

Benefits of Yoga Practices on High school student's memory and concentration in relation to Examination stress

Dr. Ram Kalap Tiwari*

*Associate Professor, Department of Psychology K. S. Saket P. G. College,
Ayodhya, Faizabad (U.P.) India
Email- tiwarirk111@gmail.com

Abstract

Memory is the mental processes of acquiring and retaining information for later retrieval and the mental stores system that enables these processes. Concentration means wholeness unity, equilibrium. It is the focusing of attention upon a particular object. The processes of concentration of attention and memory are the main factor in learning. Studies have found that Yoga exercises benefits both concepts. The main aim of the present investigation was to examine the benefits of Yoga exercises on high school student's concentration and memory. The study was conducted one month before of high school examination. 200 high school students (112 high stress students and 88 low stress students) were selected on the basis of scores obtained through stress scale. Students were divided into two groups- Experimental group and control group. Both groups were given pre test to examine their concentration of attention and memory. Yoga exercises consisting of Pranayama, prayer and a value orientation programmers were administered on experimental groups for four weeks. The experimental and control groups were post-tested for their performance on concentration of attention and memory. Results showed that experimental group produced and exhibited higher concentration of attention and memory. It has been suggested on the basis of these observations that Yoga practices and exercises should be a regular part of the high school curriculum.

Key words: Memory, Concentration, attention & Examination stress.

Introduction:

Yoga is an ancient Indian science and way of life that includes not only physical movements and postures but also regulates breathing and meditation. It appears that following Yoga practice, the participants were better able to focus their mental resources, process information quickly, more accurately and also learn, hold, and update pieces of information more effectively.

The presence of Yoga in main stream in Indian culture has grown dramatically during past 15 years. Yoga is a mind – body practice that combines physical postures, breathing exercises, and meditative practices, with the goal of unifying the physical, mental, and emotional selves. Research has proven that regular practice of yoga helps in the development of the body, mind, and spirit, leading to healthier and more fulfilling life

(Ray, et al, 2001). A part from the achieving physical health, yoga can maintain cognitive control, specifically in the area of attention and memory (Heriza, 2004; Oken et al, 2006). Studies have been conducted to analyze the effect of yoga practices on attention – concentration and memory (Anantharaman & Kabir, 1984).

Yoga has shown a positive impact on mental health and well-being, attention – concentration, memory and physical fitness. Yoga can increase student's ability to concentrate, focus and improve memory (Galantino et al, 2008). Incorporating physical activity in to daily lives of students is essential to their health and well-being (Williams & Ellis, 2013). One form of physical activity entering schools is yoga. It increases academic performance and stimulates brain (Harr, Doneyko and Lee, 2012).

Banda and Kercood (2012) on 10-12 years children found that yoga exercises increases concentration of attention, quality of life, overall well being and energy (Oken, 2006). Practicing yoga has been associated with numerous benefits. The number of empirical studies conducted on yoga has risen in the past 15 years, but the field of yoga research continues to advance slowly. Many of the published studies has been exploratory in nature, and have been limited by various methodological and statistical weaknesses. Additionally, although yoga is making its way into school and extracurricular programs, there is very little research on the impact of yoga on adolescents, and much of this small body of research is limited by poor methodological quality (Birdee et al, 2009).

As indicated by the research cited, the effects of Yoga on memory and attentional capacity are inconclusive at best. Many researchers combined traditional Yoga poses with meditation or other form of exercise. Some did not directly compare experimental group with control group; and in some instances, control group did not exist. Lastly, much of the existing Yoga research is centered geographically in a region known for its belief in the physical, mental and spiritual benefits of Yoga. This fact may introduce a bias on the part of the investigators or participants.

Adolescent Development :

Adolescence is characterized by dramatic biological, cognitive and social changes (Susman and Rogel, 2004) including changes in physical stature and appearance, improvements in cognition and executive function, increases in emotional activity and self – reflection, and changes in self concept and identity. The adolescent years are a time of exploring new ways of thinking about one's self and one's interaction with surrounding environments. Engaging adolescents to yoga – practice that emphasizes self awareness and self acceptance – may offer protection against declines in body – satisfaction.

Exercise and Physical Activity :

Exercise and physical activity has been associated with positive changes in cognition and psychological well-being (Hillman et al 2008). Some studies suggest that there is positive relationship between fitness level and concentration of attention and memory among children (Hillman, 2008). Budde et al (2010) found that yoga exercise influenced concentration of attention of young children.

Concentration of Attention:

When a person fixates his attention for some time on particular object it is a process of concentration of attention. Attention can be thought of as the mental process of concentrating effort on a stimulus or a mental event. It is a limited mental energy or resource that powers the mental system (Ascraft, 2006). Memory is the mental process of acquiring and retaining information for later retrieval and the mental storage system that enables these processes. Asana, Pranayam and prayer are one of the best poses to increase the memory and concentration power. It is the yoga exercise in which we take deep breath.

Various research studies concluded that yoga exercises influenced concentration positively (Manjunath, 2000), and improved memory (Natraj, 2000). The investigation made by various researches proved that yoga exercises improves memory and attention of school children (Kocher, 1974; Palsane, 1973). However, the scientific and empirical evidence that support above claims is limited. Little work has been done to examine the effect of regular yoga practice on High School students and on various aspects of memory and concentration. This study has been designed to examine the effect of yoga practices and exercises on various aspects of memory and concentration of High School students (Adolescents).

