

**IMPACT OF YOGA INTERVENTION ON EXAM ANXIETY,
MINDFULNESS, ATTENTION & MEMORY IN SCHOOL GOING
CHILDREN**

SUBMITTED BY

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UNDER THE GUIDANCE OF

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CERTIFICATE

This is to certify that Divyansh Jain who has been given MSc registration with effect from August 03, 2017 by Swami Vivekananda Yoga Anusandhana Samsthana, Deemed-to-be University, has successfully completed the required training in acquiring the relevant background knowledge in Yoga Therapy and has completed the MSc course of 2 years to submit this Research project entitled “**IMPACT OF YOGA INTERVENTION ON EXAM ANXIETY, MINDFULNESS, ATTENTION & MEMORY**” as per the regulations of the University.

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DECLARATION

I, hereby declare that this study was conducted by me at Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA), Bangalore, under the guidance of Dr. Bharathi Dhevi V. R., S-VYASA University, Bangalore. I also declare that the subject matter of my dissertation entitled “**IMPACT OF YOGA INTERVENTION ON EXAM ANXIETY, MINDFULNESS, ATTENTION & MEMORY IN SCHOOL GOING CHILDREN**” has not previously formed the basis of the award of any degree, diploma, associateship, fellowship or similar titles.

DATE: 1-5-2019

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PLACE: Bangalore

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**STANDARD INTERNATIONAL TRANSLITERATION CODE USED TO
TRANSLITERATE SANSKRIT WORDS**

a	=	अ	ña	=	ढ	pa	=	प
ā	=	आ	ca	=	च	pha	=	फ
i	=	इ	cha	=	छ	ba	=	ब
ī	=	ई	ja	=	ज	bha	=	भ
u	=	उ	jha	=	झ	ma	=	म
ū	=	ऊ	ñ	=	ञ	ya	=	य
ṛ	=	ऋ	ṭa	=	ट	ra	=	र
ṝ	=	ॠ	ṭha	=	ठ	la	=	ल
e	=	ए	ḍa	=	ड	va	=	व
ai	=	ऐ	ḍha	=	ढ	śa	=	श
o	=	ओ	ṇa	=	ण	ṣa	=	ष
au	=	औ	ta	=	त	sa	=	स
m̐	=	अं	tha	=	थ	ha	=	ह
ḥ	=	अः	da	=	द	kṣa	=	क्ष
ka	=	क	dha	=	ध	tra	=	त्र
kha	=	ख	na	=	न	jña	=	ज्ञ
ga	=	ग						
gha	=	घ						

ABSTRACT

Background

Exams are identified as a major source of concern to many children, and the overall prevalence of exam anxiety appears to be increasing, possibly due to increased testing in schools and pressures associated with this. Previous studies have reported the effects of yoga in school going children showing physical, cognitive, emotional, memory, attention and mindfulness benefits.

Aim

The aim of the present research is to study the impact of yoga intervention on exam anxiety, mindfulness, attention, and memory in school going children.

Methodology

Both group pre-post design was used in this study. Eighty school students of 8th to 9th standard within the age range of 13 to 15 years who were able to perform yoga asanas were selected for yoga intervention. The number of samples who had undergone regular yoga practice was forty. They practiced one hour daily for six days a week for one month. The Yoga intervention includes asanas and breathing exercises to regulate the breath and also seated mindfulness breathing, loosening, *pranayama*, relaxation, and meditation techniques. Children's' test was assessed before and after the intervention. Subjects who are physically challenged and under medication were excluded. Test anxiety, exam anxiety, mindfulness, attention, and memory were assessed using appropriate assessment tools before and after one month of yoga intervention. Data were analyzed using R-Studio.

Results

Statistically significant improvement was found in mindfulness, DLST and magnitude of increase in test-anxiety score in yoga group was significantly lower compared to control group.

Conclusion

One month of yoga practice is more beneficial in improving memory, anxiety, mindfulness, and attention.

Keywords

Exam anxiety, mindfulness, attention, memory, yoga, school going children

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CHAPTER 1

1. Introduction

Yoga is a 5000 plus year old science, originated in India (Kaley-Isley, Peterson, Fischer, & Peterson, 2010). Patanjali is known to be at the source of creation of Yoga as known to modern man today. In current scenario, pressure and in particular students are worried about the exams which affects in anxiety, depression and stress. The intervention of yoga, encompassing *asanas*, *pranayama*, *prathyhara*, *dharana* and *dhyana*, appears effective in helping children overcome stress and anxiety (Nanthakumar, 2018a).

1.1 Challenges of school children

Population of school children and the literacy ratio in India is 65.38% with male literacy at 75.85% and female literacy at 54.16% Of the 193 million children in the age group 6 to 14 years, 8.1 million youngsters are out of school as of September 2004 according to Government measurements. Test tension, consideration, memory and care are believed to be real stressors among younger students. Reasons for worry for school understudies are for the most part identified with rivalry. In India because of populace blast the pressure and tension of 'making it throughout everyday life' gets duplicated the same number of understudies are battling for too few seats.

1.2 General Problems

1.2.1 Commonness of issues among younger students

Tests and tests are distinguished as a noteworthy wellspring of worry to numerous kids, and the overall prevalence of test/exam anxiety appears to be increasing, possibly due to increased test in schools and pressures associated with the same (Sibnath Deb, Esben Strodl, & Jiandong Sun, 2015).

Exam anxiety varies along a continuum, rather than simply being present or not, and this has lead to interest in what causes individual variations in exam anxiety. The origins of exam anxiety are believed by some to lie in the academic expectations parents place on their children, with children fearing the consequences if they do not meet these expectations. Recent research has also suggested that praising children when they do perform well can have paradoxical effects on subsequent performance (Mullally, Intraub, & Maguire, 2012)

1.2.2 Role of stress in school children

In particular this study entails the effects of stress as experienced by school students. It is a known fact that some amount of stress or trigger is important for performance. However over stress and the rush of adrenaline beyond a point is known to have a negative effect. It can cause heightened anxiety and stress resulting in failure or loss of interest to attempt an exam. This feeling of failure or over stress can even lead students to attempt to commit suicide (Gini & Espelage, 2014)

1.2.3 Stress related problem in school children

With so many options available to students today, instead of reducing stress, it has only increased. Therefore, the purpose of this study is to find a way to manage and reduce this unnecessary stress. For this purpose and to understand – Yoga has been introduced to a focus group to understand the effects of doing Yoga and Meditation on Exam stress, anxiety and other reported disorders (Culver, Whetten, Boyd, & O'Donnell, 2015)

1.3 Exam anxiety and mindfulness related problems in school children

As per dictionary meaning the term anxiety is our body's natural response to stress it's a feeling of dread or fear about what's to come. The first day of school, going to a job interview or giving a speech, or going for an exam causes most people to feel fearful or nervous. But if the feelings of anxiety are extreme, last for longer than 6 months and interfere with the life one may have anxiety disorder (“Anxiety Definition vs. Stress Definition: A Simple Explanation of How These Responses Differ - University Health News,” n.d.).

