CHAPTER - I

INTRODUCTION

Sport and athletes have always been subjects for art. In early Greek Culture, where sport was so fundamental to social life, artists often used athletes as subjects, creating sculpture and decorating vases with athletes in action. Throughout history, artists have been intrigued by the physical beauty of the athletic body and the visual beauty of the athletic performance. Sport became the object for intellectual analysis and investigation during this century.

Sport is intimate, profound and even spiritual. It reached the root of human existence and, as such, provided an area for the discovery of personal truth. Neither man alone nor did sport alone provide the completeness by existence. Sports and men, revealed to each other the opportunity of determining meaning. In this way, once again, man located a realm of value formation. It was a source of worth and meaning.
Sport and games involve competition. Without competition, there is no game. Competition provides a forum within which people strive to become competent, to become excellent. The opportunities for rivalry within sport are many and varied: team against team, individual against individual, individual against a record, individual now against a previous best performance, individual against a physical barrier. Competition involves individuals and groups striving for excellence within the rules and traditions that make up a sport, including all the festival characteristics that give the sport additional flavor and meaning (Siedentop, 1998).

The entire sphere of sport, its structure and dynamics, is a reflection of the society in which it exists. Sport in general, and sport activities in particular, are the creations of people interacting with one another. Sport is influenced by the society and the ways in which the people in sport, especially athlete, are “naturally” supported or victimized by their involvement. Sport can have both positive and negative effects on participants, but it also calls attention to the possibility that people define and create sport in their lives and that sport can be defined and created in ways that actually stand in opposition to society as a whole (Coakley, 1986).
Sport competition is viewed in terms of the extent to which it prepares people for successfully handling the rest of their lives. It is concluded that people are most likely to learn valuable lessons from their experiences in sport competition when sport is not used as a metaphor for life. An emphasis on the life preparation functions of sport often interferes with experiencing the competition in sport in a form that can lead to learning and self-discovery.

Sports participation and appreciation have become integral part of life. Competitive sports make tremendous demands on the physical conditioning, virtually, endurance and mental power of the participants. Only the finest can play to the best of their abilities. Each sport has its own pattern, muscle load, tempo and duration. Today the people of every country are more concerned with physical fitness than ever before as it has become the vital part of winning sports competition.

The game Soccer is one of the most interesting and strenuous games. Soccer at any level is a thrilling game enjoyed by players of all ages. It is one of the fastest field sports being played on a 120/80 yards rectangular play field. The game of Soccer is played ninety minutes with an interval of fifteen minutes.
Soccer is a game which calls for strenuous, continuous, thrilling action and therefore appeals to the youth of the world. It is one of the world’s most popular games comprising of two teams trying to kick or head a ball to opposing goals (Pick, 1952).

Soccer is a game of physical and mental challenges. You must execute skilled movements under generalized conditions of restricted space, limited time, physical and mental fatigue, and opposing players. You must be able to run many miles during a game, mostly at sprint like speed and respond quickly to a variety of rapidly changing situations during play. Finally, you need a thorough understanding of an individual, group and team tactics. Your ability to meet all these challenges determines how well you perform on the soccer field (Luxbacher, 1996).

The skills involved in the game are simple, natural and yet are highly stimulating and satisfying to anyone who participates in the game (Thomas, 1964).

Soccer as it is seen today has undergone a tremendous improvement since its birth. Of all the events in human history the one to attract the largest audience was neither a great political occasion nor a special celebration of some complex achievements in art or science, but simple ball game a soccer match. If we examine it more carefully we would soon realize, that
each soccer match is a symbolic event of some complexity. One of the greatest strengths of the game is its simplicity. At its crudest level all that are needed is a ball and an open space with something to act as a goal post. No other sport is so easily available and so immediately inspiring (Morris, 1981).

The true origin of the game of soccer is shrouded in mystery. Many countries claim that this game has been played in their countries from the very ancient times. There is evidence that football game was played in both Babylon and Egypt. When the various English public schools, all playing their own different codes, eventually formulated a unified set of rules, splitting with the handling devotees who went on to Rugby. But speculation on the origin of the game can be protracted indefinitely.

