

**INFLUENCE OF AN INTEGRATED YOGA MODULE  
ON THE LEVELS OF  
PERCEIVED STRESS AND ANXIETY SCORES  
IN  
STUDENTS AND WORKING PROFESSIONALS**

**BY**

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Submitted in partial fulfillment of the requirements for the degree of the  
Master of Science (Yoga)  
with Research Specialization



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May 19, 2023

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

a	=	A	ia	=	'	pa	=	p
ä	=	Aa	ca	=	c	pha	=	)
i	=	#	cha	=	D	ba	=	b
é	=	\$	ja	=	j	bha	=	É
u	=	%	jha	=	H	ma	=	m
ü	=	^	ï	=		ya	=	y
å	=	\	öa	=	q	ra	=	r
è	=	§	öha	=	Q	la	=	l
e	=	@	òa	=	f	va	=	v
ai	=	@e	òha	=	F	ça	=	z
o	=	Aae	ëa	=	[	ña	=	;
au	=	AaE	ta	=	t	sa	=	s
à	=	A	tha	=	w	ha	=	h
ù	=	A>	da	=	d	kña	=	]
ka	=	k	dha	=	x	tr	=	Ç
kha	=	o	na	=	n	jña	=	}
ga	=			=			=	g
gha	=			=		"	=	

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# ABSTRACT

## Background

With today's lifestyle stress is unavoidable. People undergo a lot of psychological and physiological stress. Yoga has been a very useful tool to reduce stress in everyday life. The purpose of this program was to see if the IYT module can be used to reduce perceived stress and anxiety scores in college students and working professionals.

## Materials and Methods

Students and working professionals aged 18+ were recruited. Two groups were formed:

- Yoga intervention
- Control

A 30-minute Integrated module of yoga comprising some breathing, joint loosening, asanas, relaxation, and pranayama was given to the participants every day for two weeks. Pre and post data were collected by having the participants fill out psychological questionnaires related to the following tests.

- Perceived Stress Scale (PSS)
- Somatic Symptom Scale (SSS-8)
- State Trait Anxiety Index (STAI short)

## Results

The above-mentioned three tests were used before and after two weeks.

For the yoga group, the scores improved in the SSS-8 ( $p=0.04$ , mean decreased from 9.64 to 6.29) and Positive STAI ( $p = 0.01$ , mean increased from 7.57 to 9.46).

The results of PSS and Negative STAI did not show statistical significance, but the mean values showed some positive improvements.

## **Conclusions**

The practice of the IYT (a.k.a. Integrated Yoga) module helps decrease the somatization score (measures to check the severity of symptoms) and increase positive emotions. A study of longer duration is required to see more concrete results in other areas like perceived stress.



# INTRODUCTION

Stress in today's life is experienced both by young and old equally. It is a slow poison harming an individual's physical, mental, and psychological health. It affects a wide range of populations worldwide. It is a physiological and psychological effort to cope with demanding situations. When stress becomes long-standing it shows up in various ways in the *soma* (i.e., body). It is here that yoga provides a vital contribution to medical science (Nagendra, 1995).

As per Hans Selye, "*Stress is the non-specific phylogenetic response of the body to any demanding situation.*" (Siang Yong Tan, 2018, 170).

"Acute stress results in a fight or flight response that prepares the body to defend itself. This is controlled by the Sympathetic Nervous System (SNS) of the Autonomic Nervous System (ANS). As that stressful event is gone, the Parasympathetic Nervous System (PNS) kicks in bringing the body to a restful state." (Pascoe et al., 2021). When stress crosses the fine line where it cannot be handled in daily life, it becomes distress.

There are different stages of stress (P.R, Sreekanth, Krishnan, & Krishnaprabha, 2018).

1. **Alarm stage:** SNS is overacted with adrenaline and cortisol increase.
2. **Resistance stage:** The body continuously tries to cope with stress and feels mentally and physically tired.
3. **Exhaustion stage:** Despite all efforts one does not achieve any success.

Chronic stress is the long-standing stress where the body is in a continuously demanding situation due to day-to-day work overload or psychological factors. (P.R, Sreekanth, Krishnan, & Krishnaprabha, 2018)

## Stress Statistics in the US

"Americans are one of the most stressed out in the world with the current stress level 20 percentage points higher than the global average. 55% of Americans are stressed during the day. Stress causes 57% of US respondents to feel paralyzed. 63% of US workers are ready to quit their job to avoid work-related stress. Chronic

stress is commonplace at work with 94% of workers reporting feeling stress at work.” (The American Institute of Stress, 2022).

## Rationale of the Study

To understand how the Integrated Yoga Therapy (IYT) module (a.k.a. Integrated Yoga module) module can be beneficial in lowering the stress and anxiety scores in an individual.

“The role of the HPA axis in a person’s response to stress is well understood. In stressful situations, Hypothalamus releases CRH which signals the Pituitary gland to release ACTH which in turn signals the Adrenal gland to secrete cortisol, the stress hormone.” (Patel, 2019)

Yoga is mastery over the mind. It is a constant process of calming down the disturbed mind. With this understanding of yoga over the mind we can very well think it would help in regulating HPA axis dysfunction in which a big cause is emotional stimulation.

In this study, we consider a human being as a five-layered personality (*Pancha Kosha*) rather than just a physical body. All disturbances of the mind are because of incorrect or perverted knowledge (*avidya*). This in turns disturbs the mind which causes disturbances to the *prana* which further settles down in the body as a disease (*vyadhi*) (Nagarathna & Nagendra, 2018).

We see the effectiveness of the IYT module on all the layers of human existence i.e., *Annamaya Kosha* (physical), *Pranamaya Kosha* (vital life force), *Manomaya Kosha* (mind), *Vijyanamaya Kosha* (intellect), and the *Anandamaya Kosha* (bliss) (Nagarathna & Nagendra, 2018).

Also, we incorporate the four streams of Yoga.

- **Raj Yoga:** to develop the strength of the mind and body.
- **Bhakti yoga:** to culture emotions.
- **Jnana Yoga:** to bring notional corrections or remove the *Avidya*.
- **Karm Yoga:** to bring expansiveness of self-taking one to a blissful state.

# LITERATURE REVIEW

## Ancient literature review

“Yoga is derived from the root word ‘*yuj*’ which means to connect. It is the connection between the individual self to the supreme self.” (Basavaraddi, n.d.)  
Contrary to the conception of yoga as a connection of mind and body, it is actually a disconnection of mind from the body.

## Definitions of Yoga

Ancient Hindu texts define yoga in different ways. A few of those are as follows:

### *Patanjali Yoga Sutras*

“Yoga chitta vritti nirodhah”

Meaning: “Yoga is mastery over the mind.”

### *Yoga Vashishtha*

“Manah prasamna upayah yoga”

Meaning: “A technique to calm down the mind.”

### *Bhagwad Gita*

“Yogah karmasu kaushalam”

Meaning: “Yoga is a skill in action.”

“Samatvam yoga uchyate”

Meaning: “Yoga is a state of harmony.”

## Stress, as in Hindu Scriptures

Various ancient Hindu scriptures talk about the causes of stress and provide wisdom on how to avoid it.

### *Bhagavad Gita chapter 2 Shloka #62–64 (Mukundananda)*

“ध्यायतो विषयान्पुंसः सङ्गस्तेषूपजायते ।

सङ्गात्सञ्जायते कामः कामात्क्रोधोऽभिजायते ॥ 62॥”

Meaning: “When the mind is constantly thinking of an object, an attachment is developed which leads to desire which in turn gives rise to anger.”

