



Physical and performance variables of women hockey players

Dr. Ashok Kumar

PGT Physical Education, DAV School, Safidon, Jind, Haryana, India

Abstract

The aim of the present report was to analyze the performance of women hockey players and their physical fitness profile. Many essential parameters related to the performance of the players were compiled in the present study and are described in detail. The morphological parameters which were considered in the present study are arm strength, leg strength and abdominal strength. While the physical parameters include agility, speed, dribbling and goal shooting.

Keywords: Morphological parameters, Physical, strength and dribbling

Introduction

Hockey "National game of India" was introduced by the British in India. India holds record in achieving the heights of success in hockey in both national as well as in international forum. Hockey has been reported as physiologically demanding, particularly at the professional level. It is one of the most spectacular team games. In addition, the game requires at times intense physical contact, aggressive play and exercise intervals at maximal capabilities.

A successful athlete must have some good abilities which included endurance, strength, speed and flexibility. Hockey is considered as one of the fastest game and involves both aerobic and anaerobic activities during the play. Muscle strength which is gained mainly by exercises, development of strong muscles in arm (forearm, triceps). Development of muscles in leg includes (hamstring, calf and hip muscles) (Manna, I., *et al.*, 2010). Strength of these muscles results in less injuries. The athletes with weaker development of muscles are more prone to injuries. Physically and mentally strong players have edge on comparably weaker players (Elferink-Gemser, M. T., *et al.*, 2004). Considering for the better performance of the team, selection is based on their training process and fitness parameters. Playing sports like hockey releases the hormone endorphin which helps in fight depression and anxiety.

Abant Izzet Baysal (2015) in his studies have reported that speed test, leg power, and grip strength scores of hockey players were significantly better non-sporting individuals. While the body posture was not found to vary with non sporting persons.

From the statistician point out of view, half of the population is females in the world. Owing to this number, the participation of the females is less as compared to males. But during the present times an increasing trend is being going on with related to the participation of the females in world sports. This leads to greater opportunities in females. Still in India the female participation is far less than that of men and boys in our country.

Enhance and develop women's lives in the society.

To the best of the author knowledge, there are only few studies related to physical and performance variables of women hockey.

Importance of physical variables in hockey

Athletes success in hockey does not mainly depends upon the level of competency over the fundamental skills but also depends upon a number of other factors. Paramount important among the various other factors is the 13 physical variables. Physical variables include the physical structure and fitness a combination of many characteristics bestowed upon the physique, namely, strength, speed, speed endurance etc. In other words "Physical fitness or condition is the sum of five motor abilities namely, strength, endurance, flexibility and co-ordinative abilities", these motor abilities and their complex form are the basic pre requisites for human motor actions. The various factors which determine the success of the athlete are

Morphological parameters	Arm strength
	Leg strength
	Abdominal strength
Physical strength	Agility
	speed
	dribbling
	Goal shooting
	Reflex action

Speed and its importance

Speed is an innate ability which can be Improved through practice and training. Speed is a prized quality in many sports. Speed performances appear in different form in various sports. Singh was of the view that there are five types of speed abilities namely reaction ability, movement speed, acceleration ability, locomotor ability and speed endurance. Speed is considered one of the most component in hockey. In hockey speed is directly related to the more possession of the ball during the game. Athlete strength is directly related to the speed. The more strength the more the speed. Speed is a valuable factor in games like hockey, football, handball.

Hockey is the game which primarily depends upon the speed of the players. The game looks spectacular when it is played by the players who possess greater mobility and speed. The players are called upon to chase an opponent, move with the ball or move along the team mates with greater speed during the game.

Agility and its Importance

Sports person should possess some qualities which in basic terms is called Agility. It is a unique attribute which contributes strength, speed of the sports person, eye hand coordination, reflex time, decision making, and analyzing the opponents in quick time. Various scholars have defined agility in terms among the most common is as 'it is the ability to rotate body quickly and accurately'. Agility is very important in all abilities involving quick changes in position of the body and its parts. Fast start and stop, quick change in directions are fundamental to fast performance, particularly in all out door games such as hockey, basketball, tennis, shuttle badminton, kho-kho. Football and gymnastics. These games require running 15 ability, agility etc., Agility plays very important role in all the physical activity where efficient foot work and quick change in body position which helps the individuals perform in sports. Agility is more effective when it is combined with the high level of strength, power, endurance and speed.

Speed Endurance and its importance in Hockey

Hockey is considered as the fastest game. The players require too much energy and stamina. The various components for the speed endurance are

Position of the body

Placement of the foot

Stride adjustment

Body lean

Body Posture

Reactive strength

Strength (concentric, isometric, and eccentric)

Hockey like football is the fast game and its duration of play is 70 minutes. During the play athlete has to control the ball with his skills. It has been reported there is an intense increase in the basal metabolic rate (BMR). Successful athlete ultimately mainly on cluster of factors viz. physical fitness such as speed, endurance, strength, flexibility, agility, coordination, etc. Many coaches include fitness testing among their training control strategies to detect strong and weak points both at individual and group levels.

