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## A COMPARATIVE STUDY OF PSYCHO-PHYSIOLOGICAL VARIABLE AMONG DIFFERENT GAME PLAYERS



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### **Abstract:**

The main objective of the study was to compare the Psycho-Physiological (Reaction Time) variable among different Game Players. The sources for data collection were selected from the players of handball, Basketball, Cricket, Football and Water polo, who participated inter-university/All India Inter University level under Maharashtra state. All those subjects were sources of data. Analysis of the data was collected on two hundred and fifty (250) male players. Nelson's Hand Reaction Time Test was used to collect the data. The data was collected on Reaction Time among the selected game players. One Way Analysis of Variance (ANOVA) method was used for data analysis. While the obtained F-ratio was found to be significant then to determine the paired mean difference L.S.D. Post-Hoc test was employed. The findings of the study revealed that there were significant differences in the reaction time among the players of Handball, Basketball, Cricket, Football and Water polo.

**Keywords:** Psycho-Physiological (Reaction Time) & Different Game Players.

### **Introduction:**

Mental chronometry is the use of response time in perceptual-motor tasks to infer the content, duration, and temporal sequencing of cognitive operations. Mental chronometry is one of the core paradigms of experimental and cognitive psychology, and has found application in various disciplines including cognitive psychophysiology, cognitive neuroscience, and behavioral neuroscience to elucidate mechanisms underlying cognitive processing. Mental chronometry is studied using measurements of reaction time (RT), which is the elapsed time between the presentation of a sensory stimulus and the subsequent behavioral response. In psychometric psychology it is considered to be an index of processing speed. That is, it indicates how fast the individual can execute the mental operations needed by the task at hand. In turn, speed of processing is considered an index of processing efficiency. The behavioral response is typically a button press but can also be an eye movement, a vocal response, or some other observable behavior. RT is constrained not only by the speed of signal transmission in white matter, but also by the properties of synaptic and neural processing in cortical gray matters.

Response time is the sum of reaction time and movement time. Usually the focus in research is on reaction time. There are four basic means of measuring it:-

Simple reaction time is the motion required for an observer to respond to the presence of a stimulus. For example, a subject might be asked to press a button as soon as a light or sound appears. Mean RT for college-age individuals is about 160 milliseconds to detect an auditory stimulus, and approximately 190 milliseconds to detect visual stimulus. The mean reaction times for sprinters at the Beijing Olympics were 166 ms for males and 189 ms for females, but in one out of 1,000 starts they can achieve 109 ms and 121 ms, respectively. Interestingly, this study also concluded that longer female reaction times can be an artifact of the measurement method used, suggesting that the starting block sensor system might overlook a female false-start due to insufficient pressure on the pads. The authors suggested compensating for this threshold would improve false-start detection accuracy with female runners.

Recognition or Go/No-Go reaction time tasks require that the subject press a button when one stimulus type appears and withhold a response when another stimulus type appears. For example, the subject may have to press the button when a green light appears and not respond when a blue light appears.

Choice reaction time (CRT) tasks require distinct responses for each possible class of stimulus. For example, the subject might be asked to press one button if a red light appears and a different button if a yellow light appears. The Jensen box is an example of an instrument designed to measure choice reaction time.

Discrimination reaction time involves comparing pairs of simultaneously presented visual displays and then pressing one of two buttons according to which display appears brighter, longer, heavier, or greater in magnitude on some dimension of interest.

#### **Objective of the Study:**

The main objective of the study was to compare the Psycho-Physiological (Reaction Time) variable among different Game Players.

#### **Hypothesis of the Study:**

It was hypothesized that there would be significant difference among the different Game Players.

#### **Methodology:**

The sources for data collection were selected from the players of handball, Basketball, Cricket, Football and Water polo, who participated inter-university/All India Inter University level under Maharashtra state. All those subjects were sources of data. Analysis of the data was collected on two hundred and fifty (250) male players. Nelson's Hand Reaction Time Test was used to collect the data. The data was collected on Reaction Time among the selected

game players. One Way Analysis of Variance (ANOVA) method was used for data analysis. While the obtained F-ratio was found to be significant then to determine the paired mean difference L.S.D. Post-Hoc test was employed.