“क्रोधान्द्रवति सम्मोहः सम्मोहात्स्मृतिविभ्रमः ।  
स्मृतिभ्रंशाद् बुद्धिनाशो बुद्धिनाशात्प्रणश्यति ॥ 63॥”

Meaning: “With the anger, all judgments are clouded leading to confusion of memory. With perplexed memory, the intellect is destroyed ruining the self.”

“रागद्वेषवियुक्तैस्तु विषयानिन्द्रियैश्चरन् ।  
आत्मवश्यैर्विधेयात्मा प्रसादमधिगच्छति ॥ 64॥”

Meaning: “By control of the mind, even with the use of senses, one can be free of attachments and aversions.”

### ***Bhagavad Gita chapter 3 Shloka #37–42***

These shlokas talk about lust, desire, and anger and how they are all connected.

“काम एष क्रोध एष रजोगुणसमुद्भवः ॥  
महाशनो महापाप्मा विद्ध्येनमिह वैरिणम् ॥ 37॥”

Meaning: “Lust leads to anger.”

“धूमेनाव्रियते वह्निर्यथादर्शो मलेन च ।  
यथोल्बेनावृतो गर्भस्तथा तेनेदमावृतम् ॥ 38॥”

Meaning: “One’s knowledge gets clouded by desire.”

“आवृतं ज्ञानमेतेन ज्ञानिनो नित्यवैरिणा ।  
कामरूपेण कौन्तेय दुष्पूरेणानलेन च ॥ 39॥”

“इन्द्रियाणि मनो बुद्धिरस्याधिष्ठानमुच्यते ।  
एतैर्विमोहयत्येष ज्ञानमावृत्य देहिनम् ॥ 40॥”

Meaning: “Senses, mind, and intellect are breeding grounds of desire. It clouds one’s knowledge and soul.”

“तस्मात्त्वमिन्द्रियाण्यादौ नियम्य भरतर्षभ ।  
पाप्मानं प्रजहि ह्येनं ज्ञानविज्ञाननाशनम् ॥ 41॥”

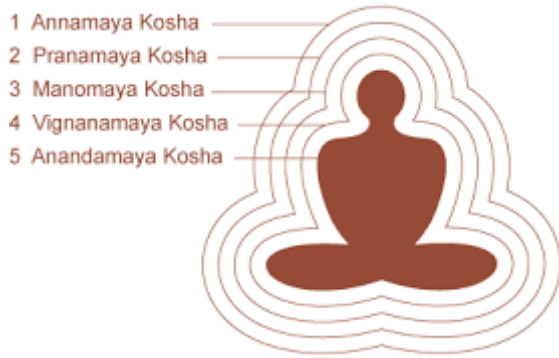
Meaning: “Bring senses under control”

“इन्द्रियाणि पराण्याहुरिन्द्रियेभ्यः परं मनः ।  
मनसस्तु परा बुद्धिर्यो बुद्धेः परतस्तु सः ॥ 42॥”

Meaning: “The senses are superior to the gross body, the mind is superior to the senses, the intellect is superior to the mind, and the soul is superior to the intellect.”

## Panch Kosha (Five layers of existence)

“In Bhrigu Valli of Taittiriya Upanishad, in the dialogue between sage Varun and his disciple Bhrigu, the concept of *Panch Kosha*, or a five-layer existence of an individual, is described in great detail.” (Nagarathna & Nagendra, 2018).



- *Annamaya Kosha* – Physical layer. It is made from matter.
- *Pranamaya kosha* – Prana or vital life force or energy.
- *Manomaya kosha* – Emotional layer, which holds our likes and dislikes.
- *Vijnanamaya kosha* – Higher intellect or guiding faculty obtained by the knowledge of self. It is a guiding faculty in an individual.
- *Anandamaya kosha* – It is the layer of total bliss.

## The yogic concept of disease

Yoga Vashishtha is an ancient text consisting of a dialogue between Sri Rama and Guru Vashishtha. Guru Vashishtha explains to Sri Rama about the disease, and he talks about the vasanas or desires that affect the mind as primary and the pain of the body as secondary.

In Anandamaya kosha a person is in a balanced state of mind and complete bliss. In Vijñanamaya kosha, even though there are some moments, they are still channelized in the right direction. In Manomaya kosha all the desires take place. The likes and dislikes cloud the judgment and a person leading him/her to take incorrect action. Going against what is right, causes imbalances, which results in a mental illness called 'Adhis'.

### ***Adhija vyadhi***

Adhis or the disturbance of the mind cause a person to lose sight of one's true nature i.e. bliss which leads them to an improper unhealthy lifestyle further percolating to physical level problems in the form of 'Vyadhis' or secondary disease. Such diseases are called 'Adhija vyadhi'(born from the mind). The Adhis or the primary diseases are 1. *Samanya* (ordinary) 2. *Sara* (essential).

**Samanya vyadhi** is equivalent to the psychosomatic ailments produced during normal worldly interactions. *Samanya Adhis* can be taken care of with the help of proper yogic techniques and lifestyle measures. This in turn reverts or destroys the *vyadhis* (physical ailments).

**Sara vyadhi** is of a subtler type which causes the birth of the physical body and can be destroyed by the realization of a causal state of mind where one can be in Vijnyana and Anandamaya kosha all the time.

### ***Anadhija vyadhi***

It is the ailments that do not originate from the mind but are caused by some external causes like infections or chemicals. Such diseases would need conventional medical treatment. (Nagarathna & Nagendra, 2018)

## **Scientific Literature Review**

The following literature has been reviewed for Stress and Yoga.

Sr. No.	Author & Year of Publication	Sample Size	Design	Intervention	Assessment Tools	Results	Conclusion
1.	Rajalekshmy P. R., Sreekanth V. M., Prasanth R. Krishnan and Krishnaprabha A.  2018						
2.	<u>Virginia Lemay, John Hoolahan, Ashley Buchanan</u>  Am J Pharm Educ, 2019 Jun	17	Pilot study	6-week Yoga and Meditation	“Beck Anxiety Inventory (BAI)  Perceived Stress Scale (PSS)  Five Facet Mindfulness Questionnaire (FFMQ)”	There was a significant reduction in the students' anxiety and stress scores and an increase in their mindfulness. Post-intervention questionnaire did not show any high scoring for stress and anxiety.	Stress and anxiety levels were reduced after completing a six-week yoga and meditation program.

3.	<u>Rachel E Maddux</u> , <u>Daiva Daukantaitė</u> , <u>Una Tellhed</u>  Epub 2017 Nov 23	90	RCT	16-week Yoga		<p>Within the yoga group, there was a reduction in stress and all psychological health measures. There was a significant decrease in stress, anxiety, and general psychological health in the Yoga group as compared to the control group. The control group showed a positive change in anxiety level after they crossed over and practiced yoga for 8 weeks.</p>	<p>Gym Yoga showed effectiveness in reducing stress and psychological health among workers.</p>
4.	Alba Torné-Ruiz a 1, Mercedes Reguant b 2, Judith Roca c d  Nurse education in practice, Jan 2023	42	Quasi Experimental Design	10-day online intensive mindfulness	Self-administered Analogue Stress Scale, State-Trait Anxiety Inventory, and Five Facet Mindfulness Questionnaire. Physiological tests to measure blood pressure and heart rate.	Physiological tests showed improvement in diastolic blood pressure and heart rate. Levels of stress and anxiety were managed better. No changes in mindfulness	Online mindfulness reduced physiological parameters, stress, and anxiety in clinical stimulation.



