Chapter I

INTRODUCTION

Sports are an important part of just about every society, every country, and every part of our planet. In one way or another, everyone is involved in sports or some sort, whether they're playing or watching or just knows someone who does either. Many athletes compete in sports, only a few reach the highest performance level. Certainly not everyone has the same potential in the beginning. Even so, many athletes who seem only ordinary in their early years, later blossom into national or world class performers. What makes them able to reach the top, when initially more talented athletes are lacking behind in training. Both training and techniques are essential in improving sports skill levels. The human body is a self optimizing machine. It gradually adapts to a given movement challenge by improving the efficiency with which the movement is performed. Peak physical performance is essentially the result of a balance between natural abilities and proper training.

Field Hockey is one of the oldest games in existence. Hockey is the most thrilling and spectacular sports in the world.
It is a symbol of the ruggedness and skill, dangerous to certain extent but very exciting from start to finish. The essence of this game lies in its artistic skill and aggressiveness.

Looking back to the history, to find out how this game originated, one should peer into primitive times when he would have, as a matter of instinct, started hitting at objects, with some thing that came to his hand. A pebble and a branch of a tree, so much the better if hooked or curved, would have made an ideal combination.

Hockey is a fast and furious game of remarkable complexity, and the variety of skills displayed can confuse even the most knowledgeable spectator. At the highest level, these movements are the result of years of painstaking practice by players who have made many sacrifices in the interest of the sport to reach the game’s premier stage. However, one of the truly great things about the game is the fact that it can be enjoyed by almost everyone with an interest in sporting activity.

Hockey at any level is a thrilling game enjoyed by players of all ages. The vast majority plays the game primarily for social reasons and do not normally have the opportunity for the sort of
coaching that could significantly improve both their individual skills and overall performance (Taylor Ian and David Vear, 1988).

The continental style of play has completely changed the pattern of modern Hockey and it is more of ‘Power Hockey’ than the aesthetic and delightful Indian styled play. It is a ‘hit and run’ game, the ball moves fast from one end to the other. All the countries have improved their trapping and ball control as well. They are quick on the ball. They mastered the art of attacking and defense and I have been noticing that there are as many defenders as there are attackers.

So the pattern of the game has changed considerably and we should come out with ideas and strategies to cope up with this new style of play. The skill of dribbling, the suppleness and the flexibility of players are very much essential.

While speed and stamina are the watchwords of Modern Hockey, skilful play always goes a long way in winning matches.

A typical field Hockey player must train for many years to refine the technique and to develop physical fitness factors especially strength, endurance and speed to reach his individual potential. There are many types of training by which an athlete can improve the above said bio-motor qualities.
Field Hockey is considered to be an endurance event. Various skills in field Hockey demand display of specific strength and endurance. A definite degree of strength of arm muscle is required to do the basic skills like hitting, pushing, and scooping. Hockey requires a higher degree of running ability. The extension of the Hockey field is so large that the players are able to run in the whole field without fatigue and compete with their opponents. The quality of muscular endurance and cardio respiratory endurance is highly required for a Hockey player to improve his performance. There are trainings like circuit and weight training to develop and improve strength and interval and resistance training to improve the speed. Circuit training has proved to be a very effective method for improving strength endurance (Don et al, 1983).

**Field Positions in Hockey:**

Field positions in any game are related to the structure and pattern of the game. The rules and regulations which govern the game also influence the field positions. They are very rigid in certain games, but according to the system of play adopted by a particular team this may change.

The team of Hockey consists of eleven players. In Hockey the following eleven positions are Goal keeper, Right fullback,
Left fullback, Right Halfback, Centre Halfback, Left Halfback, Right Extreme Forward, Right in Forward, Centre Forward, Left in Forward, Left Extreme Forward.

For the purpose of this study only three positions were taken for the analysis namely Defenders, Mid Fielders, and Forwards.

**Importance of each Field positions:**

The particular positions are adopted according to the game for the smoothness and attraction of play. The field positions are allotted accordingly to serve the purpose. This will help the teammates to reduce the pressure of attack on them and lose of energy. Positioning in relation to your forward partners is governed in the main by the pattern of play adopted by the team.

**Importance of Defenders in Hockey:**

According to the Indian style of play there may be two backs but in the European style they have more. The important point is that the last back should never be in line with the other backs. Both the backs should be in a see-saw position which makes easier to cover each other.

