CHAPTER I

INTRODUCTION

C. Coakley, (1978) Sports is an institution allied competition activity that involves vigorous physical exertion or the use of relatively complex physical skills by individual whose participation is motivated by a combination of intrinsic and extrinsic factors.

Brue L. Benneth, Maxel L. Howell and Vricesinri, (1983) viewed that Sports is an institutional physical activity in which the rules are fixed externally and before. It is conceded however, that the team sports is commonly used in its broad concept to embrace non-athletics, games, play, gymnastics and activities of an individual and team variety - both competitive and non competitive.

Sports and games have been part and parcel of culture and a reflection of a large macro system of the society within which the life exists. In an analysis of primitive societies, it was found that in the non-game culture which was more in number, the society was non competitive, but it was characterized by a low level of activity.
Physical Fitness

According to M.L. Kamalesh and Usha S. Nair, (1994). Physical Fitness - the central theme of physical education, precisely refers to that condition of the body which will provide the youngster to maintain good health, respond to physical effort and physical stress, enjoy the sensations of his or her own body and function at an optimal mental and physical level. (Loren, 1971). As a relative term, fitness has been studied at length by members of the physical education profession throughout the world (Phillips and Hornak, 1979). Despite endless dialogues and debates as to its definition and structure (Tancred, 1987) physical fitness is considered as an essential presentation for work and performance (Roy, 1971).

Beverly Nichols (1986) stated that Health related Physical Fitness is important to everyone and should be stressed by physical educationists and medical people alike. Health related fitness is defined as the ability to perform strenuous activity without excessive fatigue throwing evidence of traits that limit the risks of developing diseases and disorders, which affect a person's functional capacity. Components of health related physical fitness
are identified as muscular strength, endurance, flexibility, cardiorespiratory endurance and body composition.

Jerold S. Greenberg and David Pargnam, (1986) viewed that to enjoy an optimum state of health and physical fitness, exercises are quite necessary. Exercises are helpful in maintaining the sound body through out life. Health and fitness afford the people an opportunity to live longer and they add to the quality of every day life.

Ted A. Baumgartner and Andrew S. Jackson, (1987) stated that exercise is essential to maintain good health. For the past twenty years a great deal of evidence has been reported by the medical researches supporting the value of sufficient exercise for the promotion of health. Health related physical fitness components enrich one's health. Those components include cardio respiratory endurance, flexibility and body composition.

The World Book Encyclopedia (1993) stated that Exercise improves and promotes physical fitness, muscle tone, and body condition. Regular vigorous exercise also increases the efficiency and capacity of the heart and lungs and helps people maintain their
proper weight. Individuals who are physically fit tend to be slimmer than those who are unfit. They have greater resistance to diseases and recover faster if they do become ill. Physically fit people may be happier and more alert and relaxed. They may be able to resist the effects of aging better than those who are physically unfit.

Physical fitness is a personal responsibility. Most people are physically unfit simply because they do not get enough exercise. Most health experts agree that people should exercise at least three times a week to maintain desirable fitness.

**Muscular Strength and Endurance**

Muscular strength or more precisely, the maximum force or tension generated by a muscle (or muscle groups). In other words muscular stretch is the force that a muscle or muscle group can exert against a resistance in one maximal effort.

Muscle that function under no load, even if they are exercised for hours on end, increase in little in strength. At the other extreme, muscle that contract at more than 50% maximum force of
contraction will develop strength rapidly even if the contractors are performed only a few times each day.

A dynamic method of measuring muscular strength is used by one repetition maximum or 1 RM method. This refers to the maximum amount of weight lifted at one time with correct form during the performance of a predetermined weight lifting exercise. To test 1 RM for any particular muscle group (or) groups such as fore arm flexors, leg extensors or shoulders, a suitable starting weight is selected close to but below the subject maximum lifting capacity. If one repetition is completed, weight is added to the exercise device until maximum lift capacity is achieved. The weight increments are usually 5,2, and 1 Kg during the period of measurement. The 1 RM technique is usually used with barbells and dumbbells but can also be applied with most commercial exercise machines.