Mindfulness is defined as the basic human ability to be fully present, aware of where we are and what we are doing and not excessively responsive or overpowered by what's happening around us. Intercessions that sustain care might be a doable and compelling strategy for structure flexibility in universal populations of children and youth and in the treatment of disorders in clinical populations (Greenberg & Harris, 2012a). The researcher is looking into the school going children level of mindfulness after the yoga intervention which would be measured by using a scale (Greenberg & Harris, 2012b)

1.4 Attention and memory related problems in school children

Attention is a concept studied in cognitive psychology that refers to how one actively processes specific information in the environment. Dictionary defines memory as the power of the process of reproducing or recalling what has been learnt and retained especially through associative mechanism. It can also be defined as the store of things learnt and retained from an organism's activity or experience as evidenced by modification of structure or behaviour or by recall and recognition (Telles, Hanumanthaiah, Nagarathna, & Nagendra, 2011).

1.5 General benefit of yoga

Yoga increases flexibility, increases muscle strength, tones the muscle, improves respiration, energy and vitality, helps in maintaining a balanced metabolism, helps in weight reduction, improves cardio and circulatory health (Pradhan & Nagendra, 2010). The intervention of yoga, encompassing *asanas*, *pranayama*, *prathyhara*, *dharana* and *dhyana*, appears effective in helping children overcome stress and anxiety (Nanthakumar, 2018b).

1.6 Need of study

The purpose of this study is to understand the effects of Yoga intervention on Exam stress, anxiety and other reported disorders after the focus group has been given one month of yoga practice. The students who took part in this study took a Yoga program which includes seated mindfulness, asanas and breathing exercises to regulate the breath (Pradhan & Nagendra, 2010).

Simple questionnaire is used to understand the levels of examination anxiety. The analysis of the result shows marked improvement in the state of mental health of students. Multiple studies around the world have shown that yoga has benefits beyond looking in and meditation (Stephens, 2017) Test anxiety has negative effects on students' learning and academic performance. Test-anxious students do not perform well on standardized achievement tests, receive poorer grades and are more likely to be retained and to drop out of school. However the changes that actually happen at the anxiety, mindfulness attention and memory related performance of the school going children undergoing any kind of yoga intervention have not been done. Hence the present study has been designed to study the impact of yoga intervention on exam anxiety, mindfulness, attention and memory.

The study is designed with the interest and focus on this segment so that the children can be benefited of mindfulness, attention and memory and have reduction in exam anxiety which will help them to modulate their responses to the fear of exams.

CHAPTER -II

2. ANCIENT LITERATURE REVIEW (PRAMEHA)

The Bhagavad Gita is an antiquated Indian content that turned into an essential work of Hindu custom as far as both writing and rationality. The soonest understandings of this work from Sanskrit into English were made around 1795 CE by Sir Charles Wilkins. The name Bhagavad Gita signifies "the tune of the Lord". It is created as a sonnet and it contains many key subjects identified with the Indian scholarly and profound convention. In spite of the fact that it is regularly altered as a free content, the Bhagavad Gita turned into an area of a monstrous Indian epic named "The Mahabharata", the longest Indian epic. There is a segment in the midst of this long substance, including 18 brief parts and around 700 holds back: this is the region known as the Bhagavad Gita. It is moreover insinuated as the Gita, for short. We can discover our ideas of concentrate in the Bhagavad Gitas different shlokas which show us how our psyche gets on edge and furthermore demonstrates the way to upgrade our aptitudes and improve our memory, consideration and care which would lessen the uneasiness.

ध्यायतो विषयान्पुंसः सङ्गस्तेषूपजायते । सङ्गात्संजायते कामः कामात्क्रोधोऽभिजायते ॥ २.६२ ॥

dhyāyato viṣayānpumsaḥ saṅgasteṣūpajāyate ।
saṅgātsañjāyate kāmāḥ kāmātkrodho'bhijāyate ॥ 2.62॥

At the point when a man thinks about the items, connection for them emerges; from connection want is conceived; from want outrage emerges. (Prabhupada, 1972)

क्रोधाद्भवति संमोहः संमोहात्स्मृतिविभ्रमः । स्मृतिभ्रंशाद् बुद्धिनाशः बुद्धिनाशात्प्रणश्यति ॥ २.६३ ॥

krodhādbhavati sammohaḥ sammohātsmṛtivyibhramaḥ ।
smṛtibhramśād buddhināśaḥ buddhināśātpṛaṇāśyati ॥ 2.63॥

From resentment comes dream; from hallucination loss of memory; from loss of memory the obliteration of separation; from the annihilation of segregation he perishes. (Prabhupada, 1972)

काकचेष्टा बकोध्यानं श्वाननिद्रास्तथैव च । अल्पहारी गृहत्यागी विद्यार्थी पञ्चलक्षणम् ॥

kākaceṣṭā bakodhyānaṁ śvānanidrāstathaiva ca |
alpahārī gr̥hatyāgī vidyārthī pañcalakṣaṇam || Subhashitam ||

A student should be alert like a crow, have concentration like that of crane sleep like that of dog that wakes up even at slightest of the noise. The student should eat scantily to suffice his energy needs and neither eats less not more .also he should stay away from chores of daily house hold stuff and emotional attachment. (Shubhashitam)

कर्मण्येवाधिकारस्ते मा फलेषु कदाचन । मा कर्मफलहेतुर्भूः मा ते सङ्गोऽस्त्वकर्मणि ॥ २.४७ ॥

karmaṇyevādhikāraste mā phaleṣu kadācana |
mā karmaphalaheturbhūḥ mā te saṅgo'stvakarmani || 2.47||

You reserve a privilege to play out your endorsed obligation, yet you are not qualified for the products of activity. Never view yourself as the reason for the consequences of your exercises, and never be connected to not carrying out your responsibility. (Prabhupada, 1972)

योगस्थः कुरु कर्माणि सङ्गं त्यक्त्वा धनंजय । सिद्धयसिद्धयोः समो भूत्वा समत्वं योग उच्यते ॥ २.४८ ॥

yogasthaḥ kuru karmāṇi saṅgaṁ tyaktvā dhanañjaya |

siddhyasiddhyoḥ samo bhūtvā samatvaṁ yoga ucyate || 2.48||

Be resolute in yoga, O Arjuna. Play out your obligation and forsake all connection to progress or disappointment. Such equity of brain is called yoga (Prabhupada, 1972).

बुद्धियुक्तो जहातीह उभे सुकृतदुष्कृते । तस्माद्योगाय युज्यस्व योगः कर्मसु कौशलम् ॥ २.५० ॥

buddhiyukto jahātiha ubhe sukṛtaduṣkṛte |
tasmādyogāya yujyasva yogaḥ karmasu kauśalam || 2.50||

A man occupied with reverential administration frees himself of both great and awful activities even in this life. Consequently take a stab at yoga, O Arjuna, which is the craft of all work (Prabhupada, 1972).

