

## ROLE OF PERFORMANCE VARIABLES AND IMPORTANCE IN HOCKEY GAME

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### ABSTRACT

Hockey is a sport that typically spans a duration of seventy minutes, during which players engage in fast-paced gameplay on a surface composed of gravel or synthetic materials. The objective of the game is to strike the ball back and forth with great speed. With the exception of the goalkeeper, all other players are required to engage in continuous movement throughout the field during the whole of the game. This necessitates the presence of the capacity for nourishment, which encompasses the intricate network of blood arteries associated with the heart, as well as the respiratory organs. In the realm of athletics, the phrase used to describe this particular skill is "cardiovascular endurance" or "cardiorespiratory endurance," sometimes known as "speed endurance" or, more simply, "stamina." Muscular endurance refers to a form of endurance characterized by the repetitive execution of a specific movement pattern, which serves as an indicator of the muscles' ability to sustain prolonged activity. This type of endurance is significant as it enhances the effectiveness of the cardiovascular system, specifically the heart and lungs, thereby augmenting the supply of blood and oxygen to the active muscles. This facilitates optimal muscular functioning and aids in the elimination of lactic acid accumulation, hence preventing premature weariness.

**KEYWORDS:-** Hockey Game, Muscular endurance, speed endurance, cardiovascular endurance

### INTRODUCTION

The longstanding dominance of India in Olympic hockey was disrupted in the final of the 1960 Rome Olympics, when Pakistan emerged victorious against India. Nevertheless, the remarkable achievement established by India is expected to last for generations, since no

other nation has ever come near, much alone surpassed it. When discussing notable and esteemed players in the realm of Indian hockey, many names immediately spring to mind, including Dhyan Chand, K.D. Singh, Dhanraj Pillay, and Dilip Tirkey. India's status in the sport of hockey has reached unprecedented levels due to their superb gaming skill and persistent zeal.

The Indian hockey team has achieved a remarkable feat by securing a total of eight Olympic gold medals, which stands as the largest number of gold medals won by any national team. Notably, the team's exceptional performance includes an impressive streak of six consecutive gold medals, along with an extraordinary record of winning 24 straight matches spanning from 1924 to 1956. This record, however exceptional, may potentially be surpassed in the future. India has had notable success in many international sporting events, including a gold medal in the World Cup, two gold medals in the Asian Games, and two gold medals in the Asia Cup.

## **AGILITY AND ITS IMPORTANCE**

Agility is a significant motor attribute that has a determining influence on physical performance in activities. According to Johnson and Nelson (year), agility may be described as the physiological capacity that allows a person to swiftly and accurately alter their body posture and direction. Field hockey, a sport that has similarities to football, requires a significant level of agility from its participants. The measurement of agility encompasses a range of methods, including the shuttle run, side stepping, zig-zag run, and combinations of forward, sideways, and backward movements.

According to Mathews (year), agility is characterized as the capacity of the human body or its individual components to swiftly and precisely alter their direction. The attribute of agility has significant importance in several capacities that need rapid alterations in bodily posture and its constituent components. The ability to rapidly initiate and cease movement, as well as swiftly change directions, is a crucial aspect of achieving high levels of performance, especially in various outdoor sports such as hockey, basketball, tennis, shuttle badminton, kho-kho, football, and gymnastics. These sports need physical attributes such as running ability and agility. Agility assumes a crucial part in many physical activities, as it facilitates effective footwork and rapid adjustments in body posture, hence enhancing an individual's

performance in sports. The effectiveness of agility is enhanced when it is complemented with a high degree of strength, power, endurance, and speed.

