

Relationship of Reaction Ability to Offensive Skill Performance of Mysore University Intercollegiate Male Hockey Players

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Abstract

The Purpose of the this study was to find out the significant relationship of reaction ability to selected offensive skill performance of Mysore University Inter-collegiate Male Hockey Players, the aged between 18 to 22 years. The researcher has randomly selected 165 Male Hockey Players those who were Participated Mysore University Inter-Collegiate Hockey tournament in the year of 2023-24 and those who are practicing regularly. To find out the reaction ability, Audio - visual reaction time test tool (Electronic chronoscope) which was used in previous studies as standardized test tool. The subject rating scale was used which was consist of minimum ten points and maximum hundred points to assess the offensive skills (Dribbling, Hitting, Flicks, Dodge and Scooping) performance of selected subject was rated by three experts during match situations. The average of three expert coaches rating was considered as a performance of the subjects. Pearson's product movement correlation statistical technique was used, to identify the significant relationship between said variables and the significant level was set at 0.05. As the findings shows that the mean visual based simple reaction time was about 227 milliseconds as compared to mean auditory based simple reaction time of about 216 milliseconds. And the audio based simple reaction ability ($r = -0.179$, $p = 0.022$) was significantly correlated to offensive skill performance than the visual based reaction ability ($r = 0.095$, $p = 0.226$). This study can be concluded that the visual reaction period is slower than the auditory reaction period in Mysore University Inter-collegiate Male Hockey Players. The reaction time ability improves the game achievement.

Keywords: Reaction Ability, Audio Visual, Offensive Skills, Hockey Player

Introduction

Sport pertains to any form of competitive physical activity or game that aims to use, maintain, or enhance physical potentiality and skills during recreation to individuals and in other cases of entertainment to spectators. Sports can through organized or casual sport participation improve participants' physical health. It is also a significant source of recreation to the spectator and wider audiences those who are non-sports persons and non-participants at the venues of sports. But, the

competitive sports like team – hockey, football, basketball, kho-kho, handball, kabaddi and etc., and individual sports such as Athletics, Weight lifting, Wrestling and etc., are highly performance oriented. They are characterized by highest mechanical performance.

Hockey is a game played with curve ended sticks between two teams of 11 players. It is played on a field measuring 100 yards by 60 yards. The object is to use the stick to direct the ball into the opponent's goal, while defending the goal being scored.

Each team have been fielded with eleven players and they were arranged themselves according to their playing position are forwards, midfielders and defence (Putra et. al., 2021, Lausgran B., S. & Sentu M, 2020). Each team will have a designated goal keeper, who wears a different colored shirt and protective equipment. The game field hockey as mentioned earlier has become a very popular sport, in the modern society (Lausgran B., S. & Sentu M, 2020). As a major spot it has become highly competitive and competitions are being organized regularly. As mentioned, the sport hockey, as it has become highly competitive and undergone many changes from the earliest to the most modern time (Putra et al., 2021; Saputri & Suharjana, 2020; Sibarani & Manurung, 2021). Performance in hockey therefore has become quite tough and demands a lot of characteristics and qualities like physical, cognitive abilities, physiological, psychological, biomechanical, technical and tactical adjustment to various condition and playing equipment, surfaces and the environment.

Cognition is the scientific term for mental processes. It refers to the perception, acquisition, and memorization of information of humans, more precisely; it refers to the thinking, knowing, remembering, judging and problem-solving abilities of humans.

Reaction is a purposeful voluntary response to an external stimulus. There is certain time period of external stimulus and appropriate physical response to the impellent is called as period of reaction. The reaction ability defined as interval time of appropriate voluntary response which presentation of stimulus and appearance in a subject. It is generally expressed in time (milliseconds or seconds). Reaction is reflects the certain time period of intellectual, information processes and neurophysiological flow which are generated by the impellent action on the person's sensory system (G. Nelly, 2021). The receipt of data from light and sound, its processing, finding conclusion and giving the replay or achievement of the kinetic action are the processes which are following one another is called as reaction time ability. The reaction ability influencing by the aware and attention an individual and must be lower in respective professionals such as army people, sports men, medical officers, drivers, pilots and investigators where attentions is a must for them. Many of affecting factors have been shown on reaction period which are including age, sex, motor fitness, fatigue level, rest and recovery, personality type, situations, Positional activities whether it is auditory or visual impellent. According to the previous many studies were summarised that the reaction ability required enhancing their better position in the game. The hockey players had quicker reaction ability than the Volleyball players, Gymnast (Bhanot and Sidhu, 1980). And also, very few studies conducted on reaction ability in the field of hockey game. Hence the researcher was interested to conduct a study on reaction ability in relation to offensive skill performance of Mysore University Inter-Collegiate male Hockey Players. This study will helps to the coaches, players, those who want to make their carrier in field hockey.

Objective

The objective of the study was to find out whether there is a significant relationship of Reaction ability to offensive skill performance of Mysore University Inter-collegiate male Hockey players.

Hypothesis

It was hypothesis that, there is a significant relationship of reaction ability to offensive skill performance of Mysore University Inter-collegiate male Hockey players.

Methodology

To reach the aim of this investigation, randomly the investigator was selected total 165 Male Hockey players between the age of 18 to 22 years who had played at the Mysore University Inter-collegiate tournament in the of 2022.

Sl. No.	Variables		Criteria of Measurements
1	Independent Variables	Simple Reaction Ability	Light
			Sound
2	Dependent Variables	Offensive Skills	Performance Rating Scale

To identified the reaction ability, Audio visual reaction period test (Electronic chronoscope) which was used in previous studies as standardized tool and technique. The subject rating scale was used which was consist of minimum ten points and maximum hundred points to assess the offensive skills (Dribbling, Hitting, Flicks, Dodge and Scooping) performance of selected subject was rated by three experts during match situations. The average of three expert coaches rating was considered as a performance of the subjects. Pearson’s product movement correlation statistical technique was used, to determine the significant correlation between offensive skill performance and reaction ability of Mysore University inter-collegiate Male Hockey Players. The significance level was set at 0.05.

