Chapter I

INTRODUCTION
Chapter I
INTRODUCTION

The world of games and sports is ever expanding and continuous. In to-day’s techno-scientific age, the world is progressing with tremendous speed in almost all the fields. Science has permeated in all walks of life and sports and games are no exception. In order to give the best possible performance in any competition, the help of scientific disciplines is sought. With the introduction of the basic principles of science, physical education and sports has become a subject of scientific research, along with the allied subjects research, such as bio-mechanics, physiology of exercise psychology, nutrition and diet etc, have contributed to the performance level. New techniques have been evolved based on the insight and understanding of the sports researchers. The concept of sports is a continuous process, ever changing and far reaching.¹

The main aim of modern sports competition is to detect and diagnose the human ability at an early stage of life and channelize it in the right direction to realize the achievements aimed at in a particular game. Frost² had stated that competition is one of the outgrowths of modern life. In a world of scientific sports and computerization, training provides for greater importance of preparing the athletes in psychomotor variables and in physio- psycho variables.
Sports physiology now a days focus its attention on cardiovascular, cardio-respiratory, metabolic, and neuro-muscular adaptation to exercise and training; advances in biochemistry and molecular biology of physical activity, nutrition and energy metabolism in the perspective of fitness and health; generic environment, other determinates and modifiers of adaptation to training; psychological adaptation to space. However a lot of importance is being given to the psychological research dealing with psychological characteristics of various levels of athletes namely motor control, motor learning, motor development and motor performance in their broadest sense, mechanisms, determinants the modifiers relative to the production and control of voluntary human movement, the acquisition of motor skills, the development of movement control personal and social factors influencing participation and performance of motor skills right from childhood . Sports psychologists and performance consultants believe in mastering the mental preparedness in all types of sports, especially when sportsman face an opponent either individually or in a group.

Scientific coaching has become a very much personalized aspect, both for the coach and athletes, who believe that without psychological preparation there is little chance of success in the higher levels of competition. Competitive games and sports have raised the standards of human efficiency and performance; they have revealed incredible human capacity; they have initiated and strengthened research programmes in allied disciplines of physical education. Sports and physical education are too widely used and yet grossly misunderstood.
concepts. There is obviously some kind of relationship between the two, but one can never be certain as to exactly what the ties are. The reason for this uncertainty is apparent. Sport is a very widely accepted concept. At least, programmes, and activities associated with the idea of sport have gained considerable approval in terms of participation and other forms of support.

It is difficult to state definitely whether psychological characteristics is the result of sports excellence or whether the sportsmen is successful because of the characteristics they possess.

It is an established fact that sports performances are intricately related to psychological make-up of an athlete. Though the performance in any form of physical activity, sport/game is determined by generic factors to a great extent, yet, the intense urge/inclination of human beings to constantly try to improve upon the previous performance level has actually seen him/her exceeding beyond his/her natural potential by sheer hard work, determination and systematic practice.

Today, performance in sports not only demands systematic training/practice to develop physical, psychological variable and technical demands training and consideration of psychological characteristics for success in this field.

To attain high level performance in today’s highly competitive situation, several physical, psychological and social qualities need to be present in the aspirants. Apart from a number of physical attributes
necessary for keeping pace with the rapidly ascending heights of sports performance, certain neuropsychological qualities play a very crucial role especially at the time of competitive struggle⁷.

Psychological variable which may influence the performance of the sportsmen, however, are the neuro-psychological abilities such as reaction time, concentration, perception, memory, intelligence, etcetera, which would seem to be topping the hierarchy of the overall psychological demands of the competitions. It is an established fact that a ‘sound body’ alone cannot do much in the absence of a ‘sound brain’. In competitive situations, the competitors are exposed to a variety of stimuli or situations which require a very quick and accurate analysis for the adequate handling of the task. The competitors possessing the abilities of quick reaction, brisk perceptual analysis, adequate concentration, sharp memory, and high intelligence always have an edge over those competitors who lag behind in these abilities. In some of the individual sports events, it may not to be the same extent, albeit these attributes are greatly needed in team games⁸.

