for superior performance in any sport is selected on the basis of his physical fitness, anthropometric measurements which have proved to be appropriate for high performance in the given sports (Tanner 1964).\textsuperscript{25}

Speed and agility have already been seen as two of the most important and differentiating performance related physical fitness components for soccer play, but it is ball control however, that is the most defining characteristic.

Wilmore\textsuperscript{26} defined agility as the ability to change movement direction, and constitutes a conjunction of sprint, strength, stability and coordination factors. “Flexibility is often said to be one of the most crucial components of

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physical fitness, as a sufficient degree of flexibility is required to prevent injury, as tight muscles may predispose an athlete to muscle sprains and tendon injuries.”

The existing literature in the field of football shows that speed, agility, flexibility, coordination, reaction time are important prerequisites for efficient football performance, whereas excess body fat proves to be a hindrance. Performance in physical activity of sports not only demands systematic training to develop physical and physiological variables but also demands training and consideration of psychological characteristics for success in this field. The success or failure of an individual athlete depends on the blending of physical ability, conditioning, training mental preparation and the ability to perform well under pressure. On the other hand it has also been said that highly extensible muscles, which do not possess the necessary coordination and stability, may lead to joint dislocations and ligamentous sprains.

Game Performance

Football is all about high speed and precise, quick passing and one of the more high octane sports at the Olympics. The key to success lies in players working together at high speed to move the ball up the court and they do so much quicker. In this study, the dribbling, kicking, stopping, tactics, supporting,
passing abilities, positional play in defence, control, past and present achievement, general behaviour were used.

Every one is eager to know about the future well in advance. Hence prediction plays a key role in the day-to-day affairs. The perfection in the prediction makes vast changes in the life style of many individuals in the outcome of their engagements.

Florene Phipps considers a quick, alert, well-coordinated athlete with stamina fit player to master the various complex skills and playing conditions of volleyball players.\(^{31}\)

Measurement of performance has two alternative procedures namely skill testing through stimulated test items and rating of ability by judges in actual game situation. Though ideally the rating of playing ability provides a more comprehensive and accurate measure. Practical problems of getting qualified judges and lack of uniformity in different situations prelude wide use of this method. Skill testing through stimulated items on the other hand can be standardized in earlier and provides objective measures of playing ability. Need for validating such skill tests against a sound criterion is usually and quite successfully met by using coaches. Rating of playing ability or tournament raking or game performance as the criterion, essential features of a good sports skill test include a minimum acceptable reliability, case of administration, stimulation of game situations, case of accuracy of shooting and provision too diagnostic interpretation of test results.

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Prediction can be defined as the act of foretelling about the future and present. As the educationist and the economist predict certain things in their respective fields a person involved in sports and games also can predict the possible outcomes. Prediction are obviously sound if they prove to be correct one of the most important fruits of scientific investigation and one of the most exacting tests of any hypothesis is the provision, it makes for predictions. Prediction statistically oriented investigators make how they do not blind themselves to their failures but bring them clearly into the sight. As an educationist and an economist predict certain things in their respective fields a person involved very much in sports and games also predicts the possible outcomes in sports and games. The coach is in a way competent person to do the predictions about the outcomes of the match to be played in future. This can be well observed in the selection of players based on their performance to meet the future emergencies in a play ground. A coach is actually exploiting the inherent abilities dormant in individual players.

Prediction and explanation of scientific factors can be justified as the most important aspect of applied researches. Prediction of an event that is to take place or prediction at top-level players can be determined accurately to a greater extent by taking a number of measures in various skills and parameters specific to a particular game. One way in which tests have been used with increasing frequency is as predictions of various aspects of motor behaviors. For many years coaches have been interested in tests to predict success in their sport. In some instances the prediction involved Olympic athletics, other efforts were directed to the college athletes. Efforts have also been directed to predicting long-term involvement in physical activity. In exercise physiology, scores on a
fitness test might be used to estimate maximal oxygen uptake. The percentage at one’s body that can be predicted using indicators such as skin fold thickness tests. These are merely ten examples at the widespread use at tests as predictors in physical education and exercise science.

Relationship can be used for the purpose of evaluation, a sportsperson’s future success in a specific area or skill can be predicted using proper evaluation. The present status in a particular skill area is used to predict future success in that same area participates in various aspects can be advised into activities in which they have the greatest chance of success through prediction.