5.	Alaka Mani TL Omkar SN, Manoj K. Sharma, Astha Choukse, Nagendra HR	50	Non- randomi zed control study		Content Validity Ratio (CVR) and paired t-test	Development of an IAYT-based yoga program for anger management.  The viability of the anger management program was recognized. The effectiveness of the module was proven to be a reduction in anger scores in the participants	A well-accepted yoga module for anger was developed
6.	Sudha Ramaprasad, Manjunath Sharma N.K., Vijaya Majumdar  2022	6	Single- case, multiple - baselin e, betwee n-case interven tion randomi zation	12 weeks	Demography, Actigraphy, PSQI, Daily sleep diaries, PSS, UCLA- Loneliness, Brief Resilience Scale, Geriatric depression scale		

7	Michaela C. Pascoe, Michael de Manincor, Jana Tseberja , Mats Hallgren , Peter A. Baldwin , Alexandra G. Parker  2021	22	RCT				
8	<u>Masoumeh Shohani</u> , <u>Gholamreza Badfar</u> , <sup>1</sup> <u>Marzieh Parizad</u> <u>Nasirkandy</u> , <sup>2</sup> <u>Sattar Kaikhavani</u> , <sup>3</sup> <u>Shoboo Rahmati</u> , <sup>4</sup>	52	Quasi-experimental study	4 weeks	DASS-21(Depression Anxiety Stress Scale-21)	Depression, anxiety, and stress decreased significantly after 12 sessions of regular hatha yoga practice	Yoga has an effective role in reducing stress, anxiety, and depression

	<u>Yaghoob</u> <u>Modmeli,<sup>5</sup> Ali</u> <u>Soleymani,<sup>6</sup> and</u> <u>Milad Azami<sup>7</sup></u>  2018						
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# AIM AND OBJECTIVES

## **Aim**

To study the effects of the “Integrated Yoga Therapy (IYT)” module on an individual’s perceived stress and anxiety scores.

## **Objectives**

To study the effect of the IYT module on Perceived stress and Anxiety scores in individuals practicing yoga for 2 weeks vs. the control group.

## **Research Questions**

Influence of practice of IYT module on perceived stress and anxiety scores.

## **Hypothesis**

The IYT module will bring positive changes in the perceived stress and anxiety scores in an individual.

## **Null Hypothesis**

No significant positive changes with the practice of the IYT module.

## **Ethical Consideration**

The VaYU ethical committee was informed, and approval was taken from them.

All tests and data collection were done with an informed consent from the participants. The participants themselves filled up the psychological questionnaires of their own free will. All data was kept confidential and only the researcher had access to it for data analysis. A master sheet was created for the analysis, using pseudo names for each participant to keep privacy.

The participants were allowed to withdraw anytime from the study.

# METHODOLOGY

## Study Population

The population was comprised of college students and working professionals who were either located across the U.S. or from India. Sources for advertising and hiring participants were WhatsApp groups and word of mouth. All participants were from Indian background.

### Group formation

- 104 people registered out of which 51 failed to keep the commitment. They either could not complete the attendance requirement or failed to fill in the pre-assessment and post-assessment questionnaires.
- 53 could commit to the study.
- Two groups were formed purely on their choice.

### Sample size

- 28 healthy individuals of both genders in the intervention group (Male = 9, Female = 19)
- 25 healthy individuals of both genders in control groups (Male = 12, Female = 13)

## Inclusion Criteria

- College students and working professionals, of both genders, aged 18 years and above.
- A proper working device with a good internet connection to run Zoom, a video-conferencing application.

## Exclusion Criteria

- If someone is unable to operate a computer or has no internet access.
- People with chronic health conditions.

## **Confounding Factors**

- Sometimes some participants were hesitant to turn the video on. In that case, I was unsure of their active participation.
- Since it was online, there might be other background disturbances or sounds which might cause hindrance to a person to calm the mind during yoga practices.
- The quality of voice reception might be poor since it was online.
- In a short 2 weeks of time, there might be some new stressors in life.

## **Design**

The study design was a *pre-post-controlled trial*. There were two groups (Intervention and Control).

### **Intervention Group**

The intervention group was given every day a 30-minute guided yoga session for two weeks from Monday to Friday. A video recording for self-practice was provided for the weekend. A daily attendance sheet was maintained.

For this group the data was collected at the start of the intervention (pre-test data) and after the two weeks of intervention (post-test data).

### **Control Group**

For the non-intervention group, similar data was collected fifteen days apart without any yoga intervention in between.

## **Assessment Tools**

The following three tools were used.

1. Perceived Stress Scale (PSS)
2. State-Trait Anxiety Inventory Short (STAI-S)
3. Somatic Symptom Scale-8 (SSS-8).

## **Perceived Stress Scale (PSS-10)**

“PSS consists of ten questions for assessing stress. Evaluation to the degree a person perceived life as unpredictable, uncontrollable, and overloading over the past month.

A five-point scale from ‘never-0’ to ‘very often-4’

Higher scores mean higher perceived stress.

0-13 is low stress.

14-26 is moderate stress.

27-40 is highly perceived stress.” (Rodrigo Siqueira Reis, 2010)

Two people with the exact same situation and experience may perceive it differently and thus individual scores will vary.

## ***Somatic Symptom Scale (SSS-8)***

“SSS-8 is a reliable self-reporting measure of somatic symptom burden. The questions on back pain, chest pain, dizziness, feeling tired, headaches, pain in arms and legs, stomach bowel problems, and trouble sleeping are scored on a scale of 0 to 4 (not at all-0, very much-4).

The sum of the scores for each question is mapped as follows.

- low (4 to 7)
- medium (8 to 11)
- high (12 to 15)
- very high (16 to 23)” (Benjamin Gierk, 2014).

## ***State Trait Anxiety Index short (STAI – 6)***

“STAI-6 is a short form of STAI.

It is a 6-item question denoting three positive and three negative emotions. The questions are:

1. I feel calm.
2. I am tense.



3. I feel upset.
4. I am relaxed.
5. I feel content.
6. I am worried.

Each question is scored on a scale of 1 to 4 (1-not at all, 4-very much)” (T M Marteau, 1992)

Scores from negative and positive emotions were totaled separately.

## Intervention

The participants in this group followed this module for two weeks. The module was comprised of the following steps.

1. 10-minute IYT presentation before the first session
2. Some concepts from Bhagavad Gita and Patanjali Yoga Sutras on stress during the sessions
3. Daily 30-minute yoga (live guided for weekdays and video recording for the weekends)

## Daily Practices

The following table shows a breakdown of the daily practices.