Human beings are not the products of their own actions alone but are also influenced by the intrinsic environmental factors. These forces exercise a considerable amount of influence and control in shaping and moulding the personality of an individual. The environment does not comprise physical surroundings alone but includes all the biotic as well as the biotic components around, which cause physical and intellectual experience. One cannot alienate/dissociate oneself from the environment but instead is an integral part of it. A human being is a complex and
intrinsic structure endowed with a number of physical, mental, emotional as well as social elements blended together in a single whole. The success of an individual does not lie in the mere consideration of any of these elements of behaviour or performance. A physically educated person is one who is a perfect integration of psychomotor, cognitive and affective domains of behavior.

The psychomotor domain is concerned with movement and other closely related factors that influence it. Through sports, exercise, or dance, as well as work and locomotor skills, students overcome both their own forces and the forces universally found in nature, such as the physical laws and principles governing force, gravity, friction, and motion. Movement is the key to life process. While it is associated directly with muscular contractions and involves muscular action in its myriad forms, it is also associated with neural mechanisms – hence, psychomotor domain or sometimes neuromotor or neuromuscular domain. There are levels of utilization of the body’s forces and there are many restrictions on movement. Some factors aid and help make more effective such man-made forms of movement as sports, exercises, and work skill.

The purpose of this unit is to provide a greater appreciation and understanding of the many facets that make up movement and influence it. For purposes of measurement in physical education, human movement may be classified into a number of categories. Movement is a complex quality and is influenced by many factors: (1) Physical performance factors underlie the action for all movement. These factors include speed,
agility, strength, power, and the like as they are manifested through the fundamental skills of running, jumping, throwing, or hanging. (2) Structural factors either help or hinder movement. These factors include age, weight, height, body type, and structure. (3) Psychological and sociological forces influence behaviour and ultimately affect movement to a marked degree. These factors will be discussed under the affective and cognitive domains. 

Physical educators generally measure the first of these when they are interested in evaluating movements, although indirectly they may concern themselves with the second. For example norms established for these movements are based on age, weight, and height, or combinations. The coach and teacher must also be cognizant of the third group consisting of certain mental, emotional, and social factors. These also have great influence on movement, but they generally cannot be isolated, parceled out, and measured separately and directly in tests of physical performance.

The physical performance factors are the ones which are most influential in this area. They are of three kinds: (1) Factors that are basic to all performance, such as agility, power, speed, arm and shoulder coordination, balance, and flexibility; (2) Basic fundamental movements such as running, walking, jumping, throwing, lifting, carrying, climbing, and hanging, which are racial activities, are inherent in man, and are common to the performance of all people since they make up the basic patterns of motor movement; (3) Highly specialized movements that are the result of training and experience and are not common to mankind.
everywhere. These include athletic or sport activities and skills, gymnastics, dance, and most work skills. These highly specialized movements are adaptations of fundamental skills and are influenced by the factors that are basic to all performance\textsuperscript{13}.

The three learning domains psychomotor, cognitive and affective domains, psychomotor, neuromotor or neuromotor domain is perhaps the most important of all these domains as far as sports and physical education is concerned. It encompasses both physical and motor elements. Every human action involves movement of some sort. Movement is an integral feature of a human being and is thus a tool of life. Sports and physical education is a science of perfect, deliberate and desirable movements. Motor performance depends on the physical components like strength, speed, power, agility, endurance, flexibility, balance, kinesthetic sense and coordinative abilities\textsuperscript{14}.

Psychomotor components work as the medium for the realization of cognitive and affective domains. These domains are inseparable identities and function in perfect unison and harmony with one another. These are concerned primarily with muscular concentration. The psychology and biomechanics of the muscular system is to be understood before understanding the nature of movement. Performance of motor skills is not a physical or mental response alone but involves neural, physiological and psychological aspects and is a continuum that runs the gamut from physical to cognitive and there is always integration between these aspects of human behavior\textsuperscript{15}. 

8
Sports have been very closely associated with the human society and thus the competitions in sports have a decisive social, cultural, political and economical influence. This impact of competition has been further strengthened by the use of public media i.e. radio, television and press.

Sports competition can be considered in two ways:
(a) As a final goal of sports training and
(b) As a means of quick development of sports form.

