RESEARCH PAPER | Physical Education | Volume : 4 | Issue : 2 | Feb 2014 | ISSN - 2249-555X



Assessment of Reaction Time of Soccer Goalkeepers Wicketkeepers in Cricket and Kho-kho Players

KEYWORDS: Reaction time, Goal keeper in soccer, Wicket keeper in cricket, Kho-kho player

Mr. Arup Gayen	Dr. Sentu Mitra	Dr. SagarikaBandyopadhyay
Research Scholar, Visva-Bharati , Santiniketan, West Bengal, India	Assistant Professor; AKPC Mahavidyalaya; Bengai, Hooghly (WB), India	Associate Professor, Department of Physical Education, Visva-Bharati , Santiniketan, West Bengal. India

ABSTRACT *Reaction time denotes the elapsed time between the presentation of a stimulus and the subsequent behavioural response. It has application in various disciplines including behavioural neuroscience. In psychology it is considered to as an index of speed of processing (en.wikipedia.org). Objective: To compare reaction time among goalkeepers in soccer, wicketkeepers in cricket and kho-kho players. Method: Study area: Nadia and Hooghly districts in West Bengal, India. Subject: 30 (10 from each game) varsity-level players ranging the age between 20 and 24 years. Criterion measure: Hand reaction time and leg reaction time of subjects were measured in seconds with the help of Stick drop test. Statistics: Mean, Standard Deviation and one-way ANOVA were used. Level of Significance was set at 0.05. Result: The mean hand reaction time of goal-keepers, wicket-keepers and kho-kho players were 14.08±1.13, 12.38±2.33 and 12.58±1.39 seconds respectively, while mean leg reaction time of three different groups were 19.31±3.07, 21.34±2.09 and 17.89±3.51 seconds respectively. The F-value of hand reaction time among three different category of players was 3.005(>0.05), whereas leg reaction time was 3.446(<0.05).Only significant result was obtained so far as leg reaction time of wicket-keepers in cricket and kho-kho players are concerned. Conclusion: The present study finds that kho-kho players have better leg reaction time than wicket-keepers in cricket.*

Introduction:
Man is born with certain fundamental movements. Sports activities are combination and modification of all those movements. In this connection the word performance is important. It should be thought that the development of fitness is of prime importance for the development of the performance. The components of fitness are speed, strength, endurance, flexibility, agility, balance, reaction etc. Good reaction time is always required for successful competition of the event.

Reaction time defined as the interval of the time between the presentation of the stimulus and the initiation of the response (Johnson & Nelson; 1982). It is true that the muscular system of the original organism came first in the processes of evolution and all of the other organic systems arose in response to its needs. For developing muscular system movement is essential.

External stimulators are of great importance in sports as proved by the fact that systematic training has positive influence upon such indicators, visual, tactile and auditory are the most important among them. Correct perception and quick movement and/or response to the stimulatory object are very important for any skilled maneuver. For this purpose only vision and/ or visual reaction time should be correct and/or fast to develop and maintain good performance level in all games and sports.

In many sports maximum speed is rarely reached or needed, but explosive reaction is often necessary. Athletes can improve reaction times by training to make the right choices. Reaction time and quickness is an important part of overall speed training and the best athletes have this quality.

Reaction varies from individual to individual. The ability of an individual to react to an external stimulus shows the level of his neuro-muscular coordination. A faster or slower reaction and / or movement is a good or poor ability to coordination and the use of limbs and body depends on the type of games play situations and type of action to move or to react to the objects. Reaction time of an individual is liable to vary according to special physical activity in which he participates. Therefore, it has great importance in sports, especially faster, smoother and speedy team games like soccer, cricket and kho kho.

Objectives of the study:
To compare the reaction time of hand and leg among soccer goal keepers, wicket keepers in cricket and kho-kho players.

Methodology:
Selection of Subjects: The subjects were under graduate students and they selected from Nadia and Hooghly districts in West Bengal, India. All the subjects were participated at least inter district competition. Ten (10) male subjects from each soccer goal keeper, wicket keeper in cricket and kho-kho players were selected randomly.

Variable and Criterion Measures: Hand Reaction ability and leg reaction ability were selected as the variables for the study**.** The first was measured by Johnson and Nelson hand reaction test and the second was measured by Johnson and Nelson leg reaction test. The subject sits with his forearm and hand resting comfortably on the table (or bench or chair). The lips of the thumb and index fingers were held in a ready pinch position about three or four inches distance the edge of the table. The upper age of the thumb and index finger were in a horizontal position. The tester held the stick timer near the top, letting it hang between the subjects thumb and index finger. The base line was even with the upper surface of the subject thumb. The subject was directed to look at the concentration zone (which was a black shaded zone between the 120 and 130 lines) and was told to reach by catching the stick on scale (by pinching the thumb and index finger together) when it was released. The subject did not look at the tester's hand, nor was the allowed to move his hand up or down while attempting to catch the falling stick. Each drop was processed by a preparatory command of 'ready'.

The subject sits on a table (or bench) which was about 1 inch from the wall with his shoe off, the subject positioned his foot so that the ball of the foot was held about 1 inch from the wall with the heel resting on the table about 2 inches from the edge. The tester held the reaction timer next to the wall

Volume : 4 | Issue : 2 | Feb 2014 | ISSN - 2249-555X

so that it hang between the wall and the subject's foot with the base line opposite the end of the big toe. The subject looked at the concentration zone and was told to react, when the time was dropped by pressing the stick against the wall with the ball at his foot. Twenty trials were given.