Practice	Duration
<ul style="list-style-type: none"> <li>• 3 Om and breath awareness</li> </ul>	2 mins
Loosening <ul style="list-style-type: none"> <li>• Griva chakra (neck rotation)</li> <li>• Skanda chakra (shoulder rotation)</li> <li>• Bhuja chakra (arm rotation)</li> <li>• Manibandha chakra (wrist rotation)</li> <li>• Kati chakra (waist rotation)</li> </ul>	4 mins
Breath and Body	3 min

<ul style="list-style-type: none"> <li>• Hand in and out breathing</li> <li>• Tiryaktadasan breathing</li> </ul>	
<b>Asanas</b> <ul style="list-style-type: none"> <li>• Ardhakati Chakrasan</li> <li>• Markat asan (folded leg lumbar stretch)</li> </ul>	4 mins
<b>DRT</b>	7 mins
<b>Pranayam</b> <ul style="list-style-type: none"> <li>• Nadi Shuddhi</li> <li>• Shitali</li> <li>• Bhramari</li> <li>• 3 Om and shanti mantra</li> </ul>	7 mins
IAYT concept review and feedback	2 mins

## Purpose

The purpose of each of these practices is explained below.

**Loosening** – Gentle loosening practices, mostly for the upper body (focusing on the neck, shoulder, and arms), to release the stress from the muscles.

**Breath and Body** – Slow breathing practice with deep inhalation and full exhalation along with the body movements with complete awareness of the breath and body movements helps calm down the mind. It brings down the sympathetic tone and increases the parasympathetic tone.

**Asanas** – Asanas or postures are body movements that are meant to be held with ease in the final pose. Patanjali talks about “*Sthiram sukham asanam*” (Postures should be stable and comfortable). It is used to stretch and hold and, in the process, attain deep calmness.

**Deep Relaxation Technique (DRT)** – It is a relaxation technique where a guided part-by-part relaxation is given to a participant in *savasana* (a relaxed supine pose) to bring deep physical and mental relaxation.

**Pranayam** – Pranayama is the systematic harnessing of prana the life force through proper slow breathing. The purpose is to regulate the prana and bring pranic balance.

## **Summary of the presentation**

The IYT presentation covered the following topics.

- Definition of health by WHO
- Definition and explanation of stress
- Autonomous Nervous System – Sympathetic and Parasympathetic response
- Imbalance of SNS and PNS
- Explanation of HPA axis
- Stress hormones
- Effects of Stress on the Body
- Mind and its definition
- Yoga and its Effect on the Mind
- Definitions of yoga as in different ancient scriptures
- Panch Kosha (5-layer existence) concept
- Four streams of yoga
- Integration of practices for all 5 layers of Panch Kosha and the four streams of yoga.
- Some research findings on Yoga vs PE and stress recovery with Shavasana

## **DATA COLLECTION**

Data Collection was in the form of Google Forms. All three questionnaires for the PSS, SSS-8, and STAI-6 were combined into one Google form. The participants were given the link to complete those before and after two weeks of yoga intervention. For the control group, they just entered the forms 2 weeks apart without any intervention.

# DATA ANALYSIS

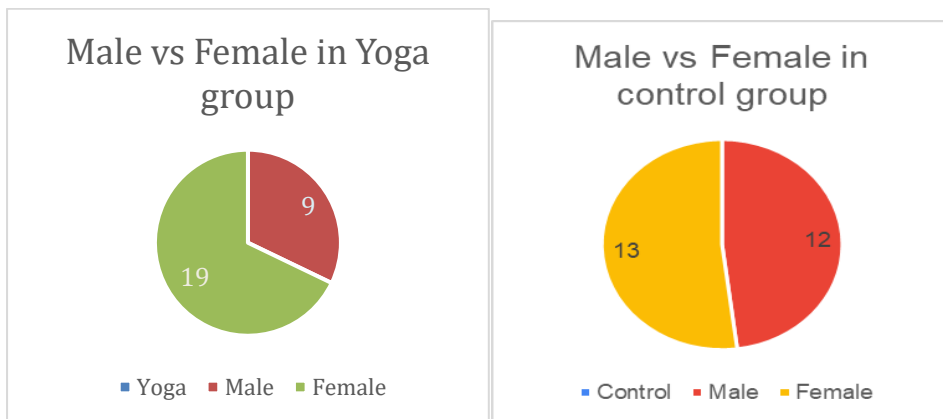
The following table shows the normality.

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre Somatization	.137	52	.016	.926	52	.003
Post Somatization	.186	52	.000	.812	52	.000
Pre PSS	.140	52	.013	.961	52	.083
Post PSS	.162	52	.002	.903	52	.000
Pre Positive STAI	.139	52	.014	.939	52	.010
Post Positive STAI	.169	52	.001	.950	52	.030
Pre Negative STAI	.246	52	.000	.860	52	.000
Post Negative STAI	.256	52	.000	.824	52	.000

Shapiro-Wilk Test shows that the data is not normally distributed

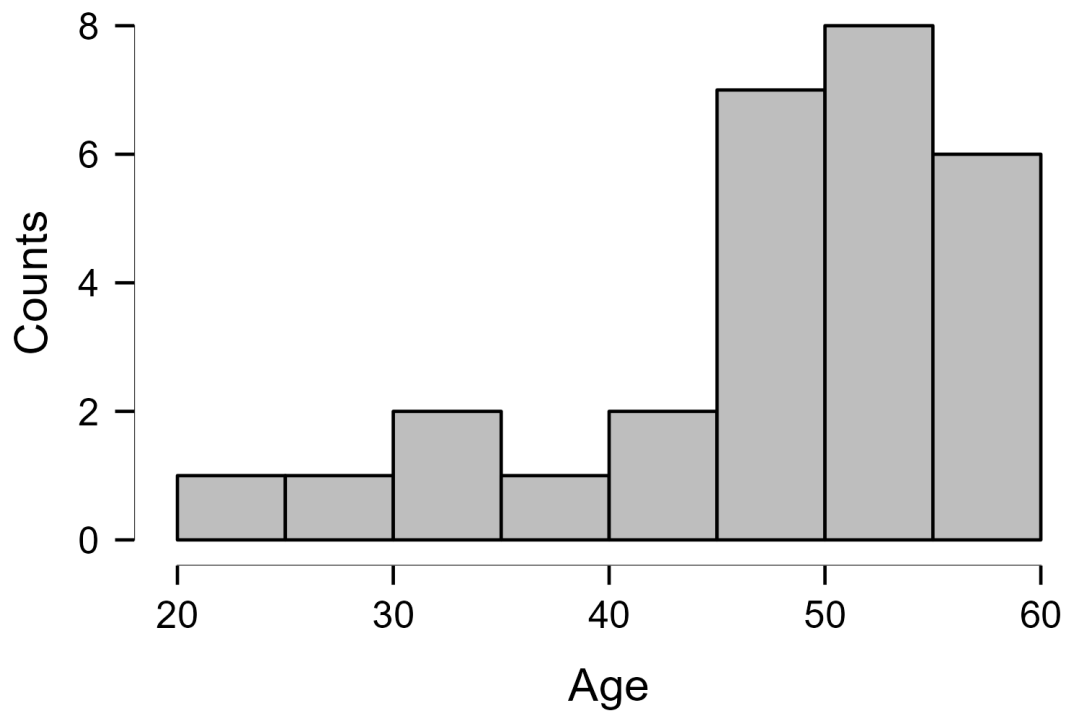
Table 1. Normality tests

The following charts show a graphical representation of demography.