Training alone is not enough for a sportsperson to excel in competitions. Only typical competition like situations are developed in training. In competitions, the energies available in most cases are utilized to a great extent, than in training. The demands of the competition are much higher than the demands of training. Hence, in order to attain optimal sports performance competitions play a vital role.

Correct tactical thought and action (distribution utilization of various motor abilities, selection and timely application of technical means) self control during the competition, mastery of inner urge and assessment of real performance capacity etcetera are learnt but the sportsperson, after careful build up in training, only during competition. Therefore, competitions are indispensable for development of sports form.

A single competition cannot serve as a preparation for all possible contest situations. The exact number of competitions in a sport
will depend upon the nature of sport, age of the sportsperson, training age of the sportsperson, level of performance, ability to withstand competition load, level of motor abilities, technique, tactics and will qualities of the sportsperson. Therefore, one should participate in adequate number of competitions against individuals or teams of different performance level and also against unknown opponents.

If a sportsperson always competes against known opponent, a system of stereotype motor behaviour pattern is developed which works well under stable conditions but fails when the conditions of competition change. Participation in competition develops the ability of a sportsperson to adjust quickly to various competition situations which change frequently.

The number and degree of difficulty of competitions should increase from year to year. A fully trained sportsperson should participate in as many as 20 to 50 competitions and remaining major and preparatory (build-up) competitions. However, if the frequency of competition becomes very high i.e. exceeds the limit indicated above, it will interfere with the normal training programme and the sportsperson will not be able to train himself as per the planned schedule.  

**HISTORY OF BASKETBALL**

Basketball is probably one of the most widely played and patronized team games all over the world. The game of basketball involves players of all ages and sexes. Continuous involvement demands
a high degree of physical fitness and skill. This game has always had considerable popularity in schools, colleges, and Universities. The game has a much reduced ‘contract’ element compared with some other team games and injuries are much less uncommon. The control and energy are prime requisites to play this game and thus satisfies the demand and supply of the above factors.

**PRE-REQUISITES FOR A BASKETBALL PLAYER**

Basketball player requires a high level of physical development, physiological and motor skill traits so as to give the less possible performance. A player should have appropriate physical structure and body size suitable for this game. This game demands quick and alert well coordinated players with great endurance to master its complex skills and utilize during playing situations. The skill must be developed up to the maximum level to get optimum performance with minimum expenditure.

Physical characteristics have been considered pre-requisite for players to reach the high level performance in the game of basketball. Height of the player is a special advantage in this game. Powerful legs help a great deal in achieving good jump during rebounds in offense and defense. Arm strength gives greater force to fast breaks and shooting. Speed and agility are essential qualities to run faster and change the direction in the game situation, which is required most often in a game of basketball. Dynamic balance helps to control over the body keeps the balance during jump shooting and while taking rebounds either in offence
or defense. Flexibility plays a vital role in performance of coordinated movements and provides the base for the development of certain other components like strength, speed, agility etcetera. Excess weight or obesity may prove to be disadvantage for a player to move quickly and to propel the body into the air at any time during the game\textsuperscript{19}.

The progressive advancement of sportsman to enable him to achieve high level of performance is usually concentrated in four areas namely physical prowess, social adjustment, physiological development and psychological aspects.

Atkins and Rainey\textsuperscript{20} opines that the basketball is probably the leading ball game in the world as far as action occurrence is concerned. In modern sports, basketball had advanced scientifically to a high degree that a coach has to vary his angle of approach from time to time to produce the best performance from the players of varying calibers within the prescribed period and with available facilities. It is fast, aggressive and attractive.

**MOTOR ABILITY OF A BASKETBALL PLAYER**

In modern basketball, a player is required to be continuously on the move over a certain period of time say 75 to 90 minutes, varying his pace from slow to fast or medium and vice-versa. During the period of play he has to collect rebounds, dribble, shoot, guard, and change of directions and involves himself in game strategy. This puts a great deal of demand in terms of motor abilities on the part of each player\textsuperscript{21}.  

12
The novelty of basketball does demand quickness. In a precise term, it is important that a player is able to move quickly and easily on the basketball court. It is a quality that demands both strength and coordination of an individual in order to perform all the movements needed in basketball\textsuperscript{22}.