When Edward II was the king, Football was popular in London, but unpopular with merchants, because their windows were broken and with parents of some those who were hurt, playing the game. It was primitive, rough and almost a brutal game and in 1314 things were so bad that Edward II banned the game. Tremendous popularity among the people kept the game alive and it survived the edicts of a series of kings and queens and remained the favorite sport of both the people and soldiers of England. From the beginning of the 17th century several new
types of football game were played which were not as rough as the original game. These developed into Rugby and at about 1870 association football which is also known as soccer came into picture (Grombach, 1963).

Soccer, the most attractive and popular game in the world is certainly not a sort of fashionable sport which comes today and is gone tomorrow. It has been played in some form or the other for centuries. “TUSCHU”, a game similar to soccer was played in China as far back as the 3rd and 4th centuries B.C. Modern soccer, however, has evolved from England where one of the earliest references to the game was a royal proclamation, beginning the game in the city of London in 1314. The game was standardized in 1863. With the formation of Football Association and the present concept of eleven players to a team was arrived at in 1870 (Puri and Swamy, 1992).

The ancient Greeks played a game called “Epicures” which seem to have borne a strong resemblance to what we now call Rugby. Historians speculate that this Greek game was taken over by the Romans after they conquered the Greeks, just as the Romans appropriated much of Greek culture.
What we don’t know is that, whether soccer was brought to England or arose there spontaneously as it had elsewhere. England was the womb of our modern game. In 1314 Edward II had proclaimed the prohibition of a game which made “a great noise in the city caused by hustling over large balls”. By 1349 Edward III’s dislike of this activity was such that he threatened to put in prison, as punishment, those who engaged in it. The historical records on this subject are detailed so that they are not very useful, so that we don't know precisely what this game of “football” was like.

There is also a version that this game started in the 11th century. When a few laborers excavating the ground near a battle field found a skull of a dead soldier which was believed to be that of a dancer, their dead enemy, they kicked it to and fro for ventilating their utter hatred towards dance. This was imitated by the boys who later on substituted an inflated cow bladder for the skull, and thus the basic principle of football had its genesis.

Whatever may be the authenticity of the origin of this game, it is evident that this game was nurtured and promoted in Britain. Even from the 12th century onwards the young men of London used to go to the country green to play football. Further Shrine Tuesday was considered to be an important day when the game
was played all over England. The number of players was ultimate and the goals were even a few miles apart. The ball could be handled, kicked, carried or even hit. The game was dangerous to life, limb and property. Because of its rough nature and the resultant breach of peace, the rulers of England and Scotland passed laws forbidding this game. As the game was very popular with the masses, it survived in spite of repressive laws.

Soccer was an upper class activity, a game for gentlemen until 1882. During the same period soccer was spreading a British export, throughout the world. Britain’s worldwide influence was then perhaps at its all time zenith. British navy ruled the seas; its merchant marine dominated international trade routes; and its colonial empire embraced vast areas in all parts of the world. No one was forced to play soccer, but millions of people took to the game, because they were attracted to it on a level beyond words. By 1904 soccer was sufficiently entrenched internationally to give rise to the formation of Federation International de Football Association (FIFA) at a meeting in Paris. The purpose of FIFA was to standardize and control the rules of soccer all over the world and to this day FIFA remains the pre-eminent world governing body of soccer. Under this organization the world cup soccer was started. The game of soccer was introduced in Olympics in the year 1900.
Soccer is perhaps India’s oldest favourite sport. It is played widely all over the country and is as popular in India as it is Europe and Latin America. The game soccer was introduced in India during 1880 by the British who ruled over India. The sport became popular first in Bengal before it spread to other parts of the country. The Christian Missionaries started many educational institutions in India. The Indian players got the opportunity to learn soccer through these institutions. This was the milestone for spreading soccer to the nook and corner of India. The military officers, priests and teachers contributed much to the promotion, growth and development of soccer in India.