The full backs take up the wide defensive positions, one on each side of the field. Their main task is to prevent opposition
players crossing or cutting the ball back into the penalty area. In some defensive systems, full backs man-mark opponents. Most full backs are also expected to provide an attacking dimension by getting up field, engaging in interplay with the wingers and providing crosses.

In the traditional 2-3-5 team formation, the two players in the final row of defense before the goalkeeper were referred to as full backs. This formation is almost never used in the modern game, having been replaced largely by the four-man defense, but the term "full back" lives on — the full backs now occupy the wide positions in the defensive line, with the old centre half [back] doubled-up to fill the central defensive position.

When the Defenders are required to tackle an advancing forward with the ball in control they should never commit themselves and should wait for the Forward to make the first move. They should position themselves in such a way that the Forward should be forced to dribble one way.

There are six principles for building an effective defense that can be implemented into your daily practice routine. The six principles include: 1) Drop pass, 2) Covering the passing lane, 3) Eliminating options, 4) Support on the ball, 5) Communication,
and 6) Cutting the field in half. Each principle is demonstrated thoroughly on the marker board along with extensive on the field demonstration. These principles can be used with any team, at any level. Bozman also suggests how they can be modified to help inspire your team to be a successful defensive machine. In addition, she demonstrates and diagrams drills that complement and fine-tune these principles to help build a dominating defense.

Due to the physical and technical demands of their playing position, successful full backs need a wide range of attributes, which make them suited for adaptation to other roles on the pitch. Many of the game's utility players, who can play in multiple positions on the pitch, are natural full backs. In the modern game, full backs often chip in a fair share of assists with their runs down the flank when the team is on a counterattack. The more common attributes of full backs, however, include:

- Speed and stamina to handle the demands of covering large distances up and down the flank.
- A healthy work rate and team responsibility.
- Marking and tackling abilities and a sense of anticipation.
• Good off-the-ball ability to create attacking opportunities for his team by dribbling into empty channels.

• Dribbling ability. Many of the game’s eminent attacking full backs are excellent dribblers in their own right and occasionally deputies as attacking wingers.

• Player intelligence. As is common for defenders, full backs need to decide during the flow of play whether to stick close to a winger or maintain a suitable distance. Full backs that stay too close to attacking players are vulnerable to being pulled out of position and leaving a gap in the defense. A quick passing movement like a pair of one-two passes will leave the channel behind the defending full-back open. This vulnerability is a reason why wingers considered to be dangerous are double-marked by both the full-back and the winger. This allows the full back to focus on holding his defensive line.

**Importance of Mid fielders in Hockey:**

The Mid fielders or the half backs are the back bone of the team. They have to be always on the move to keep up the correct position according to the run of play. Their team may be playing with the formation of two backs or four backs. It hardly matters
as their strength is identical. When they are defending they are defending with six players instead of five.

The best position of the right side midfielder is to keep him away from the side line to force the opponent Extreme to move up on his right side, where as the left side midfielder should keep him as near as possible to the side line. Another important point is that they should able to face the counter attack and do the job of feeding their forwards.

**Importance of Forwards in Hockey:**

There is no doubt that the number of forwards will be one less than in the game that is played in the formation of 5-3-2-1. But that is on paper and mere eyewash. The attack in reality will be with the whole team except one last back and the goal keeper.

The important aspect is not the number of forwards but the more vital is the fact that how many openings they are finding in the opponent’s defense and thus finding greater number of opportunities to score goals.

It is essential for all forwards to be on the side at all times and to do so they must immediately fallback when their attack fails.
Though all the Hockey players have similar Physical ability during the game, each Hockey player is believed to have different Physical fitness qualities depending on the situation and depending on the position. During the game situations the custodian will differ from other players in every aspect.

Physical fitness is the basis of Hockey performance and it is a competitive phenomenon consisting of various factors like speed, power endurance etcetera and these factors are the Major concern of playing in Hockey in various field positions and a player is required to lay more emphasis on one other factor depending upon the nature and demand of the game.

High level of performance of Hockey player may depend upon the Physical variables or Motor abilities. Motor fitness is generally judged by performance and this performance is based on a composite of many factors, the following factors have generally been conceded as being most commonly mentioned components of motor fitness: Strength Endurance, Power, Speed, Agility, Balance, Flexibility and Stamina.

