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EFFECT OF TRATAKA ON SPAN OF ATTENTION ON YOGA STUDENTS

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****SUMANT BATISH**

ABSTRACT

The ancient Indian yoga text, Hatha Yoga Pradipika, describes six cleansing techniques. The objective of cleansing techniques is to purify and prepare the body for the practice of yoga postures, breath regulation, and meditation. Yogic visual concentration technique (trataka) is one of these techniques. A previous study showed an increase in cognitive performance following yogic visual concentration (trataka). The present study is comparative in nature. Experimental and Control group were divided randomly with 12 students in each group. Performance on the Span of Attention equipment (Tachistoscope) and meaning and non meaningful cards was assessed in healthy volunteers with ages ranging from 20 years to 35 years. The participants of both groups were pre tested and post tested after 3 weeks of intervention.

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INTRODUCTION

Yoga is an ancient Indian science and the way of life. Sage Patanjali (circa 900 B.C) explains the theoretical aspects yoga in 196 aphorisms called Yoga Sutras.¹ Patanjali evolved Astanga yoga (eight limbed) to reach the ultimate reality. Later around 10th Century CE Sage Svamimarama wrote a text called Hatha Yoga Pradipika in which he explains the method of yoga techniques. He prescribes six cleansing techniques (kriyas) viz., dauti, basti, neti, trataka, nauli and kapalabhati to purify the body. The goal of Hatha Yoga is to prepare the body and mind for the practice of Raja yoga or Astanga yoga.²

Yogic visual concentration (trataka) is one of the six cleansing techniques mentioned in the ancient Indian yogic text, Hatha Yoga Pradipika. The literal meaning of the Sanskrit word trataka is “to gaze steadily”. Looking intently with an unwavering gaze at a small point until tears are shed is known as trataka (Hatha Yoga Pradipika, Ch:2, V: 31).³ Hatha Yoga Pradipika mentions that the practice of trataka eradicates all eye diseases, fatigue, and lethargy (Hatha Yoga Pradipika, Ch:2, V: 32).¹ Although trataka is known as a cleansing technique, the final stage of trataka induces a meditative mental state.⁴ When meditation is practiced over a period of time it improves perception, attention, and cognition.⁵ A large number of research studies have shown improvement in attentional task performance following meditation.

Practice of Trataka falls into two groups: Pratyahara and Dharana. Pratyahara Trataka includes gazing at an external point. It is also called as called Bahir Trataka (outer gazing). This Trataka controls the dissipation that occurs when we become aware of the form. The aim of this Trataka is to control over the dissipation and developing awareness of the form. At the level of Dharana, the form is seen internally. This Tratak is known as AntakTrataka (inner gazing).⁶ During Trataka practice, the eyeballs should remain steady, and the eyelids should not flutter. No other object should be seen except the one on which Trataka is to be done. The mind should not wander here and there but merged in observation of the object.^{7,8}

Tratak is a vehicle for us to transcend the dual nature of the mind. In Buddhist doctrine, the mind is referred to as the "tyranny of the drunken monkey!" In addition to this theology, the Vedic Sutras inform us that the mind can be our

best friend or our worst enemy. Tratak helps us unify our awareness and transcend this duality.⁹

Many of the hurdles in our personal lives and even on the path to meditation have to do with our inability to disconnect with the external world at will. In yogic terminology, this would mean the inability to withdraw our senses from the sense objects. Trataka, through the focus on one object, helps to make this disconnect more easily and prepares us to do so at will.¹⁰

SPAN OF ATTENTION

The term “span of attention” refers to the number of objects which can be grasped in one short presentation. Sir William Hamilton (1859) was the first to carry experimental study in this field.

Attention is defined as the process which compels the individuals to select some particular stimulus according to his interest and attitude out of the multiplicity of stimuli present in the Environment. Thus in short it is the selective activity of consciousness as a process of getting an object of thought clearly before the mind. Span of attention actually tells us that how many things can exist in the focus of consciousness at one time in an individual. It refers to the number of objects which can be grasped in one short presentation.¹¹

EXTERNAL DETERMINANTS¹¹ OF SPAN OF ATTENTION ARE:

- ❖ Nature of stimulus
- ❖ Intensity of stimulus
- ❖ Location of stimulus
- ❖ Contrast of stimulus
- ❖ Change of stimulus
- ❖ Isolation of stimulus
- ❖ Duration of stimulus
- ❖ Movement of stimulus
- ❖ Repetition of stimulus

INTERNAL DETERMINANTS¹¹ OF SPAN OF ATTENTION ARE:

- ❖ Interest
- ❖ Basic drives
- ❖ Mental set
- ❖ Aim
- ❖ Meaning

- ❖ Habit
- ❖ Disposition and Temperament
- ❖ Past experience
- ❖ Emotion
- ❖ Social motives

According to research, our attention span has markedly decreased in just 15 years. In 2000, it was **12 seconds**. Now, 15 years later, it's shrunk significantly to **8.25 seconds**.¹²

OBJECTIVE OF STUDY:

The objective of the study was to find the effect of Trataka on Yoga students.