“Many sports are highly dependent upon the body’s ability to uptake and metabolism oxygen infects it is often the singular most important factor in deciding the quality of the performance…. Elite level (athletes) are generally chasing after only very small potential increases....” Whereas newcomers to sports are able to significantly increase their VO2 max with training. By the time athletes have reached the elite level they are generally chasing after only very small potential increases each season. It seems that genetics’ has a lot to do with “ceiling”. Hypoxic training has the ability to literally raise this ceiling and provide improvements that would traditionally take years to obtain, if they ever could.
The use of oxygen-depleted air for training, physical improvement and curing illness is not new. Esculapius, the “blameless physician” of Greek myth and father of hygiene, was said to have built his healing temple on the mountains. Indians prepared their future chiefs in a hypoxic environment to make them stronger than their peers. Highland natives like those of the Caucasus Mountains are famed for living far beyond 100 years.

The study of Hypoxic capacity has covered such matters as the exchange of gases in the lungs during breath holding, the effects of hyper ventilation and oxygen inhalation on breath holding time and inter relation of barometric pressure and breath holding ability.

Councilman (1984) states that track athletes of Czechoslovakia, East Germany and United States of America have used hypoxic training in the patterns such as inhale for six steps. Breath holding for longer duration during or after the activity according to him is not of much value.

Hypoxic studies have shown that when exposed to a hypoxic environment over a period of time, organism gradually becomes acclimatized to a lower partial pressure (PO₂) through five means:
1. Increased pulmonary ventilation

2. Increased hemoglobin in the blood

3. Increased diffusing capacity of the lungs.

4. Increased vascularity of the tissues.

5. Increased ability of the cells to utilize oxygen despite the low PO$_2$.

The rate of pulmonary ventilation ordinarily does not increase significantly until one has ascended to about 8000 feet (Guyton, 1985). At this height the arterial oxygen saturation has falls to approximately 93 percent, at which level chemo receptors respond significantly. Above 8000 feet the chemo receptors stimulating mechanism progressively increases the ventilation until one reaches approximately 16,000 to 20,000 feet, at which the ventilation reaches a maximum of approximately 65 percent above normal if the person is exposed only acutely to the high altitude (but several days of exposure increases ventilation about 3000 percent...).

Hypoxic (low-oxygen) workout makes the oxygen delivery system more efficient, increasing the strength and endurance up to 40 percent (Guyton, 1990).
Specific muscles exercised in the HRS gain improved oxygen delivery for extra power and endurance. Hypoxic training can cut your valuable workout time by up to 50 percent.

HRS air raids the air of bacteria, ozone and other oxidizing agents, providing a clean, fresh and healthy environment (especially for urban dwellers).

Dieters: the HRS to burn fat calories faster.

The HRS doesn’t dehydrate like mountain air does.

Hypoxic training increases lung volume and RBC count, adding to overall health. It boosts the immune system in the fight against cardiovascular and pulmonary diseases and other afflictions.

The ancient Indian science of Yoga makes use of voluntary regulation of the breathing to make respiration rhythmic, and to calm the mind. This practice is called Pranayama. Some varieties of Pranayama require the practitioner to inhale and exhale through one nostril selectively. These Yogic practices provide an opportunity to study the effects of selective nostril breathing carried on effortlessly for prolonged periods. When each respiratory cycle is completed through the right nostril exclusively, the practice is called Surya Anuloma Viloma Pranayama, which means ‘heat generating breathing practice’,
and when completed through the left nostril alone, the practice is called Chandra Anuloma Viloma pranayama, which means a ‘heat dissipating or cooling breathing practice’. In Nadisuddhi Pranayama (which means ‘purification of subtle energy paths’), inhalation and exhalation are through alternate nostrils for successive respiratory cycles. These names were given based on the subjective experiences of the ancient sages.

Pranayama means control of breath and it involves three main phases / it is much more important to keep strength. These are best practised in the early hours of the morning or after sunset. During Pranayama practice make use of the diaphragm fully by drawing into the lowest and largest part of the lungs due to the regular practice of the Pranayama.

