

Auditory Reaction Time and Visual Reaction Time on Inter-University Level of Basketball and Volleyball Men Players: A Comparative Study

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Abstract

The purpose of present study to examine basketball and volleyball players of inter university level of auditory reaction time and visual reaction time. Only male athletes who had participated in the Inter University Championship in basketball and volleyball players were selected as sample for this study. Convenience sampling was used for this study. Subjects age ranged between 18 to 25 years were selected for this study. The variables selected for the present study were Audio reaction Time and Visual Reaction Time. The data was collected with the help of Medi system's audio visual reaction time machine. To compare the difference between basketball and volleyball inter university level players, an independent t-test at level of significance set at 0.05 was used. The study's findings showed that volleyball players have faster audio reaction times than male basketball players. Additionally, basketball players have faster visual reaction times than male volleyball players.

Keywords: Auditory Reaction Time, Visual Reaction Time, Volleyball, Basketball.

Introduction

The reaction time is split into two categories: simple reaction time and complex reaction time (choice) response time. Exner, an Austrian biologist, was the first to develop the concept of "reaction time" in 1873. The reaction time was then brought to Wundt's psychology laboratory.

In the 1950s, a Japanese researcher named AIJ Investment Advisors Astoria proposed that the reaction time be divided into two sections during the reaction determination procedure. There are two parts to the reaction. As a result, weiss advises that the response time be divided into two parts: the prior action time (PMT) and the subsequent reaction time (MT). During this time, the former begins with the stimulus and ends with the muscle action potential, whereas the latter is known as electro-mechanical delay (EMD). In other words, it refers to the period during which the muscle is stimulated to create action potentials, resulting in shrinking. By examining reaction time and mobility, Fiss and other researchers found no significant association. The overall result of the sports practise is that response quickness and movement speed are unrelated. According to certain research, the reaction speed and the unique characteristics of the sport. The reactions of athletes from other sports, even within the same sport, varied significantly, which may indicate that the division is different. In general, under demanding work conditions, reducing reaction speed is necessary to improve action precision.

Abu Rayhan al-Biruni, a Persian scientist, was the first to describe the idea of reaction time (RT). Donders was the first scientist to quantify reaction time (RT) in the lab (1868). (Chandra and colleagues, 2010). The study of response time has spanned more than a century and has offered a straightforward method of measuring sensor motor performance as well as an indicative index of the central nervous system's processing capability. (Geraldine,1981).

The period of time between the occurrence of a stimulus and the commencement of the movement is known as reaction time. The sensory organ receives the stimuli, the information is transmitted from the nerve to the brain and from the brain to the muscular contraction, and the muscle is moved. The core processes in the brain typically contribute significantly more than all of the others combined.

The time it takes an individual to react to a visual input is known as visual reaction time. The rate at which the central nervous system processes sensory stimuli and then executes that processing in the form of a motor response is measured by reaction time. It defines a person's alertness since his reaction time dictates how quickly he responds to a stimulus. A variety of factors influence reaction time, including age, gender, left or right hand dominance, central versus peripheral vision, practise, exhaustion, fasting, exercise, personality type, and medical condition.

Basketball is a sport played on a rectangular court between two teams of five players, usually indoors. Each side attempts to score by hurling the ball into the opponent's basket, which is an elevated horizontal hoop and net. Players must bounce the ball (dribble) or pass it to a teammate to progress the ball down the court. Shooting a three-pointer (from behind the three-point line), a two-point field goal (from anyplace not beyond the three-point line), or a one-point foul shot will get you points (after the referee determines a foul). Basketball necessitates a wide range of abilities, including collaboration, accuracy, ball handling, speed, agility, size, and strength. Basketball has grown in popularity around the world.

There has been a lot of research on the numerous physical components involved in the game of basketball, and because it is a game that lasts more than 20 minutes, players must have a high level of endurance. Due to the 23-second regulation in basketball, speed becomes an important factor in giving players an advantage. Even coordinative talents cannot be overlooked. When we examine the basketball game closely, we can find a significant utilisation of balancing skills, reaction ability, rhythm, and orientation ability.

Volleyball is a sport in which two teams of six players use their hands to bat a ball back and forth over a high net, attempting to get the ball contact the court within the opponents' playing area before it can be returned. To avoid this, an opposing team player bats the ball up and toward a teammate before it touches the court surface; that teammate may then volley it back across the net or bat it to a third teammate who volleys it across the net. A team can only touch the ball three times before it must be returned over the net.

Volleyball requires a lot of strength to perform various skills like volleying and striking during a game. Larger shoulder muscles in volleyball players will undoubtedly be a favorable attribute in the component of strength, as can be concluded from their physical appearance. In addition, the game necessitates a high level of agility and reactive ability, making it a key aspect in game improvement. Even flexibility is important, as players may be seen using abilities like spiking during the game.

Objectives of the study

- The objective of the Study was to compare a Auditory Reaction Time of Volleyball and Basketball inter university level players.
- The second objective of the Study was to compare a Visual Reaction Time of Volleyball and Basketball Inter university level players.

Methodology

Selection of Subjects

For the present study, 60 male Volleyball (30) and Basketball (30) Inter university level players of Banaras Hindu University, Varanasi, U.P., were selected as subjects. Their age ranged from 18 to 25 years.

Sampling Technique

The researcher employed convenience sampling to identify participants and collect of data for the current study. Basketball and Volleyball Inter University level players participated as subject for this study.

