Chapter I

INTRODUCTION

Sport is as old as human society and it has achieved a universal status in modern society. It enjoys the popularity, which outstrip any other form of social activity, it has become an integral part of the educational process. Many participate in sports activity for the fun of it or for health, fitness and well being.

Physical activity has been a part of the lives of all people. Human evaluation started with movement and the development of the human sapiens was largely dependent on the action of the muscle. It must be conjectured that primitive physical activity as primarily a survival activity. The incessant search for food, clothing, shelter and protection from the hostile environment and secondly it becomes a means of preparing youth for adult life, as the games were taken from life activities and become a recognized way to improve strength, speed and skill and other qualities necessary for survival.¹ Physical activity as an inherent trait of human being. It develops of its own in a nation. It

becomes all the moral imperative to identify the nature and the degree of this nature talent and nature modify and refine to get the cherished out comes. The children perform a lot of activities such as running, jumping, throwing, catching, Kicking and striking etc., these activities are known as natural, universal skills, because they seem common to all the people all over the globe irrespective of geographical, regional, national or racial barriers. These natural abilities ultimately develop into more complex and specific sports due to the increased capability of the individual. These complex skills forms of highly specified movements obtained through rigorous and strenuous practice and specialized training. They lay foundations for the fundamental skills and the ultimate complex of sports techniques.

Progress and high degree of excellence or the true reflexes of this over involving and charming world of competitive sports. Competitions is proving over demanding and has been thus putting a great deal of pressure on the sports person to take sports as a full time business for earning name, fame and the material wealth as well as competitive sports have catalyzed the race for supremacy and excellence. Not to speak of the individual sports persons or teams but the nations, honor and presenting also find involvement in the most
prestigious and elite international contest of competitions. The coaching as well as the training methods has undergone a tremendous

In the case of motor abilities, individual differences may depend on the sensitivity of sense organs in the muscles are the joints on the competitions of muscular tissue or on difference in the structure of the central nervous system. Within the boundaries set by hereditary environmental factors, learning plays a major role in influencing the ability development. Basic abilities being to be acquired early is in life. There is a definite sequence of development stages in the structural characteristics of the individuals.2

The football players must concentrate on the development of psychomotor abilities along with other qualities. Psychomotor components have a very important association with the playing ability of the football players. The important component like reaction time, speed of movements, kinesthetic perception, depth perception, etc. has a vital role in achieving high level of performance in football.

The players not having such qualities like reaction time, speed of movement, kinesthetic perception and two hands co-ordination can

never be on the top level because the players deprived on only of these quality or qualities cannot execute the learned technique or skill fully according to the demand of the game. Hence the success of the psychomotor activities and sports, the action in soccer is built up collectively with time, the play becomes increasingly complex, through the progressive complication of the structure of motor inter personal relation defined as the system N+1 intervening in the action and through the difficulty of carrying out required behaviour. Player’s involvement is not limited to their immediate surroundings. It can depend on events which like place in another area of the field and do not directly involve them, but have an influence on what occur is their vicinity. This particular feature is difficult to understand the behaviour of competitive sportsmen for two reasons, first players cannot be readily to explained by their personal attributes. When their behaviour or choice of others, it is not usually possible to obtain small sets of individuals merely by addition or extrapolation. Second, the composition of individual action produces the so-called aggregate effects can prompt perverse effects in the behaviour of sports man.

These two problems means the sports man’s behaviour appears to be observed as indeterminatel (complexity form the observes point
of view). This makes it difficult of direct research line in particular area of activity in team games and also restrict our ability to establish a correlation and or consistency between the intervention should take in training sessions. The core of the problem for researchers trying to understand the behaviour of the sportsman lies in uncovering the complex relations that link the subjective intentions of each individual in the various stages of the game to the opportunities and limitations imposed by the social contest in which they are involved.

However, the personnel that context in soccer entails participation in different dimensions or levels of interaction is valid only when these levels can be identified and empirically verified, that is the purpose of the present study.

Building on earlier work, the suggested existence of stable interaction among players in the same team, we will try to identity the dyadic grouping that link sportsman to each other in order to reveal the various dimensions that make up the action in soccer: from the micro level of the behaviour of individual players to the macro level of the behaviours of teams.

