

# The Impact of *Yoga Nidra* and Seated Meditation on the Mental Health of College Professors

## Abstract

**Background:** World statistics for the prevalence of anxiety and mood disorders shows that a great number of individuals will experience some type of anxiety or mood disorder at some point in their lifetime. Mind-body interventions such as *Hatha Yoga* and seated meditation have been used as a form of self-help therapy and it is especially useful for challenging occupations such as teachers and professors. **Aims:** In this investigation, we aimed at observing the impact of *Yoga Nidra* and seated meditation on the anxiety and depression levels of college professors. **Materials and Methods:** Sixty college professors, men and women, aged between 30 and 55 years were randomly allocated in one of the three experimental groups: *Yoga Nidra*, seated meditation, and control group. Professors were evaluated two times throughout the 3-month study period. Psychological variables included anxiety, stress, and depression. **Results:** Data analysis showed that the relaxation group presented better intragroup results in the anxiety levels. Meditation group presented better intragroup results only in the anxiety variable (physical component). Intergroup analysis showed that, except for the depression levels, both intervention groups presented better results than the control group in all other variables. **Conclusions:** Prepost results indicate that both interventions represent an effective therapeutic approach in reducing anxiety and stress levels. However, there was a tendency toward a greater effectiveness of the *Yoga Nidra* intervention regarding anxiety, which might represent an effective tool in reducing both cognitive and physiological symptoms of anxiety.

**Keywords:** College, meditation, mental health, professor, Yoga

## Introduction

In the last decades, a progressive increase in the predominance of mental disorders has been observed in the adult world population. World estimates for the prevalence of anxiety and mood disorders are significantly high, around 25%.<sup>[1]</sup> This means that a great number of individuals will experience some type of anxiety or mood disorder at some point in their lifetimes, in a continuous or recurrent manner.

Stress and anxiety are key components of many mental disorders. The current treatment for them includes evidence-based therapeutic and pharmacological interventions.<sup>[2]</sup> However, studies found that many a times, patients fail to seek for professional help, which indicates the need for reliable and proper “self-improvement” strategies. Besides, both health professionals and patients agree on two points: (1) it is not satisfactory to spend an entire lifetime

making use of drugs and (2) traditional psychotherapy can be extremely costly if carried out for long periods. In addition, clinical trials have demonstrated that anxiolytic drugs and antidepressants have limited effectiveness,<sup>[3]</sup> cause dependence,<sup>[4]</sup> affect cognition and memory,<sup>[4,5]</sup> and cause sexual dysfunction.<sup>[5]</sup>

The classical Global Burden of Disease Study published in 1996 showed that psychiatric disorders account for more than a quarter of all health loss due to disability, more than eight times greater than that attributed to coronary heart disease, and 20-fold greater than cancer.<sup>[6]</sup> These findings highlighted, for the first time, the central place of mental disorders in population health as well as an urgent need for alternative responses from health service systems.

There are different therapeutic approaches for the treatment of mental disorders, but

Camila Ferreira-Vorkapic<sup>1,2,3</sup>,  
 Claudio Joaquim Borba-Pinheiro<sup>2,4</sup>,  
 Murilo Marchioro<sup>1</sup>,  
 Daniel Santana<sup>5</sup>

<sup>1</sup>Department of Physiology, Laboratory of Neurophysiology, Federal University of Sergipe, <sup>2</sup>Department of Physical Education, Laboratory of Biosciences of Human Kinetics, LABIMH, Tiradentes University, <sup>3</sup>Department of Psychology, ESTACIO/FASE, Aracaju, Sergipe, <sup>4</sup>Federal Institute of Pará, Tucuruí, PA, Brasil, <sup>5</sup>Trika Research Center, Phu Ruea, Thailand

**Address for correspondence:**  
 Dr. Camila Ferreira-Vorkapic,  
 Laboratory of Neurophysiology,  
 Federal University of Sergipe,  
 Av. Marechal Rondon,  
 s/n, Jd. Rosa Elze, São  
 Cristóvão - SE, 49100-000,  
 Brazil.  
 E-mail: cfvorkapic@gmail.com