Among the various motor abilities the investigator select Agility, Speed, Strength Endurance and Flexibility for his investigation.
The basic characteristic of Physical components such as Agility, Speed, Strength Endurance, and flexibility are essential for Physiological function and good health.

Speed, Agility, flexibility and Strength Endurance are influencing factors at any level of Hockey and fit players will gain more enjoyment from the game.

**Speed:**

Speed is one of the main requisites which enables for higher performance in certain motor tasks. It is the capacity of an individual to perform successive movements of the same pattern at a fast rate. The rate at which a body moves from one location to another is called Speed. Speed may vary from individual to individual.

In Hockey the players have to move around at high speed depending on the requirement and also need to execute the skill at very fast rate. They should be able to make sudden and rapid adjustments to the constantly changing stimuli of the game. He has to move forward, backward, or sideward directions. The Speed at which he can execute these movements is often the factor that determines whether or not his objectives are accomplished.
In Hockey the players usually run in a short distance with or without ball in an average or maximum speed to receive or pass a ball or shoot at the goal or to mark an opponent in a single movement. Thus Speed is interwoven in the game of Hockey.

**Strength Endurance:**

Strength Endurance is one of the basic corner stones of Hockey, the foundation which carries a long way. In Hockey the onset of fatigue is most noticeable in loss of speed and a marked deterioration in skill in which the player is weakest will fail first.

Endurance development depends on the rate of duration of exercise, the recovery interval, the previous level of fitness, the individual make up of the player.

The game of Hockey nowadays is being played on many types of surfaces namely grass, gravel and artificial surface. After the introduction of the artificial surface, the players, coaches and the conditioning experts now understand, that, the physical variables are playing vital role to reach high level performance on the artificial surface. All the major tournaments like the Olympics, World cups, Asian games, Champion’s trophy, and Commonwealth games are being played only on the artificial surface. Playing on the artificial surface requires a high level of
physical efficiency, especially in speed, agility, power and endurance. Among the many physical variables, the investigator felt and experienced that the physical variables namely speed, agility, flexibility and strength endurance are important and therefore selected those as physical variables for this study.

The simplification of the rules attracts not only the players and also the spectators. The game of Hockey is played seventy minutes with an interval of ten minutes. Playing on the artificial surface and on other surfaces continuously for seventy minutes is more difficult. The players who have good endurance only can play the game continuously without fatigue, and also can perform better. After the change of off-side rule and the introduction of the rolling substitution, the game has become faster. The player has to run faster and play the game continuously for seventy minutes and it requires more endurance capacity to do better performance. Hence, cardio respiratory and strength endurance is vital for all the Hockey players at all the levels (Singh, 1991).

In sports, seven coordinative abilities are of crucial importance. In different sports the relative importance of these abilities is, however, different (Singh, 1991, p-165).
Physical education teachers and coaches should be well versed with coordinative abilities in putting up good performance in various physical education activities and sports. Differentiation ability enables the sportsman to perceive micro-differences regarding the temporal, dynamic, spatial aspect of movement execution and the differentiation can be in regards to an implement or movement like serve, movement serve, water feeling, etc (Singh, 1991).

Reaction ability permits the sportsman to effective action quickly and purposefully according to a signal and for a sudden change in situation. Balance ability helps in keeping the total body in a certain position or to re-establish it (Singh, 1991).

Coordinative abilities are primarily dependant on the motor control and the regulation processes of the Central Nervous System (CNS). Motor coordination is part and parcel of action regulation and is hence closely linked with the processes of regulation of cognitive, psychic and movement execution aspects of an action. Hirtz (1985), Sutcliffe and Ganham (1981) pointed out that these aspects of action regulation are important determinants of coordinative abilities.