The psychomotor abilities which are used in every sports and
games. The psychomotor domains includes all the movement behaviour, objectives that emphasize the ability to demonstrate motor skill requiring neuromuscular coordination, manipulation of sports skills and movement that are considered goals of the psychomotor domain.³

Psychomotor variables act as the medium for the realization of cognitive and effective domains of learning and motor behaviour. These domains of learning are inseparable identities and work in perfect harmony and vision with one another. The psychomotor variables are primarily concerned with muscular contraction performance of motor skills involves neural, physiological and psychological aspects and is a continue that runs the game from physical to cognitive and there is always an integration between these aspects of human behaviours.⁴

Psychomotor movement is a complex quality and is influence by the physical performance factors with underline the action of all movements. These factors comprise speed, power, strength and reaction time. Speed of movement agility, flexibility, kinesthetic

⁴ Ibid, p. 123.
perceptions, coordinative abilities and the like. This psychomotor movements can be restricted or imbalanced by certain structural factors compressing height, weight, body type, structure and posture. These physical performance factors are effective in the enhancement of psychomotor performance of the sports person.5

Psychomotor elements exercise a great control and influence over performance in sports. Total fitness of the performance is of outmost importance in order to get optimal performance at the prestigious sports competitions at the international level. Fitness of the player has become a very complex but sought after proposition for the very obvious reasons. We see and find now-a-days that the winners and the runners-up are adjudged by the slightest difference of more fractions of a second. Fitness is a product of exercise and training. The perfect of harmonious integration of various psychomotor, physiological, emotion and social attributes account for the total fitness of an individual and forms the basis for maximal performance. All these components of total fitness are mutually interdependent, and are required in different proportion according to the type and nature of the activity for the sports being undertaken. Psychomotor fitness of an

individual is a perfect blending of physical as well as motor fitness, and goes a long way in yielding the excellent outcomes. The nation’s existing excellence in the international sports do attach great significant to the total fitness.

Football requires a high degree of running maneuverability and total body agility so that the player is able to gain good field position and compare with his opponents on both offensive and defensive man curves. Fast acceleration is required to be able to advantage positions while attacking and counter attacking. In the way, the football players has to change his body position quickly and accurately to concentrate while receiving the ball.⁶

William A M, Hodges N J, North J S and Barton G,⁷ Perceptual cognitive information use to support pattern recognition skill in soccer was examined. In experiment 1, skilled players were quicker and more accurate than less-skilled players at recognizing familiar and unfamiliar soccer action sequences presented on film. In experiment 2, these action sequences were converted into point light display, with


superficial display feature removed and the position of players and the relational information between them made more silent skilled players were more accurate then, less-skilled players in recognizing sequences presented in point-light form, implying that each pattern of play can be defined by the unique relations between players. In experiment 3 various offensive and defensive players were occluded for the duration of each trail in an attempt to identify the most important scores of information underpinning successful performance. A decrease in response accuracy was observed under occluded compared with non-occluded conditions and the expertise effect was no longer observed. The relation information between creation Key players, team-mates and their defensive counterparts may provide the essential information for effective pattern-recognition skill in soccer. Structural feature analysis, temporal phase relations, and knowledge based information are effectively integrated to facilitate pattern recognition in dynamic sports tasks.

Symes E. Ellis R & Y Tucker M8 five experiments systematically investigated whether orientation is a visual objects properly that affords action. The primary aim was to establish the

---

existence of a pure physical affordance (PPA) of object orientation, independent of any semantic objects action associations or visually salient areas towards which attention might be biased. Taken together, the data from these experiments suggest that firstly PPAs of object orientation do exit, and secondly, the behavioral effects that reveal them are large and more robust when the object appears to be graspable, and is oriented in depth (rather than just frontally) such that its lending edge appears to point outwards in space towards a particular hand of the viewer.

Wuhr P, & Elsner B⁹ the present study investigated the effects of irrelevant stimulus orientation on visually guided grasping movements. Participants had to grasp a rectangular objects at either the ends of the sides, depending on the color of a visual stimulus. In this task correspondence between stimulus orientation and object orientation (stimulus-object congruency) and correspondence between stimulus orientation and hand orientation (stimulus-hand congruency) varied independently. Two experiments with different sets of objects orientations, revealed a consistent patterns of results. In particular, there were significant effects of stimulus-hand congruency suggesting

that perceiving an objects activates congruency, oriented hand movements, indicating that participants did not benefits from a preactivation of object orientation in the present task. The pattern of congruency effects implies that the cognitive representation, which is affected by irrelevant visual information, entails only those object or response features that are needed to select and control a response.

Crundall D, Cole GG & Galpin A\textsuperscript{10}, five experiments assessed whether same-object bias was imediated by the collinearity of the targets. Participants divided whether two objects were the same or different. Results showed that same object bias only occurred when targets appeared on the same straight line with the same object. When targets appeared in the same object but were separated by an angle or corner, within object facilitation was eliminated or greatly reduced. In final experiment, response time to two targets that were collinear but on separate object were represented to faster than were non-collinear targets on the same objects. This suggests that collinearity between targets mediates the effects founds in this paradigm, at least to a greater extent than colour grouping.