## **SPEED ENDURANCE AND ITS IMPORTANCE IN HOCKEY**

The concept being referred to is the capacity to endure moderately demanding physical endeavors, such as engaging in prolonged sessions of long-distance running, swimming, or cycling, with durations ranging from 45 seconds to 2 minutes. The 400-meter sprint in track and field serves as a prominent illustration of an individual's capacity for speed endurance. The efficacy of this capability is closely tied to the potency and efficiency of the glycolytic energy generating process. The phosphagens, namely the alactacid metabolic pathway, provide a substantial contribution to the creation of energy. Glycolysis leads to a significant increase in lactic acid concentration inside the muscles, making it one of the primary contributors to exhaustion during activities that require high levels of endurance. Consequently, speed endurance sports often result in a substantial accumulation of oxygen debt. The capacity of muscles to sustain contractions at the necessary force levels, even in the presence of elevated levels of lactic acid, is a fundamental need for achieving optimal performance in activities that demand speed endurance. During activities with a duration of around 20-22 seconds, the energy generation is mostly accomplished by alactacid metabolism, which involves the breakdown of adenosine triphosphate (ATP) and creatine phosphate (CP).

Endurance has significant importance for hockey players, as it is crucial for sustaining prolonged physical activity for a duration of seventy minutes. This entails the need for players to possess sufficient stamina to engage in repeated bouts of sprinting, both while in possession of the ball and during periods without ball possession, over the course of the game. Muscular endurance refers to the ability of a muscle to sustain lengthy periods of labor without experiencing tiredness.

## **ARM STRENGTH AND ITS IMPORTANCE IN HOCKEY**

Strength is an essential element in all competitive activities, particularly in the context of hockey. Both upper body strength and lower body strength are crucial factors that must be considered. Arm strength refers to the magnitude of force generated by the muscles of the

shoulder girdle and wrist during a single maximal exertion. The term "arm strength" may be described as an individual's ability to generate muscular force using the muscles of the arm. The performance of hockey players is contingent upon their arm strength, since the stick is the only means by which the ball is played and it is grasped by the hand. The importance of arm strength in the sport of hockey is crucial for the precise and efficient execution of various abilities. The act of pushing the ball, striking the ball, transferring the ball to a fellow player, and skillfully capturing the ball are essential actions in order to successfully achieve a goal in the context of the game.

## **LEG STRENGTH AND ITS IMPORTANCE**

Strength is an essential element in all competitive activities, particularly in the context of hockey. Both upper limb strength and lower limb strength are of utmost significance. Leg strength refers to an individual's ability to generate muscular force using the muscles of the leg. The performance of hockey players is contingent upon their leg strength, as it enables them to engage in running, keep control over their pace, and sustain stability throughout the duration of the game. The function of leg strength in the sport of hockey is crucial for the precise and efficient execution of skids.

## **ABDOMINAL STRENGTH AND ITS IMPORTANCE**

The abdominal muscles are a collective collection of muscles that encircle the central region of the body or trunk, serving as the genesis point for all bodily motions. The abdominal muscles have a crucial role in giving stability and support to the central region of the body, therefore enabling individuals to engage in activities such as walking, running, and maintaining an upright sitting posture. In other terms, the abdominal muscles serve as the connective element that binds the upper and lower body regions. In the realm of sports that require extensive running and leaping, where a combination of movements and variations is demanded, experienced trainers often assert that as the leg becomes fatigued, the likelihood of experiencing defeat becomes significantly heightened. One of the key benefits of having strong abdominal muscles is a reduction in the occurrence of back injuries, which are often associated with daily activities and sports-related movements, hence mitigating the associated risks.

The fatigue experienced in the legs during physical activity may be attributed to a combination of inadequate foundational strength and insufficient muscular endurance. In some instances, the legs may become unsupported owing to the presence of weak abdominal muscles, resulting in difficulties in lifting the knees, reduced stride lengths, and a decrease in driving force, ultimately leading to a slower overall motion. The abdominal muscles play a crucial role in supporting the lungs and diaphragm, hence influencing the efficiency of breathing. Strengthening these muscles may enhance respiratory function, which has significant importance in the context of athletic performance. Consequently, this process facilitates several facets of an individual's exercise routine as it expedites the oxygenation of blood and enhances the effective transportation of blood to muscles. In order to optimize resistance and engage the tiny muscles within the musculature, it is recommended to execute sit-up exercises with bent knees rather than with the legs extended.