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many a times, patients look for additional or complementary strategies for different reasons, such as adverse effects of drugs, lack of response to treatment, high cost of psychotherapies, or just personal preference. Some of these complementary or integrative therapies comprehend the so-called mind–body interventions. Specific practices such as *Hatha Yoga*, relaxation, and seated meditation can be taught as a form of self-help therapy in order to help the patients to achieve a state of mental calm. A great amount of studies have demonstrated the significant effects of such techniques in the treatment of mental disorders.<sup>[5,7-12]</sup> These nonpharmacological interventions called contemplative techniques have no adverse effects (if present, they are minimal), can be practiced by the patients after specific recommendations, and have international acceptance.<sup>[13]</sup> Besides, with the clime of cost reduction in the health system, brief group interventions might represent relevant preventive methods, when compared to traditional forms of therapy. Maybe, this is the reason why techniques such as meditation, especially mindfulness, are among the most investigated complementary or integrative practice: It is concise, it has a well-defined program, it can be practiced by the patient himself once learned, and it can be used in parallel to any traditional therapy.

According to Betonio,<sup>[14]</sup> teaching is a very challenging job in which the teachers' performance is wrapped up in her/his personality. It requires a unique talent and sense of vocation for the teacher to perform her/his role exceptionally well. This makes teaching is a complex occupation. Depending on the type of college or university, teachers may be juggling many responsibilities, such as teaching a number of course overloads at nonresearch 2- and 4-year colleges and universities, doing different administrative jobs, or fulfilling teaching and research requirements at research colleges and universities. Even more demanding than the complexity of teaching and related responsibilities is the fact that teaching can also generate a high level of anxiety, depression, stress, and fatigue. Contributing factors to this stress include unclear expectations; spending many hours in class; handling classes with large enrollments, planning productive activities, or dealing with difficult or very needy students; newer curricular and teaching approaches, including the use of technology; time involved in student advising and conferences; increasing demands from administrative and committee duties; increasing diversification of expertise; campus politics and meeting the economic necessities of the institution; lack of financial and personnel support; time pressures and deadlines; continual overload of work; and doing research in a continuous manner.<sup>[15]</sup> These factors may be compounded by student attendance, attention, discipline, and lack of motivation. The latter can be especially stressful because uninterested students disrupt a classroom and the work of other students. Moreover, teaching uninterested or unmotivated students can be exhausting stressful.

Therefore, the overall aim of this investigation is to observe the impact of contemplative practices (*Yoga Nidra* and seated meditation) on the mental health of college professors at the Federal University of Sergipe, Brazil. Hence, the specific goals of this study are: (1) to observe the impact of contemplative practices on the mental health of college professors, (2) to indirectly observe the levels of stress, depression, and anxiety in this community, and (3) to encourage the practice of meditative techniques to reduce risk factors, prevent diseases, and promote a healthy lifestyle.

## Materials and Methods

### Sample and experimental protocol

Sixty healthy subjects, men and women, aged between 30 and 55 years, professors at the Federal University of Sergipe, were selected for the study (unfortunately, the sample size was not statistically determined due to practical and administrative issues and general costs, which represent a limitation of the study). Individuals with chronic pulmonary disease, making use of psychotropic drugs, and with previous meditation or yoga experience were excluded from the investigation. Drugs utilized in the treatment of diabetes, hypertension, and heart disease were allowed in the study. Comorbid psychiatric conditions or drug-free status was not clinically evaluated. All experimental protocol was authorized by the Brazilian Ethics Committee, under the registration number 29390514.3.0000.5546 (<http://plataformabrasil.saude.gov.br>).

All participants initially answered to questionnaires that included demographic information [Table 1], substance use, and general health, in addition to consent form. After the first psychological evaluation (pretest), volunteers were randomly allocated to one of the three experimental groups. A separate examiner coordinated the group distribution (and all statistical analysis was performed by an expert from another state), using the random allocation method. However, since the main examiners were directly responsible for the interventions, the composition of the groups was known to the investigators at some point:

- Group 1 – 20 participants attended weekly seated meditation sessions
- Group 2 – 20 participants attended weekly relaxation (*Yoga Nidra*) sessions
- Group 3 – 20 participants participated as the control group (waiting list).