Barrow and McGee\textsuperscript{23} are of the opinion that agility plays an important role in physical Education activities and it is revealed to a great extent in sports involving efficient footwork and quick changes in body position such as basketball, handball, badminton, volleyball etcetera. Jumping may also be considered to be a basic movement motor skill that is quite important in the game of basketball. Full treatment of the mechanical aspects of jumping may be found in jumping during held ball, rebounding and jump shot situations. Many coaches like to attempt to improve their player’s jumping ability or ability to grab and collect offensive and defensive rebounds. This type of strength development should be done according to the specific task to be performed. Jump shooter may jump almost to his maximum jumping height or he may use the quick short jump before releasing the ball depending upon the situation. The game of basketball not only demands jumping endurance but it also requires power (explosive strength) to execute some of the most important skills.

Jagger\textsuperscript{24} is of the opinion that running, jumping stopping and pivoting all impose a considerable amount of strain on legs and feet muscles and therefore, suggests that a strength programme is most essential in basketball training. Power seems to be a vital factor in
basketball since a player is required to make very frequent up and down movements, repeated jumps, during shooting, rebound etcetera. Power is also necessary in performing certain techniques in basketball which demand jumping activity such as jump shot, rebounding, fast and breaks.

A player in good physical condition is generally thought to have the ability to perform sustained work over a long period of time. He should have sufficient speed endurance, power and agility. Since basketball game requires varied movements one must possess muscular and cardio-respiratory endurance. Since the players move quickly, one needs to concentrate on developing good control of body movements. Proficiency in skills like passing, dribbling, shooting, footwork, rebounding and defending against opponents attack. When a player has mastered the fundamental skills of the game a feeling of gaining mastery over the game is felt.

Agility is one of the most important factors influencing movement. This factor is revealed by the ability of the body or parts of the body to change directions rapidly and accurately. Measures of these quality test the ability of the student to move quickly from one position in space to another. Agility involves coordinating quickly and accurately the big muscles of the body in a particular activity. These rapid changes in the movement patterns by the whole body or by some of its part have been measured by such test item as dodge run, obstacle, zig zag run, side step and squat thrust. One’s level of agility is probably a result of both innate capacity and training and experience. Certainly agility plays an important role in physical education activities. It is revealed to a great
extent in sports involving efficient foot work and quick changes in body position.  

Balance, which refers to the ability to maintain body position, is necessary for the successful performance of sports skills. It is essential in those dynamic sports requiring sudden changing movements like water skiing, gymnastics, football, basketball, etcetera. Each sport demands a particular type of balance.  

Differentiation ability is the ability to achieve a high level of fine tuning or harmony of individual movement phases and body part movements. Differentiation ability depends on conscious and precise perception of temporal, dynamic and spatial parameter of movement execution and their comparison with the similar parameters of movement concept at different levels of control and regulation. The high level of differential ability depends on movement experience (i.e. motor memory) and the degree of mastery over motor action. Differentiation ability is to be particularly stressed when the aim is to achieve high level of mastery over sports movements and their effective application in competition. High level of differentiation ability is expressed in different sports as a feeling or sense of an implement or movement example. ball sense, movement sense, etcetera. The ability to execute highly skillful movements with hand feet or head is also a special type of differentiation ability.  

Orientation ability is the ability to determine and change the position and movement of the body in time and space in relation to a
definite field of action (example playing field, boxing ring, apparatus and/or a moving object example ball, opponent, and partner). The perception of position and movement and the motor action to change the body position should be understood as a unity for the ability for space-time oriented movement regulation. The demands on the orientation ability are vastly different in different sports example team games, combat sports, technical sports. In gymnastics the position and movement of head and eye is important for orientation. In wrestling, kinesthetic sense organs assume more importance for orientation. In team games vision, especially peripheral vision is decisive for orientation.

Reaction time is one of the outstanding characteristic or quality, which is not only desired in a basketball player but necessary for successful all round performance. Height is selected as the second quality to look for in the selections of the players. It is a tangible quality and good tall players are tremendous asset to a team for rebounding purpose and as a defensive deterrent around the basket.