Along with the increase in strength an approximately equal percentage in muscle mass, which is called muscle hypertrophy decreases. In old age many people become so sedentary that these muscles atrophy tremendously. In these instances muscle training often increase muscle strength more than 100%. Most of
the muscle hypertrophy result from increased diameter of the muscle fibers rather than increased number of fiber but this probably is not entirely free because of very few greatly enhanced muscle fibers are believed to split down the middle along these entire length to form entirely new fibers. This increases the number of fibers slightly.

Muscular endurance is the ability of a muscle or muscle group to perform repeated contractions against a light (sub maximal) load for an extended period of time. A practical test for local muscular endurance is the maximum numbers of bent knee sit-ups a person can do.

A nation's true wealth lies not in its land and waters, not in its forests and mines, not in its flocks and hands, not in its dollars but in its healthy and happy men, women and children.

According to Miller W. Bon, (1943) Physical fitness is the organic condition which permits the individuals to skillfully utilize the body for activities involving strength, speed, velocity and endurance without mental experience of fatigue or exhaustion."
Stafford and Ray (1945) stated that, “the individual who is physically fit has a well proportionate and well developed body and his posture is usually good. He performs his activities with a high degree of motor proficiency”

Components of Physical Fitness

Many components contribute to physical fitness. The important components are:

1. Flexibility
2. Strength
3. Endurance
4. Agility
5. Explosive Power
6. Balance
7. Speed.
Flexibility

Thomas K. Cureton, (1941) viewed that Flexibility is the ability to execute a wide range of movement in the joints while for repetition of work done in natural speed. Flexibility is most important. Flexibility helps to move bodily parts easily, takes less time, energy to perform a task. Elasticity in muscle reduces tension and provides maximum length, thus yielding passive physical stretch.

Strength

Hans Kraus, (1963) stated that Strength helps the muscles to exert force to physical activity that could be performed without strength. When strength is less other life functions are handicapped. The functioning capacity of vital organs such as those of respiratory, circulatory and digestive systems depend upon the condition of voluntary muscles. Strength in hands helps to pull, push and to lift objects. Strength in legs helps to carry body weight and to carry extra burdens.
Agility

This factor was observed by tests, in which the subject must quickly change direction while running.

Philip M., (1949) stated that it is the ability to change direction of the body and its parts rapidly. Agility is a combination of several athletic traits. Agility, either general, or specific, can be improved by increasing the athletic components, which constitute it. Co-ordination involved in the specific movement is far more important than components of agility. If a person is poorly coordinated, he will lack agility regardless of the other traits he possesses.

Agility is an important physical fitness component, often stated as maneuverability or mobility. It is the ability to change the direction of the body and its parts rapidly. Agility is a combination of several athletic traits such as strength, reaction time, speed, movement, power and co-ordination. Its display becomes essential in such movements as dodging, zig zag running, stopping and starting and changing body positions rapidly. The agility was measured to the nearest 1/100th of a second.
Explosive Power

Donald K. Mathews (1963) defined that the capacity of the individual to release maximum force in the shortest period of time.

Endurance

Fall, T.L., and Bigbee, R. (1968) stated that Endurance is defined as the capacity to continue to work under strain for a longer period of time without undue fatigue.

Clayne R. Jenson and A. Grith Fisher, (1972) viewed that it is the ability to persist in strenuous activity. This definition, may apply to the body as a whole not to a particular body system or to a local area of the muscular system. Endurance is one of the basic components of general athletic ability and it is usually considered to be the most important component of physiological fitness. Some activities of which endurance is of prime importance are running, swimming, cycling, wrestling, basketball, handball, soccer, rugby and football. In all these activities endurance training occupies an important place in preparation for performance.
Balance

Balance has been defined as the "ability to maintain the equilibrium at rest and in motion."

Balance is a collective working of the nervous and muscular system while performing some movement that is largely dependent upon the neuro muscular system. Activities like skating, riding, skipping, dancing and may other skills need balance.

Speed

Speed is defined as "the ability to move the entire body rapidly from one place to another."

Speed of movements is highly specific to areas of the body. An individual with fast arm may have slow leg movements. For example in fact this specifically extends even to the type of task and the direction of movement. Running speed can be discussed in terms of two factors; rate of acceleration and maximal velocity.
Anaerobic Power

William D. Mc Ardle, (1991) viewed that all out exercises for up to two minutes duration is powered mainly by the immediate and short-term energy systems. Both systems operate anaerobically because their transfer of chemical energy does not require molecular oxygen. Generally there is greater reliance on anaerobic energy for fast movement or when there is a resistance to movement at a given speed. At the initiation of a movement performed at high speed the stored phosphates ATP and CP provide immediate energy for muscular contraction. After the first few seconds of movement an increasingly greater proportion of energy is generated by the short-term energy transfer reaction of glycolysis. As exercise continues beyond five minutes a greater demand is then placed on the aerobic metabolic pathways for purposes of ATP synthesis.