Breathing is so simple and so obvious that we often take it for granted ignoring the power it has to affect body, mind and spirit. With each inhale we bring oxygen into the body and spark the transformation of nutrients into fuel. Each exhale purges the body of carbon dioxide, a toxic waste. Breathing also affects our state of mind. It can make us excited or calm, tense or relaxed. It can make our thinking confused or clear. What is more, in the yogic tradition, air is the primary source of prana or life force, a psycho-physio-spiritual force that permeates the universe.
Pranayama is a Sanskrit word meaning "restraint of the prana or breath". The word is composed of two Sanskrit words, Prana, life force, or vital energy, particularly, the breath, and "ayama", to suspend or restrain. It is often translated as control of the life force (prana).

Pranayama is loosely translated as prana or breath control. The ancient yogis developed many breathing techniques to maximize the benefits of prana. Pranayama is used in yoga as a separate practice to help clear and cleanse the body and the mind. It is also used in the preparation for meditation, and in asana, the practice of postures, to help maximize the benefits of the practice, and focus the mind.

Prana is a subtle invisible force. It is the life-force that pervades the body. It is the connecting link between the body and the mind. The body and the mind have no direct connection. They are connected through Prana only and this Prana is different from the breathing in once physical body.

During breathing for Pranayama inhalation (puraka) stimulates the system and fills the lungs with fresh air; retention (kumbhaka) raises the internal temperature and plays an important part in increasing the absorption of oxygen; exhalation
(rechaka) causes the diaphragm to return to the original position and air full of toxins and impurities is forced out by the contraction of inter-costal muscles. These are the main components leading to Pranayama which massage the abdominal muscles and tone up the working of various organs of the body. Due to the proper functions of these organs, vital energy flows to all the systems. The success of Pranayama depends on proper ratios being maintained between inhalation, exhalation and retention.

Patanjali (sage and yogi of yore) has said that one develops concentration and clarity of thought by practising Pranayama. It helps in increasing the mental and physical powers of endurance. It is the path to deeper relaxation and meditation and is a scientific method of controlling breath. It provides complete relaxation to the nervous system. It provides relief from pain caused by the compression of nerve endings. It helps in increasing oxygen supply to the brain which in turn helps controlling the mind.

Pranayama works as the basis for spiritual awakening in yoga. Although this is the supreme aim, Pranayama brings about tremendous benefits along the way such as increased energy, increased perception and development of various brain faculties.
To most, control of breath is Pranayama. However, this is a result of wrong interpretation. For a right interpretation, it must be understood that 'prana' is an energy or life force that is universal in nature - it is omnipresent. A portion of that prana is also present in the human body. It flows at a superficial level to maintain the body and its organs. The goal of Pranayama is to increase the quantum of this life force (Prana) so that it can reach out to 'hidden' recesses of the brain. This helps in expanding the human faculties and retarding degeneration.

All the life force or Prana lies as dormant potential energy called the 'pranashakti' or 'kundalini'. It resides at a center which is found just above the genital area, called the 'mooladhara chakra'.

According to yoga, this prana flows from the base 'mooladhara' center up along the right side of the spinal column into the center which lies at the top of the spinal column. This center is called the 'Ajna Chakra'. The prana also gets distributed to the whole body through a different set of nerve channels so that it reaches every atom of the body. This is how prana operates in the normal body and the scope of Pranayama is to extend this influence beyond the physical body.
Modern science has divided the brain into three parts: the new brain, the middle brain and the primitive brain. According to yoga, the primitive brain forms nine out of ten parts of the brain. These parts are 'silent' and unexplored. The next phase of evolution will see the development of these parts and Pranayama helps achieve that.

Pranayama helps create a greater quantum of prana and also purifies the channels that will carry this increased prana to these 'silent' areas of the brain. It is very important that the channels be purified first to cope with the increased energy created by Pranayama.

When this fantastic amount of energy is created it flows from the mooladhara through the right side of the spinal column (pingala nadi) and up to the Ajna Chakra. From here it flows into the silent areas of the brain. These are the little known brain areas that house 'mysterious' faculties such as clairvoyance, intuition and expanded awareness (Singh and Singh, 2002).