मनः प्रसादः सौम्यत्वं मौनमात्मविनिग्रहः । भावसंशुद्धिरित्येतत्तपो मानसमुच्यते ॥ १७.१६ ॥

manaḥ prasādaḥ saumyatvaṁ maunamātmavinigrahaḥ |
bhāvasaṁsuddhirityetattapo mānasamucyate || 17.16||

What's more, quietness, effortlessness, gravity, discretion and virtue of thought are the stark nesses of the psyche (Prabhupada, 1972).

The Yoga Sutras of Patañjali are a gathering of 196 Indian sutras (truisms) on the hypothesis and routine with regards to yoga. The Yoga Sutras were gathered before 400 CE by Sage Patanjali who blended and sorted out information about yoga from more seasoned conventions (Prabhupada, 1972).

योगश्चित्तवृत्तिनिरोधः ॥ १.२ ॥

yogaścittavṛttinirodhaḥ || 1.2||

When you are in a condition of yoga, all confusions (vrittis) that can exist in the alterable part of individuals (chitta) vanish (Prabhavananda, 1953).

तदाद्रष्टुःस्वरूपेऽवस्थानम् ॥ १.३ ॥

tadā draṣṭuḥ svarūpe'vasthānam || 1.3||

For finding our actual self (drashtu) involves knowledge into our own tendency (Prabhupada, 1972).

वृत्तयःपञ्चतय्यःक्लिष्टाक्लिष्टाः ॥ १.५ ॥

vṛttayaḥ pañcatayyaḥ kliṣṭā'kliṣṭāḥ || 1.5||

There are five sorts of misguided judgments (vrittis), some of which are more pleasing than others (Prabhavananda, 1953).

CHAPTER - III

3. SCIENTIFIC LITERATURE REVIEW

AUTHOR & YEAR	Samples Details	Type of Intervention & Duration	Assessment	Results	Conclusion
(Nanthakumar, 2018b)	The number of children suffering from stress and anxiety in Malaysias	asanas (postures), pranayama, dharana (concentration) and dhyana (meditation)	Stress, anxiety	Yoga practice has shown significant improvement in managing and reducing stress and anxiety	Yoga is effective for children to cope with stress and anxiety. Malaysia schools can incorporate yoga as part of the physical education curriculum, it will definitely benefit the students.
(Bougea, Spantideas, & Chrousos, 2018)	tension-type headache and migraine are the two most common types of headache in children and adolescents	An integrative plan through the lifestyle improvement and biopsychosocial modifying stress response techniques. Healthy dietary choices, sleep hygiene, and regular exercise	Health promotion; migraine; stress management; tension-type headache; well-being	Biopsychosocial therapies such as relaxation, biofeedback, hypnosis, yoga, cognitive behavioral therapy, and acupuncture focus at stress physiological and behavioral relief.	Study suggest a stress-related headache management to empower children to make healthy choices in order to improve their lifelong well-being and quality

					of life
(Sarkissian, Trent, Huchting, & Khalsa, 2018)	n = 30	10-week YOGA program 1 to 2 times per week	Perceived Stress Scale, Positive and Negative Affect Schedule, and the Resilience Scale before and after the yoga program. After the program, informal qualitative interviews were conducted with school teachers, yoga teachers, and students to determine the overall impact of the yoga program.	Yoga program significantly improved students stress ($p < 0.05$), positive affect ($p < 0.05$), and resilience ($p < 0.001$). The qualitative results indicated that students, school teachers, and yoga teachers all found the program to be beneficial for students' well-being	YOGA for Youth program provide students in low-income urban schools with behavioral skills that will protect against risk factors associated with the development of behavioral and emotional problems.
(Butzer et al., 2017)	n = 16 (7 th grade students)	Sixteen students were randomly selected from the yoga condition to participate in one-on-one interviews. Qualitative analyses revealed 13 themes	Usability (student perceptions of the usefulness, learnability, and convenience of the yoga intervention) and Effect (student perceptions of the	Beneficial effects of yoga on stress, sleep, and relaxation shown. Effects of yoga on self-regulation, social interaction, substance use, and academic performance were	suggest that qualitative research shows promise for providing an in-depth perspective on the impact of mind-body

		that were organized into two categories	direct results of the yoga intervention)	also generally positive, although somewhat mixed	interventions in schools
(Culbert, 2017)	Not mentioned	biofeedback; children; computer games; meditation; mind-body skills; mobile applications; multimedia; relaxation; stress; technology; video games	MB skills can also be health promoting in the long-term, and with regular practice, could potentially contribute to longer attention spans, social skills, emotional regulation, and enhanced immune system functioning.	Benefits accrued from MB skills are largely dose dependent, meaning that individuals who practice with some consistency tend to benefit the most, both in the short- and long-term	Assisted relaxation as an engaging and effective option to enhance treatment adherence (i.e., daily practice) for pediatric patients, for whom MB skills have been recommended to address physical and mental health challenges.

CHAPTER - IV

4. AIM & OBJECTIVES

4.1 Aim of the study

The aim of the study is to find the impact of yoga intervention on exam anxiety, mindfulness, attention & memory in school going children.

4.2 Objective

To study the effect of yoga intervention on exam anxiety, mindfulness, attention and memory in school going children.

4.3 Research Question

Does yoga intervention have effect on exam anxiety, mindfulness, attention and memory of school going children?

4.4 Hypothesis

Yoga intervention may have an effect on exam anxiety, mindfulness, attention and memory of school going children.

4.5 Null Hypothesis

Yoga intervention may not have effect on exam anxiety, mindfulness, attention and memory of school going children.

CHAPTER– V

5. METHODOLOGY

5.1 Source of subject

Subjects were recruited from RA. Gita School, Delhi, India School's students both male and female with age range 13 to 15 years.

5.2 Sample size

G-power was used to estimate sample size with effect size = 0.58, Alpha = 0.05 and Power = 0.80; estimate sample size was 76 on the basis of working memory (Quach, Jastrowski Mano, & Alexander, 2016)

5.3 Sampling

Convenient sampling was used for the study.

5.4 Ethical clearance and consent

Ethical consent was obtained from the concerned participants before the starting of the study. The Principal and the class teacher of the school were explained the details of the study and their consent was sought to conduct the yoga intervention. Each participant who participated in intervention was also explained in detail about the study and written informed consent was obtained from them to participate in the study. (Details in the Appendix)

5.5 Inclusion criteria

- Age 13 to 15 years.
- Able to perform yoga *asanas*.

5.6 Exclusion criteria

- Any physically challenged.
- Under medication.

