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An Analytical Study On Factors Determining Goal Keeping Ability In Field Hockey Goal Keeper

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Abstract

The researchers set out to see how male field hockey goalkeepers fared across various skill levels in terms of response time. For this research, 45 male hockey goalkeepers, ranging in age from 18 to 24 years, were chosen. Intercollegiate, interuniversity, and national level participation each contributed fifteen out of forty-five courses. The themes that were chosen are all from the state of Punjab. The capacity to respond quickly was chosen for the research. Prior to data collection, all participants were gathered, each test question was described in detail, and they were given enough time to warm up before the test. Accurate "Ball reaction exercise test" demonstrations were carried out on the pitch. We compared the means of the various involvement levels using the analysis of variance (ANOVA) method, with the significance threshold set at 0.05. When available, we utilised the least significant difference (LSD) metric to further narrow the results. The research found that the variable of response time ability was significantly different among field hockey goalkeepers at the senior national, inter-university, and intercollegiate levels.

Keywords: Hockey Goalkeepers, Ball Reaction Exercise Test, LSD, Time Ability.

Introduction

Competence as a hockey custodian requires not just physical prowess but also technical know-how, mental agility, and tactical acumen. The success of a hockey goalie depends on the following: Setting the Stage: The ability to understand the game and predict the opponent's actions is crucial for a skilled custodian. This allows them to position themselves efficiently. Goalkeepers need to be at the correct angles to cut off their opponents' chances to score goals.

Speed & Quickness: The ability to make split-second saves, particularly from close range, is a must-have skill for goalkeepers. Rapid lateral movement and direction changing are two of the most important skills for getting shots on target. Techniques for the feet: Fast Feet: Goalkeepers that are skilled with their feet are able to execute quick cuts, dives, and leaps to make saves.

Expertise in the Field: The ability to catch and block shots with one's hands, body, or stick is crucial for goalkeepers. Accurate and rapid ball clearing is a must for defending against rebounds and counterattacks. Expressing oneself: Leadership: As the team's "eyes in the sky," goalkeepers direct the defence and provide directions. Verbal Communication: In order to organise the defensive structure and make sure that everyone is marking their opponents, it is essential to communicate effectively with the defenders. Making a Call: Determination: It takes decisiveness to know whether to approach an adversary from behind or not. Before making a decision, goalkeepers must weigh the potential consequences of their actions. This includes deciding whether to run out to intercept a ball or to remain back and protect the goal.

Resilience of Mind: attention: A keeper must maintain unwavering attention throughout the whole game. The ability to recover quickly from setbacks and keep one's self-assurance intact is a key component of mental resilience. Grasping the Game: Being alert: It's crucial to know how your opponent plays the game, see trends, and know what's happening at all times. Flexibility: Being able to modify one's strategy in response to shifting game circumstances or one's opponent's moves. Staying in Shape: Endurance: Being physically fit is essential for goalkeepers since they are always on the go and must cover a large area.

Background and Education: Developing Your Skill: If you want to be a better custodian, you need to train and practise often. A goalkeeper's ability to adapt to various game scenarios is enhanced by their match experience. A hockey goalkeeper's performance may be greatly improved by consistently practicing, gaining experience, and taking an active attitude to progress.

Literature Review

According to Mohammad (2022), a shot from the edge of the area gives the custodian less than a second to react and make a move to stop the ball, and the ball travels at a speed of around 110 to 120 km/h. Each team's performance is impacted by the goalkeeper's reaction time.

Goalkeepers, as stated in Coach's Goaltending Handbook (2022), played several responsibilities for their respective teams. A goalkeeper's duties also include coordinating defences and protecting the goal. A goalkeeper's knowledge of defensive strategy and tactics, ability to concentrate and focus, and physical and technical skill set are all areas that need improvement. A goalkeeper's physical and technical abilities are always being honed.

A high degree of motor fitness was required to play the game (Nelson & Johnson, 1970). Speed, agility, response time, and stamina are all part of the motor component, which aids in skill acquisition; yet, one cannot hope to excel in Goal-Keeping until he cultivates the requisite talent.

The physical components that are most helpful to goalkeepers are the essential components of dynamic flexibility, according to the England Hockey Workshop (2023). Goalkeepers must possess exceptional foot speed, balance, and agility, sometimes known as co-coordinative ability.

There is a dearth of research on custodian performance. The aforementioned literature demonstrates a correlation between goalkeepers' reaction time ability and their performance on the ice. This is an exciting new field of study that has the potential to educate aspiring students, players, and coaches in the sport of hockey, particularly those interested in goalkeeping as a profession.