Soccer is a ball passing and running game of an unpredictable and constantly changing pattern, demanding an awareness of other players and an ability to make quick decision and act upon them without delay. It consists of eleven players in
each team. The duration of play is ninety minutes and winning is decided by scoring maximum goals.

High performance in sports is the outcome of magnitude and the quality of motor movements. These motor movements require physical fitness, technique, tactics and physiological development of athletes. Physical fitness basically depends on the motor fitness components i.e. speed, strength, endurance, flexibility, co-ordinative abilities and buffer capacity, energy reserves and functional capacity of internal organs. Although the ratio differs from game to game, certain amount of all these qualities are the necessary prerequisites for any motor movement (Singh and Singh, 2002).

Almost all physical activities incorporate one or more of the elements of force, quickness, duration, and the range of motion. When a given exercise is required to overcome resistance it is called a strength exercise. When quickness and high frequency is maximized it is referred to as a speed exercise. If distance, duration or the number of repetitions is high, an endurance exercise is performed. On the other hand, if the range of motion is maximized, a flexibility movement is being performed and finally,
when in a given exercise a high degree of complexity is required. This is known as a coordination exercise. Some athletes are more capable than others of performing such exercises.

They are said to have "talent" for that type of activity. But this talent is largely genetic; it is inherited from one's family. Strength, speed, and endurance are inherited abilities which play the most important role in one's chances of reaching high levels of performance. Therefore they are called dominant motor or bio-motor abilities. The term "motor" refers to movement, whereas the prefix "bio" is added to illustrate the biological importance of these abilities (Bompa, 1996).

Motor ability is one of the important aspects for physical activities. A totally fit individual must have the motor ability. The components of motor ability are speed, endurance, explosive power, agility, co-ordination (Reaction time, Movement time, Flexibility), strength (Grip strength, Leg Strength, Shoulder Strength) etc., Motor ability reflects an individual’s present ability to perform motor skills. Sports activity being a physical activity is not possible without these motor qualities.
Motor ability has been defined as, “The present acquired innate ability to perform motor skills of general or fundamental nature exclusive of highly specialized sports or gymnastic techniques” (Bompa, 1999).

Motor ability reflects an individual present ability. The immediate state of the individual to perform in a wild range of motor skills. Motor ability is a general quality that can facilitate more specific performances.

Speed is largely determined by the muscles rate of force development or power. It is difficult to develop the highest level of speed without developing peak power. And also speed training helps to improve speed off the mark and acceleration. Moving limbs at maximum velocity requires motor neurons to be stimulated and fixed in co-ordinations and just at the right time.

Speed is a skill that must be taught. All young athletes have mechanical, postural and technical issues that must be fixed in order to unlock their speed potential. Pure speed training has broken it down into step-by-step process. Speed is the quickness of movement of a limb, whether it is the legs of a runner or the arm of the shot putter. Speed is an integral part of every sport and can be expressed as any one of, or combination of, the
following: maximum speed, elastic strength (power) and speed endurance.

The technique of sprinting must be rehearsed at slow speeds and then transferred to runs at maximum speed. The stimulation, excitation and correct firing order of the motor units, composed of a motor nerve (neuron) and the group of muscles that it supplies, makes it possible for high frequency movements to occur. The whole process is not totally clear but the complex coordination and timing of the motor units and muscles most certainly must be rehearsed at high speeds to implant the correct patterns.

Explosive strength (or) power is seen in quick movement when body weight is propelled either upward (or) forward; it is characterized by one short burst of energy and is seen in such tests as the standing long jump and vertical jump. It has been known for a long time that the amount of energy transformed in muscular exercise is proportional to the oxygen consumption.

Elastic strength training develops the nervous system so that it will react with maximum speed to the lengthening of the muscle. In turn, it will develop the ability to shorten (contract) rapidly and with maximum force. (Bompa, 1999).
Heart and Stay (1977), have suggested that the better explosive power of a student helps him in better performance; explosive power is largely dependent upon the regulatory process of the neuromuscular system and these processes are best trainable before the age of puberty.