6. Design

Between group pre-post design

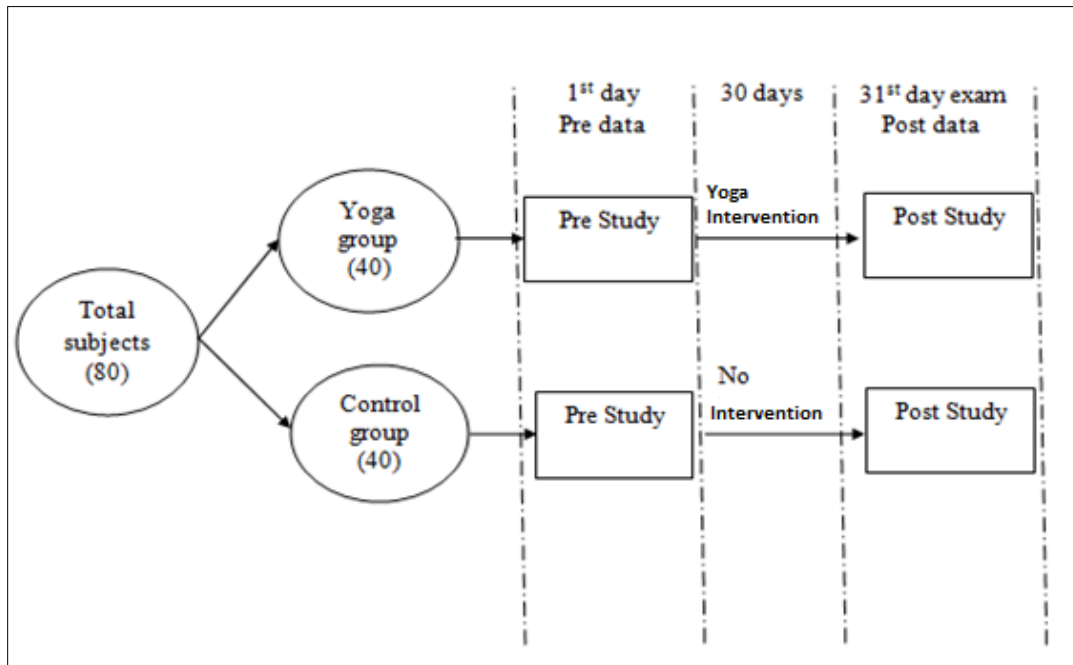


Fig: Design Between group pre-post design

6.1 Methods

The study started with the camp organized by a Principal of RA. GEETA SR.SECONDARY SCHOOL. The study population was taken from those interested to take part in the one month yoga intervention on their own will.

Among the 80 students collected data, 40 subjects attended the one month yoga intervention program. The intervention included seated mindfulness, breathing, loosening exercises, asana and relaxation techniques.

The pre data were collected 1st day prior to intervention, on the 30th day from the first day of intervention. Test anxiety, mindfulness, attention & memory test were assessed before and after intervention.

6.3 Intervention

Yoga group received thirty days yoga intervention. Intervention module was designed in combination of standing, sitting, prone and supine category asanas along with meditative and relaxation postures. The intervention components are asana, breathing awareness, DRT (deep relaxation technique) guided instruction, and positive affirmation. At the same time control group was engaged as normal day-to-day activities.

Component	Approximate Duration
Seated mindfulness scan and set positive affirmation	3±5 min
Seated asanas	6±9 min
1. Spinal twists (<i>vakrasana</i>) 2. Staff pose(<i>dandasana</i>) 3. Head-to-knee forward bend (<i>paschimottanasana</i>) 4. Reclining hand-to-big-toe pose	
Standing asanas	25±27 min
5. Mountain pose (<i>parvatasana</i>) 6. Tree pose (<i>vrikshasana</i>) 7. Warrior II pose (<i>veerasana variation-II</i>) 8. Extended side angle stretch 9. Half-moon pose (<i>candrasana</i>) 10. Standing forward bend 11. Warrior I pose (<i>veerasana variation-I</i>) 12. Downward facing dog pose	
Restorative asanas	6±8 min
13. Cobra pose (<i>bhujangasana</i>) 14. Child's pose (<i>balasana</i>) 15. Cat-cow pose (<i>gomukhasana</i>) 16. Eye-of-the-needle pose 17. Legs up the wall	
Final relaxation: guided mindfulness meditation	10 min
18. Corpse pose (supine rest) (<i>savasana</i>)	
Each asana was held for approximately five breaths	

6.4 Assessment tools

6.4.1 TEST ANXIETY

Test anxiety questionnaire is an assessment tool for assessing the test anxiety level in school going children. To analyze the test anxiety questionnaire we need to add up the total from is column a score of 160 or higher indicates that the problem with test anxiety please be assured that the symptoms of anxiety in testing situations are not abnormal or strange they are the types of things people normally experience when they are under stress that is difficult to handle or when they are very and exhaust as they have probably noticed the feelings usually passed away quickly including the irrational thoughts when the test is over at the situations changes also it is quite possible to learn to control anxiety of the sky when we need to know how to go about it consult ASL AC counselor the books about anxiety management in the cell a c lab for the university counseling centre for tips on the test exactly production summer 2014 Theresa home student learning assistance centre(Suinn, 1969). The test sheet given in the appendix.

6.4.2 DLST (Digit Letters substitution Test)

DLST is a assessment tool for assessing the attention level in school going children. The DLST test sheet given in the appendix. The DLST consisted of a worksheet which has 8 rows and columns and randomly arranged digits in roads and columns. The students are asked to substitute as many target as possible in the specified time of 90 seconds that letter substitution may be undertaken in a horizontal vertical randomized manner by selecting a particular digit .The total number of substitution and wrong substitutions are scored .the net score was obtained by detecting wrong substitution from the total substitutions attempted .Five trained assistants at the neuropsychological test laboratory administered test(Natu & Agarwal, 1997).

6.4.3 WECHSLER MEMORY SCALE

The Wechsler Memory Scale(WMS) is a neuropsychological test designed to measure different memory functions in a person .anyone ages 10 to 90 is eligible to take this test the current version is the fourth edition (WMS- IV)which was published in 2009 and which was designed to be used with the WAIS-IV .WMIS-IV is made up of 7 subtests spatial edition symbol span ,Design Memory ,General cognitive screener ,Logical memory (I and II), verbal paired associates (I and II) and visual reproduction first and second a person's performance is reported as 5 index scores: Auditory memory ,Visual memory ,Visual working memory, Immediate memory and Delayed Memory .

The WMS- IV also incorporates an optional cognitive exam (Brief Cognitive status exam) that helps to assess global cognitive functioning in people with suspected memory deficits or those who have been diagnosed with a various neural, psychiatric and /or developmental disorders . This may include conditions such as Dementias or mild learning difficulties .

There is a clear evidence that WMS differentiates clinical groups (such as those with dementias or neurological disorders) from those with normal memory functioning and that primary index scores can distinguish among the memory-impaired clinical groups(Hunsley, 2010)

6.4.4 MINDFULNESS

Mindfulness is a psychological state accomplished by concentrating one's mindfulness on the present minute, while smoothly recognizing and tolerating one's sentiments, contemplations, and substantial sensations, utilized as a remedial procedure. The care scale utilized here is 8-thing scale intended to quantify a basic normal for dispositional care, viz., open or responsive consciousness and consideration regarding what is occurring in the present. This scale demonstrates solid psychometric properties. It taps one of a kind nature of cognizance which is identified with, and prescient of, an assortment of self-guideline and prosperity builds. The measure takes 8 minutes or less to finish.