According to Lamb (1984), "Anaerobic power can be defined as the maximal rate at which energy can be produced or work can be done without a significant contribution of aerobic (intochardrial) energy production" (and was expressed as Kg per meters).
Meaning of Physiology

The meaning of human physiology is the study of body function. In physiology we study how our organs, systems, tissues, cells and molecules within cells work and how their functions are put together to maintain our internal environment.

In Physiology we study how different parts or organs of an organism work together to achieve a particular function. If we learn how the body functions normally, then we can understand what happens when organs function abnormally and we can take care of our body.

Physiological Variables

A number of physiological variables will improve in proportion to resistance training. Selected physiological variables were chosen for this study are body fat, resting heart rate and vital capacity.

Body Fat

William D. Mc Ardle, (1991) stated that fat constitutes the ideal cellular fuel because each molecule carries large quantities of
energy per unit weight. It is easily transported and stored and readily converted into energy. One gram of fat contains about nine calories of energy and has more than twice the energy storage capability of an equal quantity of carbohydrate or protein. It should be noted that three molecules of water are produced and liberated when a fat molecule is synthesized from the union of glycerol and three fatty acid molecules. Fat is a relatively water free, concentrated fuel. Fat content of the body constitutes approximately 15% of the body weight for males and 25% for female’s requirements of aerobic exercise.

Physical activity is of paramount importance in the treatment of obesity. Exercise should be taken on a regular basis over a protracted period of time if it is to be effective.

**Vital capacity**

The total volume of air that can be voluntarily moved in one breath, from full inspiration to maximum expiration or vice versa, is termed the forced vital capacity. This consists of the tidal volume plus the inspiratory and expiratory reserve volume. Although values for vital capacity vary considerably with body size as well as
with the position of the body during the measurement. Average values are usually 4 - 5 liters in young women. Vital capacities of 6 - 7 liters are not uncommon for tall individuals and values of 7.6, 8, 8.1 liters have been reported for a proportional football player and an Olympic gold medallist in cross country race and skipping respectively. Swimming and diving may be more conducive to the development of larger than normal vital capacities.

**Resting heart rate**

Cardiac muscle is unique because it has the capability of maintaining its own rhythm. If left to this inherent rhythmically, the heart would beat steadily between 70 and 80 times each minute. Nerves, however that go directly to the heart as well as chemicals, hormones etc. that circulate in the blood can change the heart rate rapidly. These extrinsic controls of cardiac function can cause the heart to speed up in "anticipation" even before the start of exercise. To a large extent, extrinsic regulation provides for heart rates that may be as slow as 30 beats per minute at rest in highly trained endurance athletes and as far as 220 beats per minute in maximum exercise.
Meaning of Psychology

The term 'Psychology' is derived from two Greek words 'psyche'; and 'logos', wherein psyche means the soul or mind, and the meaning of logos is to talk about, or science or study. Thus, the literal meaning of psychology is the science or study of soul.

The word psychology refers to the study of human behaviour and sports psychology denotes a sub category of psychology that deals with the behaviour of athletes and teams engaged in competitive sports. Sports psychology is that branch of psychology which is intimately connected with human behaviour 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.

Psychological Variables

Bucher and Dvest (1982) stated that "psychology as a behavioral science has made its contributions for improving sport performance. It has helped coaches to coach more efficiently and athletes to perform more proficiently. This psychological aspect of sports is gaining much attention among sports administrators. A
rapidly growing area of interest in sports psychology concerns the
same of stress management, procedure such as bio feedback and
relaxation training to enhance athlete’s performance by reducing.

Kamalesh (1983), viewed that psychology is the science of the
activities of an individual in relation to the environment. The
activity of the soul or the mind in other word is the internal
behaviour.

