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A Study of Individual and Team Game Players with Respect to Visual and Auditory Reaction Time

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***Abstract*-in sports, there are many occasions where speed of reaction and speed of movement are very vital factors. Individuals who react quicker and move faster have an obvious advantage over those who are slow. Reaction time can be defined as the elapsed interval between presentation times of a stimulus, to the initiation of a response. This is called response latency and it is the time between one set of a stimulus to the initiation of an overt response. Reaction time is of great importance in the field of sports, because in all competitions especially higher ones, races and events are won or lost by fraction of a second. Putting the importance of reaction time into consideration, this investigation was undertaken to measure the ART & VRT of an individual and team game players; to find out differences between the sportsmen of the team game and the individual game with respect to visual and auditory disjunctive time. In this study, it was hypothesized that there would be no significant difference between the sportsmen of individual game and team game on visual disjunctive reaction time; and there would be no significant difference between sportsmen of individual games and team games on auditory disjunctive reaction time. This study was conducted using 200 top level sportsmen of eleven games. To compare the sportsmen on the basis of this sample, they were divided into two groups Those who participated in athletics, archery, cycling, gymnastics, swimming, weight lifting, and wrestling were included in the sports of individual pursuits; whereas the players of basketball, hockey, volleyball and Kabaddi were included in the group of team players on the basis of these two categories. The tool used in this study is Electronic Chronoscope. It was evidenced that there is a significant sex difference between male & female players with regard to VTR, both in the individual game as well as in team game (t=3.99p<.01) (t=4.72<0.1). In this study, it was concluded that; team games players have faster VRT as compared to individual event players, while on ART, individual players are slower when compared to team game players.**

Keywords—reaction time, visual, auditory, players

I. INTRODUCTION

In sports, there are several occasions where speed of reaction and speed of movement are vital factors. Individuals who react quicker and move faster have an obvious advantage over those who are slow. Reaction time can be defined as the elapsed interval between presentation times of a stimulus, to the initiation of a response. This is called response latency and it is the time between one set of a stimulus to the initiation of an overt response. Reaction time is of great importance in the field of sports, because in all competitions especially higher ones, races and events are won or lost by fraction of a second. Considering the importance of reaction time, this study was conducted to measure the ART & VRT of individual and team game players.

A. Objective of The Study

The objective of this study is to find out the differences between the sportsmen of the team games, and the individual games with respect to visual and auditory disjunctive time.

B. Hypotheses Of The Study

The hypothesis of this study is that; there would be no significant difference between the sportsmen of the individual games and team game on visual disjunctive reaction time; and there would be no significant difference between the sportsmen of individual games and team games on auditory disjunctive reaction time.

II. METHODOLOGY

A. Sample

This study was conducted using 302 top level sportsmen of eleven games. To compare these sportsmen on the basis on this sample, they were divided into two groups. Those who participated in athletics, archery, cycling, gymnastics, swimming, weight lifting, and wrestling were included in the sports of individual pursuits; while the players of basketball, hockey, volleyball, and Kabaddi were included in the group of team players based on these two categories. This is shown in Table 1.

TABLE I. THE SAMPLE

Types of games	Total Sample	
	Male	***Female***
Individual games	80	80
Team games	80	80
Total sample	160	160

B. Tool

The tool used in this study for data collection is the Electronic Chronoscope.

C. Electronic Chronoscope

Electronic Chronoscope is a specially designed instrument used in this study to measure the disjunctive reaction time of sportsmen. Electronic Chronoscope can measure both the visual and auditory reaction time and it measures up to 1/1000 of a second. The time taken by subject in giving response is recorded in millisecond.

D. Procedure

The data of this study were collected during the training camps. To measure RT, standard instructions were given, and after that, some practice trials were given. Finally, ten trails were given randomly for both visual and auditory RT; and the time as recorded in the digital time was noted down for each trial. The average of the ten trials were considered as the RT of the Ss.

E. Interpretation of Data

To determine the sex difference among individual & team game players**,** the mean and standard deviation (SD) of the scores on VRT and ART of the individual games player, and team games player were calculated. Also, to find out the significant difference between the male & female players of individual & team games separately, 't' values were calculated. Table 2 shows the means, SDs, and 't'-ratio's of

A. Difference between Players of Individual and Team Games

To differentiate between players of individual and team games, the mean scores of two variables VRT & ART for the individual players & team players of male and female players, as well as combined sample were compared. Table 3 shows the means, SDs and 't-ratios' for scores on two variables for the males, females, and combined group.

TABLE II. SHOWING THE MEANS, SDS AND 'T'-RATIOS OF AUDITORY REACTION TIME AND VISUAL REACTION TIME BETWEEN INDIVIDUAL AND TEAM GAME PLAYERS.

Variable	Sex	Group	N	Mean	SD	t-ratio
VRT	M	Individual	80	700	130	3.11 **
		Team	80	680	135	
	F	Individual	80	855	120	2.34 **
		Team	80	817	70	
	Total	Individual	160	800	125	2.78 **
		Team	160	775	120	
ART	M	Individual	80	950	350	2.99 **
		Team	80	815	380	
	F	Individual	80	1011	390	1.70 N. S.
		Team	80	931	280	
	Total	Individual	160	980	360	3.13 **
		Team	160	876	340	

*Significant at .05 level
**Significant at. 01 level

As shown in table 2 above, it is quite evident that there is significant sex difference between male and female players with regard to VTR, both in the individual sports as well as in team game ($t=3.99 p<.01$) ($t=4.72<0.1$). This shows that the males in both cases had less RT as compared to the females. Within regard to auditory RT. No significant differences were found between male & females in case of the individual games; whereas in case of team games, significant difference were found between males & females with the males having low ART compare to the females.

Table 3 shows that there is a significant difference between the players of the individual games, and those of the team games with regard to VRT both in case of males and two psychological; and the means, SD, and 't'-ratios of two psychological variables for males and females of individual and team games players.

III. RESULTS

TABLE III. SHOWING MEANS, SDS & 'T'-RATIOS.

Variable	Group	Sex	N	Mean	SD	T-ratio
VISUAL RT	Individual	M	80	780	130	3.99**
		F	80	845	127	
	TEAM	M	80	810	149	4.72**
		F	80	950	80	
AUDITORY RT	Individual	M	80	999	325	1.06 N.S
		F	80	801	360	
	team	M	80	889	380	2.13**
		F	80	931	257	

**Significant at. .01 level
*Significant at .05 level

females; with the team games players having less VRT compared to the individual game players whether males or females similarly. When both males and females were combined, significant differences between individual game players and team game players were found in VRT. With regard to the auditory RT, the players of the individual games and team games were found to differ significantly with team game players having low ART compare to the individual game players. Similarly, significant differences were found between individual games and team games for male players. This is because male players of the team game players were faster on ART. However, there was no significant difference for the female players.

IV. CONCLUSION

In this study, based on the result of the data analysis, it was concluded that team games players have faster VRT compared to the individual event players; while on ART, the individual players are slower than the team game players.

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