

## **ABSTRACT**

### **Immediate effect of Bhastrika Pranayama on cognitive functions of healthy adults.**

#### **Background**

There are several types of voluntarily regulated yoga breathing techniques, all of which are considered to influence the mental state. *Bhastrika* or bellows-type of breathing which is a yogic technique in which the breath is actively blasted out in multiple 'whooshes' with forced abdominal contractions. Cognition means high level processing of specific information including thinking, memory, perception, motivation, skilled movements and languages. Although the range of cognitive problems can be diverse ranging in various cognitive domains like executive function, attention and information processing and working memory which appears to be at higher risk. Yoga Practice has been shown to be effective in improving mood and decreasing stress and depression. During exercise alpha waves are increased in the brain (increase calmness) and blood level of cortisol decreases which is a stress hormone. In pranayama practice when person intentionally focus on breathing at different frequencies of respiration and intend to relax, attention is drawn away from extraneous distracting stimuli. With continuous pranayama practice, the person's ability to concentrate is enhanced and the changes in mental processing (e.g., focused attention and reduced stress) are rapidly expressed in the body via the autonomic and neuro endocrine systems.

#### **Objective:**

The objective of the study is to investigate the immediate effect of bhastrika pranayama on various cognitive function like reaction time, working memory, divided attention and vigilance and their influence on psychological responses after a slow paced 5 minutes continuous bhastrika pranayama on healthy adults.

**Materials and Methods:**

86 healthy adults ((f)n=45, (m)n=41) were taken for the study from SVYASA university, Bangalore, aged between 19 to 28 years who are practitioners of yoga for at least 6 months. It was a two days study Participants were randomized into self as control group. To eliminate the practice effect of the inquisit tests, they were randomized as one group were given the bhastrika intervention first and performed the tests and then on second day performed same tests but without bhastrika and similarly other group performed the tests without intervention on the first day and on second day after practicing the bhastrika pranayama.

**Result:**

Bhastrika pranayama has produced significant results when analyzed with the Wilcoxon sign rank test gave p value  $< 0.05$  for almost all the parameters showing immediate effect of slow paced bhastrika pranayama on cognitive functions with reaction time divided attention showing highest significant results, on working memory showing moderately significant results and on vigilance showing least significant results.

**Conclusion:**

The investigations in this study suggests that bhastrika pranayama has showed significantly high immediate effect on reaction time, divided attention and working memory and not much significant effect on sustained attention or vigilance. From this study a conclusion from the results can be derived that bhastrika pranayama helps in triggering or activating the sympathetic nervous system of the brain by improving the response rate and reducing the latency periods of the responses.