The investigator reviewed a number of scientific articles, books, journals and found that selected anthropometrical, psychological and physical fitness variables play dominant role of the game performance of the football players. It was the matter of interest to find out the relationship of game performance of the university football players with selected anthropometric, psychological and physical fitness variables and to find out the significant differences on the selected Anthropometrical, Psychological, Physical Fitness and Game Performance Variables of football players at different play positions. The investigator also intended to find out the predictive correlates of game performance of football players.

1.2 STATEMENT OF PROBLEM

The statement of the problem selected for the present study was as follows:

“Relationship of Selected Anthropometrical, Psychological and Physical Fitness Variables with the Performance of Football Players.”
1.3 **DELIMITATIONS**

The study was delimited in the following ways:

1. The study was delimited to the male football players only.

2. The study was delimited to 165 subjects from Eleven Universities of Karnataka state who have represented at South Zone Inter-University Football Tournament, 2011-12 organized by University of Kerala, Thiruvanthapuram held on October 2\textsuperscript{nd} to 7\textsuperscript{th} October 2012.

3. Further, the study was delimited to the South Zone Inter-University Football Players of
   
   1. Agricultural University, Dharwad;
   2. Bangalore University;
   3. Davangere University;
   4. GKVK University, Bangalore;
   5. Karnataka University;
   6. Kuvempu University;
   7. Mangalore University;
   8. RGUHS, Bangalore;
   9. Tumkur University;
   10. University of Mysore and
   11. VTU, Belgaum.

4. The subjects selected were in the age group between 18 and 25 years.
5. The study was conducted on the selected anthropometrical variables, namely, Standing Height, Body Weight, Arm Length, Leg Length, Calf and Thigh girth.

6. The study was delimited to psychological variables namely Sports Achievement Motivation, Aggression and Self Confidence

7. The study was limited the term ‘physical variables’ to import bodily characteristics including fitness variables essential for football players, namely, Speed, Agility, Leg Explosive Power, Muscular Strength, Flexibility and Cardiovascular Endurance.

8. The football game performance was determined subjectively by coaches 10 point rating scale (dribbling ability, kicking ability, stopping ability, tactics, supporting ability, passing ability, positional play in defense, control, past & present achievement and general behaviour)

1.4 LIMITATIONS

Food habits, motivational factors, fitness levels of the subjects were not taken into consideration. The geographical region to which the subjects belonged may have an effect on the result of the study, which could not be controlled. This study is limited in the following aspects and these limitations have to be taken into considerations.

1. The subjects were from different social, cultural and economical status which was taken as a limitation for this study.

2. Heredity and Environmental factors which contribute to performance have not been controlled.
3. No effect would be made either to control or to assess the quality of the food ingested, life style, effect of metabolic functions as these are recognized as a limitations for this study.

4. No other motivational techniques were followed to assess selected physical, psychological and performance variables.

5. The influence of different modes of training programme of football players and their influence could not be considered.

1.5 HYPOTHESES

Keeping in mind the statement of the problem the following hypotheses were formulated.

1. It was hypothesized that there was no significant relationship between selected anthropometrical measurements of different University football players with game performance.

2. It was also hypothesized that there was no significant relationship between selected psychological variables of different University football players with game performance.

3. It was further hypothesized that there was no significant relationship between selected Physical Fitness of different University football players with performance.

4. It was further hypothesized that there was no significant differences on the selected Anthropometrical, Psychological, Physical Fitness variables and Game Performance Variables of football players at different play positions (Defenders, Midfielders and Attackers).
5. It was hypothesized that football game performance of the football players cannot be predicted successfully from the selected anthropometrical, psychological and physical fitness variables.

1.6 SIGNIFICANCE OF THE STUDY

In the recent years physical educators, coaches, sports experts and even most of the players have realized the importance of game performance. The significance of the study is based on the fact that game performance can be predicted from selected anthropometric, psychological and physical fitness variables.

1. The findings of the study may add to the existing knowledge in the area of physical education and sports which will greatly benefit the physical education teachers and coaches.

2. The findings of the study may be used as a measure for determining game performance of football players.

3. The findings of the study will help to compare anthropometrical, psychological and physical fitness of football players in relation to different positional play.

4. The study will help to critically examine the selected anthropometrical, psychological and physical fitness variables of different football players, who plays at different positions.

