



**Research Article**

**EFFECTS ON COGNITIVE DEVELOPMENT AMONG ADOLESCENT SCHOOL CHILDREN BY THE PRACTICE OF TRATAKA KRIYA**

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**ABSTRACT**

The *Tratak kriya* is considered to be the best way to increase concentration and calming the mind. In view of this a study was conducted among adolescent school children, both boys and girls, studying at a local Aided school in Hyderabad, Telangana state, India. To assess the role of *Trataka kriya* (a visual concentration yogic procedure) on cognitive performances with the emphasis on concentration and academic performances. A random sample of 34 students 19 boys and 15 girls pursuing 8<sup>th</sup> and 9<sup>th</sup> secondary education were selected for the study and were explained the study protocol. They were taught the *Trataka kriya* and asked to continue to practice every day for 3 months (90 days). The subjects were assessed for letter cancellation test on day one, after 30 days and after 90 days of continue practice. The results has shown a non-significant improvement in letter cancellation score i.e., after 30 (t=-234 p & lt; 0.008) days of practice and improved significantly after 90days of practice (t=-5.661, p<0.0001) and between 30 to 90 days of practice. (t=-5.774, p<0.0001). The changes are much higher in boys, compared to girls. Apart from the improvement in letter cancellation tests, all the subjects had got a better percentage of marks in their academic exams at the end of the study.

**INTRODUCTION**

*Trataka* is one among the six yogic *Kriyas* i.e., *Neti, Dhouthi, Batsti, Trataka, Nauli, Kapalbhathi*.<sup>[1]</sup> *Trataka kriya* includes gazing at one object without blinking the eyes until tears shed down on its own. It is a process of initiating the *Ekagrata*. It can be practiced by gazing at one symbol or an object termed as *Bahiranga Trataka* and inner visualization of an object<sup>[3]</sup> termed as *Antaranga trataka*. This yogic cleansing unlocks the inherent energy of the mind and channelizes it to the dormant areas of consciousness. *Trataka* benefits not only for the eyes but also the physiological and mental functions. It is acts as therapy in depression, insomnia, allergy, anxiety, postural problems, poor concentration and memory. It awakes the *Ajna chakra*.

In *Trataka*, the end result is 'blinking out' of visual perception, and in the wake of this suspension, the central nervous system begins to function in isolation. Studies have proven that continuous visualization of the display screens has negative impact on vision. Children below the age of 15 years are exposed constantly to cell phones, and other electronic media will have negative effects on their nervous systems, eyes, concentration, psychological behavior etc. This results in decreasing of their academic performance, attention and development of cognitive skills. In yoga it was found that practicing of *Trataka kriya* can improve the skills as well as academic performance.

To assess the yogic intervention of *Trataka kriya* a six letter cancellation test<sup>[2]</sup> used to score the range of attentiveness in the subjects. The intervention was used with a purpose to increase the attention and concentration. The test consisted of work sheet with 22 rows and 14 columns of randomly arranged alphabets.<sup>[3]</sup>

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**MATERIALS AND METHODS**

The present study was designed to know the effectiveness of the *Trataka kriya* on the academic performance among the adolescent school children whose concentration was an average in their academics. For the study total 35 students of 8<sup>th</sup> and 9<sup>th</sup> standard were selected randomly from Vijetha Vidyalaya located at Motinagar, Hyderabad, Telangana State. Of those 20 were boys and 15 were girls of the same age group.

The study protocol was explained to the school principal and to parents of the selected subjects in their regional language. A written consent was sought from the principal on behalf of the selected subject's parents.

The subjects were made into 6 groups named as A, B, C, D, E, F, G. The groups A, B, C, D, E consisted of 6 participants while the group G group has 5 participants only.

A six letter cancellation test (SLCT) sheet was given to all the subjects. For this AFMUZR target letters were given to cancel in a given time (1 and half minute). To maintain accuracy a stop watch was used. Later Subjects were placed to sit around the tables

arranged with a DIYA at the centre lightened by pure cow desi Ghee in earthen pot.

Session began with chanting OMKARA followed by eye exercises moving the eye balls in horizontal, vertical and circular directions for 3 times each. Students were asked to gaze at the tip of DIYA (which is placed at center of the table), without blinking eyes till the tears shut down by their own, followed by practice of meditation in chin *Mudra* by visualizing the light between two eye brows while closing the eyes for 5 minutes. The time taken for entire procedure to complete was 30 minutes. This was repeated every day for 90 days (excluding the holidays and Sundays). Entire procedure was done under the supervision of the BNYS doctors and school teachers, so as to overcome the due negligence if any in performing *Trataka*.

