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Original Research Article

Study the Effect of Pranayama on Academic Performance of School Students of IXand XI Standard

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Abstract: Fifty students of IX and XI std, whose ages ranged from 13 to 18 years, where assessed by GC Ahuja group test of Intelligence (GGTI), at the beginning and again at the end of 6 months period during which the students were made to do regular Pranayama daily. The GGTI test is devised to assess the general mental ability of children in the age group of 13-17 Years. Following Pranayama were taught to the students- Kapal Bharti, Slow and Fast breathing, Anulom Vilom, Breath Awareness and Bhramari pranayama by a trained yoga teacher daily for 45 minutes for duration of 6 months. After 6 months of regular pranayama, there is improvement in academic performance of students as seen by the improved GGTI test scores. Both boys and girls performed equally well after six months of pranayama.
Keywords: Intelligence, Pranayama, Kapal Bharti.

INTRODUCTION

Yoga is a holistic system of mind-body practices that was originally developed as a practice for achieving optimal mental, emotional, and physical health and ultimately unitive states of consciousness [1]. Yoga through its techniques of meditation, asanas, and pranayama yields a positive effect in the management of stress in adolescents [2]. Pranayama is an art and has techniques to make the respiratory organs to move and expand internally, rhythmically and intensively. It consists of long, sustained flow of inhalation (puraka), exhalation (rechaka), and retention of breath (kumbhaka). Puraka stimulates the system; rechaka throws out vitiated air and toxins; kumbhaka distributes the energy throughout the body. This disciplined breathing helps the mind to concentrate and enables the sadhaka to attain robust health and longevity" [3]. The processing of sensory information at the thalamic level is facilitated during the practice of pranayama [4]. Academic achievement is an attained ability or degree of competence in school task, usually measured by standardized tests and expressed in grades or units based on norms derived from a vide sampling of pupil's performance [5]. Health experts have illustrated that after two months of practicing pranayama 56 medical students had reduced stress levels, as was evident by a decrease in total stress score, which was highly significant, at the start of the study [6]. School-based yoga interventions may improve several factors that are relevant to academic performance, such as emotional balance, attentional control, cognitive efficiency, and a number of positive psychosocial outcomes [7]. The present study aims to assess the effect of pranayama on academic performance of students of class IX and XI, in the age group of 13 to 18 years and tries to correlate the test results of boys and girls of similar age group after pranayama.

MATERIAL AND METHODS

In the present study, 50 students (28 boys, 22 girls; 13-18 years age) motivated to do pranayama of standard IX and XI were selected from Kendriya Vidyalaya - 1, Agra, U.P. The criteria for exclusion were the students must not have taken yoga previously, students suffering from any chronic illness, taking any type of medicine for long duration, and suffering from any acute respiratory infection like rhinitis and sinusitis. Following Pranayama were taught to the students- Kapal Bharti, Slow and Fast breathing, Anulom Vilom, Breath Awareness and Bhramari pranayama by a trained yoga teacher daily for 45 minutes for duration of 6 months. The students were assessed for their academic performance before starting pranayama by

using G. C. Ahuja Group Test of Intelligence (2008). The same test was repeated after completion of 6 months daily pranayama and the results were compared before and after pranayama and between boys and girls. The test is devised to assess the general mental ability of children in the age group of 13-17 Years. This test consists of eight sub tests having total 115 questions: following directions, Classification, Analogies, Arithmetic Reasoning, Vocabulary, Comprehension, Series, and Best Answers. Each correct answer carries one mark and no negative marking for incorrect answer. Time required for whole administration is 32 minutes. The study was approved by the institutional ethical committee.

Statistical Analysis

All data obtained were expressed as mean ± standard deviation (SD). The differences in observations before and after pranayama were studied using student's paired t-test. A two tailed, un-paired student's t-test was used to test difference between boys and girls. A statistical significance was reported at a two tailed p value of <0.05. All the statistical analysis was done using the SPSS software version 11.5 (SPSS Inc, Chicago, IL, USA).

RESULTS AND DISCUSSION

The Mean and SD of test scores in students before and after pranayama are shown in Table 1. The Mean and SD of test scores between boys and girls are shown in Table 2. There is a significant improvement in the test scores of students after pranayama (p<0.0001). The test scores improved both in boys and girls. There was no significant difference in the test scores of boys and girls both before (p=0.1114) and after pranayama (p=0.4423).

The present study have correlation with the previous study which suggests that six months of yogic practices (meditation, asanas and pranayama) brings a feeling of well being, a reduction in body weight, increased vital capacity, acceleration in endocrinal functions and improvement in memory [8]. The improvement in test scores after six months of pranayama may be due to reduced test anxiety in students after pranayama. In addition, the anxiety scores which rose prior to exams showed a statistically significant reduction on the day of exams after practice. These results point to the beneficial role of yoga in not only causing reduction in basal anxiety levels but also attenuating the increase in anxiety score in stressful state such as exams [9]. Pranayama and other yogic practices shows highly significant improvement in the IQ and social adaptation parameters in mentally retarded children. This shows the efficacy of yoga as an effective therapeutic tool in the management of mentally retarded children [10]. Prior research suggests that yoga participation may improve several aspects of attention and learning, such as cognitive efficiency [11], spatial memory and executive functioning [12], time on task [13], and metacognition [14], yoga may mitigate academic-related stress [15], thereby improving academic performance.

In the present study, we did not find any difference in the test scores among boys and girls, before and after pranayama. The sex difference in intelligence is far more controversial among experts. There is a significant influence of intelligence on academic achievement whereas gender has not significantly influenced the academic achievement [16].In another study, it was found that the average IQ of men is 4.6 points higher than that of women, as measured by the Progressive (or Raven's) Matrices [17]. However, other studies found there was no gender difference in achievement [18].

Table 1: The Mean± SD values of test scores in students before and after pranayama (N=50)

	Before Pranayama	After Pranayama	P value
Test Scores	77±11.5	99±10.1	p<0.0001

Table 2: The Mean± SD values of test scores between Boys and Girls

	Before Pranayama			**After Pranayama**		
	Boys (N=28)	Girls (N=22)	p value	Boys (N=28)	Girls (N=22)	p value
Test Scores	77±11.9	77.7±10.9	P=0.1114	99.6±9.4	98±11	P=0.4423

CONCLUSION

The present study suggests that after six months of regular pranayama, there is improvement in academic performance of students. Both boys and girls performed equally well after six months of pranayama. To conclude, it may be beneficial for schools to consider implementing yoga classes as part of their curriculum. However the effect of pranayama on gender difference in academic performance needs subsequent research.

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