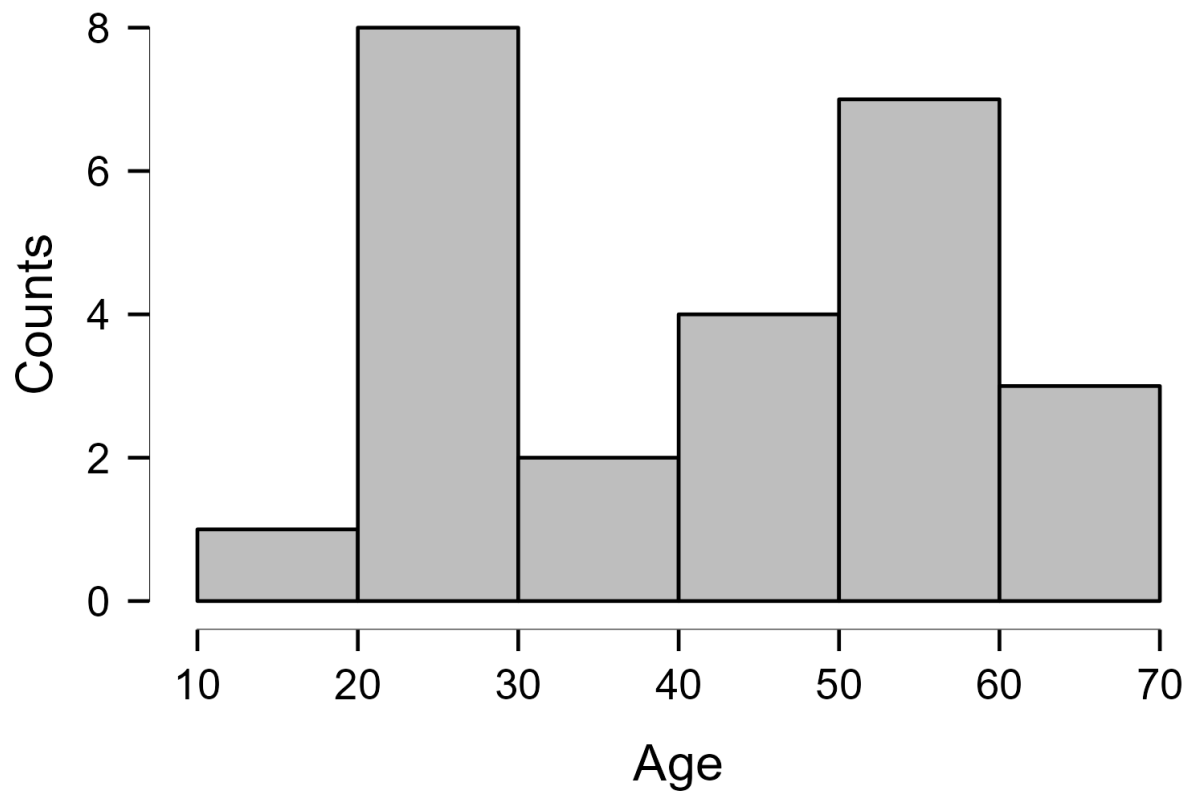


**Figure 1: Yoga group gender**

**Figure 2: Control group gender**



**Figure 3: Yoga group age distribution**



**Figure 4: Control group age distribution**

## RESULTS

Effect of yoga on study outcomes.

	Yoga (1)		Control (2)		P value
	Baseline (Mean SD)	Post-intervention (Mean SD)	Baseline (Mean SD)	Post-intervention (Mean SD)	
Age	48.79	48.79	42.56	42.56	
Somatization Score	9.64 (M) 6.96 (StDe)	6.29 (M) 5.46 (StDe)	8.04 (M) 4.05 (StDe)	7.20 (M) 4.20 (StDe)	.04
Perceived Stress Scale	17.14 (M) 7.735 (StDe)	15.00 (M) 7.097 (StDe)	17.72 (M) 5.95 (StDe)	16.08 (M) 6.14 (StDe)	.48
Positive STAI	7.5714 (M) 2.13 (StDe)	9.46 (M) 1.61 (St.De)	7.50 (M) 2.43 (StDe)	7.91 (M) 1.59 (StDe)	0.01
Negative STAI	6.32 (M) 2.52 (StDe)	5.07 (M) 2.03 (StDe)	6.29 (M) 2.05(StDe)	5.50 (M) 1.79 (StDe)	.26

Table 2: ANCOVA- adjusted for baseline values of the outcome, age, and gender.

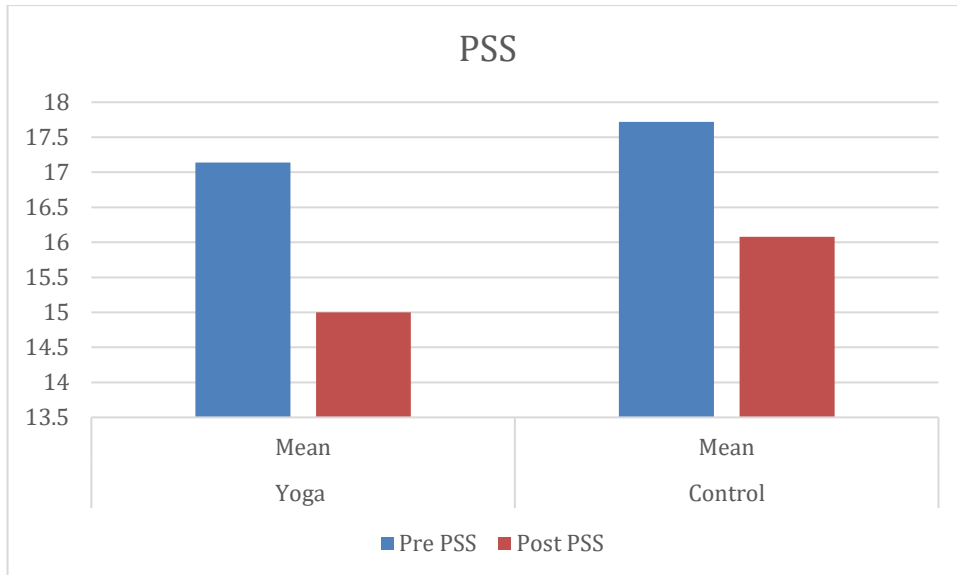
The above-mentioned three tests were used before and after two weeks.

For the intervention group, there was a significant improvement in the SSS-8 ( $p=0.04$ , mean decreased from 9.64 to 6.29) and Positive STAI ( $p = 0.01$ , mean increased from 7.57 to 9.46).

The results of PSS and Negative STAI did not show statistical significance, but the mean values showed some positive improvements.

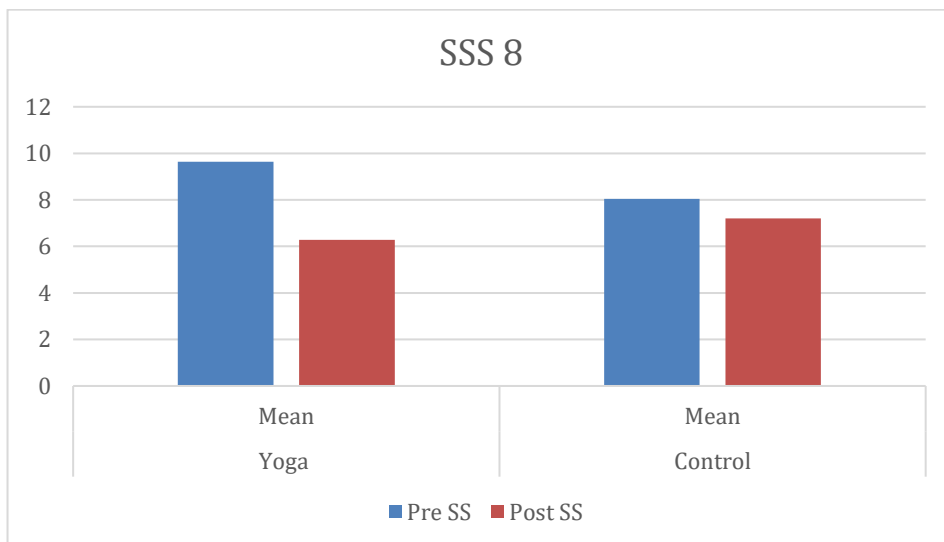
A graphical representation of the results of all the tests is shown below.