Objectives of the study

- To predict the dominant factors influencing hockey goalkeeping ability.
- To find out the co-relationship between hockey goalkeeping ability and reaction time.

Research Methodology

For the research, 45 male hockey goalkeepers, ranging in age from 18 to 24 years, were chosen. Fifteen topics each were chosen from intercollegiate, interuniversity, and national level participations out of forty-five total. The themes that were chosen are all from the state of Punjab. Reaction time ability was chosen as the variable for the investigation. The following standardised test item was used to gather data on the specified variable, as per the accessible literature:

Component

Variable	**Test and Tool**
Reaction Time ability	Ball reaction exercise test

Collection of data

All participants were gathered before the test was administered, and they were briefed on the exam's purpose and protocol. They were also given enough time to warm up before the test. On the field, sufficient demonstrations were carried out in relation to the Ball response exercise test. Methodologically, we compared the means of the various levels of involvement in the chosen reaction time ability of hockey goalkeepers using one-way analysis of variance (ANOVA) and, when relevant, we utilised least significant difference (LSD) to draw conclusions. The statistical analysis was conducted using SPSS v.23. A 0.05 threshold of significance was used to find the significant difference.

Data Analysis and interpretation

Table 1: - "Reaction time ability" descriptive data broken down by participant level

Levels	**N**	**Mean**	**SD**
Senior National	15	137.54	7.42
Intervarsity	15	157.14	6.91
Intercollegiate	15	184.69	19.75

Table 2:- Examining the "Reaction time ability" variable across various participation levels with analysis of variance (ANOVA)

	Sum of Squares	Df	Mean Square	F
Between Groups	4452.14	2	2411.31	10.91
Within Groups	9147.21	42	205.81	
Total	13542.35	44		

*Significant at 0.05 level of significance

Data F= 3.20 Looking at Table 2 from earlier, we can see that there is a significant difference in reaction time ability between senior national, intervarsity, and intercollegiate field hockey goalkeepers. This is because the calculated F value (10.91) was greater than the tabulated value of F (3.20) at a 0.05 level of significance with 42 degrees of freedom.

Using a least significant difference (L.S.D.) post hoc test, we were able to determine where goalkeepers' reaction time abilities stood across various competition levels; the results are shown in table 3.

Table 3: - The "Reaction time ability" variable's Least Significant Difference (L.S.D.) across various participation levels

Senior National	Intervarsity	Intercollegiate	Mean Difference	Critical Difference
147.33	163.47		16.14*	10.81
147.33		172.27	24.94*	
	163.47	172.27	8.8	

In the aforementioned Table 3, we can see the outcomes of an L.S.D. comparison of the three tiers of competition.3, it revealed that there were notable disparities in reaction time ability between senior national and intercollegiate hockey goalkeepers, as well as between senior national and intercollegiate goalkeepers at the intercollegiate level.

Subject under consideration

The researchers wanted to see how goaltenders from various levels of hockey played in terms of their response

times. Among field hockey goalkeepers competing at the senior national, interuniversity, and intercollegiate levels, the research found a statistically significant difference in reaction time ability. Similar findings were reported by Dravin, Singh, and Bangari (2023) in their research on motor fitness, which likewise discovered substantial differences among the individuals. Their claim that motor variables are more strongly associated with performance level is corroborated by our study's findings, which show that elite hockey goalkeepers have better reaction times than their less experienced counterparts. Additionally, Uppal and Dutta (1980) have provided support for this discovery.

According to Erkut, Sirmen, Uzun, Ramazanoglu, Akan, and Atil (2019), there were noticeable differences in reaction ability between hockey goalkeepers at the senior national and intervarsity levels, as well as between senior national and intercollegiate level hockey goalkeepers. On the other hand, there was no significant difference between intervarsity and intercollegiate level hockey goalkeepers. Also, according to Keogh and Dalton (2013), there was a notable disparity when it came to the different competition criteria.

Conclusion

The response time ability of field hockey goalkeepers at the senior national, inter-university, and intercollegiate levels was significantly different from one another. Field hockey goalkeepers at the senior national and inter-university levels, as well as those at the inter-collegiate level, were found to have significantly different reaction times according to the comparison L.S.D., while there was no discernible difference between the inter-collegiate and inter-university level. The study's overall conclusion was that the field hockey goalkeepers from the state of Uttar Pradesh, whether they were competing at the national or intercollegiate level, had a very comparable sort of reaction time ability.

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