6. 5 DATA EXTRACTION ANALYSIS

.The extracted data was tabulated and analyzed using R-studio for results.

CHAPTER - VII

7. RESULTS

Shapiro Wilcoxon test was used to check normality of base line data. Data which met the normal distribution were analyzed using repeated measures of ANOVA. For multiple comparisons Bonferroni Adjustment were used. For few variables like digit forward and digit backward the data was not normally distributed so nonparametric test Wilcoxon's sign rank test for within and Mann Whitney U test for between group analysis were used. Finally for Anxiety scores data was significantly different in the base line itself, so the baseline correction was done using analysis of covariance (ANCOVA)

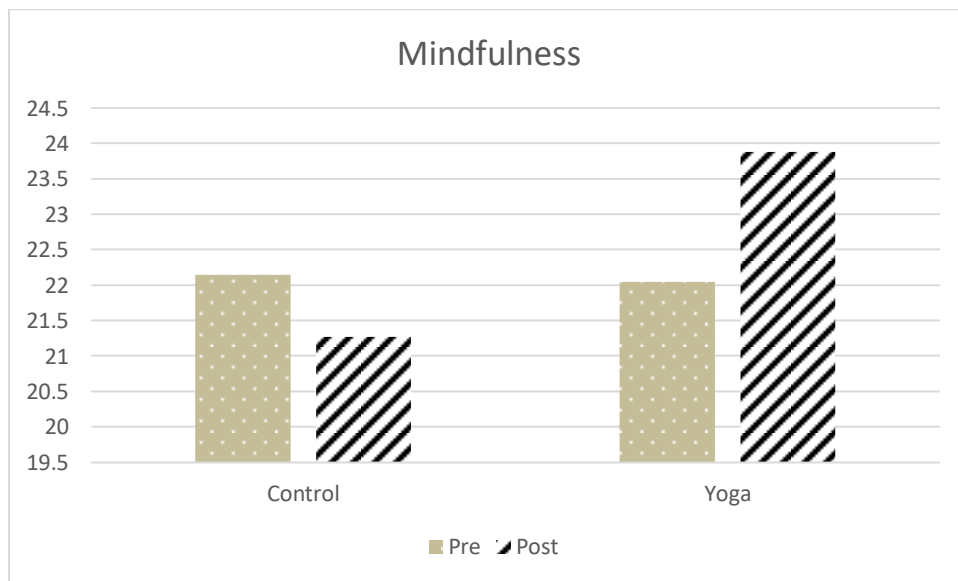
Mindfulness

The 2x2 (Groups x States) repeated measures ANOVA for Mindfulness, $F(1, 79) = 0.665$, $p > 0.05$, $\eta^2 = 0.008$ had no main significant effect on states. However, there was statistically significant interaction effect in State x Group, $F(1, 79) = 5.42$, $p < 0.05$, $\eta^2 = 0.064$. *Post hoc* multiple comparison was done using Bonferroni adjustment, within comparison showed statistically significant improvement in mindfulness of yoga group but not in control group.

Table1: Result table show the mean \pm SD values of mindfulness in both the groups

Variables	Control group			Yoga group		
	Pre	Post	% change	Pre	Post	% change
Mindfulness	22.15 \pm 3.82	21.27 \pm 5.66	↓3.9	22.05 \pm 5.06	23.88 \pm 3.88*	↑8.299

Note:*Represents P-value which is $P < 0.05$ significance within Yoga group

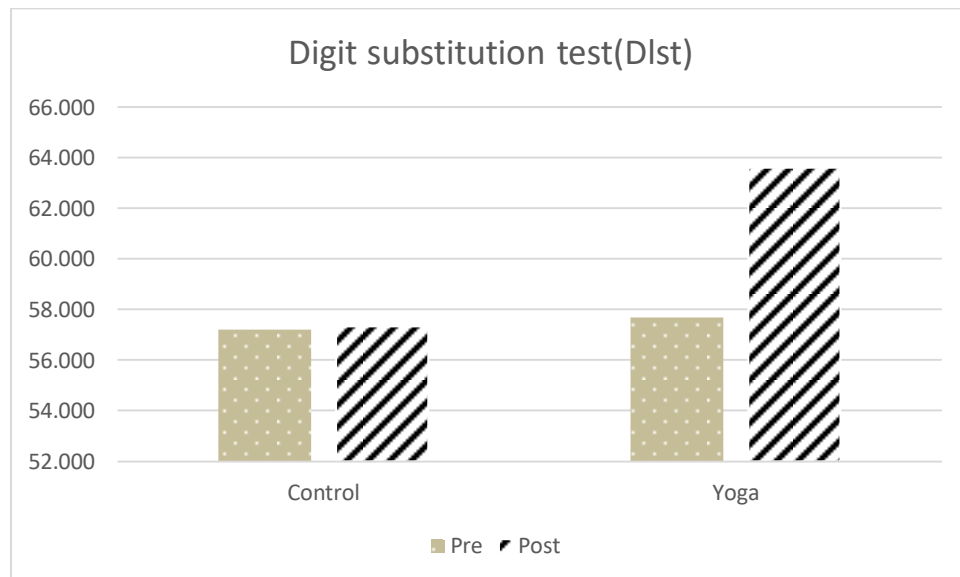


Digit letter substitution test (DLST)

The 2x2 (Groups x States) repeated measures ANOVA for Digit substitution test $F(1, 79) = 0.665$, $p < 0.01$, $\eta^2 = 0.086$ had main difference effect on states however statistically not significant. There was statistically significant interaction effect in State x Group, $F(1, 79) = 25.171$, $p > 0.05$, $\eta^2 = 0.002$. Post hoc multiple comparisons were done using Bonferroni adjustment, within comparison showed statistically significant improvement in DLST of Yoga group but not in Control group. However, there was improvement in yoga group also statistically significant.

Variables	Control group			Yoga group		
	Pre	Post	% change	Pre	Post	% change
DLST	57.2 ± 16.59	57.35 ± 11.85	0.26	57.68±15.29	63.61±17.62*	10.28