Janelle and Hillman, (2003) have stated that right actions and tactical skills are important and fundamental for the survival of the athlete in the sports. Starkes, (1993b) in his studies concluded that athletes have to adopt with changing and complex environment. Fatigue players are considered as less successful.

Arm strength and its importance in Hockey

Athlete's potential especially for hockey players, strength and stamina is a basic component. Arm strength is of the fundamental importance in athletes. Scholars have given much importance on analyzing the strength of the athletes in special

relation to arm and leg strength. Spencer, M. *et al.*, (2004) in their studies have suggested that arm and leg strength of hockey players were significantly better than age and weight matched non-sporting controls. Strength of arm is defined as the capacity of a person to exert muscular force of the arm. The performance of hockey players mainly depends upon the strength and the position of the arms and legs. The more the arm strength, more will be chances of hitting the ball in accurate position.

Leg strength and its importance

Second aspect for a successful athlete is the strength in legs. Strength of the leg constitutes how much a person exert muscular force of the leg. Strength of the legs is considered to be directly proportional to the success in games especially in hockey.

Abdominal strength and its importance

Abdominal and body strength is essential in sports. The relationship between strength of the abdominal and fitness test has already conducted by many authors. The abdominal muscles support various vital organs of the body. There strength is thus vital for the athlete. During the game studies have revealed that heart rate almost doubles. The blood value lactose values have been recorded as 13.7nmol/L. Therefore, if athlete is physically strong with a strong abdominal muscle, he can delay the onset of fatigue during the play and be more likely to be the stronger team in the finishing stages of a game. The results of the various studies have revealed that abdominal muscular endurance, strength, power and cardiovascular fitness were considerable in maximising sports performance. The physical fitness of the athlete which mainly depends on abdominal strength are

1. Vertical jump
2. Flexibility
3. Endurance
4. 40M speed,
5. 1 minute sit-up.

These components affect the better hockey performance of the athlete. All these components abdominal strength, thigh and calf strength must occupy a proper threshold in order to enhance the athlete's performance.

Vertical and jumping are the important components in hockey for the athlete. It is considered as lower limb and abdominal strength which is required in displaying a high-performance game in field hockey. Such type of studies has been reported by many authors. It is believed this component is able to identify players in different levels and enhance sport performance.

Many studies have revealed that who suffered more injuries during the training and in field have less developed abdominal and leg muscles. Therefore the athlete is more prone to injury.

Performance variables and their importance in general

Hockey is a spectacular game which enthralls the participants and spectators in a game of seventy minutes duration. In a match played between two teams of identical abilities of above average standard a series of skill and techniques are feint to use in an effort beat each other. To the host of skills

belong hitting, pushing, dribbling and passing. The mastery over those important skills decides the fortunes of the teams.

Though a number of Performance variables influence the performance, the scholar selected the following for the study.

1. Goal Shooting/ Hitting at Goal
2. Dribbling
3. Pushing
4. Passing/Total Performance

Goal shooting/ Hitting at Goal

Hitting is used while talking the free hit, scoring the goal and dispatching the ball to a teammate at a farther distance. The harder the ball is hit, the faster it traverses. A hard hit at the goal will be negotiated by the goal keeper with great difficulty and often times the ball finds its way in the goal. A hard hit at the goal may even help in earning a penalty corner or corner or even penalty stroke by the offensive sides, which cashed in subsequently.

Dribbling and its importance in Hockey

It is defined as self pass. If a player repeatedly contacts the ball alternatively on either side of ball or it propels from behind while progressing with ball or tap the ball diagonally forward from right to left and from left to right, keeping it under as perfect control while moving towards the desired target it is called dribbling.

1. Through dribbling players can move the ball from one place to the other.
2. Through dribbling players can conceal their movements from the opponents and give proper pass.
3. Through dribbling players can increase the position of the ball.

Push and its importance in Hockey

Push is to play the ball along the ground towards a desired direction in such a way that no sound is produced at the time of impact of the stick and ball, without making any swing during the time of impact. Push is another important skill used by both offensive and defensive hockey players. An accurate pass to a teammate in a close range is delivered with the ball by adopting this skill. With fake and feint if this is combined it will be of great importance. Push is also used to fend off, to score the goal, to take push in, during penalty corner and even while taking penalty stroke. Most coaches are of the opinion that push is only next in importance to hit.