Reaction time involves an integration of the higher centers of the nervous system; perception of the stimulus (a noise, light or the like) and the initiation of the appropriate movement.

Reaction time refers to the ability of an individual to respond to an external stimulus that is the time from the occurrence of a stimulus to the completion of a single muscular contraction. Reaction time is taken as
one of the component of speed. A basketball player must have good reaction time as he has to respond to unexpected situation, tackling the opponents, shooting at the basket, dodging the opponent, etcetera.

To compete in any motor skill, the athlete must have good kinesthetic sense or body awareness. A player must be able to control the position of the body and to know where each body part is at all times. Kinesthetic awareness enables the player to jump, to turn quickly or slowly, to change direction suddenly and to perform any other movement necessary for the smooth execution of an athlete skill. The integration of all four aspects of perception is required for complete perceptual development - development that is necessary for participation in any skill whether it be cognitive (mental) or psychomotor physical. Coach should be aware that perceptual development is continuous, perception is an essential part of performance at all levels of skill. Adequate perceptual development allows the athlete to use his or her physical abilities at the optimum level for the highest possible level of performance.

Coordinative abilities are qualities of an organism to co-ordinate separate elements of action in our system to decide a concrete action task. The well – timed and well – balanced functioning together of several muscles in a single move is co-ordination in complete biomotor ability closely interrelated with speed, strength, endurance and flexibility.

Coordinative abilities have a direct relevance to sports performance. Performance in different games and sports, to a great extent, depends upon the level of coordinative abilities of a sportsperson.
Coordinative abilities depend upon the mechanism involved in control and regulation of movement, the coordinative process of central nervous system and functional capacity of various sense organs.

Earlier agility was being recognised as a factor representing coordinative abilities. Since about two decades back the concept of agility has been replaced by the term “coordinative abilities” because of the following reasons:

1. The concept of agility was confusing because the term was defined differently by various authors
2. Different authors associated different coordinative abilities with agility and
3. In view of different explanations provided regarding the concept of agility, it was difficult to plan a systematized process for its development.

The concept of agility can be replaced by the concept of coordinative abilities and provided a list of coordinative abilities which affect performance in games and sports. Over the years the above concept has generally been accepted. However, there is a need for further research to ascertain various coordinative abilities affecting performance in different games and sports. This will help in working out a systematized training process and identify appropriate means and methods for the enhancement of coordinative abilities.
Characteristics of Coordinative Abilities

Characteristics of any area of study also describe its nature. The characteristics of coordinative abilities are:

1. The phenomenon of control of movement and its regulation forms the basis of coordinative abilities. In view of this, the coordinative abilities have a direct linkage with the technical aspect of sports performance.

2. The performance efficiency of the central nervous system and the functional capacity of various sense organs are important factors for the existence and further development of coordinative abilities.

3. Coordinative abilities influence performance in games and sports in combination with each other and also in relation to motor abilities and psychological factors.

4. Coordinative abilities improve only when movements are performed. The extent of acquiring mastery will depend upon the quality of movement.

5. Coordinative abilities are pre-requisites for acquiring mastery of movements belonging to specific category example balance ability is essential for learning balance activities.

6. Coordinative abilities have general as well as specific application in games and sports. Balance is needed in all games and sports but balance has specific application in gymnastics, shooting and archery.

7. Performance in games and sports is affected by different coordinative abilities appearing in varied combinations.
Significance of Coordinative Abilities

The following points describe the significance of coordinative abilities:

1. The pace of learning and acquiring skills in games and sports is influenced by the coordinative abilities.

2. In the long term of training process, the continuous refinement and modification of skills is affected by the level of coordinative abilities of the sportsperson.

3. Coordinative abilities benefit the sportsperson by not only learning different forms of exercises needed for training and competition but also those required for recreation and recovery in the training process.

4. Coordinative abilities are helpful for sportsperson for effective and economic utilization of motor abilities and acquiring of technical and tactical mastery.

5. Systematized and optimum development of coordinative abilities during childhood can help a sportsperson in learning complex skills in later years.