Note: *Represents P-value which is $P < 0.05$ significance within Yoga group

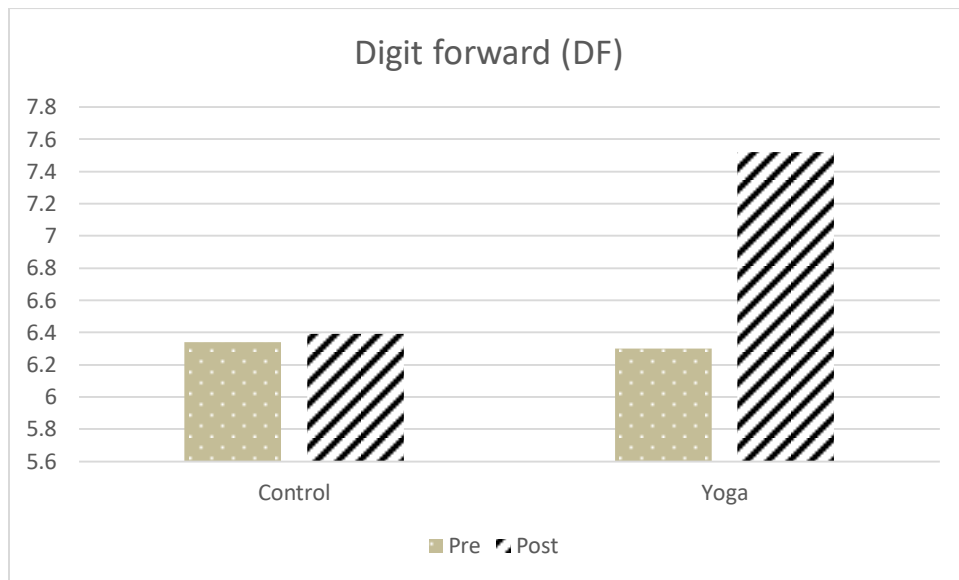


Digit forward

The data was not normally distributed, hence we have conducted non- parametric test. In Yogagroup mean value of score increased from 6.3 to 7.5 (19.04%) which was statistically significant $p < 0.01$ in contrast there was in control group mean value of score also from 6.34 to 6.39 (0.78%) but there was no statistically significant $p > 0.05$.

Variables	Control			Yoga		
	Pre	Post	% change	Pre	Post	% change
Digit Forward	6.34 ± 2.90	6.39±2.68	0.78	6.30± 1.87	7.52 ± 1.73**	19.04

Note:-**Represents P-value which is $P < 0.01$ significance within Yoga group



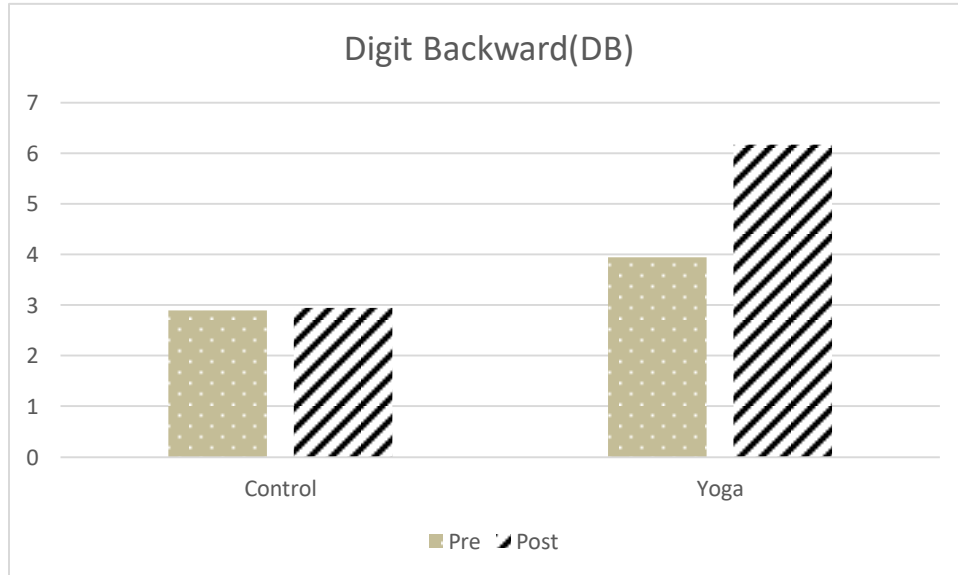
Digit backward

The data was not normally distributed; hence we have conducted non- parametric test. In Yogagroup mean value of score increased from 3.9 to 6.1(56.41%) which was statistically significant $p < 0.001$ similarly there was increase in control group mean value of score also from 2.90 to 2.95 (1.72%) and no statistically significant.

Table: Result table indicates Digit backward (within group) paired analysis

Variables	Control			Yoga		
	Pre	Post	% change	Pre	Post	% change
Digit Backward	2.90±2.25	2.95±2.25	1.72	3.95 ± 2.20	6.17 ± 2.37***	56.41

Note:- ***Represents P-value which is $P < 0.001$ significance within Yoga group



ANCOVA result for anxiety

Adjusted and unadjusted group mean and variability for post anxiety scores using pre scores as a covariate

	Unadjusted			Adjusted	
	N	M	SD	M	SE
Control	40	140.46	21.874	143.392	3.047
Yoga	40	161.93	28.376	158.923	3.086

Analysis of covariance for post anxiety scores as function of group, using pre anxiety scores taken as covariate.

Source	df	Mean Square	F	P-value	Partial Eta Squared
Anxiety Scores	1	31205.85	56.936	<0.001	0.422
GROUPS	1	578.857	1.056	0.307	0.013
Error	78	548.089			

Test-anxiety

Yoga and control group were compared at the baseline for test anxiety variable using independent sample t-test. At the baseline there was significant difference found in test anxiety. Mean score (M) illustrated that the yoga group had higher score (test-anxiety; $M = 161.93$, $SD = 28.376$) at baseline than the control group ($M = 140.46$, $SD = 21.874$).

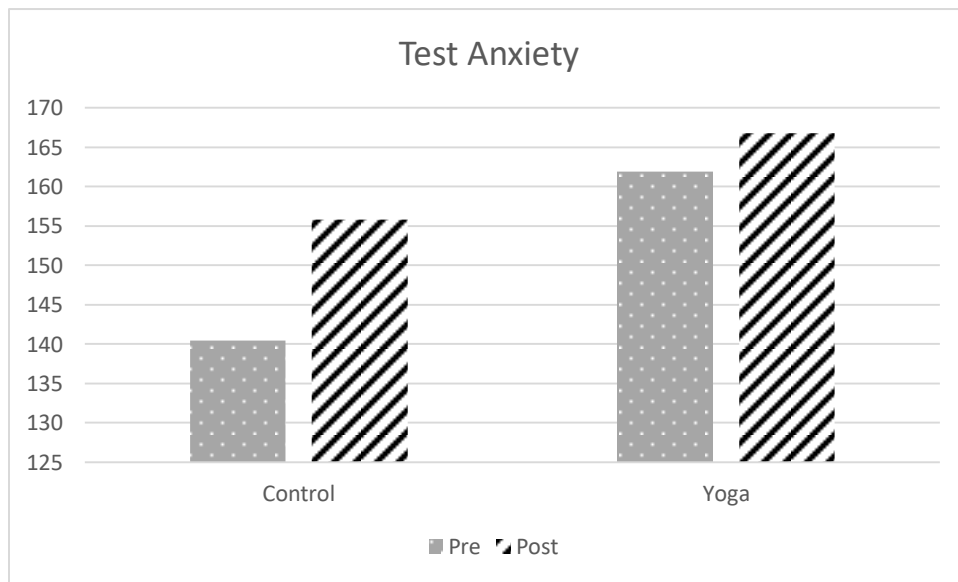
Therefore, the analyses were conducted using analysis of covariance (ANCOVA), which uses pretest scores to statistically control for differences between the groups. ANCOVA results suggest that the assumption of equal slopes was checked and satisfied, as the interaction effect was not significant.