\textsuperscript{10} D Crundall, GG Cole & A Galpin, "Object-based Attention is Mediated by Collinearity of Targets" Quarterly Journal Psychology (Colchester), 2007 Jan; 60 (1); 137; 53.
Vainio L, Ellis R & Tucker M\textsuperscript{11}, investigated the role of attention in this orientation effects. Experiment 1, showed that object orientation facilities responses of the hand that is compatible with the objects orientation, despite the entire object being irrelevant. However when a task-relevant fixation point was displayed over the prime object in experiment 2, the orientation information of viewed objects primes the action selection processes even when the object is irrelevant, but only when attentions is not allocated to a competing stimulus during the prime presentation. Experiment 3 suggested that the elimination of the effect in experiment 3 suggested that the elimination of the effect experiments 2 could not be attributed to the eliminations of an attentions shift to the graspable part of the prime. Finally, experiment 4 showed that object orientation can evoke an abstract response code, influencing the selection of finger responses.

Coordinative abilities are important for learning of sports technique and for their continuous refinement and modification during long term training process. The optimally developed coordinative ability especially in childhood are involved with assets for learning of complex technique in advanced stages in dependent upon the level of

the required coordinative ability they are the prerequisites of athletic performance.\textsuperscript{12}

In different sports required of coordinative abilities are difference in endurance sports, coordinative abilities ensure higher movement efficiency and movement economy where as sprinting events they facilitate a high movement frequency with high explosiveness and force application of maximum strength at the right time and in technique dominated events coordinative abilities contribute towards better learning. Stabilization with variability and automatization of the technique which determines maximum limits for performance.\textsuperscript{13}

Dr. Bary Fowler, a neuroscientist working with the Canadian space Agency, is researching the causes of this reduction in hand eye coordination is space. Dr. Fowler and his team have designed the PMDIS experiment (for perceptual motor deficits in space). The core of this experiment resemble a simple computer game. Astronauts will perform this experiment in the space shuttle and in the international


space station.

The computer will challenge the astronauts to respond to events on the screen of the computer. The computer will record their reaction times and also record their accuracy. Responses to the computer challenges are input in various ways. Some tasks require input by joystick other by using to touch screen. A third option, designed to measure an astronaut’s response time, will require them to use a push button by which they will respond to available cues.

Coordination is a complex motor ability closely interrelated with conditional ability it has of prime importance not only for the acquisition perfection for skill and tactics but also for their application in non familiar situation like the load dynamics in training programme equipment used climatic conditions and opponents.14

Hand-eye coordination is the ability of the vision system to coordinate the information received through the eyes to control guide, and direct the hands, in the accomplishment of a given task, such as handwriting or catching a ball. Hand-eye coordination uses the eyes to direct attention and the hands to execute task. Vision in the process of

---

understanding what is seen by the eyes. It involves more than simple visual acuity (ability to distinguish fine details). Vision also involves flexion and eye movement abilities accommodation (focusing), convergence (eye aiming), binocularity (eye teaming), and the control for example, when children are learning to draw, they follow the position of the hand holding the pencil visually as they make lines on the paper. Between four and 14 month age, infants explore their world and develop hand-eye coordination, in conjunction with fine motor skills. Fine motor skills are involved in the control of small muscle movements, such as when an infant starts to use fingers with purpose and in coordination with the eyes.\textsuperscript{15}

**Statement of the Problem**

The purpose of the study was to comparison of psychomotor and coordinative abilities of football players of different level of achievement.

**Delimitation**

1. The study was delimited to the following selected psychomotor abilities:

\textsuperscript{15}Ball, Morven F, Developmental Coordination Disorder Hints and Tips for the Activities of Daily Living (Philadelphia: Jessica Kingsley Publishers, 2002).
a. Kinesthetic Perception
b. Speed of Movement
c. Response Time.

2. The study was delimited to the following selected coordinative abilities:
   a. Balance Ability
   b. Differentiation Ability
c. Orientation Ability
d. Reaction Ability
e. Rhythm Ability

Limitation

1. Lack of sophisticated instruments for the measurement of psychomotor components are considered as a limitation in the present study.

2. The un-control lake factor like climatic condition, dietary habits, emotional conditions etc. at the time of testing will influence the result of this study, which is another limitation of this study.

3. Since no external and internal motivation techniques were used, the difference of subjects due to lack of motivation who considered as another limitation at this study.
4. Variation in performance of coordinative abilities due to motivational factor which might have affected the study was considered as a limitation of the study.

5. Non availability of sophisticated equipments and test to measure the coordinative abilities might have any effect on the collection of data was also considered as a limitation.

**Hypothesis**

On the basis of literature reviewed and scholar’s own understanding of the problem it was hypothesized that there would not be any significant difference of football players at of different level of achievements.