Figure 5 below shows before and after mean PSS values in the intervention and control groups.



**Figure 5**

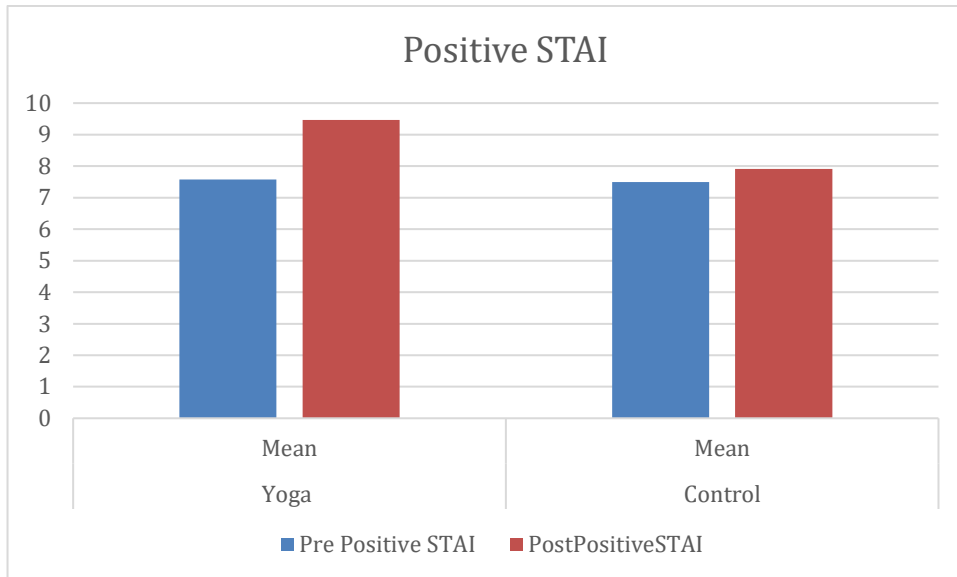
Figure 6 below shows before and after mean SSS 8 values in the intervention and control groups.



**Figure 6**

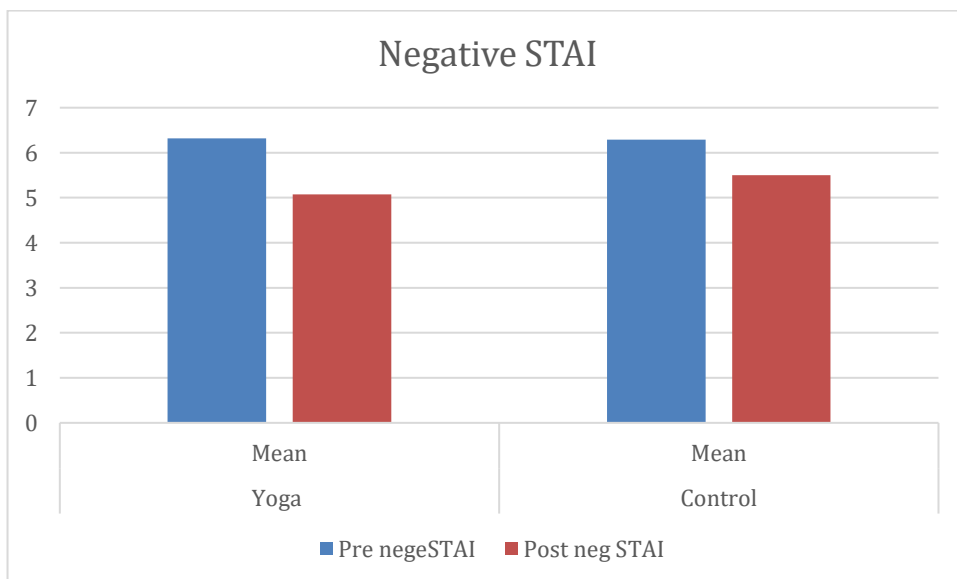


Figure 7 below shows before and after mean positive STAI values in intervention and control groups.



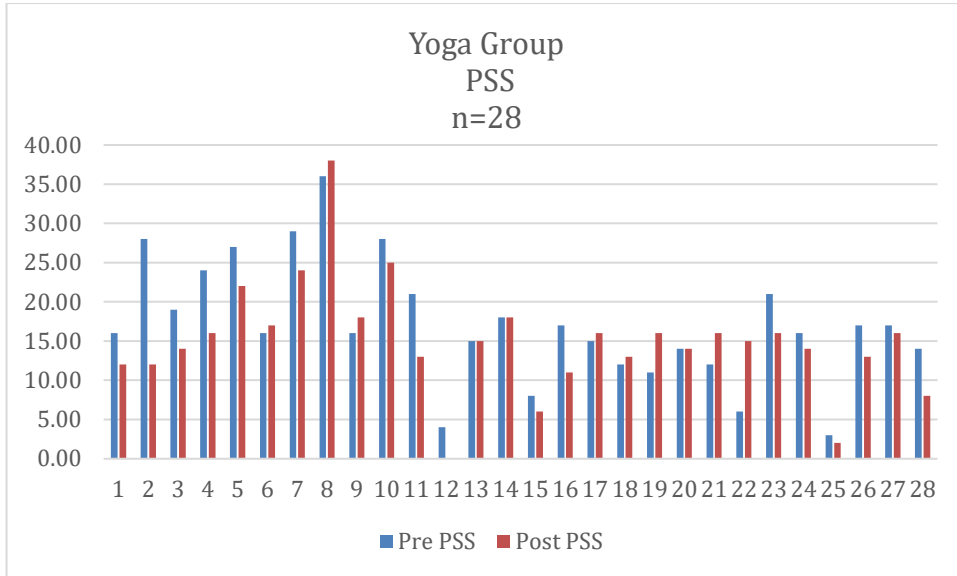
**Figure 7**

Figure 8 below shows pre and post-mean negative STAI values in yoga and control groups.