HYPOTHESIS:

There may be increase in Span of Attention after 3 weeks sessions of Trataka on Yoga Students.

ALTERNATE HYPOTHESIS:

There may be no change in Span of Attention after 3 weeks sessions of Trataka on Yoga Students.

METHODOLOGY:

RESEARCH DESIGN: comparative study, pre-test and post-test design has been used for the present study.

PARTICIPANTS: 24 Students studying in GCYEH, Sector 23, Chandigarh were selected for the study. 12 students each were randomly selected for the control and the experimental group.

Age Group: 20-35 years

TOOLS: Span of Attention equipment- Tachistoscope was used. Meaningful and Non Meaningful cards were used. Each correct response was given 2 points.

INCLUSION CRITERIA:

- ❖ Normal healthy volunteers with ages ranging from 20-35 years.
- ❖ Willingness to participate in the study.

EXCLUSION CRITERIA:

- ❖ Any kind of chronic illness and vision deformity
- ❖ Color blindness

REVIEW OF LITERATURE

P.S. Swathi et al. (2021) studied the effect of trataka on performance on corsi-block tapping task. The results of the study suggest improvement in working memory, spatial attention and spatial memory.¹³

B.R. Raghavendra (2016) studied immediate effects of trataka on cognitive performance using stroop color-word test. The participants were tested before and after in control session on two separate days pre and post intervention. The result showed significant improvement in performance on stroop color word test after trataka compared to the control session.¹⁴

Binod Chowdhary (2015) studied the effect of trataka on concentration and memory level of the college athletics team. 20 min morning session for 12 weeks were given. Pre and post test data was collected and the results showed significant contributing change in the concentration and memory of the subjects.¹⁵

Taruna Mallick et al. (2010) studied the effect of trataka on critical flicker fusion. 30 subjects participated in the study where they were evaluated for the CFF immediately before and after practice. The result showed statistically significant increase in the CFF test.¹⁶

PROCEDURE

Pre-test results of span of attention were taken, Trataka intervention for 3 weeks was given and Post-test results were taken.

Span of Attention was recorded before and after intervention. In span of attention test 10 cards each of meaningful and non meaningful words were shown to the subjects of both control and experimental group in pre and post testing. Each correct answer of meaningful and non meaningful words were given 2 points.

TRATAKA PROCEDURE²:

Smoothly, open your eyes with a few blinks and see the floor.

- ❖ Do not look at the flame directly.
- ❖ Firstly, open your eyes with a few blinks and see the floor.
- ❖ Slowly switch your vision to the base of the diya stand and bring to top of the stand. After that, slowly look at the flame of the ghee laden diya. Now, start gazing at the flame without any effort.

- ❖ Gradually gaze at the tip of the wick of the diya, a small black cord. Focus the attention at one point and try to concentrate for a few seconds. Use your willpower and keep on gazing.
- ❖ If tears come, allow them to flow freely and try not to blink eyes. By this practice, the gaze becomes stable, and mind becomes one-pointed.
- ❖ Gaze at the flame for 30 seconds.
- ❖ Smoothly close your eyes, rub palms against each other for a few seconds and cover eyeballs with palms.
- ❖ Give constant pressure with palms. Do inhale deeply and exhale completely. Continue this for more rounds.
- ❖ Do not touch the eyeballs directly with palms, till eye muscles completely relaxed. Complete five rounds, gently drop hands down.
- ❖ Feel the fresh sensation around the eyeballs. Relax for a few seconds. Do not open eyes immediately.

Go through the silence and relax for a while. After relaxing, gently drop the hands down. Sit quietly for some time and experience the deep comforting effects of Trataka practice.

RESULTS AND DISCUSSION

Experimental Group	Mean	SD	SEd	R	t-ratio	Level of Sig.
Pre Test	9.83	2.62	1.48	-0.80	11.37	Significant at 0.01 Level
Post Test	26.66	2.87				

TABLE 1.0. SHOWING THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST SCORES SPAN OF ATTENTION OF YOGA STUDENTS OF EXPERIMENTAL GROUP

Control Group	Mean	SD	SEd	R	t-ratio	Level of Sig.
Pre Test	9.5	3.41	0.32	0.96	1.56	Not Significant at 0.05 Level
Post Test	10	3.42				

TABLE-2.0. SHOWING THE DIFFERENCE BETWEEN PRE-TEST AND POST-TEST SCORES OF SPAN OF ATTENTION OF YOGA STUDENTS OF CONTROL GROUP