**Definition and Explanation of Terms**

**Psychomotor Components**

Activities that are primary movement oriented and emphasize over physical responses are termed as psychomotor components.\(^{16}\)

According to Barrow and McGee the term, Psychomotor\(^{17}\) means as “Observable voluntary human movements” the variables\(^{18}\) as

---


the traits or factors that change from one case or condition to another the representative of the tracts usually in qualitative form such as a measurement or enumeration."

Psychomotor domain or arch encompasses reflex movement, basic fundamental movement and non discursive movements.\textsuperscript{19}

Psychomotor variable bear direct association with muscular action or motor skill some manipulation of materials and objects and some act requiring neuromuscular coordination.

\textit{Kinesthetic Perception}

It may be defined as the sense that gives the individual on awareness of position of the body or part o the body as it makes through the space.\textsuperscript{20}

\textit{Speed of Movement}

Speed of movement has been defined as, “The rate at which a person can proper parts of his body through space”.\textsuperscript{21} It refers to the

\textsuperscript{18} Ibid.


\textsuperscript{20} Harold M. Barrow and Rosemary McGee, \textit{A Practical Approach to Measurement in Physical Education} (Philadelphia: Lea and Febiger, 1975); p.115.

time taken from the presentation of a stimulus to the competition of a small movement and is equal to the sum of reaction time and movement time.

Response Time

It is the interval of time between the presentation of the stimulation and the initiation of its response.\textsuperscript{22}

Phillips and Hornak state that the response time or performance time is the sum of reaction time and movement time.\textsuperscript{23}

There is also the concept of perceived response time which is the time a user sense as the beginning of input and he end of the response. It is actually possible (though not usual) for perceived response time to be too fast (it can be midly disconcerting if a system responds almost intently). However, this is not the usual complaint.

Coordinative Abilities

Coordinative abilities are understood as relatively stabilized and generalized patterns of motor control and regulation process.\textsuperscript{24}

\textsuperscript{22} Phillips and Hornak, \textit{Measurement and Evaluation in Physical Education}, p. 260.

\textsuperscript{23} Ibid.

Coordinative abilities are the generalized psychometric performance prerequisite having the function of movement control and regulation.\textsuperscript{25}

**Balance Ability**

It is the ability to maintain balance during whole body movement and to regain balance quickly after the balance disturbing movement.\textsuperscript{26}

The ability to maintain the equilibrium under static or dynamic condition is called the balance ability.\textsuperscript{27}

**Differential Ability**

It is the ability to achieve a high accuracy and economy (time adjustment) of separate body movement and mechanical phase of total movement. It is based upon conscious, precise distinction between force, space and time parameters of the motor process and these existing in the athletes mind.\textsuperscript{28}

According to Singh\textsuperscript{29} differential ability is the ability to achieve

\textsuperscript{25} Kalb, *Introduction to General Theory and Methods of Training. The Performance Factor of Coordination Technique*, p. 156.


\textsuperscript{27} Ibid. p. 167.


a high degree of accuracy and economy to separate body movements and movements phase in a motor action. It depends upon the sportsmen’s capacity to precisely differentiate between minute difference in templar spatial and dynamic parameters of a movement appropriate for the study.

**Orientation Ability**

Orientation ability is the ability to analyze and the position and changes the position and movements of the body in space and time to related to define action.\(^{30}\)

**Reaction Ability**

According to Singh\(^{31}\) reaction ability is the ability to react quickly and effectively.

Reaction ability is the ability to initiate quickly and to perform following a signal.\(^{32}\)

**Rhythm Ability**

It is the ability to preview the externally given rhythm and to reproduce it is motor action. It also denotes the ability to reproduce a

---


\(^{31}\) Ibid, p. 160.

rhythm, existing in motor action.

Rhythm ability is the ability of the person to understand the rhythm of movement with required rhythm. It depends upon the functional capacity of topic, acoustic and kinesthetic sense organs.\textsuperscript{33}

**Significance of the Study**

1. The results of the study provide an authentic understanding as how the psychomotor abilities was affected as a result of match progression.

2. The result of the study was signified with regards to providing a scientific explanation for the roly point system adopted for the decision test.

3. Due to increased degree of difficulty or load on the players what the effect on psychomotor ability to an individual can be determined.

4. The current study helps in determining the relationship of coordinative abilities to performance of the football players.

5. The result of the study helps the higher authority to understand the importance of coordinative abilities.

6. It also helps the professionally as a physical education teacher, activity coordinator coach and player itself to identify those abilities which contributes to the performance required throughout the game situation.

7. The study helps to determine the importance of psychomotor abilities on the performance of football players.

8. The study also helps to determine the importance of football players.