**Data Analysis:**

**Table No - I**  
**Summary of One Way Analysis of Variance for the Data on Reaction Time of Selected Groups**

Sources of Variance	Degree of Freedom	Sum of the Squares	Variance	F-ratio
Between the Group	4	0.01	0.003	37.5*
Within the Group	245	0.02	0.00008	

\*Significant at 0.05

Tabulated  $F_{(0.05)}(4, 245) = 2.37$

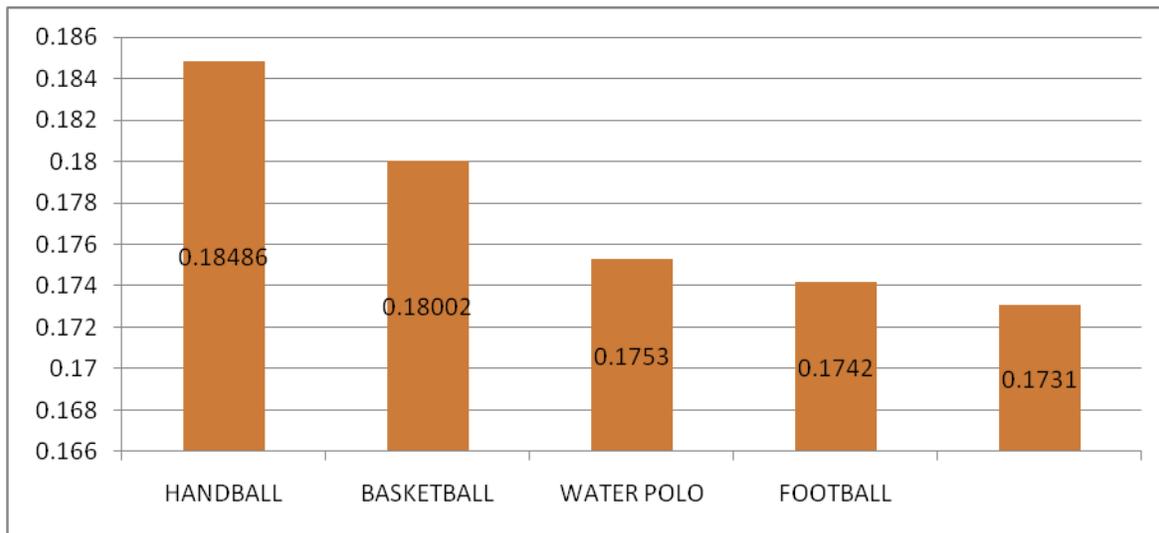
It is evident from the findings of Table - I that there is significant difference in the reaction time of selected game's players as the calculated F-value of 37.5 higher than the tabulated F-value of 2.37 at 0.05 level. Since the F-ratio is found to be significant therefore LSD post hoc test is employed to determine the paired mean difference among the groups. It has been presented in the Table – II.

**Table No – II**  
**Paired Mean Comparison of Reaction Time among the Selected Groups**

Handball	Basketball	Cricket	Football	Water polo	MD	CD
0.18486	0.18002				0.004*	0.0033
0.18486		0.1731			0.011*	0.0033
0.18486			0.1742		0.0106*	0.0033
0.18486				0.1753	0.009*	0.0033
	0.18002	0.1731			0.006*	0.0033
	0.18002		0.1742		0.005*	0.0033
	0.18002			0.1753	0.004*	0.0033
		0.1731	0.1742		0.001	0.0033
		0.1731		0.1753	0.002	0.0033
			0.1742	0.1753	0.001	0.0033

\*Significant at 0.05 level

The ordered mean differences are picturesquely depicted in Figure – I



**Figure III: Comparison of Means on Reaction Time of selected groups**

#### **Justification of Hypothesis:**

In the beginning of this study it was hypothesized that there would be significant difference among the players of handball, basketball, cricket, football and water polo in:-

Reaction Time:

The findings of this study revealed that there is significant difference of Reaction Time among different game of the players. Hence the hypothesis stated earlier is accepted.

#### **Discussion on Findings:**

The findings of statistical analysis revealed that there were significant differences in the reaction time among the players of Handball, Basketball, Cricket, Football and Water polo.

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