Pass and its importance in Hockey

When ball is propelled to travel on the ground using any legitimate push stroke by any player from his full control to the complete control of his teammate it can be called as a pass, Push Pass is more frequently used than dribbling in hockey. Pass is used for dodging the player that's why it is called "pass

is the best dodge'. Pass is used for scoring a goal by giving ball to the unmarked player in shooting circle. With one perfect pass we can beat all the players in the defense. Pass plays very important role in winning and losing a match.

Total performance and its importance

Performance is the execution of fundamental skills in any game. For the better performance ability in the components of physical fitness is required to be good. The other factors such as physiological, psychological and the Anthropometrical variables must also be good. For the success in any match in any game the total performance of the particular team must be better than the other team in all compartments. Performance is the measuring scale for the success or failure for any team. Total performance of the team depends upon the fundamental skills, physical, physiological, anthropometrical and psychological parameters. Anxiety is one of the psychological parameters which has great influence on the performance of hockey players.

Anxiety and its role in the performance of Hockey players

Anxiety is a biological response that protects humans from harm. The Merriam Webster dictionary defines anxiety as "an abnormal and overwhelming sense of apprehension and fear often marked by physiological signs (as sweating, tension, and increased pulse), by doubt concerning the reality and nature of the threat, and by self-doubt about one's capacity to cope with it". All athletes show anxiety during different period of the play. But the anxiety duration varies from one individual to other. Some athletes show more intensity of the anxiety. Fear and anxiety have been recognized and analyzed as an inevitable consequent part of the human experience and confrontation since early historical times.

Anxiety is commonly used to describe a transitory state or condition that varies in magnitude and fluctuates over time. Anxiety is also used to characterize a personality trait that refers to individual differences in predisposition toward anxiety states. He differentiated between anxiety as a transient state and anxiety as an essentially stable trait. He has proposed two anxiety constructs, State anxiety and trait anxiety.

The main causes of anxiety

Anxiety of the athlete is determined by various physiological and psychological disorders. Athlete with social anxiety disorder fears social and his performance skill in the match. The most common social anxiety disorder for the athlete is public speaking.

Second anxiety cause of the athlete is performance anxiety. If a player is suffering by performance-based anxiety, players performance is badly affected. If negative thoughts are controlled by the athlete this can help in boosting the performance of the player.

Inverted U Hypothesis Yerkes and Dodson (2006)	This hypothesis states that low arousal/anxiety decreases the performance of the athlete.
Drive Theory Hull (1943)	This theory relates that situation specific anxiety and performance is linear, it also states that higher anxiety leads to better performance
Reversal Theory Apter (1982)	This theory states that how the anxiety affects the performance of the athlete depends upon own interpretation of the athlete
Conceptual model of Athlete performance Smith and Smoll (1990)	This view depicts that anxiety influences individuals stress response to a competitive stage.
Multidimensional anxiety theory Martens et al., (1990)	This theory states that cognitive anxiety is negatively related to performance of the athlete, whereas somatic anxiety is related to U manner performance
Catastrophe theory Hardy and Parfitt (1991)	This theory states that somatic anxiety shows inverted U manner performance.
Individual zones of optimal functioning Theory Hannin (1997)	This theory depicts that high-level performers have an optimal zone of anxiety. Their performances reach at the peak at certain anxiety values. If the anxiety level decreases or increases that level the performance of the individual falls

Anxiety and Performance

Anxiety directly influences the type of the game of the athlete. Coordinated movement is badly affected during the anxiety and the players are unable to give their best in the field. Different negative thoughts and expectations of failure can have drastic effect on individuals' game. Some athletes are more prone to anxiety than others.

There are different ways how to overcome anxiety

1. Negative thoughts need to be reduced before playing, and focus should be mainly on the game
2. Different aspects need to learn how to get success in the profession
3. Self-confidence: Athlete should show self confidence that he has trained well and is prepared fully for the game.
4. Friendly environment is the key to lift the players morale during anxiety
5. Take help from the seniors, the junior players should get guidance from the senior players.

Significance of the Study

1. The present review will help us to understand the performance among the women hockey players
2. This study provides a basic information related to the value of the arm and leg strength for the athlete
3. The present study also helps us to understand how to overcome the anxiety during difficult stages.
4. For the success of the athlete he should follow the advices of the coach and the senior mates
5. The present study also ensures us to have team spirit by making friendly environment.

References

1. AAHPER, AAHPERD Youth Fitness Test Manual, Washington: D.C. As cited by Bosco, James, S. and Gustafson, William, F. Measurement and Evaluation in Physical Education, Fitness and Sports", Prentice Hall, Inc., Englewood Cliffs, 1976.
2. Barrow, Harold M, McGee. Rosary a practical approach to measurement in Physical Education, Philadelphia Lea and Febiger, 1979.
3. Mepartion CA. Fitness and Sports (London: G Bell and Son Ltd, 1957.
4. Gaur SK, Singh A. Comparison of Selected Physical Fitness Components among Badminton and Table Tenni.