



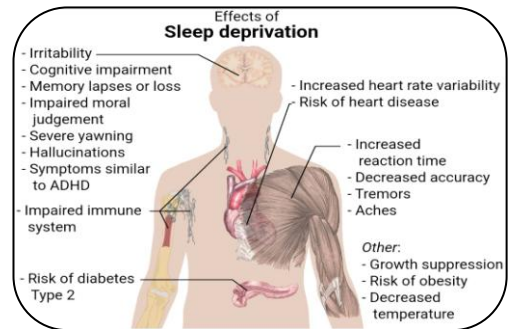
## EFFECT OF DEFICIENT SLEEP ON REACTION TIME

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### ABSTRACT

A person's reaction time can vary based on a variety of factors. Some factors are outside of their control, such as age, left- or right-handedness, and whether the stimulus is visual or auditory. Other factors that affect reaction times are more within their control, like their level of physical fitness, the presence of distractions, and how much sleep they get each night. The human brain is immensely complex, and a physical reaction to an event can happen in the blink of an eye. Behind the scenes, the brain is working through a series of processes in order to react accordingly. When a person is sleep deprived, their body is experiencing a need for sleep, a need to stay awake, and a need to perform tasks. These competing drives interfere with their attention from moment to moment, leading to cognitive impairment and an increased reaction time. Sleep disorders and sleep deficiency are important causes of adverse health effects and increased mortality in the India and worldwide. Sleep deficiency can also result in myriad adverse behavioural consequences, including profound sleepiness, cognitive slowing, automatic behaviour, attention failures and performance degradation, errors, and accidents. It is important to recognize that sleepiness and sleep deficiency are not synonymous. The aim and objective of the study was to measure the effect of sleep deprivation on speed of reaction with the hand in response to a visual stimulus.



**KEYWORDS:** Sleepiness, cognitive slowing, automatic behaviour, sleep deficiency, drives, reaction time.

### INTRODUCTION

Reaction time is defined as the elapsed interval of time from the presentation of a stimulus of a response. Speed in movement and quick reactions are prized qualities in athletics. Coaches are frequently heard to praise certain players or an entire team to for their quickness. Almost all the game requires the quick reaction time. However, despite these commonplace observations, the study of speed of reaction and speed in movement is much more complex than it might appear. Reaction time is the interval of time between the presentation of stimulus and the initiation of the response, the rate at which a person can thrust his body, or part of body, through space. Reaction time was initially thought to be rather simple and easily measured phenomenon but an individual cannot be described as having a single reaction time without specifying the conditions under which he is being tested.

Some of the factors which have been found to influence reaction time are the following: the sense organ involved the intensity of stimulations, the preparatory set, general muscle tension, motivation, practice, the response required, fatigue, and one's general state of health. Being a physical

educator is ordinarily not able to justify the purchase of an expensive timing device. There are several ways to test your reaction time at home. While these methods should not be used to decide if you are too drowsy to drive or do other tasks, they can be an informal way to test your reaction time under different conditions.

**AIM AND OBJECTIVE**

The aim and objective of the study was to measure the effect of sleep deprivation on speed of reaction with the hand in response to a visual stimulus.

**HYPOTHESIS**

It was hypothesised that there was significant difference between pre test and post test of sleep deprivation on the reaction time.

**MATERIAL AND METHODS**

**Subject:** The study has made on forty male student of Bundelkhand University Jhansi. The age of subjects ranges from 21-25 years. There are only one group i.e. experimental group were exposed in pre-test and post-test. The instrument which used to take score was Measuring 30 cm scale. Pre-test was taken in fresh or alert condition of subject in morning after 8-9 hour of sleep and post-test was taken in same time of pre-test but sleeping hour of subject was less than half of his sleep i.e. >4 hour.

**Procedure:** The subjects were sitting at a chair with his hands resting on the edge of the table for administrated hand reaction time. The palm facing each other along two lines which were marked on the edge of the table of 30 Centimetre apart After the preparatory command “ready” was given, the scale is released by tester and the subject attempted to stop and hold it as quickly as possible by clapping the hands together. The subject were instructed to not to allow his hands to move up or down when he is clapping the hands together. The score were the scale point just above the upper edge of the hand after catch. The middle of five score has been taken after arranging increasing or decreasing order. Five trials have given.

**Result:**

Paired Samples Statistics			
	Mean	Std. Deviation	t
Pre Post	3.13	32.43	.59

\* Significant at 0.05 level. df 39

The data has been collected through 30 cm measuring scale taken after complete and incomplete rest recovery for five times before & after three month of treatment. The following tests were taken by qualified and well known expert in room environment. In order to find out comparison between the pre-test and post-test ‘t’-test were used. For testing the hypothesis the level of significance would be set at 0.05.

**DISCUSSION OF FINDINGS**

Sleeping has significant effect on the individual neuro-muscular co-ordination and reaction time. Hence it is more dependent on individual’s body system functioning & Physical Fitness attained than small exercise practice. This may be due to the reason that incomplete sleep decrease sugar metabolic rate of the body and fatigue decrease the flow of body movement.

The study reveals that lack of sleeping or improper rest resulted into significant effect on reaction time.

## SUGGESTIONS

### Improving Your Reaction Time:

- Improve hand-eye coordination
- Be mindful of alcohol and caffeine use
- Try meditation or deep breathing
- Improve your sleep

### Improving Your Sleep:

- Get outside and be active
- Be consistent
- Improve your sleep environment:
- Understand the role of diets
- Proper sleep cycle
- Talk to your doctor



Figure 1: Sleep cycle

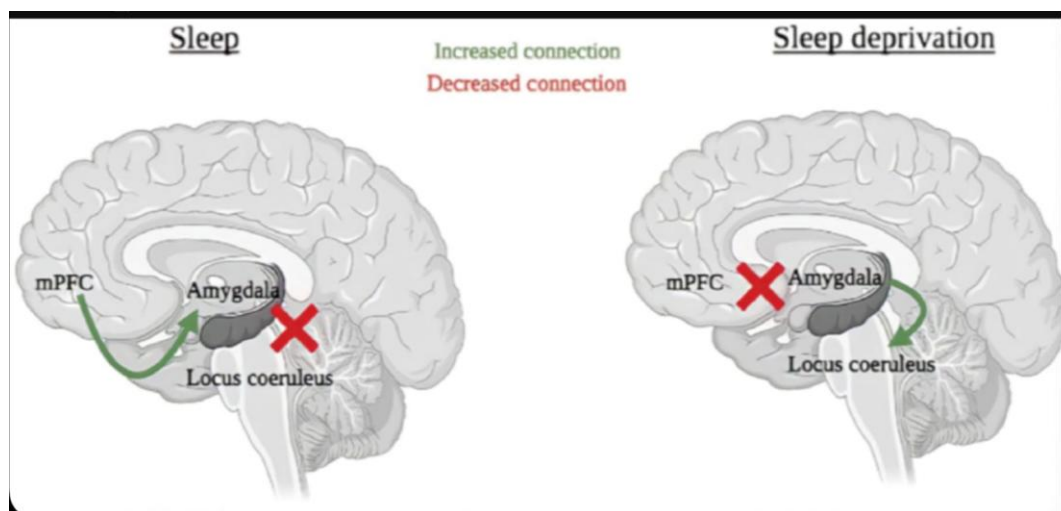


Figure 2: Sleep and sleep deprivation

## CONCLUSION

Research has shown a positive relationship between sleep and reaction time. Research also shows that, the lack of sleep effect the eye hand coordination in response to a visual stimulus.

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