## **PERFORMANCE VARIABLES AND THEIR IMPORTANCE IN GENERAL**

Hockey is an exhilarating sport that captivates both players and onlookers during a match lasting a total of seventy minutes. In a contest between two teams with comparable talents of above-average proficiency, a sequence of skills and tactics are used in an attempt to surpass one another. The repertoire of abilities includes striking, shoving, maneuvering the ball, and distributing it to teammates. The proficiency in such crucial qualities determines the success of the teams.

The research focused on a specific set of performance characteristics chosen by the scholar, since they were deemed to have a significant impact on performance.

Goal Shooting/ Hitting at Goal

Dribbling

Pushing

Passing

Total Performance

**Goal shooting/ Hitting at Goal**

The act of striking the ball is used during the execution of a free hit, the successful conversion of a goal, and the distribution of the ball to a teammate situated at a further distance. The velocity of a ball increases proportionally with the force applied to it upon impact. The goalkeeper typically has significant challenges while attempting to defend against a forceful strike aimed at the goal, resulting in a frequent occurrence when the ball successfully enters the goal. A forceful strike towards the goal has the potential to result in the awarding of a penalty corner, corner, or penalty stroke to the attacking team, which may then be capitalized upon.

According to Wein (1973), the hit has significant relevance in determining the outcome of a structured game. Consequently, it is recommended that coaches prioritize the refinement of this skill. The significance of the roles played by both defenders and attackers is equivalent.

## **Dribbling and its importance in hockey**

The term "self pass" is often understood to refer to a certain action or maneuver. Dribbling refers to the act of a player consistently making contact with the ball on alternating sides, propelling it from behind while advancing with the ball, or tapping it diagonally forward from right to left and left to right. This skill is executed with precise control as the player moves towards their intended target.

Dribbling enables players to transport the ball to different locations on the field.

Dribbling enables players to effectively obscure their movements from opposing players and execute accurate passes.

By use of dribbling, players have the ability to enhance the ball's positioning.

Dribbling enables athletes to compel their opponents to assume a defensive stance.

Dribbling is considered to be a fundamental technique used in order to attain a desired objective.

Prior to the performance of any talent in hockey, it is customary for dribbling to be used.

The act of dribbling the ball is often used in situations when the opportunity to execute a pass is not available. While contemporary hockey is known for its hit and run strategy, the presence of a brief dribble has consistently been a defining aspect of the sport.

## **Push and its importance in hockey**

The act of "pushing" in the context of ball play involves deliberately directing the ball along the ground towards a specific target without generating any audible sound upon the collision of the stick and ball. It is important to note that this action does not include any swinging motion at the moment of impact.

The talent of pushing is seen significant for both offensive and defensive hockey players. The talent of delivering a precise pass to a teammate at close proximity is achieved by effectively manipulating the ball. The combination of fake and feint has significant significance. The push technique is used in several scenarios within the sport, including defensive maneuvers, goal scoring attempts, receiving a push pass during a penalty corner, and executing a push stroke during a penalty stroke. The prevailing viewpoint among coaches is that the push is second in significance only to the hit.

## **Pass and its importance in hockey**

A pass may be defined as the act of propelling a ball along the ground by a genuine push stroke, executed by any player, from their entire control to the total control of a teammate.

The use of the push pass in hockey is more prevalent compared to the act of dribbling. The term "pass" is used as a strategic maneuver by players in order to evade opponents, thereby earning it the title of "pass is the optimal evasion technique."

The pass is a technique used in the sport of scoring a goal, when the ball is transferred to an unmarked player inside the shooting circle.

By executing a single precise pass, it is possible to outmaneuver and overcome all the defensive players. The execution of pass plays significantly influences the outcome of a match, contributing to both victory and defeat.

## **Total performance and its importance**

Performance refers to the execution of essential abilities in any game. In order to enhance performance capabilities, it is important to possess a high level of physical fitness across several components. In addition to the aforementioned characteristics, it is essential that the physiological, psychological, and anthropometrical elements are also favorable. In order to achieve victory in any match, regardless of the game, it is essential that the overall performance of a certain team surpasses that of the opposing side in all aspects. Performance serves as the evaluative metric for determining the degree of success or failure shown by a certain team. The overall success of a team is contingent upon several factors, including basic skills, physical abilities, physiological characteristics, anthropometric measurements, and psychological aspects. Anxiety is a significant psychological factor that has a profound impact on the performance of hockey players.