Coordinative abilities have also important and strong links with the motor skills as motor coordination forms the basis of
both. Coordinative abilities become effective in movements only through the motor abilities and activity determined drives and cognitive processes. (Hirtz, 1985)

At the elite level preparation for winning field hockey focuses on the physical aspects of the game. Drills are designed to improve conditioning and physical skills like stick handling, passing, shooting and marking the opposition. Mental skills like focus and emotional control are relatively neglected. When people do get around to talking about the mental game it is usually in terms of qualities like pride, character, and confidence, with little awareness of what they can actually do to develop these qualities. (Saul, 2009)

Improving the physical game is similar to improving the physical skills in that repetition builds strength. By practicing the breathing and relaxation skills, defining what we want to do on offence and defense, and then imagining you executing well, you will strengthen the mental traces of high performance and actually increase the probability and the quality of play. The mind is like a television and it is the user who controls the switch. Hence one should take a breath, see himself making the play, and do it. (Saul, 2009)
The discussion on mental toughness has been part of sport performance since the first two individuals decided to compete against each other. In the past 15 to 20 years however, interest in this issue has intensified. More and more athletes at all levels of ability are realizing that mental toughness is critical to their physical performance. Mental toughness means commitment - going to practice on a regular basis, prepared to work hard. It means one should go for training runs on days when jogging is the last thing he wants to do. Mental toughness is being part of the short corner defensive team with the attitude that, no matter what, the ball will not even reach the net. Mental toughness is the ability to remain completely focused and composed when the player is part of the penalty stroke competition to decide a winner. Mental toughness is an attitude. You take it with you into every situation. (Roger, 2009)

Everyone has some degree of mental toughness. Players all have a point at which they falter -when a situation begins to negatively affect their performance. Here is the first indicator that mental toughness is being challenged. Anyone can train to improve their current level of mental toughness. The most common techniques include visualization, relaxation, energization, self-talk and goal setting. Of these, visualization is
the most commonly used. Visualization is the process of seeing in one’s mind what he wants to accomplish. A common form is what typically happens after a game, when he sits around with his teammates discussing certain great plays (or bad plays) made during the game. What’s really happening is that he is using visualization to re-create what happened on the field. (Roger, 2009)

**Psychology and importance of Psychology in Hockey:**

Psychological factors play a vital roll in field Hockey. The term Psychology comes from the Greek words ‘Psche’. It means mind or soul and logos. The other meaning of this word is Science. In simple Psychology is the science of mind and soul. Psychologists study human nature scientifically rather than formulate conditions.

In the field of competitive game like Hockey, the term sports psychology has taken giant strides in a short span of time. The psychological aspects have been emphasized and becoming a vital aspect in the study of psychological characteristics that limit the performance of an individual in a game situation at high level of competition.
Psychological factors chosen for the study:

A number of psychological factors have a direct relation with the game like Hockey. The success of the game or failure based on the individuals psychological make up. These factors are responsible for the excellence in sports. Apart from better training, good equipments, proper atmosphere, some other factors which play an important role at the time of competition at any level in all sports are psychological factors such as Cognitive Anxiety, Somatic Anxiety, Self confidence, and Achievement motivation.

Anxiety:

Anxiety is in reality a relationship occurring through time between a person and the situation he or she faces. Specific symptoms of the anxiety expectation include heart palpitation, disturbances of respiration, sweating, tremor and shuddering, vertigo and other physiological and behavioral manifestations.

Cognitive anxiety has been found to exert a powerful influence on performance. This statement holds true regardless of the individual’s skill level. Participants in a collegiate softball tournament were put into one of two conditions: high situation criticality or low. While somatic anxiety did not differ in the two
situations, those athletes in the high criticality condition had significantly higher levels of cognitive-anxiety (Krane, Joyce, & Rafeld, 1994). Clearly, the cognitive interpretation an individual gives to a situation exerts an effect. Researchers have found that athletes that are successful interpret arousal to be facilitative. Research conducted with an elite group of swimmers found that anxiety intensity levels were higher in subjects who interpreted their anxiety more debilitative than those who reported it as being facilitative (Jones, Hanton, & Swain, 1994). This has been found to be true of gymnasts (Jones, Swain, & Hardy, 1993) as well as basketball players (Swain & Jones, 1996). Gould, Petrchlikoff, and Weinberg (1984) have reported that the strongest predictor of cognitive anxiety was years of experience such that the more experience an individual had the lower the level of cognitive anxiety. This was supported by research conducted with a group of tennis players. Advanced subjects (individuals who had been participating in the sport for an extended period of time) reported more facilitative interpretations of their anxiety than novices (Perry & Williams, 1998). Similar results have been observed among a group of elite swimmers (Jones, Hanton, & Swain, 1994). Perhaps this is due to previous experience with arousal and how to cope. This conclusion is
supported by the research of Jones, Swain, and Cale (1990), which found that cognitive anxiety was best predicted by an evaluation of previous performances, individual’s perception of preparedness, and goal setting.