Results of the ANCOVA found that the magnitude of increase in test-anxiety score in yoga group was significantly lower compared to control group $F(1, 78) = 56.936$, $p < 0.001$, partial $\eta^2 = 0.422$.

Post hoc multiple comparisons were done using paired t-test, within comparison showed statistically significant improvement in test-anxiety of control group $p < 0.001$ but not in yoga group.

Variables	Control group			Yoga group		
	Pre	Post	% change	Pre	Post	% change
Test Anxiety	140.46±21.87	155.78±28.33***	10.9	161.93±28.38	166.83±32.76	3.02

Note:- ***Represents P-value which is $P < 0.001$ significance within Control group



CHAPTER - VIII

8. DISCUSSION

Summary of results

Yoga-based intervention illustrated positive effect on exam anxiety, mindfulness, attention; and memory status of school children. Yoga-based group students have shown better confront in exam anxiety, enhance mindfulness, attention; and memory. The percentage improvement on exam anxiety, mindfulness, attention; and memory status were shown 3.02%, 8.29%, 7.6%, 19.04% & 56.41% respectively.

Comparison with earlier studies

Recent study on school children with *asana*, *pranayama*, meditation intervention was shown effective for children to cope with stress and anxiety (Nanthakumar, 2018). The present study shows better beneficial effects on the examination anxiety and memory.

Possible mechanism

Yoga-based exercise has projected beneficial effect on exam anxiety of school children. The balancing postures are helpful to relax the brain, stabilize mind and helpful to concentrate. The inverted postures nourish the brain with increased blood circulation of brain and supply oxygen to the cells and help in improving memory. Asana are designed to activate the energy channel in our body, thereby empower body within. During asana practice the breath awareness and stabilize in the posture gives profound result in nurturing the children personality.

Meditation studies have shown positive effect on mindfulness and memory. The guided meditation helpful in channelize the mind and thoughts. Meditations techniques are to train the mind to be remaining tranquilize state.

The results of the within and between group comparison have significantly more improved in yoga group than control group because yoga balances the psychological factor and physiological strength, stamina, endurance, posture stability So the relaxed and balanced state of mind and body gives the better, mindfulness, attention & memory, cope up strength of exam anxiety.

CHAPTER – IX

9. CONCLUSION

Present outcomes propose that the yoga-based intervention illustrated positive effect on examination anxiety, mindfulness, attention; and memory in school children. Yoga-based group of participants have shown better confront in exam anxiety, enhance mindfulness, attention; and memory. These yoga practices can be suggested to school going children for better performance in academics and attain joyful learning.

CHAPTER – X

10.APPRAISAL

Strength of the study

- Yoga intervention was provided in the school premises.
- All students were regular and supportive.
- Male and female children both participated.
- Intervention was regular during the school timings
- Daily intervention.
- No dropouts in the study.
- Study includes test anxiety, mindfulness, attention and memory variables.
- Attendance was more than 95% throughout the study.
- No adverse affects were reported throughout the study.
- Yoga Intervention management was sufficient.

Limitation of the study

- Physiological measurements were not taken.
- The assessment tools were western culture oriented.
- Questionnaires based study and no apparatus was used.

Suggestion for future work

- Regular and longer intervention is more beneficial
- Taking physiological measurements.
- Taking feedback from teachers on the effect of intervention and performance in school.
- Taking feedback from parents on the effect of intervention and behavior at home.
- Awareness programs to be conducted in schools.
- Randomized Control Trial to be done to get more detailed intervention.

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12. Appendix

Informed consent form

Title of the project: “Impact of Yoga Intervention in School Going children on - Exam Anxiety, Mindfulness, Attention and Memory”

Name of the Researchers: Mr. Divyansh Jain

Principal Investigator: Dr. Bharthi Devi

Name of the Student _____

Date and Time _____ **and** _____

About the project: In order to understand the effect of the 30 days of “Impact of Yoga Intervention in School Going children on - Exam Anxiety, Mindfulness, Attention and Memory” from R. A. Geeta Senior Secondary School, Delhi using Exam Anxiety, Mindfulness, Attention and Memory questionnaire and intervention.

Please note:

- 1) All information obtained during the study will be confidential and an individual report of test will be given.
- 2) You can withdraw from study at any point of time unconditionally.
- 3) The principal investigator representative has explained the nature and purpose of the above-described procedures and its benefits and risks.
- 4) S-VYASA (Deemed-to-be-University) will protect the confidentiality of your records to the extent provided by law.

I hereby have understood the above and consent voluntarily to participate in the study.

Signature of the Participant

Place:

Date:

General Details of the participating School Children

General Details			
Name			
Date of Birth			
Gender			
Address			
Contact Number			
Email id			
Standard/class			
Socio-economic status	Upper	Middle	Lower
Chronic health issue if any			
History of medication (if any, specify)			
Taking any treatment			
Interested in Yoga	Yes	No	
Date:			
Place:			
Signature:			

TEST ANXIETY QUESTIONNAIRE

The items in the questionnaire refer to experiences that may cause fear or apprehension. For each item, place a check in the box under the column that describes how much you are frightened by it. Work quickly, but be sure to consider each item individually. For each box you check, write down the corresponding number of points: Not At All = 1; A Little = 2; A Fair Amount = 3; Much = 4; Very Much = 5.

SITUA TION	NOT AT ALL	A LITTLE	A FAIR AMOUN T	MUCH	VERY MUCH
1. Going into a regularly scheduled class period in which the professor asks the students to participate.					
2. Rereading the answers I gave on the test before turning it in.					
3. Sitting down to study before are regularly scheduled class.					
4. Turning my completed test paper in.					
5. Hearing the announcement of a coming test.					
6. Having a test returned.					
7. Reading the first question on a final exam.					
8. Studying for a class in which I am scared of the professor.					
9. Being in class waiting for my corrected test to be returned.					

10.	Seeing a test question and not being sure of the answer.					
11.	Studying for a test the night before.					
12.	Waiting to enter the room where a test is to be given.					
13.	Waiting for a test to be handed out.					
14.	Being called on to answer a question in class by a professor who scares me.					
15.	Waiting for the day my corrected test will be returned.					
16.	Seeing my standing on the exam relative to other people's standing.					
17.	Discussing with the professor an answer I believed to be right, but that was marked wrong.					
18.	Waiting to see my letter grade on the test.					
19.	Studying for a quiz.					
20.	Studying for a mid term.					
21.	Studying for a final.					
22.	Discussing my approaching test with friends a few weeks before the test.					
23.	After the test, listening to the answers which my friends selected.					
24.	Looking at the clock to see how much time remains during the exam.					