Cardiovascular fitness is a special form of muscular endurance. It is the efficiency of the heart, lungs, and vascular system in delivering oxygen to the working muscle tissues so that prolonged physical work can be maintained. A person’s ability to deliver oxygen to the working muscles is affected by many physiological parameters, including heart rate, stroke volume, cardiac output, and maximal oxygen consumption.

Understanding the relationship between cardio respiratory endurance training and other categories of conditioning requires a review of changes that occur with increased aerobic or anaerobic capacity. A aerobic/anaerobic capacity increases, general metabolism rises, muscle metabolism is enhanced, hemoglobin rises, buffers in the bloodstream increase, venous return is improved, stroke volume is improved, and the blood bed acquires greater ability to adapt readily to varying demands. Each of these results of cardiovascular fitness/cardio respiratory conditioning will have a direct positive effect on muscular endurance, and an
indirect effect on strength and flexibility. (This discussion on the physiological effects of cardiovascular fitness has been very brief. For a more complete explanation, please turn to the literature related to exercise physiology).

Agility, a motor fitness variable chosen for the study may be explained as the physical ability which enables an individual to rapidly change body position and direction in a precise manner. Agility is another important component of motor fitness test. Variable performance in shuttle run reveals the agility of an individual (KaKushkiun, 1983).

Dribbling is the act of a player with beating the ball or going past another player. Despite the rationalization of the game at large, with the emphasis on defensive tactics, more logically because of it, it remains the most thrilling and fulfilling aspect of the game.

Today, with the higher degree of organization in the game, the artist who can run at players and beat them stands out more than he ever did. Not only has the nature of his undertaking become more complex but it has become more valuable also.

The excitement in dribbling stems from the incessant variety of techniques a player can use to achieve his aim. It is only the most skillful players who can use it to achieve his aim. It is only
the most skilful player who can dribble effectively and upon up defenses. Players throughout the ages have always had a dribble identity, a personal group of characteristics as distinguishable as the nose or the chin on their faces.

Ironically, although the number of great dribblers may have diminished, the art of dribbling is more familiar one to a wider variety of players. With total football and the involvement of all players is a greater responsibility, every player in the team at some time or other calls upon the skill either to get out of trouble or to get into forward positions.

The fullback or even central defender running with the ball and beating players is a familiar sight, whereas in by gone years such positions had a more functional responsibility accompanied by greater territorial restrictions.

The foundation of all good dribbling techniques is the ability to run with the ball. At first, this seems a simple process which most players should master quite easily in the early days of their career. But this is not quite so. There is more to running with the ball than meets the eye.

Passing is the essential mobility of football. Without it the game becomes a dislocated series of which occurs in different areas of the field because people have run to ball there.
The shape, the fluency and the continuity of the game depend on good passing. It is easy to see the shape of football without good passing when we watch young sides that do not have the strength or the proficiency to move the ball from one player to another by means of good passing techniques.

In this context, the investigator made an attempt to find out the Effect of Hypoxic Training and Pranayama Practices on selected Bio-Motor Variables and Soccer Performances among College Soccer Players, such as Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Dribbling, Passing and Shooting of College men.

**STATEMENT OF THE PROBLEM**

The present study was designed to find out the Effect of Hypoxic Training and Pranayama Practices on selected Bio-Motor Variables and Soccer Performances among College Soccer Players, such as Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Soccer Dribbling, Passing and Shooting of College men.
HYPOTHESES

It has been scientifically accepted that any systematic training over a continuous period of time would lead to produce changes in human beings. Based on this concept, the following hypotheses were drawn:

1) There would be significant improvement on selected Bio-Motor related variables due to the effect of Hypoxic Training and Pranayama Practices.

2) There would be significant improvement on selected Soccer Performance related variables due to the effect of Hypoxic Training and Pranayama Practices.

3) There would be significant differences on the selected Bio-Motor related variables among the experimental groups.

