

A comparative study of visual reaction time on the basis of gender in medical students

Sushil P Dube^{1*}, P R Raikar², Anand Dhole³, Mukund Kulkarni⁴, Mungal S U⁵

^{1,3,5}Assistant Professor, ⁴Associate Professor, Department of Physiology, Dr SCGMC Nanded, Maharashtra, INDIA.

²Professor, Department of Physiology, Grant Medical College, Mumbai, Maharashtra, INDIA.

Email: drsushilsingh99@gmail.com

Abstract

Background: Reaction time is defined as the period of time that elapses between the occurrence of a stimulus and initiation of movement. Visual RT is time taken by an individual to react to a visual stimulus. Various factors influencing human reaction time are age, sex, left or right hand, practice, fatigue, fasting etc. this study was undertaken to determine effect of gender on visual RT. **Materials and Methods:** Present study was carried out on 60 medical students between the age 17-20, out of them 30 were boys and 30 were girls. Simple Visual reaction time of both groups was measured and compared. **Conclusion:** Visual reaction time was shorter in male group when compared with girls group.

Key Words: Gender, Medical students, Reaction time.

*Address for Correspondence:

Dr. Sushil P. Dube, Assistant Professor, Department of Physiology, Dr SCGMC Nanded, Maharashtra, INDIA.

Email: drsushilsingh99@gmail.com

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INTRODUCTION

Reaction time (RT) is defined as the period of time that elapses between the occurrence of a stimulus and initiation of movement¹. Thus it indicates time taken by an individual to react to external stimulus. It involves reception of the stimulus by the sense organ, conduction of the information through the nerve to the brain and from brain to muscle contraction and movement of muscle². It provides an indirect index of the integrity and processing ability of the central nervous system and a simple, non invasive means of determining sensory motor co-ordination and performance of an individual. Visual RT is time taken by an individual to react to a visual stimulus. RT determines the alertness of a person because how quickly a person responds to a stimulus depends on his reaction time. Various factors influencing human reaction

time are age, sex, left or right hand, central versus peripheral vision, practice, fatigue, fasting, breathing cycle, personality types, exercise, and intelligence of the subject³. Limited reports are found on effect on gender on reaction time. So this study was undertaken to compare visual reaction time in male and female.

MATERIALS AND METHODS

The cross sectioned study was carried out in the department of Physiology, Dr Shankarrao Chavan Government Medical College, Nanded, Maharashtra, India. Study subjects were divided into two groups comprising of young individuals, healthy 30 male and 30 female medical undergraduate students in the age group of 17-20 years fulfilling the inclusion criteria were selected by convenient sampling. Before start of the study an informed written consent was obtained after explaining the purpose of the study to subjects. Information regarding personal and medical history was obtained and detailed clinical examination of both groups was carried out in a predesigned format. Medical history was evaluated to rule out any medical or surgical disease that could affect reaction time of individual. In this study, simple visual reaction time of all subjects was calculated by using a visual reaction time recorder after familiarizing the subjects with the instrument. The procedure was repeated three times and three recordings were obtained. The lowest reading was taken as subject's

best visual reaction time. The experiments were carried out at the same time of the day(i.e. in the morning) to prevent tiredness caused by daily activities, which can affect the results. The visual RT was recorded in a well illuminated, sound proof room in the presence of researchers only. Each subject took part in a test involving his dominant hand. Data was collected and analyzed by using graph pad prism 7 for unpaired t test. The significance level was set at 0.05.

OBSERVATION AND RESULT

Table 1

Visual Reaction Time	Male, n=30	Female, n=30	P value
	229.9 ± 6.508	256.9 ± 5.707	<0.05

In present study, mean simple visual RT among boys was 229.9± 6.508 ms whereas that in the girls group was 256.9± 5.707 ms and the difference was statistically significant (p<0.05)

DISCUSSION

This study aimed to determine and compare visual reaction time in young male and female. Analysis of results revealed that visual reaction time was shorter in male group when compared with girls group, as shown in above table. Our observations are consistent with the observation of other workers^{4,5}. Ritesh Karia *et al* observed RT in female is little longer than male⁶. Research done by Shelton and Kumar showed male respond faster than female⁷. Similarly study done by Nikam and Gadkari and Misra *et al* also reported longer RT in female when compared with male^{8,9}. Bruce and Russel stated that this may be due to retention of water and sodium due to variation in sex steroid levels during menstrual cycles which might influence the process of axonal conduction time. It also suggested altering the availability of neurotransmitter at synaptic level. These changes either of these two processes might affect the sensory motor association with the processing speed at the Central Nervous System¹⁰.

CONCLUSION

Our study concluded that boys has lesser reaction time than girls, but we suggest detail comparative study in this field with large sample to clear debate that weather gender should be taken as a criteria in appointment of personnel in certain fields.

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