**Self Confidence:**

Many Hockey players think that Self Confidence is the positive way of thinking. It is a quality which is formed as a result of one’s experience and reaction to the environment. Hockey players with high level of self confidence will protect themselves in game situations by effectively utilizing the skills acquired at the right time for the right purpose. Generally a player with less self confidence are more anxious, tensed, and less adjusted than those who have greater level of self confidence.

Sport psychologists define self-confidence as “the belief that one can successfully perform a desired behaviour” (Bandura, 1984). Confident athletes expect success and have a high level of self-belief that appears crucial in determining how far they strive towards their goals. It is largely confidence that determines whether people give up or remain committed to their goals following a series of setbacks. For the sake of simplicity,
self-confidence may be considered as conceptually opposite to cognitive anxiety (negative beliefs and performance worries). Both are related to one’s beliefs and both, ultimately, influence one’s performance. Coaches can often see fluctuations in the balance between these two opposing states reflected in the behaviour of their athletes. While confident athletes are not afraid of making mistakes, often taking calculated risks in order to take charge of a situation, self-doubters often avoid responsibility, becoming over-conservative and paralysed by fear of failure. At this puncture, it is appropriate to think of a football striker who has not scored for a number of successive matches and is riddled with self-doubt. When presented with a half-chance which would usually result in a snap-shot, he may elect to avoid responsibility and pass to a team mate.

Bandura’s work related to self confidence highlighted the following aspects: i) for the coach the perception of athletes are of overriding importance was, ii) athletes could gain confidence by viewing successful performance of others at similar levels better known as ‘modelling’ or ‘vicarious experience’, iii) coaches can build confidence among their athletes by verbal persuasion i.e confidence building measure, iv) confidence building could be done using deception to persuade their athletes that goals can
be achieved – of which more later. Verbal persuasion can also take the form of ‘self-talk’, whereby the athlete convinces himself that success will follow. Clearly, confidence is enhanced by good preparation, planning and a sense of optimism. Conversely, negative thinking and pessimism can undermine performance and limit progress. By expecting failure, we set our belief system to a negative channel and start favouring information that is consistent with these beliefs.

The game of Hockey largely depends upon skills, physical make up of the body, psychological built up and motor qualities of the player. The performance of Hockey is also based on the proficiency of skills such as dribbling, hitting, stopping, flicking, scooping, passing, pushing and goal shooting.

**Dribbling:**

Dribbling is used to enable a player to cover ground with the ball in possession, as a preparation for other stroke for example, when maneuvering to pass or shoot, to move away from an attempted tackle, or to accelerate into a space and so draw a defender away from a crowded area. The art of dribbling is most important and a player is not perfect until he has mastered it. The chief object of dribble is to run as fast as possible with the
ball under control, tapping it from right to left and then to the right continuously. (Dubey, 1999)

**Hitting:**

Hitting can often be of decisive importance in the outcome of the match. It is one of the most useful technical acquisitions for any player, of equal importance for both defenders and forwards. Its great advantage over the push and flick lies in its endless possibilities for moving the ball quickly to any part of the field. The hit is made up of several components but a clear distinction is difficult between them as the hit results from a connected series of movements. (Dubey, 1999)

**Pushing:**

Pushing is mostly used for passing over short distances and it is the quickest and easiest of all the methods of passing to learn. The complete movement of push is relatively simple compared with the other ways of passing: the hit, the flick and the scoop. It takes far less time and is carried out without much preliminary action. Using the pushed pass, the player dribbling with the ball can play it at any moment in any direction even when dribbling at top speed. (Horst Wein, 1973)
Every action of the attacking side is directed at getting in to the circle and producing a successful shot at the opponent’s goal. Generally speaking, the shot at goal should be made as soon as the forward has crossed the edge of the circle. For this reason all forwards must be able to shoot hard and quickly at top speed. During the course of the game, countless attacks are mounted. Only a very few culminate with the favorable opportunity for a shot at goal. So the forwards must use the chances with special concentration, determination and prudence. (Deepak Jain, 2000)

The study was focused much on the Physical, Psychomotor, and Psychological aspects of Hockey players at the college level. The investigator of the study was interested to analyse and find out how the Physical, Psychomotor, and Psychological variables influence performance in Hockey. As very few research studies have been conducted on this field, this motivated the investigator to take up the present study.