Participants were evaluated two times throughout the study – pre- and post-test time. During a 3-month period, volunteers attended seated meditation or relaxation sessions. All sessions lasted for 45–50 min and were carried out twice a week at the Federal University of Sergipe and a partner yoga center. Contemplative practices, were executed by the first author (a certified yoga instructor), which utilized a detailed attendance register

**Table 1: Description of the sample in baseline for all variables**

Groups versus tests-variables	Meditation		Relaxation		CG		P
	Mean	SE	Mean	SE	Mean	SE	
Age (years)	47.3	7.5	49.9	9.2	46.7	8.1	0.251
Education (years)	13.0	0.14	14.2**	0.16	13.1	0.13	0.001
BAI (score)	19.9	1.4	20.3	2.3	19.6	1.8	0.966
BDI (score)	13.2	1.9	11.4	1.6	11.5	1.5	0.718
BSQ (score)	32.2	2.0	31.4	1.2	33.0	2.1	0.826
HAM-A (score)	19.0	2.2	19.7	1.1	19.1	2.0	0.958
ISSL (score)	15.8	5.0	17.4	4.5	18.1	4.07	0.422
Total (score)	104.2	8.08	101.3	7.3	100.2	7.02	0.926

\*\* $P < 0.05$  for relaxation versus meditation and relaxation versus CG. The bold number indicates  $P < 0.05$ . BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, BSQ = Body Sensations Questionnaire, HAM-A = Hamilton Anxiety Rating Scale, ISSL = Lipp's Stress Symptoms Inventory for Adults, SE = Standard deviation

to check the compliance. All experimental protocol of this randomized control trial is represented in the CONSORT diagram [Figure 1] and checklist [Table 2].

Table 1 presents mean and standard deviation values for the baseline data, showing no significant differences between the groups, except for education years, where the relaxation group showed a higher level of education.

### Contemplative practices

#### Relaxation (Yoga Nidra)

It is also called “psychic sleep,” an old yogic practice that provides deep psychological and physical relaxation, while maintaining mental functions functional and alert. During *Yoga Nidra*, participants remain lied down horizontally with the face and torso facing up (supine position) in a position known as “corpse pose,” while the instructor slowly guides them into deep relaxation using specific techniques in different stages. This study used the *Yoga Nidra* intervention developed by Swami Satyananda Saraswati, School of Yoga, Munger, Bihar, India.<sup>[16]</sup>

#### Meditation (mindfulness)

There are a number of meditation techniques available, and almost all of them aim at developing specific cognitive skills, such as attention and concentration. This study has chosen to use mindfulness techniques as the main practice of the meditation group. All mindfulness practices employed here are part of the Mindfulness-Based Stress Reduction Program, described by Kabat-Zinn.<sup>[17]</sup> However, only seated practices, such as breathing space, mindfulness of breathing, and mindfulness of thoughts were utilized.

### Psychological evaluation

Psychological variables such as anxiety, stress, and depression were evaluated in two experimental times, pre- and post-test. The following psychometric tools have been used: The Beck Anxiety Inventory (BAI);<sup>[18]</sup> Hamilton Anxiety Rating Scale (HAM-A);<sup>[19]</sup> Body Sensations Questionnaire (BSQ);<sup>[20]</sup> and Stress Symptoms Inventory for Adults Lipp (ISSL).<sup>[21]</sup> In addition, to examine the

impact and acceptance of contemplative techniques, participants answered a small feedback questionnaire<sup>[22]</sup>, which included items such as reasons for participating in the study, suggestions, motivations, and teacher evaluation.

### Statistical analysis

The statistical software Statistical Package for the Social Sciences (SPSS version 20.0, SPSS Inc. Chicago) was used to analyze research data (statistical significance of  $P \leq 0.05$ ). Histograms were visually inspected to observe distribution features of the continuous variables. Normality distribution was analyzed by a Shapiro–Wilk test and the variability of the data was analyzed by a Levene's test. Results showed the need for a one-way ANOVA for the analysis of baseline data, a  $2 \times 2$  ANOVA with a Tukey *post hoc* for parametric data and Friedman for nonparametric data. Intragroup difference was calculated by the formula:  $\Delta\% = ([\text{posttest} - \text{test}] \times 100/\text{test})$ . Moreover, intergroup difference was calculated by the formula:  $\Delta\% = (\text{posttest} 1 - \text{posttest} 2)$ .

For categorical variables such as demographic data, absolute (N) and relative (%) frequencies were calculated. Data were also analyzed in terms of central tendency (mean, median) and variability (standard deviation, variance, and mean).