Statistical Techniques: To compare the mean differences among three different games of hand and leg reaction time, mean, standard deviation (SD) and one-way analysis of variance (ANOVA) were computed by means of SPSS Software version 17 (Statistical Package for the Social Sciences, version 17.0, SPSS Inc, Chicago, IL, USA).

Results & Discussion:

Table 1: Descriptive statistics of three different game players on Reaction Time

Parameters	Players	Mean	SD	SE
Hand Reaction time (sec.)	Goal keeper	12.39	±2.33	0.74
	Wicket keeper	14.09	±1.13	0.36
	Kho-Kho	12.58	±1.39	0.44
Leg Reaction time (sec.)	Goal keeper	19.31	±3.08	0.97
	Wicket keeper	21.34	±2.09	0.66
	Kho-Kho	17.89	±3.51	1.11
Legend: SD = Standard Deviation; SE = Standard Error of mean				

Table 1 shows that mean value and standard deviation (SD) of hand reaction time for soccer goal keeper, wicket keeper in cricket and kho-kho players were 12.39±2.33, 14.09±1.13 and 12.58±1.39 respectively whereas the leg reaction time of three different game players were 19.31±3.08, 21.34±2.09 and 17.89±3.51 respectively.

Figure-1: Graphical representation of means of reaction time for three different game players

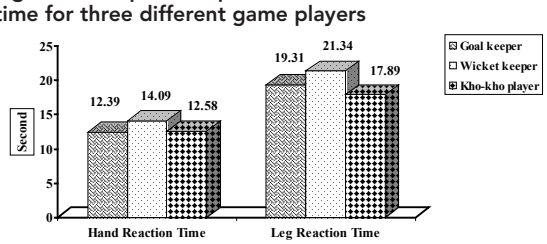

Table 2: One-Way ANOVA of f three different games on Reaction Time

	Variation	Sum of Squares	Mean Square Variance	F-value	p-value
Hand Reaction Time	Between groups	17.328	8.664	3.005	0.066
	Within groups	77.851	2.883		
Leg Reaction Time	Between groups	60.153	30.077	3.446*	0.046
	Within groups	235.653	8.728		
	*Significant at 0.05 level; $F_{0.05}$ (2, 27) = 3.34				

Table 2 shows that the F value of the hand reaction time for soccer goal keeper, wicket keeper in cricket and kho-kho players was 3.005 at 0.05 levels of confidence.

Table 2 also depict that the F value of the leg reaction time for soccer goal keeper, wicket keeper in cricket and kho-kho players was 3.446 at 0.05 levels of confidence.

Table 3: Post-Hoc test (LSD) of Leg Reaction time of three different games

Goal keeper	Wicket keeper	Kho-Kho player	Mean Difference	Standard Error	t-Value	p-value
19.31	21.34		2.027	1.321	1.534	0.137
	21.34	17.89	3.451	1.321	2.612*	0.015
19.31		17.89	1.424	1.321	1.078	0.291
*Significant at 0.05 level; $t_{0.05}$ (28) = 2.048						

Table 4 revealed that the mean difference between soccer goal keeper & wicket keeper in cricket, wicket keeper in cricket & kho-kho player and soccer goal keeper & kho-kho player of the leg reaction time ability were 2.027, 3.451 and 1.424 respectively. The mean difference of wicket keeper in cricket & kho-kho player in relation to leg reaction time ability was significant at 0.05 levels of confidence.

The result might be due to more leg movements of the kho-kho players than the wicket keeper in cricket during practice or match situation.

Conclusions: On the basis of the result it can be concluded that there was no distinction (more or less similarity) on hand reaction time ability among soccer goal keeper, wicket keeper in cricket and kho-kho players; but in leg reaction time ability the kho-kho players are superior than wicket keeper in cricket.

REFERENCE Arceneaux, J., Hill, S., Chamberlin, C., & Dean, R. (1997). Developmental and sex differences in sensory and motor functioning. International Journal of Neuroscience (89), 253-263. | Barrow, H. M., Principles of Physical Education, 3rd Edition, Lea and Febiger, Philadelphia, (1983), pp. 9 – 14. | Benefice, E., Fouer, T., & Malina, R. (1999). Early nutritional history and motor performance of Senegalese children, 4-6 years of age. Journal of Annals of Human Biology (26), 443-455. | Butterfield, S., Lehnhard, R., & Coladarci, T. (2002). Age, sex and body mass index in performance of selected locomotors and fitness tasks by children in grades k-2'. Perceptual and Motor skill Journal (94), 80-86. | Davies, P., & Rose, J. (2000). Motor skills of typically developing adolescent: awakwardness or improvement? Journal of Physical and Occupational Theraphy in Pediatrices (20), 19-42. | Garret Henry E., Statistics in Psychology and Education, Paragon International Publication, New Delhi – 110002. | Graf, C., Koch, B., Kretschmann, K., & Falkowski, G. (2004). Correlation between BMi, leisure habits and motor abilities in childhood. International Journal of Obesity (28), 22-26. | Johnson, B., & Nelson, J. (1982). Practical Measurements for Evaluation in Physical education. Delhi, India: Surjeet Publications, 201-256. | Mangal, S. K. (1987). Statistics in Psychology and Education. New Delhi, India: Sports Publication | Thomas, J., & French, K. (1985). Gender differences across age in motor performance a meta-analysis. Journal of Psychological Bulletin (98), 260-280. | Verma, J. P. (2011). A Text Book on Sports Statistics. New Delhi, India: Tata Mc Graw Hill Education Pvt. Ltd. | www.sportsfitnesshub.blogspot/2008/01/importanceof-reactiontime-insports.html. |