Selection of Variables

Following variables were selected:

Dependent Variable

- Auditory Reaction Time
- Visual Reaction Time

Independent Variable

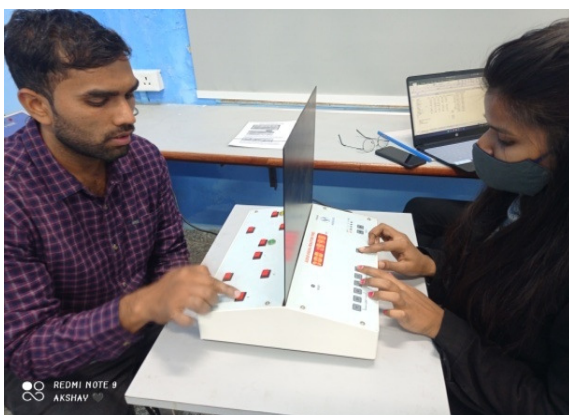
- Volleyball Inter University level Players
- Basketball Inter University level Players

Criterion Measure

The audio visual reaction time of an individual was measured using the "Audio Visual Reaction Time Machine" (by Medi system). Each participant's data was collected independently with the help of "Audio Visual Reaction Time Machine" (by Medi system) for this study.

Procedure

Medi system's Audio Visual Reaction Time Machine in the psychology lab, Department of Physical Education, Banaras Hindu University Varanasi. On both sides, there are three switches and three numbers of lights. The switches on the operator's side are for lighting, whereas the switches on the trainer's side are for turning off the lights. Ask the trainer to react to the action and switch off the light from its side as quickly as possible. The time taken by the trainer is referred to as reaction time, and it is recorded on the timer. Each player will receive five trials in the audio reaction time.



Auditory Reaction Time



Visual Reaction Time

Statistical Tools

To evaluate the data and determine whether there was a significant difference between basketball and volleyball male Inter University players, descriptive statistics and the Independent t-test were used. The significance threshold was established at 0.05 level of significance.

Results & Discussion

Table 1
Descriptive statistics of Auditory and Visual Reaction Time of Basketball and Volleyball Inter University Male Players

Variable	Group	N	Mean	S.D.
Auditory Reaction Time	Basketball	30	0.4576	±.0727
	Volleyball	30	0.4798	±.0825
Visual Reaction Time	Basketball	30	0.3207	±.0689
	Volleyball	30	0.3182	±.0525

Level of significance-0.05(2, 58)

Table 1: shows that the mean of Audio Reaction Time of Basketball Men Players (M=0.457, SD=0.072) was significantly than those of Volleyball Men Players (M=0.479, SD=0.082) as the obtained was significantly beyond 0.05 level of confidence. It shows that the mean score of the Audio Reaction Time of Basketball and Volleyball Inter University Players were significantly different. And the mean of Visual Reaction Time of Basketball Men Players (M=0.320, SD=0.068) was significantly than those of Volleyball Men Players (M=0.318, SD=0.052) as the obtained was significantly beyond 0.05 level of confidence. It shows that the mean score of the Visual Reaction Time of Basketball and Volleyball Players were significantly different.

Graph 1
Graphical representation for Auditory Reaction Time and Visual Reaction Time of Basketball (Male) and Volleyball (Male) Inter University Players

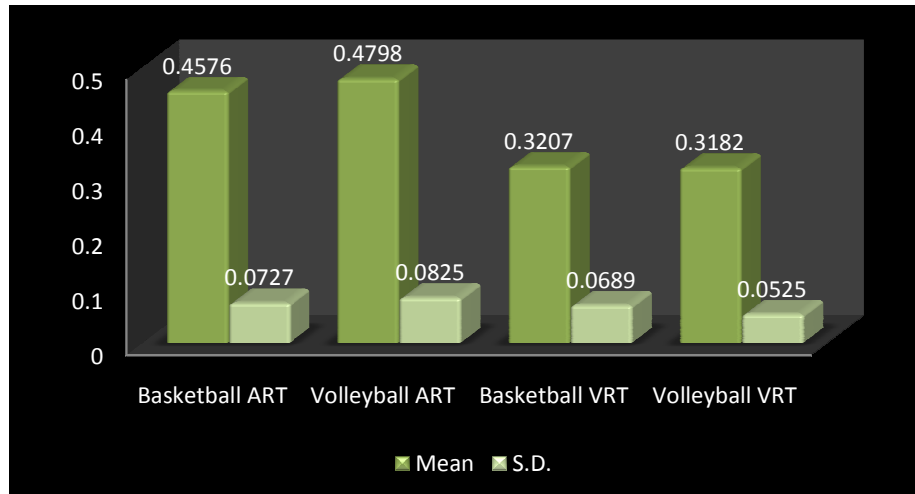


Table 2
Comparison of Auditory Reaction Time and Visual Reaction Time between Basketball (Male) and Volleyball (Male) Inter University Players

	t	df	p-value
Auditory Reaction Time	1.105	58	0.274
Visual Reaction Time	0.158	58	0.875

Significant at 0.05 levels

In the above mentioned table it is found that there is a no significant difference between Basketball and Volleyball Inter University level players in context to Auditory Reaction Time as p-value is more than 0.05 ($p > 0.05$).

In the above mentioned table it is found that there is a no significant difference between Basketball and Volleyball Inter University level players in context to Visual Reaction Time as p-value is more than 0.05 ($p > 0.05$).

Conclusions

Researchers had drawn the conclusion on the basis of Interpretation of data that Volleyball Inter University level players have a quicker Auditory Reaction Time (ART) than Basketball Inter University level players. Together, Basketball and Volleyball players showed that Volleyball players were more agile than Basketball players. But Basketball Inter University level players have a faster Visual Reaction Time (VRT) as compared to Volleyball Inter University level players.

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