### Results

Figure 2 displays the results for the BAI variable. Friedman's test has shown a statistic difference ( $F = 30.95$ ;  $P < 0.0001$ ). In the intragroup analysis, an improvement in the mean values of the meditation group was observed. However, only the relaxation group showed significant improvement ( $P < 0.05$ ;  $\Delta\% = 75.3\%$ ). In the intergroup analysis, statistic differences favorable to both intervention groups have been observed when compared to control group (meditation  $\Delta\% = 14.9\%$  and relaxation  $\Delta\% = 16.9\%$ ).

Figure 3 displays the results of the Beck Depression Inventory (BDI) variable, in which the ANOVA analysis ( $2 \times 2$ ) showed a statistic difference ( $F = 2.68$ ;

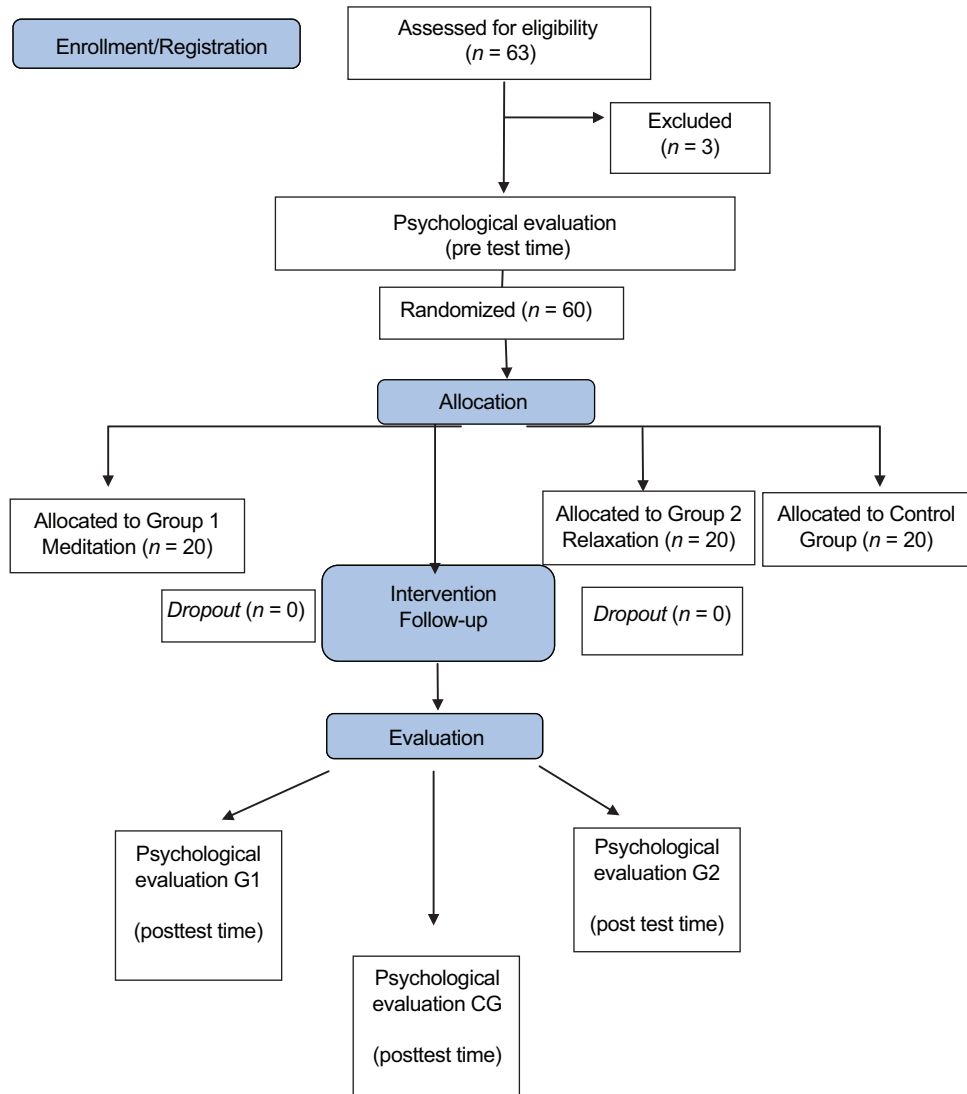


Figure 1: The experimental protocol according to the CONSORT diagram model

$P = 0.032$ ). In addition, there has been a nonsignificant improvement, in the mean values of both intervention groups (intra- and inter-group).