Responds of scientific evidence obtained from different
investigations have revealed that apart from somatic and
physiological variables, techniques and tactics the high level
performance of sportsmen depend upon their psychological make
up. Different psychic abilities play a decisive role in achieving the
performance in track and field events. Winning in international
sports competitions highly depends on the psychological abilities.
Therefore psychological fitness and training of individual are
important factors which help in achieving outstanding performance.

The psychology can help the sports excellence of the
sportsman. Role of psychology in selection, training materials and
rehabilitation would definitely help in achieving sports excellence.
The emphasis has been laid on pointing out that psychology and sports coverage at the point and excellence in sports can be optimally obtained by developing appropriate strategies.

**Achievement Motivation**

Motivation means to 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 that will meet his need or satisfy his interest. Many psychologists believe that all behaviors are motivated, but it is extremely difficult to isolate specific motivational variables.

According to Bryant Crathy (1989) Motivation as a personality characteristic related to the general state of arousal and subsequent level of attention paid to a problem or task facing an individual.
Motivation depends not only on environmental manipulations and the individual's personality, but on the nature of the task also. For simple skills high or low motivation creates the same effect. The level of motivation will affect the performance of the complex skill.

According to Chakraborthy (1998) need to achieve and fear of failure are motives aroused situational. Level of achievement motives is positively related to success. Achievement related motives might be more successful in predicting behaviour in sports performance.

Self Concept

The self-concept is now used to understand the way in which personality and its various aspects as organised. Self-concept is the most important single attribute and key to understand the behaviour of an individual.

Alderman (1974) defined that the important roll of self-concept as determinant of human behaviour and its acceptance as concise measure and critical factor or personality has increasingly risen.
According to Harris (1996), self-concept is the totality of attitude judgements and value of an individual relating to his behaviour, abilities and qualities.

**Anxiety**

According to Frost, (1983) "Anxiety is an uneasiness and feeling or foreboding is often, when a person is about to embark on hazardous venture and it is often accompanied by a strong desire to excel."

Anxiety is related to fear of failure, either real or anticipated. The basic anxieties are state anxiety and trait anxiety. Further they may be classified as competitive trait anxiety, cognitive anxiety and somatic anxiety. Conflicts among athletes can lead to unpleasant anxious feeling and abnormal behaviour as a result of faulty defensive mechanism caused by failure to fulfill ones personal potential. Anxiety is either the major symptom in itself or accomplish attempt to overcome other symptoms.

The athlete who is able to discover the source of anxiety will seek out to enhance himself. But this kind of sportsmen behaviour not only reduces the level of anxiety but also helps the sportsmen in
increasing the productivity and skill execution as well as self-confidence.

Burger Walker (1975) stated that Anxiety is an emotion that is difficult to define and even more difficult to reliably detect in performers. Nervousness is often used synonymously with anxiety. Physical educator’s duty is to help the sportsmen to channelize this anxiety to enhance the performance. Nervousness can be experienced at various level of intensity. Tension is another term used to describe the chronic usually low level to which the sportsman seems susceptible, fear and higher level of anxiety, which has a serious effect on sports performance. Anxiety experienced in response to specific threat.

Brayant J. Cratty (1989) stated that Trait anxiety is relatively permanent and broad behaviour including generalized feelings and responses. Trait anxiety is well-defined specific individual constitution. Whenever sport situation is perceived as dreadful trait anxiety’s effect heightens anxiety level particularly when the athlete is sensitive to anxiety or constitutionally a trait remains in him or her.
The researcher is interested to compare and analyze selected physiological, psychological, hematological, and motor fitness variables of rural and urban school players of South India.

**Meaning of Haematology**

The study of Blood, functions and groups are called as Haematology. Blood the life-giving fluid that flows through the human body. We cannot live without it. The heart pumps blood to all our body cells, supplying them with oxygen and food. At the same time, blood carries carbon dioxide and other waste products from the cells. Blood also fights infection, keeps our temperature steady, and carries chemicals that regulate many body functions.