With this background, the objective of this study was: To study the effect of yoga exercises on concentration of High School students and to Study the effect of yoga

exercises on various aspects of memory of High School students.

Methods

Subject :The study was carried out on 200 (100 boys and 100 girls with age ranging 14-15 years) high school students at 5 public schools of Faizabad (Uttar Pradesh) which were randomly selected from Faizabad city. Before random selecting, schools of CBSE were matched for infrastructure, student strength and human resources.

Measures: Bisht Battery of Stress Scale (BBSS). Only two sub scales, i.e. academic/examination stress and achievement stress were selected. Stress was studied as an independent variable and used for the purpose of the classification i.e. High stress and low stress students. The aim was to examine whether stress and yoga have any interaction effect on memory and attention concentration.

Yoga practice: Yoga practices were used as an intervention for experimental group for an hour daily in the morning for 4 weeks.

Digit Symbol Test : This test was used to measure attention concentration in terms of the scores on speed and accuracy.

PGI Memory Scale. The scale developed by Prasad and Wig (1994) was used in the present study. It contains 10 sub tests, i.e.

remote memory, recent memory, mental balance, attention and concentration, delayed recall, immediate recall, verbal retention of similar and dissimilar pairs, visual retention and recognition.

Semi Structured Interview : This was designed with an intention to obtain qualitative information from yoga group (experimental group) about their sense of psychological well being.

Procedure :

The tools were administered to each subject of both groups individually in pre test and post test. They were tested when they were performing yoga exercises. The testing session was followed by a short interview where each subject was individually interviewed. The total time taken by the each subject in one session was about 45-50 minutes. A yoga exercises – Asanas, Pranayama, Prayer and value orientation program was arranged daily for an hour in the morning with the experimental group for 4 weeks.

To study the effect of yoga and stress on concentration and memory, 2 X 2 factorial design (ANOVA) was employed on the obtained score of concentration as well as memory.

Results:

Table 1 : Mean and S.D. values of concentration of High and Low stress group

Stress Level	Groups				F – ratio
	Experimental		Controlled		
	Mean	S.D.	Mean	S.D.	
High	25.38	6.54	11.83	4.36	7.16**
Low	29.42	7.12	13.06	5.13	

** p<0.01.

Table 1 reveals that F-ratio for the difference between means of high stress and low stress groups of concentration was found to be significant at the 0.01 level. This indicates that students of experimental group and control group differ on the score of concentration. The

mean values were also different for both groups, meaning thereby that those students, who were exposed to yoga exercises exhibited better concentration than those who were not exposed to yoga exercises.

Table 2 : Mean and S.D. values of memory in High and Low stress group with respect of Yoga exercise

Stress Level	Groups				F – ratio
	Experimental		Controlled		
	Mean	S.D.	Mean	S.D.	
High	39.39	4.58	24.37	5.81	8.34**
Low	42.55	5.14	26.05	6.12	

** p< 0.01

Table 2 shows that F-ratio for the difference between means of high and low stress groups on memory was found to be significant at the 0.01 (F=8.34, p<0.01) which indicates that students of experimental group and control group differ on scores of memory.

Experimental group showed higher mean than control group. It is inferred that the students who exercised Yoga exhibited better memory than those who were not given Yoga treatment.

Table 3: Mean values of outcome measures

Measures	Experimental Group	Control Group
Digit symbol	10.26	9.68
Remote memory	5.72	5.43
Recent memory	5.00	4.32
Mental balance	8.60	7.90
Attention concentration	9.89	8.23
Delayed recall	9.69	9.21
Immediate recall	10.23	9.15
Verbal recall (similar pair)	5.00	4.80
Verbal recall (dissimilar pair)	12.65	11.39
Visual retention	11.48	10.25
Recognition	9.35	8.48

Results presented in table 3 indicated that experimental group performed significantly better on the outcome measures than control group because of practicing Yoga.

Discussion :

It is evident from the result that the students who were exposed to yoga exercises exhibited enhances memory and improved concentration. The results are in tune with the earlier finding, which reported that yogic practice improves memory and attention concentration of school children (Shashi, 1989). The results of concentration of attention was also consistent with earlier researches (Singh, 1977; Venkatraman, 2008).

The findings of the present study also revealed that memory and concentration of attention do

not differ significantly in two stress conditions. One of the reason of this result may be due to only one specific aspect of stress – that is examination stress selected in this study whereas in most of earlier studies stress was assessed in totality and also some physical measures like, B.P., heart rate, brain functioning were taken as indicators.

The present study was completed just before the examination in this time students has heavy burden of their course preparation. This is a one important reason of different types of results of the present investigation with the findings of previous studies.

It may be concluded from this trend of findings of the study that due to exercise of yoga memory and concentration of attention

improved and it reduced the stress level of students in examination time. Increasing evidence supports the view that yoga is a practice which addresses multiple mental, emotional, and physical facets of the individual. The exercises down – regulate stress systems. These are believed to improve

the control of attention and stress perception. The positive outcomes in this study are generally consistent with those of the few previously published studies of yoga in school setting (Noogle, 2012). Therefore, it is suggested that yoga exercise should become a regular feature of the school curriculum.

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