



To study the effect of Yoga Training on auditory and visual reaction time

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Abstract:

Reaction time is the easiest methods of assessing the sensory and motor performance of an individual. It is an indicator of performance in surgeons, sports personnel etc. Yoga can improve the reaction time. Hence, this study was undertaken to study the effect of yoga training on visual and auditory reaction time. Fifty healthy subjects aged between 18 and 25 years were selected. Auditory reaction time and visual reaction time were assessed before and after yoga training. There was significant decrease ($p < 0.05$) in the alert values of both Auditory reaction time and Visual reaction time after two months of yoga training. Yoga training enhances the reaction times which are helpful in surgeons, sportsmen and skilled workers.

Key words: Yoga, Auditory reaction time, Visual reaction time

Introduction:

Reaction time (RT) is one of the easiest methods of assessing the sensory and motor performance of an individual. Reaction time is the time interval between the onset of stimulus and the beginning of movement response.¹ Reaction time is a useful index to study the ability of central nervous system. So it is used in psychometric psychology, mental chronometry and in training of mentally challenged children.^{2,3} Reaction time is prolonged in Type 2 Diabetes Mellitus (T2DM) and hypothyroidism patients.^{4,5} Better reaction time means better performance in surgeons, sports personnel and other skilled workers.⁶ Most commonly used tests were auditory reaction time, visual reaction time. Yoga enhances physical and emotional health and increases the performance of personnel. Yoga practice promotes health and wellbeing through the integration of body, breath, and mind. Yoga training includes different postures means, asanas and meditation. Studies on yoga show that there is in significant reduction in visual and auditory reaction times.^{7,8} The present study was undertaken to study the effect of

yoga training on visual and auditory reaction time.

Materials and methods:

The study was conducted at Sri Siddhartha Medical College, Tumkur. Study group consisted of 50 male healthy subjects having normal vision and hearing. Informed consent was obtained before the study. They were not practicing yoga or any other relaxing techniques. Diabetics, hypertensives, alcoholics and smokers were excluded from the study. Before starting the study, subjects were instructed about the instrument and different yogasanas.

Both auditory and visual reaction times were measured using an instrument, RESPONSE-ANALYSER (Yantrashilpa, Pune). It has audio and visual mode. The instrument has start and stop button connected to a computer which records the reaction time in milliseconds. Examiner presses the start button to apply the stimulus and the subject presses the stop button when he has received the stimulus. For auditory reaction time, stimulus is through a head phone which is of 1000 Hz

capacity. Visual reaction time is studied through a glowing bulb.

Yoga training was by a yoga teacher in the morning between 6-7a.m. for two months. Yogasanas included Suryanamaskara and simple asanas like tadasana, padmasana, paschimothasana, halasana and at the end, Shavasana followed by meditation. Yoga training was about 60 minutes per day. Auditory and visual reaction times were measured before starting the study and repeated after two months. Results were tabulated and analysed. Statistical analysis was done by using two tailed paired student t-test.

Results:

Table I shows parameters like age, height and weight were within the normal range. **Table II** shows auditory reaction time, visual reaction time results before and after yoga training. There was significant decrease ($p < 0.05$) in the alert values of both auditory reaction time and visual reaction time after two months of yoga training. Recordings were taken on both right and left side which showed significant change in the reaction times.

Discussion:

Reaction time is a useful index to study ability of central nervous system. Yoga training enhances alert responses to auditory and visual signals after yoga training for two months. Reaction time

enhances the sensory and motor skills useful in training and competitions.⁹ Yoga training enhances the attention, cognitive abilities and strength of the central nervous system. It has been reported that yoga training improves human performance including CNS processing.¹⁰

Table I: Anthropometric measurements of the subjects

Parameters	Range	Mean \pm SD
Age(Yrs)	18 - 24	20.24 \pm 1.69
Height(cms)	158-192	171.96 \pm 10.15
Weight(Kgs)	47-67	54.76 \pm 6.24

Yoga is involved in restoring the under activity of the parasympathetic nervous system (PNS) and gamma amino-butyric acid (GABA) systems. The restoration may be partly by stimulation of vagal nerves.¹¹ A single-photon emission computed tomography (SPECT) study demonstrated that the yoga training programme increased the Cerebral Blood Flow (CBF) and the changes in particular appear to have a greater impact in right hemispheric function, particularly in the frontal lobes.¹² Now, it can be emphasized that the improvement on reaction time may be related to the above facts.

Table II: Alert responses before and after yoga (milliseconds)

		Before yoga	After yoga	p-value
Auditory Reaction Time	Right	179 \pm 15.3	167 \pm 15.4	0.02
	Left	180 \pm 16.2	172 \pm 16.0	0.02
Visual Reaction Time	Right	183 \pm 15.9	173 \pm 15.8	0.02
	Left	181 \pm 15.6	173 \pm 16.1	0.01

$p < 0.05$ significant

To conclude, our study shows that yoga training enhances the reaction times which are helpful in surgeons, sportsmen and skilled workers.

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