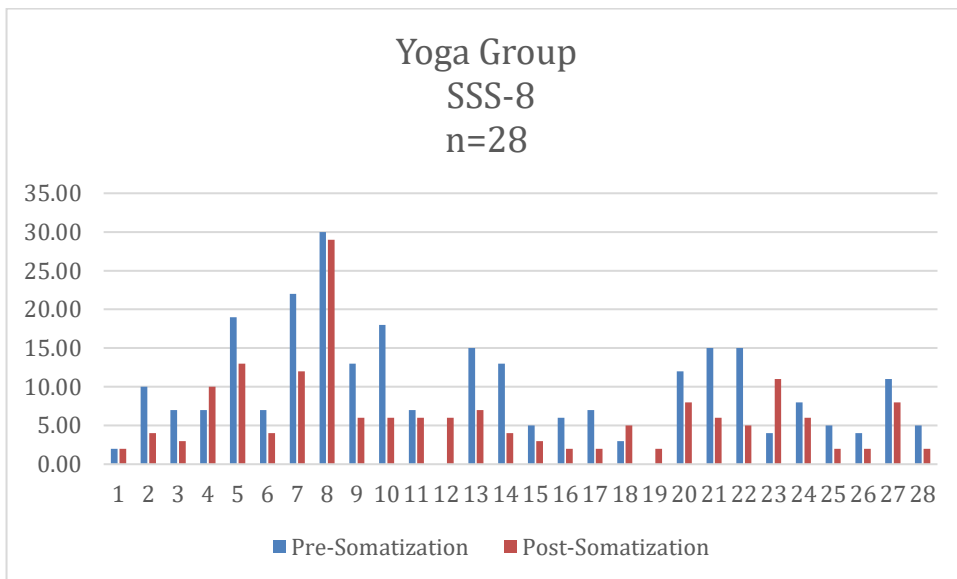
**Figure 8**

Figure 9 below gives a graphical representation of the pre and post-PSS values of each participant in the yoga group.



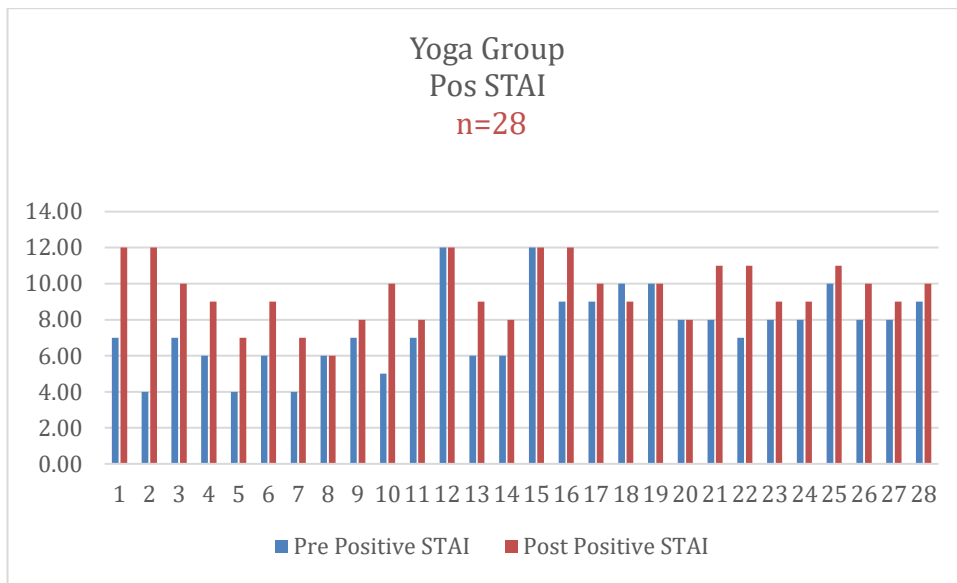
**Figure 9**

Figure 10 below gives a graphical representation of the pre and post-SSS 8 values of each participant in the yoga group.



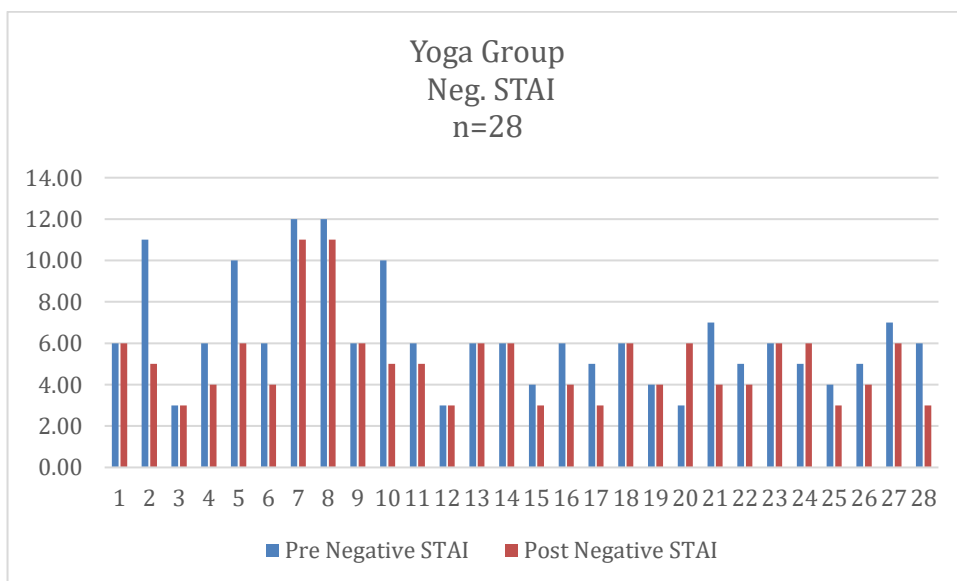
**Figure 10**

Figure 11 below gives a graphical representation of the pre and post-Pos STAI values of each participant in the yoga group. Note the increase in post value is good in this test.



**Figure 11**

Figure 12 below gives a graphical representation of the pre and post-Neg. STAI values of each participant in the yoga group.



**Figure 12**

## **Discussion**

### **Strength of the study**

Since the two-week intervention period was guided, there was a very good connection developed between the instructor and the participants. This is in comparison to the non-guided yoga recordings found on the web.

The concepts of stress according to modern science and understanding from Vedic scriptures at the beginning and during the 30-minute sessions brought a great impact on the practices.

As observed by a participant, “The workshop was great and packed with information and perfect duration.”

- The practices involved a lot of upper body loosening and stretching, keeping in mind that with increased stress and the use of computers, students and working professionals develop a lot of spasms in their neck, shoulder, and back muscles. Some participants reported that it helped them release stress and relax better.
- A good amount of time was given to relaxation and pranayama practices to help increase the parasympathetic tone.
- Many participants were surprised how just 30 minutes of practice could bring about so much relaxation.
- People felt that 30 minutes of time was easy to spare.
- Most of the participants reported an improvement in their sleep quality.

As one of them observed, “The sessions were helpful to aid sound sleep. I could also attribute an improvement in better decision makings at work and home.”

- PSS
  - 17 participants showed a reduction in PSS scores.

- 6 participants started with moderate stress and moved to the low-stress category.
- SSS
  - 22 showed improvement in SSS-8 scores.
    - 6 participants improved from the high to medium category.
    - 3 participants improved from very high to high or medium category.
    - 2 participants improved from the medium to low category.
- Positive STAI
  - 22 showed positive changes.
- Negative STAI
  - 17 showed improvement.

## **Limitations of the study**

There are a few reasons that explain why some of the results were not statistically significant.

- The study period was two weeks, which is a very short time to see any significant changes. A longer period may bring better results.
- While online intervention has the advantage of being convenient for both participant and the researcher, there can be factors that might cause hindrances to the practices. There can be some background disturbances that might cause the practice to not be as relaxing as it was in a completely quiet environment.
- Sometimes the quality of voice instructions might not be as good as in-person. Especially during chanting, which is a vital part of the practice, I experienced a break in the sound quality.
- During this short period of intervention, a few participants were going through a high level of work and family demands.
- Psychological questionnaires are sometimes very tricky and not everyone is comfortable filling out the right information.
- The study comprised of people of only Indian origin.