**Purpose of the Study**

The purpose of the study is to compare the selected physical and psychomotor, psychological and performance among Men Hockey players in different playing positions. To accomplish this factor forty five Hockey men players are selected
as subjects from the inter collegiate hockey tournament according to the chosen playing field positions namely defense, mid fields, and forwards.

The physical variables Agility, Speed, Strength, Endurance, Flexibility, Psychomotor variables namely Reaction time, Movement time, Balance, Psychological variables namely Cognitive Anxiety, Somatic Anxiety, Self-confidence, Achievement Motivation and Performance variables namely Dribbling, Pushing, Hitting, Goal Shooting, Playing Ability are chosen for the study. These variables will be tested through standard Physical tests and psychomotor tests and Psychological Questionnaires. The data obtained will be statistically analysed and compared, employing analysis of variance statistical techniques.

**Statement of the Problem**

The purpose of the present study was to analyse the selected physical, psychomotor, psychological and performance variables among men hockey players in different playing positions.
Objectives of the Study

This study aims at investigating the differences in the selected physical, psychomotor, psychological and performance variables among the players of defense, midfield and forward in Hockey by achieving the following four objectives which are as follows:

1. To determine the relationship between the playing ability of hockey players with selected physical, psychomotor, psychological and performance variables separately;

2. To determine the relationship between the playing ability of hockey players with the combined effect of selected physical, psychomotor, psychological and performance variables;

3. To determine the variables which predict the playing ability of hockey players from selected physical, psychomotor, psychological and performance variables; and

4. To compare the variation among the players of defense, midfield and forward in hockey on the selected variables
(physical, psychomotor, psychological and performance variables).

**Assumptions**

Validity of this study will rely on the following assumptions:

1. With the exception of the research testing, subjects neither increased nor decreased their daily activities from the levels previous to the study.

2. Subjects neither increased nor decreased their daily caloric intake from levels previous to the study.

3. Participants will not perform any vigorous exercise during the course of study.

4. Participants will be tested accurately by standardized test items.

5. Participants complied with the best of their ability to the testing directions.

**Delimitations**

1. To achieve the purpose of the study, 45 male hockey players were selected at random from the affiliated colleges of Madurai Kamaraj University who represented their colleges in the Intercollegiate Hockey tournament conducted by Madurai
Kamaraj University, Madurai, TamilNadu, India during the year 2008-2009.

2. The age of the subjects ranged from 17 to 22 years.

4. The selected subjects were divided into three groups based on their playing positions such as defense, midfield, and forward.

5. The following variables were selected for this study.

**Physical Variables**

- Agility
- Speed
- Strength Endurance
- Flexibility

**Psychomotor Variables**

- Reaction Time
- Movement Time
- Balance

**Psychological Variables**

- Cognitive Anxiety
- Somatic Anxiety
- Self-confidence
Achievement Motivation

**Performance variables**

Dribbling
Pushing
Hitting
Goal Shooting
Playing Ability

6. The standardized tests were used to collect relevant data on the selected dependent variables.

**Limitations**

1. The previous experience of the subjects in the field of sports and games, which might be influencing on the data collection, was not considered.

2. Psychological factors, food habits, rest period and lifestyle could not be controlled.

3. The weather conditions such as atmospheric temperature, humidity, and meteorological factors during testing period were also not considered.

4. Though the subjects were motivated verbally, no attempt was made to differentiate the motivation level during the period of testing.
5. Since the manual operation was made during shuttle run and 50m run, the time was recorded in one tenth of a second.

**Hypotheses**

The following research hypotheses were framed for this study and it was tested at .05 level of significance.

1. It was hypothesized that there was significant relationship between the playing ability of hockey players with selected physical, psychomotor, psychological and performance variables separately.

2. There was significant relationship between the playing ability of hockey players with the combined effect selected physical, psychomotor, psychological, and performance variables.

3. The playing ability of hockey players may be predicted from selected physical, psychomotor, psychological and performance variables.