The amount of blood in our body depends on our size and the altitude at which we live. People, who live at high attitudes, where the air contains less oxygen, may have up to 2 litres more blood than people who live in low regions. The extra blood delivers additional oxygen to body cells.
Haematological Variables

Haemoglobin (Hb)

Guyton, (1972) stated that Haemoglobin is the oxygen carrying pigment synthesized by the developing erythrocytes up to the reticulocyte stage of erythropoesis. It is a complex substance, which has heme (iron containing part) and globin (protein containing part) molecular. The main function of Hb is to carry oxygen to the different tissues of the body. Normally about 97% of the oxygen transported from lungs to the tissues is carried in chemical combination with Hb in the red blood cells. The remaining 3% is carried in the dissolved state in the water of the plasma cells. Thus under normal conditions, oxygen is carried to the tissues almost entirely by Hb. The blood of a normal person contains about 15 gm% of Hb and each gram of Hb can bind with a maximum of 1.34 ml of oxygen. Under normal condition about 5 ml oxygen are transported to the tissues by each 100 ml of blood. In heavy exercise, the muscle cell use oxygen at a rapid rate, which in extreme cases can cause interstitial fluid. PO₂ to fall as low as 15 mm Hg. At the pressure only 4.4 ml of oxygen remains bound with Hb in each 100 ml of blood. Thus three times as much oxygen is
transported in each volume of blood that passes through the tissues as normally. And when one remembers that the cardiac output can increase to 6.7 times normal (in well trained marathon runners, multiplying these 2 figures a 20-fold increase in oxygen transport to the tissues.

**Red Blood Cells**

All cells in the body are nourished by means of heart blood vessels. All types of movement from simple walking to the most strenuous sports create changes in these innumerable cells.

Mellorouriez says regular exercise results in increase in the number of red corpuscles circulating in the blood. The improved oxygen carrying and waste removal capacity further increases workload capacity.

Corbin and Lindsey state that regular exercise may result in greater blood volume and a greater number of red blood cells, thus making the delivery of oxygen to the body more efficient.
Blood Lactic Acid

One of the biochemical changes induced by training is an increase in glycolytic and lactic acid system of capacity. This increase is evidenced by the ability to produce greater quantities of blood lactic acid during exhaustive maximal work. Thus more ATP energy can be generated through this metabolic pathway, thereby improving the performance or working capacity of activities that heavily on the system for energy.

The elevation in blood and muscle lactate concentration in response to exercise is one of the oldest observations of the biochemical events of muscular activity. Over the years controversy has ranged and continues to exist concerning the reasons for this rise in lactate, its consequence to exercise, how training influences it, and diet on the concentrations of lactate in muscle and blood. This is followed by consideration of the biochemical events in muscle, including the relationships between oxygen supply and production if elevated during exercise. The aspects of factors relating to mechanism for the increase of lactate in blood during exercise are continued with a presentation that relates these factors to humans during exercise. Finally, the fact of lactate as a fuel for direct
oxidation during and after exercise is elevated from studies that have used radioactivity tracers both with animals and humans as subjects.

Watson states that the lactic acid produced by muscle finds its way into the bloodstream and is carried round the body. The concentration is easily and often used as a measure of the energy produced from an aerobic glycolysis. It will be seen later that such scores are sometimes difficult to interpret. The lactic acid content of blood continues to rise for a few minutes after exercise has stopped, due to the time taken for transport from muscle. Blood lactate concentration then slowly declines but may remain elevated for approximately an hour. Until recently this was interpreted as meaning that lactic acid is removed from the body only during recovery from exercise. There is still much controversy about what actually happens to the lactic acid produced in muscle, and the problem is currently receiving a good deal of attention in the scientific literature.
Blood Pressure

A surge of blood enters the aorta with each contraction of the left ventricle. Because the peripheral vessels do not permit blood to be "run off" from the arterial system as rapidly as it is ejected from the heart. A portion of blood pumped from the heart is stored in the aorta. This creates pressure within the entire arterial system and causes a pressure wave to travel down the aorta to the remote branches of the arterial tree. This stretch and subsequent record of the arterial wall during a cardiac cycle can be felt readily as the characteristic pulse in any superficial artery of the body. At rest, the highest pressure generated by the heart is usually about 120 mm Hg during contraction (or) systole, of the left ventricle. During diastolic or the relaxation phase of the cardiac cycle, arterial blood pressure decreases to 80 mm Hg. Systolic pressure provides an estimate of the work of the heart and of strain against the arterial walls during ventricular contraction. Diastolic pressure provides an indication of peripheral resistance or of the ease with which blood flows from the arterial into the capillaries. The average systolic and diastolic blood for young adults at rest is about 120 and 80 mm Hg respectively. Several studies show that all the forms of exercises produce
dramatic elevations in blood pressure even with relatively light, isometric exercise that requires only 25% of the maximal effort. In rhythmic muscular activity such as jogging, swimming and bicycling, the dilation of the blood vessels in the working muscles enhances the flow of blood through lanes portion of the peripheral vasculature. The increased blood flow during moderate rhythmic exercise causes systolic pressure to rise rapidly in the first few minutes of exercise. The blood pressure then levels off at $140 = 160$ mm Hg. As steady rate exercise continues, systolic pressure may gradually fall as the arterioles in the muscles continue to dilate and peripheral resistance to blood flows becomes reduced. During the exercise, the diastolic blood pressure remains relatively unchanged. Following a bout of sustained sub maximal exercise, systolic blood pressure is temporarily reduced below pre exercise levels for both normotensive and hypertensive subjects. This hypothensive response to previous exercise lasts about 2 hours into recovery.
MOTOR FITNESS