## **Future scope**

- The period of the study can be increased from 2 weeks to 8 or 12 weeks to get better results.
- The sample size can be bigger, which would give a better idea of the results or output.
- Physiological tests would be good to add in addition to the psychological questionnaires.
- Recruitment of people from wider ethnicity.

## **Conclusion**

The practice of the IYT module helps decrease the somatization score (measures to check the severity of symptoms) and increase positive emotions. A study of longer duration is required to see more concrete results in other areas like perceived stress.

## PARTICIPANTS' OBSERVATIONS

These are the observations by the participants on the completion of two weeks of yoga intervention.

1. The experience was good. Personally, for me, I was holding multiple things from work or personal life within me before the session which was making me irritated, mood fluctuations, and anxiety. After doing the sessions, i was able to see the change in me and see that my body and my mind is becoming calmer day by day. I will definitely try to continue this exercise daily and include it in my routine.
2. The yoga for stress management classes are really helpful in relaxing. Vandanaji's instructions are very clear and easy to follow and it helps a lot to calm down and relax at the end of the day. I can follow her yoga classes video any time and feel relaxed and calm. Thank you very much Vandana ji... Feeling blessed that I attended her two weeks classes.
3. The sessions were helpful to aid sound sleeps. I could also attribute an improvement in better decision makings at work and at home.
4. Felt better after yoga sessions.
  - 1) Felt relief from back ache and upper arm ache.
  - 2) Felt mind was calmer post session.
5. It was a very relaxing class. Enjoyed the breathing exercises and stretches. There was sense of calmness after each class. Would definitely be interested if you have any future sessions.
6. I had a good night sleep and my mind was calm. This stress management yoga helped me.
7. Daily Practice helped me in falling asleep sooner. I feel the calmness in my mind after a session.
8. I thoroughly enjoyed 2 weeks of everyday yoga. The 9:00 pm tone was suitable for me to do it regularly but some days I was too tired and slept off during meditation.
9. It was very calming, better sleep and markatasan was much better during the second week.

10. The workshop was great and packed with information and perfect duration
11. The sessions were very calming. After starting my sleep has improved. I was looking forward for the sessions every day. All the credit goes to the teacher. Thanks, you.
12. Great sessions with lot of relaxation.
13. After yoga practice feels really good and calm
14. Excellent smooth yoga postures and pranayama.
15. Meditation and breathing yoga helped me to calm down the brain and stress relief. I can sleep better after the session. Thank you Vandana!
16. Yoga and stress workshop was very useful for me. Instructions given were easy and doable and the instructor is kind and empathetic.
17. I really liked it. It gave me the motivation to start yoga. It also changes my perspective about yoga. I always think that yoga will be very difficult as it has lot of completed asana but this stress management classes was really very good.
18. It was really relaxing yoga.
19. It was a very pleasant and helpful experience. The guided relaxation and pranayam techniques certainly helped in calming stress levels and enabled a sense of general well being.
20. It was a great experience to attend the practice with Vandana ji. Felt really relaxed and stress free at the end of the session. She makes the yoga session very easy and the flow is very smooth. Really like her class. Will be joining for the second time at 9pm thank you!!
21. Good session, very helpful for relaxation
22. I feel relaxed after attending the session but worried about the things going in day to day life.
23. The sessions were very helpful in reducing my shoulders and neck pain. Vandana ji is an excellent yoga teacher with very nice voice. Her class was always on time and 30 minute module included various practices targeting body and mind both. I felt much relaxed after each session. Thank you.
24. It was good and right size class. It did help me pick up some of the yoga and pranayama skills.
25. Good sessions, instructor kept me engaged throughout the session.



26. Excellent program. Very well organized. Clear instructions

27. The yoga for stress management classes are really helpful in relaxing.

Vandanaji's instructions are very clear and easy to follow, and it helps a lot to calm down and relax at the end of the day. I can follow her yoga classes video any time and feel relaxed and calm. Thank you very much Vandana ji...

Feeling blessed that I attended her two weeks classes.

28. It was an awesome experience. Very divine feeling

29. Thoroughly enjoyed the sessions. Very relaxing and short to accommodate on weekdays.

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## **PARTICIPANTS' TESTIMONIALS**

Here are a few testimonials from some of the participants received at the end of the study.

### Testimonial 1

*I attended the sessions for stress management through yoga which was offered by Vandana Pathak. It was very relaxing and easy to follow. It was a full body stretching which relaxed the mind and body. It helped me to relax and calm me down and be a better and more patient parent.*

*I highly recommend Vandana as she is very experienced yoga teacher and is very good natured person.*

*Thanks,*

*Best regards,*

*Geeta Sachdev*

### Testimonial 2

*Hi Vandana,*

*This is my experience as below*

*The two weeks workshop on stress management through yoga was very helpful. Daily sessions at 9:00PM really helped me to relax just before going to bed resulting in a good deep sleep. Attending a workshop daily for two weeks definitely helped with muscle flexibility and strengthening which helped me to perform my regular cardio exercise with ease. I thoroughly enjoyed the sessions with Vandana and am looking forward to attending them again in future.*

*-Best*

*Suchita*

### Testimonial 3

*Hi Vandana,*

*Here's my testimonial for the Yoga workshop.*

*The Yoga and Stress management workshop was a very pleasant and helpful experience. During the introduction, the instructor provided an overview on the triggers for stress in our daily lives and it's effects on our health and mental well being. She presented slides illustrating the various levels of yoga and the principles of pranayam. The guided relaxation and pranayam during the daily workshop certainly helped in calming stress levels and promoted a general sense of well being among the participants. She made sure that people at various levels of ability were able to follow the sequence.*

*Thanks,*

*Sonali*

### Testimonial 4

*I attended the stress management through yoga program for 2 weeks conducted by Vandana. After just one week started to sleep much better and could fall asleep sooner. Body was much relaxed by the end of the day and I was feeling much calmer too.*

*Even though it was just for half an hour it benefited quite a bit. By the end of 2 weeks , my body felt much flexible then before.*

*Thank you*

*Shilpa*

### Testimonial 5

*Vandana's stress management through yoga session was great. Her power point presentation was very precise and to the point. The practical session was very effective, soothing and relaxing.*

*She is an excellent yoga trainer and I would recommend to others as well*

#### Testimonial 6

*I had the pleasant experience of attending the two-week workshop " Yoga and stress management " offered by Vandana Pathak. I am glad I could attend the workshop and learn to manage my stress through yoga and mindfulness. Vandana ji is a wonderful teacher and she puts the students at ease with her calming assuring voice and simple and straightforward instructions. She simplifies the concepts such that the students feel the openness to practice even after the workshop gets completed. I have definitely felt calm and stress relief after the breathing exercises, warm up exercises and simple yoga poses and final relaxation meditation. I have been able to sleep well which is a struggle for me due to my sleep apnea. I sincerely wish Vandana Ji all the very best in her practice and further teaching. I appreciate her kindness in giving us this wonderful workshop and encourage everyone to undertake this workshop and other classes offered by Vandana ji.*

#### Testimonial 7

*Hello Vandana ji*

*The workshop that you conducted for "Yoga and Stress management" was very helpful and a good quality session. It provided theory as well practice into the Yoga and stress relief connection. The session was well balanced with relaxation exercises and asanas. I plan to continue to this practice everyday watching the video you shared.*

*With best regards*

*Ramani*