6. In as much as coordinative abilities have direct relevance to performance in games and sports, they can form an essential component in the process of identification of potential sportsperson (talent identification).
Various Coordinative Abilities

The following seven coordinative abilities which affect the performance in games and sports their relative importance of these coordinatives abilities varies from sport to sport.

1. Combinatory ability
2. Differentiation ability
3. Orientation ability
4. Reaction ability
5. Balance ability
6. Rhythm ability
7. Adaption ability

1. Combinatory Ability

It is the ability of a sportsperson to systematically and meaningfully combine the movements of different body parts for successful performance of a sports movement. It also reflects the ability of an individual to effectively combine meaningful parts of a skill into a whole during the skill learning process. This ability has the special relevance to combative sports, gymnastics and team games. This ability depends upon the functional capacity of kinesthetic and optic sense organs.
2. **Differentiation ability**

This ability enables a sportsperson to achieve high degree of perfection and economy of separate body movements and movement phases in a motor action. This ability is stressed when purpose is to acquire mastery of the skill for effective application during competition. This ability depends upon the functional capacity of kinesthetic sense organs.

3. **Orientation Ability**

It is the ability of a sportsperson to analyse and change the position of the body and its parts in time and space in relation to performance area (Eg. play field, gymnastic apparatus, boxing ring etcetera) or a moving object (Eg. ball, opponent, partner). This ability depends upon the functional capacity of optic sense organ, vestibular apparatus and kinesthetic receptors.

4. **Reaction Ability**

It is the ability of a sportsperson to respond quickly to a given stimulus and execute well directed actions following a signal. It depends upon the functional capacity of optic, acoustic and tactile sense organs.
5. **Balance Ability**

It is the ability of a sportsperson to maintain equilibrium of the body both in static and dynamic conditions. All types of body movements are affected by this ability but it has a special importance when movements are done in a small area. This ability depends upon the functional capacity of vestibular apparatus.

6. **Rhythm Ability**

It refers to the sportsperson’s ability to understand the rhythm of movement and to execute the movement with required rhythm. It depends upon the functional capacity of optic, acoustic and kinesthetic sense organs.

7. **Adaptation Ability**

It is the ability of a sportsperson to bring about an effective change in the movement according to anticipated changes in situation. It depends upon the functional capacity of optic and acoustic sense organs.\(^{35}\)

A player should have a good kinesthetic perception ability, stability, speed, strength, suppleness endurance and skill (personal skill, rhythm, handling etcetera). For a player it is extremely important to have information about what the muscles are doing and their position during a movement. It is also successfully argued that the muscle sense called kinesthetic is equally necessary for the successful execution of skills.
Kinesthesis is a keenly developed sense required of beginners and experts alike for proficiency in many motor skills. To perform competently in basketball our individual must have good kinesthetic sense or body awareness. A player must be able to control the position of the body and beware of his body parts at all times. Kinesthetic awareness evolves the individual to jump to turn quickly or slowly to change direction suddenly and to perform any movement necessary for execution of skill\textsuperscript{36}.

Speed is used in sports for such muscle reactions (motor movements) that are characterised by maximum quick alteration of contraction and relaxation of muscles. It is also the ability to execute motor actions, under given conditions, in minimum possible time. Speed ability is highly movement specific. Like strength and endurance, speed is also a conditional ability but unlike those two conditional abilities (strength and endurance) speed depends to a considerable extent on the nervous system. As a result of this, speed is more complex in nature and is comparatively less trainable as compared to strength and endurance. The efficiency of the nervous system, which can be influenced only to a limited extent, becomes a limiting factor in the development of speed\textsuperscript{37}.

**Fundamentals of Speed**

Speed as an important conditional ability has wider application in all games and sports (both cyclic and acyclic). The following factors determine speed.
1. *Morphological Structure of Muscle Fibers*

Speed is more a product of heredity than environment. A person is born with the dominance of muscle fibers capable of working at speed. Those persons who are born with dominance of fast twitch muscle (phasic) fibers are meant for speed dominating activities. Slow twitch (tonic) muscle fibers are helpful in endurance sports. The famous saying “sprinters are born” is in fact directly related to this important adage.

