

LETTER TO THE EDITOR

EFFECT OF PRANAYAM ON VISUAL AND AUDITORY REACTION TIME

Sir,

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Yogic techniques produce consistent physiological changes and have sound scientific basis (1-4). There are few reports on the effects of various pranayams i.e. yoga breathing on body functions (5-8). Various methods of pranayam are mostly characterised by breath holding at the end of maximum inspiration or maximum expiration and slowing of the respiratory rate. They also bring an equipoise between psychic and somatic aspects of bodily functions (9-10).

The study of reaction time (RT) spans more than a century and provides an indirect index of the processing capability of the central nervous system and also a simple means of determining sensorimotor performance (11).

The present study was undertaken to study the changes on visual reaction time (VRT) and auditory reaction time (ART) before and after 4 weeks of pranayamic breathing exercises.

30 normal healthy subjects, both male and female medical students 17 to 19 years underwent a four week practice in pranayamic breathing and were studied for the visual and auditory reaction time before and after the yogic course.

Reaction time was measured by asking the subject to open as quickly as he could a key kept in series with a electromagnetic time marker and a light or sound source using the right hand which was also the dominant hand. The point of application of

stimulus and the response by the subject were automatically recorded on a moving drum whose speed was 580 mm/sec. Practice trials were administered till we were satisfied that the subjects understood and performed the task as required of them (12). After practice trials reaction time for light as well as sound were measured for each subject at 4 p.m. in the laboratory. The subjects were asked to take light meals before 12 noon. The subjects did not undertake any other physical activity such as sports or athletic training. Each subject acted as his own control. No subject has been performing any pranayam before. The pre and post pranayamic recordings were done under similar environmental conditions.

Pranayam for 20 minutes was practised twice morning and evening on week days and once on Sunday mornings for a total period of 4 weeks.

First 5 minutes: slow, deep maximum inhalation and exhalation each lasting for five seconds. Thus respiratory rate was 6/min.

Middle 10 minutes: 5 sec. Slow, maximum inhalation, 17 seconds holding breath with efforts at same lung volume, 8 sec. Slow maximum exhalation. Last 5 min. same as in (1).

Subjects were instructed to breath through their nostrils with eyes closed and concentrate on breathing while they were sitting straight on a chair (breathing was

monitored with audio tape).

The statistical analysis was done by student's 't' test. In our study there was reduction in VRT from 0.196 sec. to 0.141 sec. after 4 weeks of pranayamic breathing exercise and ART reduced from 0.188 to 0.139 sec. Both values were statistically significant.

A decrease in reaction time indicates an improved sensorimotor performance and could be due to an enhanced processing ability of the central nervous system. These effect of prayanam training on the central nervous system could be due to greater improved concentration power and ability to ignore and/or inhibit extraneous stimuli. Pranayamic practitioners are known to have better attention and less distractibility. It

TABLE I: Showing the auditory and visual reaction time in 30 subjects before and after 4 weeks of pranayamic breathing exercise.

	<i>VRT in sec Mean ± SD</i>	<i>ART in sec Mean ± SD</i>
Before Pranayam	0.196±0.25	0.188±0.036
After Pranayam n = 30	0.141±0.019 P<0.001	0.139±0.024 P<0.001

P value is highly significant (P<0.001).

has been reported that this form of yoga practice results in a decreased in mental fatigability and an increase in performance quotient. Since performance of an athlete is directly linked with duration of RT, determination of RT could be used to screen a large population for physical fitness. Thus determination of RT has important implications in sports physiology.

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