5. The findings of this study might act as guide to the coaches, experts to select the young stars who will be more suited or competent towards the particular position to play in football.
6. This study will help to evaluate and compare the abilities and capacities of the football players by themselves, coaches and physical educators.
7. The result and findings of this study would provide criteria for selecting potential football players.
8. This study might be utilized as a screening instrument in analyzing and classifying the football players.
9. The outcome of the results shall be helpful to football coaches and physical educationists to concentrate at the selected predicted variables of this study, which might be having high correlation with performance, to design the training programme.
10. The result of the study would be making it clear whether the selected predictor variables are directly or indirectly related to the criterion variable.
11. The result and findings of this study, may guide football players on their playing ability.
12. This study will help the budding researchers to take up similar studies in other areas and disciplines.

1.7 DEFINITION OF THE TERMS

Football

Football refers to a number of sports that involve, to varying degrees, kicking a ball with the foot to score a goal. The most popular of these sports worldwide is association football, more commonly known as just "football" or
‘soccer’. Football is a game, played under terms of 11 players on a side and using a round leather/synthetic football.\textsuperscript{32}

**Relationship**

Relationship is estimating one variable score to another variable based on the persons score on one or more of other measures.\textsuperscript{33}

**Anthropometry**

Anthropometry is the science of measuring the human body and it’s parts. It is used as an aid to the study of human evaluation and variations. According to Philips and Hornok the measurement of the structure and proportion of the body is called anthropometry.\textsuperscript{34}

**Psychology**

Psychology is the science of the activities of an individual in relation to his environment.\textsuperscript{35}

**Aggression**

Accidental harm is not aggression, but acts that are intended to injure others are aggression, whether or not they are successful.\textsuperscript{36}


Self Confidence

Self confidence is the belief that one can successfully perform a desired behaviour. The desired behaviour might be kicking a soccer goal, staying in an exercise regime, recovering from a knee injury, serving an ace. But the common factor is that one believes that he will get the job done.\textsuperscript{37}

Achievement Motivation

Achievement motivation refers to the tendency to strive to achieve and excel in whatever challenge that is presented. and Sports Achievement Motivation is defined as the tendency to strive to achieve and excel in particular game or sport.\textsuperscript{38}

Physical Fitness

Physical fitness is the utilization of excessive calories by a cardiovascular and muscular process bringing the body to optimum efficiency.\textsuperscript{39}

Speed

Speed may be defined as the capacity of an individual to perform successive movements of the same pattern at the fastest rate.\textsuperscript{40}

Agility

Agility is the ability to change directions quickly and control body movement.\textsuperscript{41}

\textsuperscript{38} Ibid.
\textsuperscript{40} www.freeonlinedictionary.com
Explosive Power

It is the capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed.\(^42\)

Muscular Strength

The force that a muscle or group of muscle can get exert against a resistance in one maximal effort. Strength is the ability to overcome resistance or to act against resistance. Strength should not be considered a product of only muscle contractions. It is in fact, a product of voluntary muscle contractions caused by the neuromuscular system.\(^43\)

Strength is the capacity of the individual to bring into play maximum muscle contraction at the fastest rate of speed.\(^44\)

Flexibility

Flexibility is the capacity of the body to move freely through the full range of extension and flexion at the joints without undue restriction.\(^45\)

Cardiovascular Endurance

Endurance is basic in measuring organic capacity believing that if one is able to run or swim more than normal distance without undue fatigue he is in good physical condition. Endurance is the capacity to persist in strenuous tasks

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for some length of time. The capacity to work under strain for a long period of time without undue fatigue\textsuperscript{46}

Cardiovascular Endurance is the ability of the heart, blood vessels, blood and respiratory system to supply oxygen and fuel to the muscles at a steady rate for a considerable length of time.

**Game Performance**

Game performance is the ability of an athlete by an individual, which can be observed the total playing ability during the game situation.

Football game performance served as the criterion and was measured by the judge’s ratings of three experienced experts based on selected football skills and strategies. Judge’s rating of playing ability refers to the marks awarded to players on the basis of their demonstrated ability during the actual game of football. In the present study the marks given by three judges were averaged to get the final ratings.

The coach’s objective rating of a player’s level of development in performance skills required for all areas of forward match play. The performance criteria consists of a number of cognitive, tactical, and motor skill criteria, specific to principle areas of match play including dribbling, kicking, stopping, tactics, supporting, passing abilities, positional play in defense, control, past & present achievement and general behaviour.