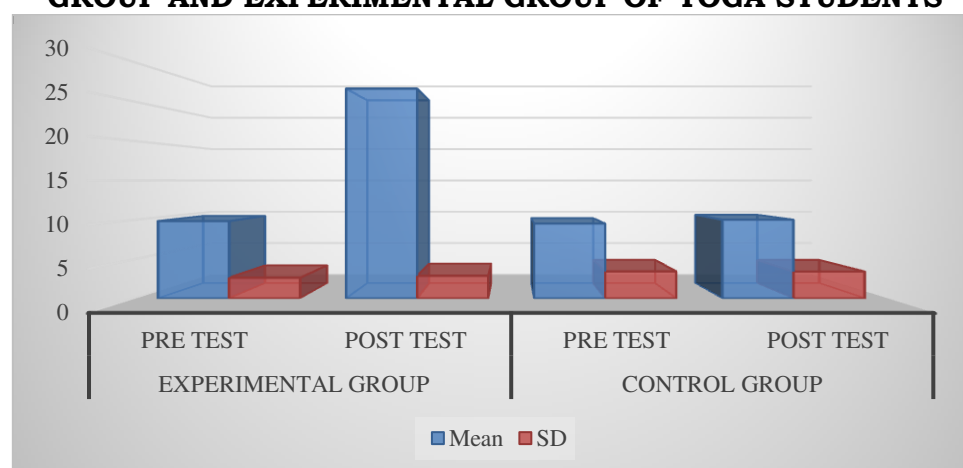
From Table 2.0, it can be seen that the Correlated t-Value is 1.56 which is not significant at 0.05 level with $df = 49$. It indicates that mean scores of span of attention at Pretest and Posttest stages of control group don't differ significantly. Thus the null hypothesis that there is no significant difference in the mean scores of span of attention at pretest and posttest stages of control group of yoga students

is accepted because in control group no yogic training practices were given to yoga students.

Further, it can be seen in Table 1.0 that the Correlated t-Value is 11.37 which is significant at 0.01 level with $df = 49$. It indicates that mean scores of span of attention at Pretest and Posttest stages of experimental group given yogic training practices differ significantly. Thus the null hypothesis that there is no significant difference in the mean scores of span of attention at pretest and post-test stages of experimental group of yoga students is rejected. Further, the mean score of span of attention of yoga students after trataka practice of 3 weeks is 26.66 which is significantly higher than span of attention of yoga students before yogic practices whose mean score at Pretest is 9.83. It may, therefore, be said that span of attention of students improved significantly after trataka practice.

The present study confirms the findings of P.S. Swathi (2021) who found that those students who practiced yoga have an improvement in working memory, spatial attention and spatial memory.

GRAPH1.0: SHOWING THE SPAN OF ATTENTION OF MEAN, SD OF CONTROL GROUP AND EXPERIMENTAL GROUP OF YOGA STUDENTS



DISCUSSION

Trataka involves intense focusing on a candle flame. It is somewhat similar to a focused meditative state (dharana) which is described in the ancient yoga text, Patanjali Yoga Sutras.¹⁷ A study compared performance on a cancellation task following four mental states namely, chanchalta (random thinking), ekagrata (non-meditative concentration), dharana (focused meditation), and dhyana (effortless meditation or meditative expansiveness).¹⁸ Following dharana there was a significant increase in scores on cancellation task. This suggests better selective

attention, visual scanning, and concentration after the practice of dharana. In another study, the practice of dharana showed improvements in incidental learning, accuracy, and attention.¹⁹

Performance in attentional tasks following meditative focusing and Developing coordinative abilities influences learning and perfecting new motor acts and their stability over time, promotes an efficient execution of motor acts and actions in various conditions, supports better use of the other conditional abilities, encourages restructuring movements in high-performance training phases and improving primary and applied motor skills (NelutaSmidu, 2014)

During Trataka, the whole system is stimulated and awakened by concentration through the eye and this induces higher sensitivity of the pineal gland. It directly influences the pineal gland. Pineal gland stimulates the sympathetic nervous system. It balances all systems of the body and hence increases mental clarity, emotional stability and greater sense of wellbeing.²⁰

According to the findings of ^{21,22} yogic practices balanced Autonomic nervous system dominance.

Steady gaze reduces Central Nervous System and Autonomic Nervous System activity through diminution in proprioceptive feedback to the reticular activating system.²³

Another possible mechanism could be a surge in melatonin release due to practice in the dim light. It is known that bright light tunes the suprachiasmatic nucleus (SCN) that regulates the circadian rhythm. Exposure to bright light impedes the melatonin synthesis, whereas the dim light initiates the surge in melatonin release (Zisapel, 2018). Melatonin has been found to positively influence learning and memory (Zakaria et al. , 2016)¹³

CONCLUSION

From the above study we can conclude that TRATAKA is a useful practice to increase the span of attention in individuals when done regularly.

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