## **Anxiety and its role in the performance of Hockey players**

Anxiety is a physiological reaction that serves as a protective mechanism for people. According to the Merriam Webster dictionary, anxiety is characterized as an atypical and overpowering feeling of unease and dread, frequently accompanied by physiological manifestations such as perspiration, muscular tension, and heightened heart rate. It is further characterized by uncertainty regarding the existence and characteristics of the perceived threat, as well as self-doubt concerning one's ability to effectively manage it. Every individual encounters a certain degree of typical worry. Nevertheless, some people may encounter this emotional state with a significant level of intensity or length, leading to the development of psychophysiological dysfunction. Fear and anxiety have long been acknowledged and examined as inherent and inescapable aspects of the human condition and encounters, dating back to ancient times (May, 1977; Spielberger, 1972). The notion that anxiety is a typical reaction to hardship or the anticipation of misfortune is not a novel idea. During ancient times, anxiety was acknowledged as a prevailing condition characterized by a pervasive sense of unease or mental distress. Subsequently, in the 17th century, it evolved into a descriptive classification including emotions of fearfulness, often accompanied by bodily manifestations such as chest tightness. Under typical conditions, a wide spectrum of anxiety levels exists, which is seen to be within the bounds of normalcy and conducive to overall well-being. Pathological anxiety is distinguished by its excessive, pervasive, and uncontrollable nature. Anxiety is characterized by three distinct elements: the recognition of



possible danger or injury, the psychological manifestations of alarm, dread, or fear, and the physiological reaction including autonomic discharge and motor activity. According to Spielberger (1972), there is a suggestion that anxiety is often administered in an indiscriminate way. The term "anxiety" is often used to denote a temporary state or condition that exhibits varying degrees of intensity and changes over a period of time. Anxiety may also be used to describe a personality attribute that pertains to variations among individuals in their inclination towards experiencing sensations of anxiety. The author made a distinction between anxiety as a temporary condition and anxiety as an inherently enduring characteristic. The author has put forward two distinct conceptions pertaining to anxiety, namely State anxiety and trait anxiety.

State anxiety may be described as an emotional state that varies in both intensity and duration. It is characterized by subjective experiences of apprehension, uneasiness, and concern. It is well accepted that the level of state anxiety tends to increase when individuals see their surroundings as potentially hazardous.

Trait anxiety, as described by Spielberger (1972), refers to an individual's inherent tendency to see events as potentially hazardous and their inclination to respond to such perceived dangers with responses of state anxiety. Individuals with elevated levels of trait anxiety are inclined to see a larger array of circumstances as being potentially menacing. As a result, individuals exhibit an elevated level of state anxiety in response. In the aforementioned theoretical framework, trait anxiety is conceptualized as an inherent inclination towards experiencing anxiety across many contexts, while state anxiety pertains to the unique emotional responses elicited under certain circumstances. According to Spielberger (1983), there is a positive correlation between the strength of an individual's anxiety trait and the likelihood of experiencing heightened levels of state anxiety in a scenario seen as hazardous. Approximately 25% of the people residing in the United States experience the presence of at least one anxiety disorder during the course of their lifetime. Anxiety disorders have a higher incidence among individuals in younger age groups, particularly between the ages of 25 and 44. This is particularly notable among individuals who possess lower levels of education, are single, do not have children, and identify as female.

Competitiveness may be described as the underlying drive towards achieving success in sporting events. Likewise, competitive anxiety may be seen as the sport-specific manifestation of the drive to evade failure or the inclination to experience worry and concern around failure within the context of sports competition. Evident are the variations in competitive anxiety among individuals. Certain people, especially those who possess exceptional athletic abilities, experience physiological distress in anticipation of an impending competition, while others exhibit composure and self-regulation. The presence of individual variances has significant consequences for those involved in sports, particularly when considering the relationship between anxiety and accomplishment motivation.