Meaning of Motor Fitness

It may be defined as the limited phase of motor ability emphasizing capacity for vigorous work.

Motor Fitness Variables

Fundamental to success in all types of games and sports is higher level of physical and motor fitness. Under any hypothesis a sound and fit body is a pre requisite to become a top-level performer in any of the games or sports. It is considered a matter of common sense that even when all other contributing factors are controlled an increase in the level of physical or motor fitness shall definitely lead to improvement in the performance level of the sportsman participating in a variety of games and sports.

All the sports activities involve the application of skills of same kind, cognitive or intellectual, perceptual or motor. According to Reilly (1996) skills have been classified as open and closed. Open skills are those which are dictated by and are varied according to external situations, for example opponents, support players, movement, weather, ground conditions and on how a player acts.
according to what he sees going on in the game. Closed skills are pre-learned sequences of movements; little affected by the environment, and are well timed and coordinated. Basketball is an open skill game requiring rapid responses to unpredictable situations but with some closed skill events such as free kicks and corner kicks in Football.

The term “Motor fitness” became popular during World War-II. It may be defined as the limited phase of motor ability emphasizing capacity for vigorous work. The aspects selected for emphasis are endurance, power, strength, agility, flexibility and balance. More specifically motor fitness might be referred to as running, jumping, dodging, climbing, falling, swimming, lifting, weights and carrying loads and enduring sustained efforts in a variety of situations.

Thomas. J.P. (1965) stated that Players having more individual skills in the game could never assure victory. Speed helps to elevate the skills to higher levels of performance and endurance helps to sustain the skills effectively throughout a game. Excellence in sports and games calls for three factors, skills, speed and endurance as energy on one hand efficiency and skills on the.
other. It would be absurd to cultivate skill only without developing speed and endurance, one without the other is bound to fail and in combination they have the way to excellence.

Physical Fitness is soundness of body, a condition in which its functions are duly and efficiently discharged. Physical fitness encourages and benefits body mobility, strength etceteras. Fitness is the state, which characterizes the degree to which a person is bound to function efficiently. To lead a happy and successful life, people have developed physical fitness because it is necessary for the proper functioning of the body and the system.

According to Jaimitra (1990) "Physical fitness may be defined as a reflection of one's ability to work and play with vigour and pleasure without undue fatigue and with sufficient energy left for meeting unforeseen emergencies".

When people are physically fit they look better, feel better, work better, think more clearly from their balanced mind and resist disease and tensions more easily. Physical fitness requires daily attention and it is not developed in a day or in one easy lesson.
Average people seek physical fitness to achieve health but athletes seek to improve their performance.

Every individual must know the importance of physical fitness. In other words, one must have a fundamental knowledge of anatomy and physiology. This fundamental knowledge enables person to understand physical fitness. Physical fitness is the capacity of a person to function steadily and smoothly when a critical situation arises.

Physical fitness makes you feel mentally sharper, physically comfortable and move with your body and better able to cope with the demands that every day life makes upon you.

Jackson (1985) stated that "increased physical fitness not only improves health but improve your performance at work. Hundreds of American companies have backed this idea financially by employing full time directors of fitness for their work.