**Significance of the Study**

1. The results of the study may provide the standards for the university hockey players in various predictor variables of
specific skills in hockey, physical, psychomotor, psychological and performance variables.

2. The prediction and conclusions of this study will pave the way for creating a new model that can be applied to the men in selecting hockey players.

3. The findings of the study might be used as a screening tool and technique in analyzing and classifying the players.

4. This study may enable the coaches and the trainers to develop sound training.

5. This study might motivate other hockey lovers and scholars to take up similar studies.

Definition of the Operational Terms

Playing Ability

In the present study playing ability refers to ability of the players to play hockey game and it was assessed by the judges or subjective rating for this study.

Agility

It is the ability of the human body to change direction quickly and effectively. (Uppal, 1992)
**Speed**

The capacity of moving a limb or part of the body's lower system or the whole body with the greatest possible velocity. (Dick Frank, 1992)

**Strength Endurance**

The ability of a muscle or group of muscles to overcome resistance or to act against resistance for longer duration under conditions of fatigue or tiredness. (Singh, 1991)

**Flexibility**

Flexibility can be defined as the ability to perform movement with a great range of motion or large amplitude. (Uppal, 1992)

**Psychomotor**

Psychomotor is relating to movement or muscular activity associated with mental processes (or) relating to the combination of psychic and motor events, including disturbances. (“Psychomotor”, 2007)
**Reaction Time**

“According to Singh (1991) reaction time is the ability to react quickly and effectively to a signal”.

Reaction time is the ability to initiate quickly and to perform rapid and well directed actions following a signal. (Dictrich Harre, 1982)

**Movement Time**

Movement time is defined as the time that it takes to complete the movements of a particular action, from its initiation to its termination. (“Movement time”, 2009)

**Balance**

Singer defined balance as the ability to maintain body position which is necessary for the successful performance of sport skill”. (Robert, 1978)

**Sports Psychology**

“Sports psychology is the branch of sports and exercise science that seeks to provide answer to questions about human behaviour in sports”. (Thelma, 1992)
Cognitive Anxiety

“Cognitive anxiety is a mental component of anxiety and is caused by negative self-evaluation”.

Cognitive anxiety is characterized by “conscious awareness of unpleasant feelings about oneself or external stimuli, worry, disturbing visual images”. In sport, cognitive anxiety is most commonly manifested by negative performance expectations and thus negative self-evaluation. (Rainer, 1990)

Somatic Anxiety

“Somatic anxiety refers to the physiological and affective elements of the anxiety experience that develop directly from autonomic arousal. It is reflected in such responses as rapid heart rate, shortness of breath, clammy hands, butterflies in the stomach, and tense muscles”. (Rainer, 1990)

Self Confidence

It is the belief that one can successfully perform a desired behavior. (Weinberg and Daniel, 1995)

Achievement Motivation

Achievement motivation is dominant motivational orientation in situation characteristised by the attainment of
clear success or failure. The two primary motives are either to achieve success (Mass) or to avoid failure. (Anne and Cripe, 1986)

**Dribbling**

Dribbling is the basic skill field Hockey of all the basic skills; the dribble is the one which can most often open up a game and create that all important goal scoring chance. (Taylor Ian and David Vear, 1998)

**Goal shooting**

The ability to slip into the right position at the right time will always set apart the nature goal scorer from his gifted teammates. However the skills in shooting at goal can be developed and finetuned and should therefore be practiced regularly by players of all standards. (Taylor Ian and David Vear, 1998)

**Pushing**

A push moves the ball along the ground by a pushing movement of the stick after has been placed close to a stationary (or) rolling ball. When a push is made, both the ball and a head of the stuck are in contact with the ground. (Taylor Ian and David Vear, 1998)
Hitting

A Hit is a stroke with a swinging movement of stick in order to increase the ball’s speed. (Taylor Ian and David Vear, 1998).

Summary of the Chapter

This thesis consists of five chapters. The title was introduced in the first chapter and the statement of the problem, hypothesis, and significance of the study and definition of the terms are discussed. The next chapter describes the sources of review of related literature. Selection of subjects, variables, units, experimental design, statistical procedure and various training methods are given in the third chapter. Analysis of data and discussion on findings and discussion on hypothesis are highlighted in the fourth chapter. The thesis is concluded with summary, conclusions with suitable recommendations, which will be useful for further investigation.