4) There would be significant differences on the selected Soccer Performance related variables among the experimental groups.
DELIMITATIONS

1) To achieve the purpose of the study, forty five men students doing Under Graduate Degree course in Farook College, Calicut, Kerala, India, during the period 2007-2010 were selected as subjects.

2) The age of the subjects ranged from 18 to 21 years.

3) The subjects were divided at random into three groups of fifteen each (n=15). Group I underwent Hypoxic Training, Group II underwent Pranayama Practices and Group III acted as Control.

4) The Hypoxic training was restricted to 30 minutes continuous running with deep inhale and exhale of stride throughout the course of run.

5) The duration of the training period was restricted to twelve weeks and the number of sessions per week was confined to three.

6) The dependent variables Speed, Explosive Power, Cardio Respiratory Endurance, Agility, Soccer Dribbling, Passing and Shooting were selected for this study.

7) The selected criterion variables for the study were assessed by the following standardized test items: Speed was assessed by 50 Meters Run, Explosive
Power was assessed by Standing Broad Jump, Cardio Respiratory Endurance was assessed by Coopers 12 Minutes Run/Walk Test, Agility was assessed by Shuttle Run Test, Soccer Performance Skills such as Dribbling, Passing and Shooting were assessed by Warner test for soccer skills and Mor-Christian soccer test.

8) The data were collected prior to and immediately after twelve weeks of training.

**LIMITATIONS**

The following limitations were considered while interpreting the results of the study.

1) The previous experience of the subjects in the field of sports and games, which might influence the training and data, was not considered.

2) Psychological factors, food habits, rest period, life style etc., could not be controlled.

3) The weather conditions such as atmospheric temperature, humidity and meteorological factors during testing and training periods were also not considered.
4) Though the subjects were motivated verbally no attempt was made to differentiate the motivation levels during the period of training and testing.

DEFINITION OF OPERATIONAL TERMS

Training

Training is a pedagogical process, based on scientific principles, aiming at preparing sportsmen for higher performance in sports competitions (Singh, 1991).

Soccer

Soccer is a game in which there are eleven players a side one of whom shall be a goal keeper, the ball is round and is to be kicked through the goal posts under the crossbar and no handling of the ball is allowed except by goal keeper. (Barrow, et.al, 1988)

Hypoxic Training

Hypoxic means low oxygen workouts that make the oxygen delivery system more efficient, increasing the strength and endurance by up to 40 percent (Gyuton, 1990).
**Pranayama**

Pranayama means control of vital force (Prana) by concentration and regulated breathing.

**Speed**

It is ability to perform rapidly successive movements over a short period of time in a single direction *(Barrow, McGee and Tritschler, 1989).*

**Explosive Power**

It is the quality of a muscle to contract forcefully in the quickest possible time *(Dick, 1980).*

**Cardio Respiratory Endurance**

Cardio respiratory endurance is the ability to continue activities that tax the cardiac, circulatory and respiratory functions *(Franks and Deutsch, 1973).*

Endurance is the ability to do sports movements, with the desired quality and speed, under conditions of fatigue *(Singh, 1991)*

**Agility**

Agility is the ability to perform in a particular activity and change the direction in a quick manner *(Fresh, 1971).*
**Dribbling**

Dribbling is the art of trapping. The ball is forwarded with foot so that it remains close and within the control of the kicker.

**Passing**

Moving the ball from one player to another.

**Shooting**

Shooting is an essential part of offensive players to achieve the target. The main objective in football is to score goal. So shooting skill is required to drive the ball towards the target.

**SIGNIFICANCE OF THE STUDY**

1) The ultimate goal of research in Physical Education is to help coaches and physical educators train their athletes and players based on new concepts to improve their performance.

2) The study would add new knowledge in the area of sports Training.

3) The results of the study may be useful to the professional colleagues of Physical Education and Sports in the following ways:
i. To study the Effect Hypoxic Training and Pranayama Practices on Bio-Motor and Soccer Skill Performances related parameters.

4) The study would provide guidance to Physical Educators and Coaches in preparing training schedules.