Physical fitness is the prime necessity to every being. It is the ability of the individual to live a full and balanced life. It means the ability to handle the body well and the capacity to work hard over a long period.
When defining physical fitness, it may be best to describe two types of physical fitness, namely, health related and skill related. Both types require exercise and both are linked to proper nutrition, adequate rest, relaxation and good health habits. Without these components, neither type of physical fitness is difficult to develop and maintain. The human body is built for movement and vigorous activity, not for rest. It can generate maximum motor responses and psychic stimulation, when it is active. If one is not used, the person cannot perform his duty properly.

Busch, Judy, G. (1970) viewed that the concept of health related physical fitness was developed during the mid 1970's. They believed that for the majority of the population, the emphasis should be on health related fitness, since this may help to prevent certain cardiovascular diseases, musculoskeletal disorders and obesity. The health related physical fitness test was introduced by AAHPER in 1980 in U.S.A. Positive health state, low back musculoskeletal function, in particular cardio-respiratory function and fitness of the body, the above said test was designed to measure the physical fitness components.
As quoted in Manorama Year Book (1988), "Many individuals lack physical fitness and suffer from hypokinetic disease or diseases associated with inactivity."

Bucher and Prentice (1985) say that "The benefits of physical fitness are numerous. The person, physically fit, has greater amount of strength, energy and stamina on improved sense of well being better perfection from injury. Because strong well developed muscles safeguard bones, internal organs and keep moving parts limber and improved cardio-respiratory function".

It is necessary for every individual to be physically fit to perform their daily work with ease and take part in various activities effectively. Every one should be fit enough through participation in physical activities to develop the different physical fitness components.

The physical fitness components and strength, speed, endurance, power, flexibility, agility, balance and co-ordination.

According to Kakkar (1984) "Physical fitness is the ability to do daily tasks with vigour and alertness without undue fatigue and
having reserve energy to enjoy pursuits of leisure and to meet unforeseen emergencies.

The neuromuscular co-ordination of the individual, which includes his ability to learn new skills and achieve competency in physical activities are essential to all process of physical education.

For efficient and successful performance many factors such as speed, power, strength, agility, endurance and flexibility are necessary. For this study, the investigator selected motor fitness of speed, agility and endurance.

STATEMENT OF THE PROBLEM

The main aim of the study is to compare and analyze the differences in selected physiological, psychological, hematological and motor fitness variables of rural and urban school players of South India.
The selected physiological, psychological, hematological and motor fitness variables are listed below.

a. Physiological

   i. Body Fat (percentage)
   ii. Vital capacity (cms)
   iii. Resting Maximum Heart Rate (Minutes)

b. Psychological

   i. Self Concept
   ii. Anxiety
   iii. Achievement Motivation

c. Haematological

   i. Haemoglobin
   ii. Differential count
   iii. Red Blood Cells

d. Motor Fitness Variables

   i. Speed
   ii. Agility
   iii. Endurance
SIGNIFICANCE OF THE STUDY

The study would be significant in the following aspects.

1. This study might be of great use in designing programmes to improve the motor fitness levels of the school players of the South India.

2. The results and findings of this study will help to understand the unique and specific requirements of physical, physiological, hematological and psychological variables of the different students.

3. The long term effects of training related developments and adaptation in physiological, hematological, psychological and motor variables that differ in selected games may be determined.

4. The physiological, psychological, haemotological and motor variables' differences documented in players in the selected groups would help the coaches and physical educationists to select the teams as per requirements.
5. The physiological, hematological, psychological and motor fitness values tested may differ in the selected games and this would help the coaches and physical educationist to understand the nutritional and vitamin supplementation for school players.

DELIMITATIONS

The study was delimited to the following factors.

1. School players, who had represented their respective states during the year 2005, were selected.

2. The age of subjects selected for the study ranged from fourteen to sixteen years only.

3. To cover South India, school players from Tamil Nadu, Karnataka, Andhra Pradesh and Kerala who represents their states in Republic Day Sports Meet, 2005 were selected.