Figure 4 displays the results of the BSQ; Friedman’s test has shown a statistic difference ( $Fr = 29.85$ ;  $P < 0.0001$ ). In the intragroup analysis, statistic differences (improvements) were observed for the meditation ( $\Delta\% = 29.8\%$ ) and the relaxation ( $\Delta\% = 35.03\%$ ) groups. In the intergroup analysis, statistic differences favorable to both intervention groups have been observed when compared to control group (meditation  $\Delta\% = 14.1\%$  and relaxation  $\Delta\% = 16.3\%$ ).

Figure 5 displays the results for the HAM-A. Friedman’s test has shown a statistic difference ( $Fr = 27.67$ ;  $P < 0.0001$ ). In the intragroup analysis, statistic differences (improvements) were observed only for the meditation group ( $\Delta\% = 53.2\%$ ). In addition, in the intragroup analysis, statistic differences favorable to both intervention groups have been observed when compared

to control group (meditation  $\Delta\% = 11.9\%$  and relaxation  $\Delta\% = 12.6\%$ ). However, no statistical difference was observed when the groups were compared (intergroup).

Figure 6 displays the results for the stress variable (ISSL). Friedman’s test has shown a statistic difference ( $Fr = 26.21$ ;  $P = 0.0001$ ). Even though the mean values of the intervention groups have shown some improvement, intragroup analysis showed significant differences for the meditation ( $\Delta\% = 93.03\%$ ) and the relaxation ( $\Delta\% = 93.2\%$ ) groups. However, intergroup analysis showed statistic differences favorable to both intervention groups when compared to control group (meditation  $\Delta\% = 23\%$  and relaxation  $\Delta\% = 22.9\%$ ).

Figure 7 displays the results for the total general score, in which the ANOVA analysis ( $2 \times 2$ ) showed a statistic difference ( $Fr = 25.49$ ;  $P < 0,0001$ ). Intragroup analysis showed statistic differences (improvements) for both meditation ( $\Delta\% = 51.6\%$ ) and relaxation ( $\Delta\% = 57.4\%$ ) groups. Intergroup analysis showed statistic differences favorable to

**Table 2: Consort checklist of information**

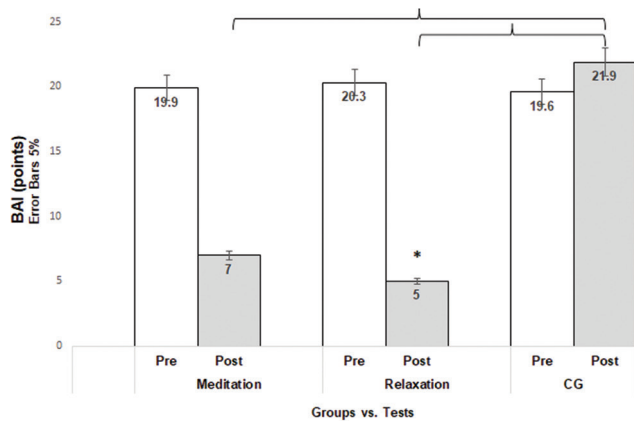
Section/topic	Item number	Checklist item	Reported on page number
Title and abstract	1a	Identification as a randomized trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see consort for abstracts)	1
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	2
	2b	Specific objectives or hypotheses	4
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	5
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	5
Participants	4a	Eligibility criteria for participants	5
	4b	Settings and locations where the data were collected	5
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	6
Outcomes	6a	Completely defined prespecified primary and secondary outcome measures, including how and when they were assessed	6-7
	6b	Any changes to trial outcomes after the trial commenced, with reasons	N/A
Sample size	7a	How sample size was determined	5
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomization			
Sequence generation	8a	Method used to generate the random allocation sequence	5
	8b	Type of randomization; details of any restriction (such as blocking and block size)	5
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	5
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	5
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	5
	11b	If relevant, description of the similarity of interventions	N/A
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	7
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	7
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome	Figure 1
	13b	For each group, losses and exclusions after randomization, together with reasons	Figure 1
Recruitment	14a	Dates defining the periods of recruitment and follow-up	7
	14b	Why the trial ended or was stopped	N/A
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	Table 2
Numbers analyzed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	7-10
Outcomes and estimation results	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% CI)	7-10
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	N/A