Results

Table No. 2 Shows that the Descriptive Statistics of the Selected Players on Simple Reaction Conditions for Sound and Light Stimuli and Offensive Skill Performance

Sl. No.	Variables	Sub variable	N	Min,	Max.	Mean	S.D
1	Offensive Skill			11	90	42.60	22.776
2	Period of Simple Reaction	Sound	165	154	216	183.54	13.878
		Light		158	227	197.05	14.091

The table 2, shows the mean for selected players offensive skills and under simple reaction conditions for sound and light is 42.60, 183.54 and 197.05, respectively. Their respective standard deviations are 22.776, 13.878 and 14.091. Their maximum and minimum scores are 90, 216 and 227, and 11, 154 and 158 respectively.

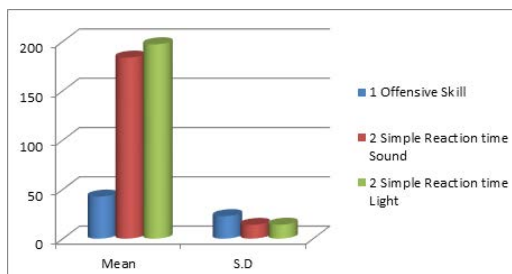


Table No. 3 Shows that Results of Pearson’s Product Moment Correlations between Cognitive Ability Variables and Scores on Offensive Skills

Variables	Offensive skills	Sig.
	‘R’ Value	
Simple reaction time-sound	- 0.179	0.022
Simple reaction time-Light	0.095	0.226

The table no. 3 depict the correlation coefficients of simple reaction ability selected for the study, the simple reaction ability with sound was found to be significantly and positively related to scores on offensive skills. Between simple reaction time scores for sound and offensive skills correlation coefficient of - 0.179 was observed which was found to be significant at 0.022 levels. It is clear that lesser the time taken to reaction is better was the performance. However, obtained correlation coefficients between Simple reaction time with light and Offensive skills ($r=0.095$; $p=.226$), was found to be non-significant. In other words, there is null-significant relationship of simple visual reaction ability to offensive skill performance. Because, both variables having independent nature.

Discussion

This research paper tried to highlight the relationship of simple reaction time to hockey skill performance of Mysore University Inter-collegiate Male Hockey players. The findings of the investigation demonstrated with major limitations of the study were the participant’s attitude towards the test effort as challenges the researcher. This study indicated that the audio based simple reaction time was significantly correlated with offensive skill performance. It was mentioned the hypothesis that there is significant relationship due to the influence of audio based simple reaction time on offensive skill performance of selected subjects of the study. This result also revealed that our hypothesis which state that “there is a significant relationship of simple reaction ability to offensive skill performance” was strongly accepted with the audio based simple reaction ability of male hockey players at 0.05 % significant.

Whereas, the visual based simple reaction time was not influencing on offensive skill performance of selected male hockey players due to the effect of extraneous variables like, nature of situations, training age of players and other physiological factors and cognitive characteristics. Hence, the hypothesis which states that there is a significant relationship of simple reaction ability to offensive skill performance of said subject was rejected and Nul-hypothesis was accepted with said variables of male hockey players at 0.05% significant.

As the result shows that in table 2, the mean light (visual) reaction period was about 0.227 seconds when compared to mean scores of sound (auditory) reaction period of about 216 milliseconds. This findings clearly stating that the sound reaction period was quicker than the light reaction period in selected subject. This result is revealed similar to the previous findings (T.G. Mttthew pain & A.Hibbs,2007, P. D Thompson et. Al., 1992) which shows that sound reaction period was quicker than the light reaction period. The reaction period is influencing by many determine factors such as arrival of impellent in sensory organs, conversion of the impellent by the sensory organs to the neural signals, transmissions of neural and processing, activation of the muscular, compliance of soft tissue which are surrounds, connects and supports organs and other tissues in the body(Pain & Hibbs). According to the previous investigation, found that the auditory impellent takes 0.008 to 0.010 seconds to reach the brain than the visual impellent which takes 0.020 to 0.040 seconds (Remp et. al., A. K. Sing, 2021). It indicated that cortex, raidness is the reaction period to the impellent. Hence, the sound impellent reaches the motor cortex quicker than the light impellent.

In other words, the visual reaction period is lesser than the auditory reaction period (P.D. Thompson et. al., 1992). In sports, the reaction period is the tool to use widely for assesses the response of neuromuscular and physiological. The early studies have shown that the neuromuscular-physiological variable of a sound reaction period for short distance runners will be about 0.085 seconds. The quick reaction periods are more significant to excellent performance of sprint runners when quick impellent reaches to the brain, the necessary motor reaction is activated by the quick signal processed and necessary responses (T. G. M. Pain & Hibbs, 2007).

G. Velly et al., (2006), were also given reference that, due to the conditions of fatigue by sleep deprivation reason subjects to had late reaction period. Another investigation was also given reference that, the reaction ability has increased with regular and repeated attempt. Hence, the reaction period to a certain impellent will be made quicker by regular practice with a certain impellent and appropriate rest in between period of stimuli. So, these findings are agreed with previous studies, the experts also, accepted these results as a valued. Hence, the study revealed the fact based findings.

Conclusion

This results show that the audio based simple reaction ability was significantly correlated to offensive skill performance than the visual based reaction ability. And also the auditory reaction period is quicker than the visual reaction period in Mysore University Inter-collegiate Male Hockey Players.

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