## CONCLUSION

It is well recognized that sports significantly contribute to the holistic development of individuals, promoting inclusivity and developing intercultural understanding across diverse populations, particularly in the context of racial diversity in sports. Certain people possess innate genetic traits that are predisposed to facilitate success in sports. These people devote little time and effort into improving their performance in sports. Presently, there is a growing trend towards prioritizing scientific conditioning approaches as a means to expedite growth and enhance performance optimization. In contemporary times, elite athletes, even those of the highest caliber, actively seek to use all available resources and strategies at their disposal in order to get a distinct advantage in competitive settings. In order to enhance their support technique and game performance, players must first cultivate the requisite physical attributes that facilitate the effective integration of their physical and performance features inside their gameplay. This aspect of training is very rewarding as it enables individuals to acquire a heightened awareness of their own bodies, facilitating accelerated progress and imparting the ability to exhibit superior skills and performance in many athletic endeavors. Hockey, which is widely recognized as the national sport of India, has gained significant popularity among women in recent years. The success of a hockey game is influenced not only by the players' skill level, but also by many physical and performance factors, as well as the amount of competitive anxiety experienced by the individuals involved. The current investigation has been undertaken with this backdrop.

## REFERENCES

- Martin, K. A., & Hall, C. R. (1997). Situational and intrapersonal moderators of sport competition state anxiety. *Journal of Sport Behavior*, 20, 435-446.
- Martens, R., Burton, D., Vealey, R. S., Bump, L. A., and Smith, D. E. (1990). Development and Validation of the Competitive State Anxiety Inventory - 2. In R. Martens, R. S. Vealey & D. Burton (Eds.), *Competitive Anxiety in Sport*, Human Kinetics, Champaign, IL, 117-190.
- Martin, K. A., & Halt, C. R. (1997). Situational and intrapersonal moderators of sport competition state anxiety. *Journal of Sport Behavior*, 20, 435-
- Mathews, K. D. (1968), *Measurement in Physical Education*. Philadelphia: W.B. Saunders and Company.
- Maynard, I. W., & Cotton, P. C. (1993). An investigation of two stress management techniques in a field setting. *Spon Psychologist*, 7, 375-387.
- McNair, D.M., Lorr, M., & Droppelman, L.F. (1971). *Profile of Mood States Manual*, Educational and Industrial Testing Services, San Diego, CA.
- Mellalieu, S.D., Hanton, S., Brien, O., M. (2004). Intensity and direction of competitive anxiety as a function of sport type and experience. *Scandinavian Journal of Medicine and Science in Sports*, **14(5), 32**
- Meyers, A. W., Scheleser, R., & Okwumabua, T. M. (1982). A cognitive behavioral intervention for improving basketball performance. *Research Quarterly for Exercise and Sport*, 53, 344-347. Doi: **10.1111/j-1600-0838:2004.00389.x**
- Mettel, K.K., et al. (1996). A Comparative Study of Physical Fitness Profiles of Different Levels of Indian Women Shot putters with selected International Norms. *SA/ Scientific Journal*, 19(1, 2, & 3), 42-53.
- Morgan, W. P. (1985). Affective Beneficence of vigorous physical activity. *Medicine and Science in Sport and Exercise*, 17, 94-100.

- Murphy, S. M. (1988). The on-site provision of sport psychology services at the 1987 U.S. Olympic Festival. *The sport Psychologist*, 2, 337-351.
- Nayar, K.N.K (1996). Education and Sports, its role in Higher Education at University Level. In Uberoi N.K. (Ed). *Professional Competency in Higher Education*. In *Professional Competency in Higher Education*. Delhi: A.G.Korde Graphic Centre.
- Nemour, B. (1971). A comparative study of Anthropometric measurements of caucasian and Negro boys and girls. *Dissertation Abstracts International* 32 .2464A.
- Nieuwenhuis, C.F., Spamer, E.J., & Van Rossum, J.H.A. (2002). Prediction function for identifying talent in 14- to 15-year-old female field hockey players. *High Ability Studies*, 13, 21-33.
- Orlick, T. (1986). *Psyching for Sports*. Human Kinetics, Champaign, IL.
- Orlick, T., & Partington, J. (1988). Mental links to excellence. *The Sport Psychologist*, 2, 105-130.