SITUATION	NOT AT ALL	A LITTLE	A FAIR AMOUNT	MUCH	VERY MUCH
25. Seeing the number of questions that need to be answered on the test.					
26. On an essay exam, seeing a question I can not answer.					
27. On a multiple choice test, seeing a question I cannot answer.					
28. Being asked by someone if I am ready for a forth coming exam.					
29. Being the first one to finish an exam and turn it in.					
30. Being asked by a friend where I stand in a class.					
31. Being asked by a friend the results of a test on which I did poorly.					
32. Discovering I need an A or B on the next test in order to pass the course.					
33. Discovering I need an A or B on the final to maintain the grade point average necessary to remain in school.					
34. Remembering my past reactions while preparing for another test.					
35. Seeking out the teaching assistant or professor for advice or help.					
36. Being told to see the professor concerning some aspects of my class work.					
37. Asking for a make-up exam after missing the scheduled exam.					
38. Being the last one to finish an exam and turn it in.					
39. Discussing the course content with fellow students just before entering the classroom the day of the exam.					
40. Reviewing study materials the night before an exam.					

SITUATION	NOT AT ALL	A LITTLE	A FAIR AMOUNT	MUCH	VERY MUCH
41. On the first day of the course hearing the professor announce the dates of themed term and final exams.					
42. Having the professor ask a question of the class which deals with the course material and then look in my direction.					
43. Making an appointment to see the professor regarding some course problem.					
44. Thinking about a coming exam <i>3weeks before</i> it's scheduled.					
45. Thinking about a coming exam <i>1week before</i> it's scheduled.					
46. Thinking about a coming exam <i>the weekend</i> before it's scheduled.					
47. Thinking about a coming exam <i>the night before</i> it's scheduled.					
48. Thinking about a coming exam <i>the hour before</i> it's scheduled.					
TOTALS FOR EACH COLUMN					
TOTAL SCORE					

To analyze your Test Anxiety Questionnaire, add up the totals from each column. A score of 160 or higher indicates that you may have a problem with test anxiety. Please be assured that these symptoms of anxiety in testing situations are not abnormal or strange. They are the types of things people normally experience when they are under stress that is difficult to handle or when they are very anxious. As you have probably noticed, the feelings usually pass away quickly, including the irrational thoughts, when the test is over and the situation changes. Also, it is quite possible to learn to control anxiety of this kind--when you know how to go about it. Consult a SLAC counselor, the books about anxiety management in the SLAC Lab, or the University Counseling Center for tips on test anxiety reduction.

Source: Suinn, R.M. (1969). The STABS, a measure of test anxiety for behavior therapy: Normative data*. *Behavior Research and Therapy*, 7, 335-339. Revised: Summer 2014, Theresa Hoang

STUDENT LEARNING ASSISTANCE CENTER (SLAC)

Texas State University

MINDFULNESS

The purpose of this inventory is to characterize your experience of mindfulness. Please use the last 7 days as the time-frame to consider each item. What is important to us is your own personal experience.

1	2	3	4			
Rarely/Never Often	Occasionally	Almost	Always/Always			
1.	I am open to the experience of the present moment		1	2	3	4
2.	When I notice an absence of mind, I gently return to the experience of the here and now.		1	2	3	4
3.	I am able to appreciate myself		1	2	3	4
4.	I pay attention to what's behind my actions		1	2	3	4
5.	I am friendly to myself when things go wrong		1	2	3	4
6.	In difficult situations, I can pause without immediately reacting		1	2	3	4
7.	I experience moments of inner peace and ease, even when things get hectic and stressful		1	2	3	4
8.	I feel connected to my experience in the here-and-now		1	2	3	4

DIGIT LETTER SUBSTITUTION TEST(DLST)

Instructions:

1. Substitute the digits with corresponding letter as per the given key.
2. Substitute as many as possible within the given time.
3. Start and stop only when told.

Substitute Letters:

1	2	3	4	5	6	7	8	9
L	H	Y	N	R	E	D	T	J

6	2	4	1	5	7	9	3	2	6	8	5

5	4	7	8	1	2	3	4	9	6	3	7

2	4	6	7	8	9	3	1	2	3	7	4

2	9	4	6	8	1	2	5	9	3	4	7

9	7	4	2	3	8	1	5	6	2	9	1

8	6	2	3	9	4	5	7	1	4	3	9

3	5	9	1	2	5	6	2	7	8	9	1

5	4	9	2	7	1	3	2	8	9	5	6

Total attempted:

Wrongly attempted:

Net score:

WECHSLER MEMORY SCALE

NAME: AGE: SEX: DATE:

I.(A) DIGITS FORWARD:



4) 6439 -----

7286 -----

6) 619473 -----

392461 -----

8) 58192647 -----

38295176 -----

5) 42731 -----

75836 -----

7) 5917423 -----

4179382 -----

SCORE -----

4. DIGITS BACKWARD:

3) 283 -----

415 -----

5) 15286 -----

61843 -----

7) 8129365 -----

4739120 -----

4) 3279 -----

4968 -----

6) 539416 -----

623854 -----

SCORE -----

I.D. No.: 1001149



Ph. : 22002338

School No. 60056

C.B.S.E. Affilin. No. 2772008



आर.ए. गीता को-एजू. सीनियर सेकेण्ड्री स्कूल

(राष्ट्रीय राजधानी क्षेत्र, दिल्ली सरकार द्वारा सानुदान मान्यता प्राप्त)

शंकर नगर, दिल्ली-110051

(संचालित-हिन्दू शिक्षा समिति (पंजी) दिल्ली)

सम्बंधित-विद्या भारती-अखिल भारतीय शिक्षा संस्थान

क्रमांक आर.ए.जी./२०१८-१९/११५

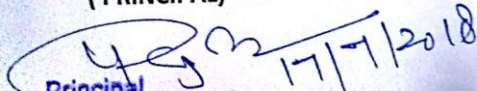
दिनांक 17/7/2018

This is to certify that Sh. Divyansh Jain who is pursuing his PG (MSC) course in Yoga Therapy, at SVYASA , Jigani came to our school and completed intervention regard "impact of Yoga intervention on school going children on stress levels ,Exam anxiety and mind fullness' in our school in July month.

This intervention done successfully and collected pre & post data among 40 students age group b/w 13 to 15 his intervention with students has been very fruitful y.

Thanking You

SH. YASH PAL SINGH
(PRINCIPAL)


Principal
R.A. Gita Co-Edu. Sr. Sec. School
Shankar Nagar, Delhi-110051



Shri Satguru Devai Namah

School ID - 1003233

TAGORE PUBLIC SCHOOL

Recognised

Jheel Kuranja (Opp. Geeta Colony Ram Lila Ground) Delhi - 110051, Phone : 32450415, 65290415

This is to certify that **Sh. Divyansh Jain** who is pursuing his PG(MSC) course in yoga therapy at **SVYASA YOGA UNIVERSITY, JIGANI BANGALORE** came to our school and completed YOGA intervention regard "Impact of yoga intervention on school going children on 'stress levels, exam anxiety and mind fullness' in our school in the month of July 2018.

This workshop was done successfully and collected pre & post data among 40 students age group b/w 13 to 15 his interaction with students has been very fruitfully.

TAGORE PUBLIC SCHOOL
(RECOGNISED)
JHEEL KURANJA, DELHI-110051
Thanking you

Satish Arora

SH. SATISH ARORA
(PRINCIPAL)

TAGORE
JHEEL KURANJA