2. *Regulating Procedure of Nervous System*

Faster movements in sports are facilitated by quick alteration of contraction and relaxation of the muscles. When the agonist muscle contracts, the antagonist has to relax and vice versa. Rapid contraction and relaxation of the muscle is possible only when the motor and sensory nerves act efficiently. This to a great degree depends upon the regulatory procedure of central nervous system.

3. *Muscular Strength*

Speed movements to a great extent depend upon explosive strength of the involved muscles. In fact development of strength indirectly enhances speed.
4. *Technique*

Acquistion of skills facilities performance of movements at high speed. In fact unlearnt movements cannot be performed at a faster pace. A person who has mastery of technique is in a position to utilize his strength, flexibility etcetera to the fullest extent to execute movement at high speed.

5. *Elasticity and Relaxing Capacity of the Muscles*

Good stretchability of the muscles allow movement over as greater range as possible. This reduces internal resistance and thereby aids quick movements. A muscle which relaxes fast, can contract faster subsequently.

6. *Phosphogen Stores and Metabolic Process*

For faster movement, the muscles need supply of energy at a quicker rate. This will be possible only if the phosphogens (ATP and CP) are stored in the body in adequate amount.

7. *Psychic – Factors*

Psychic factors are also responsible for affecting performance in speed activities. Factors such as motivation, ability to relax, ability to concentrate, will power etcetera, are important for quick reactions.
Basketball has progressed to be a worldwide game, internationally popular and universally accepted. The game demands a high degree of psychomotor variables and psycho-physiological potential to give an outstanding performance. No doubt the psycho-motor variables should be woven together to enhance performance at every level. Though the game has been developed into a distinct scientific discipline in itself, it still remains to be established scientifically. Considerable research is devoted to identify the psycho-motor distinct that enhance in achieving a high performance (playing ability) level. In the current study, the scholar has compared and analyzed the psycho-motor distinct in basketball performance.

Statement of the Problem

A game like basketball emphasises in preparing the player psychologically than physically and thus lot of emphasis given to the psycho-motor research dealing with psychological characteristics of top level players, mental rehearsals of the training task etc. The fun and joy that the game provides have impelled people of all classes to play basketball or witness the game world over. With the scientific advancement in every discipline, basketball game has become scientific in nature. It demands a high degree of importance for acquiring and perfecting technique and tactics, as well as for application in game situation. The purpose of this study was to determine the psychomotor distinction in basketball performance among state players.
The sub problem was to compare the psychomotor variables between the State men basketball players.

**Hypothesis**

It is hypothesize that the psycho-motor distinct will not be significantly a limiting factor to performance of the state level men basketball players.

There will be no significant differences in the selected psycho-motor variables among the state men basketball players.

**Delimitations**

The studies which are taken on scientific was delimited. This study will be delimited to the following:

1. The Subjects were confined to the senior national basketball players.
2. The study was restricted to 240 basketball players.
3. Twenty eight state teams all over had participated in the 58th Senior National Basketball Championship.
4. Based on the order of the performance level 20 state teams were selected on a purpose sampling.
5. During the process of the tournament the assessment of the playing ability was confined to a panel of three experts.
6. The player’s age was 25 years and above, most of the subjects were employed in Government, private sector and public sector and alike.
7. The selected subjects were free from chronic disease and found to be medically fit.
8. The psycho-motor distinct were delimited to the following selected variables:

- Agility – 2 x 10 mts. Shuttle run
- Balance – Bass test
- Differentiation ability – Medicine ball throw
- Explosive power – Sargent vertical jump.
- Eye – hand co-ordination – Ball transfer
- Kinesthetic perception – Kinesthetic obstacle test
- Orientation ability – Numbered medicine ball test reaction
- Reaction ability – Ball reaction exercise test
- Speed – 30 mts. dash.