4. All the subjects were from schools of South Indian States
LIMITATIONS

The results and conclusions of the present investigation would be reduced considering the following limitations:

1. The day to day ranking and the method of training of the subjects were not considered.

2. The nutritional status of the subjects were not analyzed.

3. The subjects were from different social, cultural and economic backgrounds.

4. The behavioral and co-operative attitude of subjects to the test would differ.

5. Only the following variables have been taken into consideration:

   a. **Physiological** :
      
      - Body Fat,
      - Vital capacity,
      - Resting Maximum Heart Rate
b. Psychological:
   - Self Concept,
   - Anxiety
   - Achievement Motivation

c. Haematological:
   - Haemoglobin,
   - Differential Count
   - Red Blood cells.

d. Motor Fitness:
   - Speed,
   - Agility
   - Endurance

HYPOTHESES

It is hypothesised that there would be no significant differences between the two groups, namely urban and rural school players in selected physiological, psychological, hematological and motor fitness variables.
DEFINITION OF THE TERMS

The important terms used in this study are defined below:

Body Fat

Body composition is a key component of an individual's health and physical fitness status. To understand body composition, the body may be viewed as two component systems: Lean body weight and fat weight. The lean body weight represents the weight of the muscle, bone, integral organs and connective tissues in the body.

The fat weight was measured and expressed in millimeters as body fat in percentage.

Vital Capacity

Arthur C. Greyton, Arthur C.Greyton (1979) defined that the volume of air that can be made to pass in and out of the lungs by the most forcible inspiration and expiration is termed as the vital capacity of lungs. The vital capacity was measured to the nearest millimeters.
Resting Maximum Heart Rate

Miller Benjamin, F. (1965) defined that Resting Heart rate is the number of beats felt in exactly one minute.

Self-concept

Leonard A. Lanson (1971) defined that Self-concept as the totality of altitude judgement and values of an individual relating to his behaviour, ability and qualities; self-concept embraces the awareness of these variables and their calculation.

Anxiety

Anxiety is a psychological factor. Anxiety differs from arousal; in that it encompasses some degree co-allivation and unpleasant emotional state. Thus the term anxiety is used to describe the combination of intensity of behaviour and emotion. The direction, a characteristic of anxiety is negative in that it describes feelings that are unpleasant.

According to Rebuen B. Frost Anxiety is a complex emotional state characterized by general fear or forbidding usually accompanied
by tension. It is related to apprehension and fear and is frequently associated with failure, either real or anticipated.

Achievement Motivation

Robert Lebel, (1969) defined that achievement motivation refers to the tendency to strive to achieve and excel in whatever challenge that is presented.

Haemoglobin

According to Fulton (1956) “Haemoglobin is a readily crystalizable protein which contains iron and the unusual property of combining rapidly and reversibly with oxygen.”

According to Chatterjee “Haemoglobin is the red pigment of blood. It is chromoprotein consisting of two parts. One part (96%) is a specific simple protein known as globin (Histone) and the other (4%) is a specific prothelic group containing iron pigment called haem”

According to Murugesh (1993), “Haemoglobin contains globin, a protein which is conjugated with haem. (Haemoglobin = haem + globin) Haem molecule contains 4 pyrite rings with iron in
the center. The Haemoglobin content of the body is about 15g per 100 ml of blood.

The Haemoglobin was expressed as grams per 100 ml of blood.

**Differential Count**

The differential count may be defined as the individual count of the formed element of the blood.

**Red Blood Cells**

Corbin and Lindsey state that regular exercise may result in greater blood volume and a greater number of red blood cells, thus making the delivery of oxygen to the body more efficient.

**Speed**

S.M. Johnson and D.C. Stalberg (1975) defined that, Speed may be defined as the capacity of the individual to perform successive movements of the same pattern at the fastest rate.
Agility

Donald K. Mathews (1978) defined that Agility is the ability of the body or parts of the body to change direction accurately.

Endurance

Clarke (1971) states that, “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”.

Robert V. (1973) defines that Endurance is the capacity to persist in strenuous tasks for some length of time.

Fall, T.L. and Bighee, R. (1968) defines that endurance is the capacity to work under strain for a long period of time without undue fatigue.

Rural

Rural is a word derived from Latin. It defines that the people who live in the village surrounded by land, which has local of facilities of water, electricity, Roads, Transport Hospitals and Higher Education. They make their living be means of agriculture
and cattle rearing. Their way of life is simple. Most of the villagers live below poverty line because of the social and political barriers.

Urban

Urban is a word derived from Latin. It defines that the people who live in the cities. Which are busy at all times they are high tech facilities available for using electricity, Roads, transport, education and Health in cities the people in the cities have a lot of sources to entertain themselves. Their way of living is complicated and sophisticated most of the urban people live above poverty line because of their social & political awareness.