**RESULTS**

The results obtained by the six letter cancellation test followed by the practice of *Trataka kriya* were tabulated. The results of six letter cancellation test of the individual at initial, 45<sup>th</sup> day, and 90<sup>th</sup> day are as follows.

**Table 1: Results of the six letter cancelation test as performed by Boys**

S.No	1 <sup>st</sup> Day	45 <sup>th</sup> day	90 <sup>th</sup> day
Boys	1 <sup>st</sup> test	2 <sup>nd</sup> test	3 <sup>rd</sup> test
1	41	32	75
2	30	22	42
3	42	40	50
4	43	37	75
5	43	37	43
6	53	29	75
7	25	39	42
8	30	33	41
9	22	12	33
10	31	26	37
11	16	40	70
12	30	27	74
13	33	23	36
14	30	32	37
15	28	17	38
16	32	33	85
17	26	24	49
18	35	13	46
19	21	19	53
20	27	26	39
Mean	31.9±8.9	28.2±8.7	52 ± 16.8

After doing ANOVA for comparing the mean outcome; the p value was 0.00001.

Hence there was a significant increase in the mean *Trataka* Scores among boys post intervention as compared to the baseline. Post Hoc analysis was carried out since the p- value was found to be significant. There was a significant difference seen between scores I and III and also II and III.

**Table 2: Results of the six letter cancelation test performed by the girls**

S.No	1 <sup>st</sup> Day	45 <sup>th</sup> day	90 <sup>th</sup> day
Girls	1 <sup>st</sup> test	2 <sup>nd</sup> test	3 <sup>rd</sup> test
1	22	12	33
2	31	26	37
3	54	51	42
4	34	45	46
5	29	20	42
6	31	28	39
7	17	46	52
8	40	48	61
9	40	42	44
10	21	21	36
11	22	23	46
12	22	40	56
13	19	34	49
14	34	15	62
15	26	35	54
Mean	29.4 ± 9.95	32.4 ± 12.7	46.6 ± 12.66

After 90 days the results of six letter cancelation test for girls was found to be increasing than the second test and initial test. This was proved statistically by conducting ANOVA. (The p value is 0.00001 (for boys) and 0.0001 (for girls). This shows there was a significant increase in the mean *Trataka* Scores among boys and girls post intervention as compared to the baseline. Post hoc analysis was carried out since the p- value (<0.05) was found to be significant.

There was a significant difference seen between scores I and III and also II and III.

**Table 3: Comparison of mean values between boys and girls post the study**

	Mean	Standard deviation	T value	p-value
Boys	52	16.8	1.1290	0.267
Girls	46.6	12.66		

The unpaired t-test showed that there was no significant difference in the mean values post intervention between the boys and girls. But the mean scores were higher among boys than the girls.

## DISCUSSION

It has been demonstrated in the studies conducted by Vivek Mishra et al., and Swathi et al., that regular practice of the *Trataka kriya* improves the attention and memory by reducing the stress and anxiety in the work<sup>[4]</sup>

*Trataka kriya* is said to be as a meditative processes where the focusing and de focusing of the object can be done.<sup>[5]</sup> This has been explained by the sage patanjali in his yoga sutras of *Vibhudi pada* as *Dharana* (*Deśabandhaścittasya dhāraṇā.*) and *Dhyana* (*Tatra pratyayaikatānatā dhyānam.*) If *Chittam*

(wandering mind) concentrating and meditating on one object is *Dharana*, where as when the flow of cognition becomes longer it is *Dhyana*.

The procedure for *Trataka* also have the similarity of *Dharana* i.e., focusing and concentrating on the light quite for some time and Meditating about the same is *Dhyana*. The effect continuous practice of meditation can reduce the stress by inhibiting the releasing of cortisol, enhances the attention, interception and cognitive skills <sup>[5]</sup>

As it has effect on *Ajna chakra*, promotes the clairvoyance (fore seeing). *Trataka* increases the alpha waves production, will control the visual attention to the surroundings, this is because, when same object is observed continuously and constantly by the brain it gets habituated to it then stops the registration of the

object. When the same image of an external object is stabilized on the retina after a period of time image perception disappears and a suspension of the mental processes occurs. In *Trataka* the central nervous system function in isolation, when the brain is in isolated condition suspension of thought processes, ideas and memories can unlock the inherent energy of the mind and channelize the consciousness. One pointed observation always improves the memory, strong will power and concentration ability [7]

#### CONCLUSION

It is evaluated that there is a large improvement of the score in six letter cancellation test after performing the *Kriya* in boys when compared to girls. But overall results suggest that there is a significant difference in scores before and after performing *Trataka* in both genders of the same age.

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