Limitations

1. Certain factors like living habits life style daily routine and diet was not considered.
2. The subject’s day to day activities may have an impact on their performance during the test administration.
3. The aspirant level of the subjects at the time of test administration could not be controlled.
4. No motivational technique was used during testing.
5. The subject’s routine training schedule was also considered as a drawback of the study.
Operational Definitions and Explanations of the Terms

Psychomotor Variables

The term “Psychomotor” is concerned with voluntary human movement, which is observable. Psychomotor variables are the variables bearing direct association with muscular action or motor skill, some manipulation of materials and objects and some act requiring neuromuscular coordination. \(^{39}\)

Agility

Agility may be defined as the physical ability which enables an individual to rapidly change body position and direction in precise manner. \(^{40}\)

Agility is the ability to change direction of the body and its parts rapidly. \(^{41}\)

The ability to change the direction (or) body parts rapidly is termed as agility. \(^{42}\)

Balance

Balance is the ability to maintain body position which is necessary for the successful performance of sport skills. \(^{43}\)

Balance is the ability to maintain body position. \(^{44}\)
Balance is defined as the ability to remain in equilibrium\textsuperscript{45}.

**Differentiation ability**

It is the ability to achieve a high level of fine tuning of individual movement phases and body part movement. It finds expression in high degree of accuracy and movement economy\textsuperscript{46}.

This ability enables a sportsperson to achieve high degree of perfection and economy of separate body movements and movement phases in a motor action. This ability is stressed when purpose is to acquire mastery of the skill for effective application during competition. This ability depends upon the functional capacity of kinesthetic sense organs\textsuperscript{47}.

**Explosive power**

Explosive power is an action where maximum muscular force is released at maximum speed in one single attempt\textsuperscript{48}.

Power is an explosive action and it is equal to the product of force times velocity, where force has to do with muscle strength and velocity with the speed with strength is used in motor performance\textsuperscript{49}.

Power is a mechanical principle concerned with propelling the body or projecting its parts in a forceful, explosive manner in the shortest period of time\textsuperscript{50}. 
Eye-hand coordination

Eye-hand coordination is the ability to coordinate body parts movement (example movement of hand, eye, feet, etcetera) with one another and in relation to a definite goal oriented\(^51\).

Eye-hand coordination may be defined as the coordination of the eyes with either the feet, hands, or head\(^52\).

The primary objective in Eye-hand coordination is to keep one’s eye on the ball while the initial part of the body is in movement\(^53\).

Kinesthetic perception

Kinesthetic perception is defined as the sense which enables us to determine the position of segments of the body, their rate, extent and direction of movement, the position of entire body and characteristic of total body motion\(^54\).

Kinesthetic Perception refers to the varying degrees of accuracy the position of the body and/or body part as it moves into space\(^55\).

Kinesthetic Perception may be defined as the movement of body part or awareness of position of the body in space\(^56\).
Orientation ability

Orientation ability is the ability to determine and to change the position and movements of the body in time and space in relation to a definite field of action (or a moving objects like ball, partner, opponent, etcetera)\textsuperscript{57}.

It is the ability of a sportsperson to analyse and change the position of the body and its parts in time and space in relation to performance area (like play field, gymnastic apparatus, boxing ring etcetera) or a moving object (example ball, opponent, partner)\textsuperscript{58}.

Orientation ability depends upon the functional capacity of optic sense organ, vestibular apparatus and kinesthetic receptors\textsuperscript{59}.

Reaction ability

Reaction ability is the ability to react quickly and effectively to a signal\textsuperscript{60}.

The ability of a sportsperson to respond quickly to a given stimulus\textsuperscript{61}.

Reaction ability depends upon the functional capacity of optic, acoustic and tactile sense organs to execute action\textsuperscript{62}.
**Speed**

Speed is the ability to execute motor actions under given conditions in the minimum possible time\textsuperscript{63}.

Speed is quick alteration of contraction and relaxation of muscles\textsuperscript{64}.

Speed may be defined as the ability to execute motor actions, under given conditions, in minimum possible time\textsuperscript{65}.

**SIGNIFICANCE OF THE STUDY**

The study made the following significant contributions:

1. The results and findings of this study may provide criteria for selecting potential players in basketball game at a young age.
2. The findings of this study may be used as a screening tool and technique in analyzing and classifying the players.
3. The results of this study may help the coaches, physical educators, selectors and experts by providing them with information on the particular motor abilities, physiological variables and anthropometric components are required for achieving higher proficiency in the game of basketball.
REFERENCES