*Contd...*

**Table 2: Contd...**

Section/topic	Item number	Checklist item	Reported on page number
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing prespecified from exploratory	7-10
Harms	19	All important harms or unintended effects in each group (for specific guidance see consort for harms)	N/A
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	20
Generalizability	21	Generalizability (external validity, applicability) of the trial findings	10-14
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	10-14
Other information			
Registration	23	Registration number and name of trial registry	14
Protocol	24	Where the full trial protocol can be accessed, if available	N/A
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	14

N/A = Not available, CI = Confidence interval



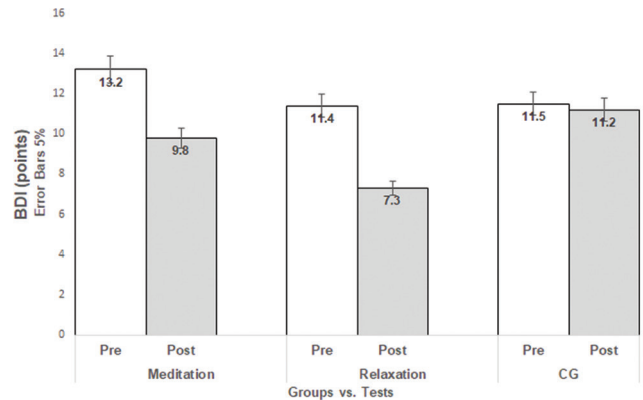
**Figure 2: Improvements in both intervention groups when compared to control group for the Beck Anxiety Inventory. Significant improvements were observed between the pre- and post-experimental times in the relaxation group**

both intervention groups when compared to control group (meditation  $\Delta\%$  = 65.3% and relaxation  $\Delta\%$  = 72.6%).

**Discussion**

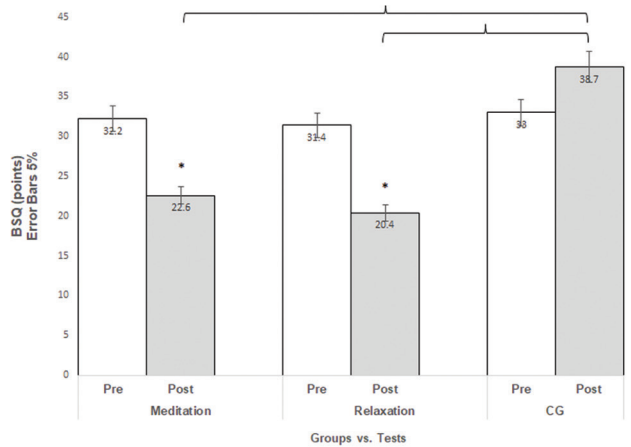
Anxiety and stress symptoms have a great short-term societal cost. Although the current treatment for anxiety (and mental disorder in general) is the consolidated drug–psychotherapy approach, its consequences include adverse effects of drugs, lack of response to treatment, high cost of psychotherapy, or/and pharmacological interventions.<sup>[3-5]</sup> Therefore, the need for effective low-cost strategies has become increasingly urgent and necessary because they might provide the individuals with the right tools to cope with anxiety while changing lifestyle and reducing the economic cost.

One of these strategies embraces integrative approaches, the so-called mind–body interventions, such as tai chi chuan, seated meditation, and yoga.

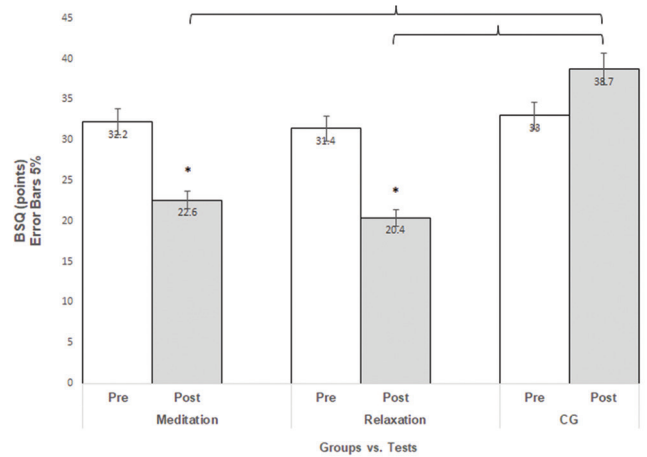


**Figure 3: Improvements in both intervention groups when compared to control group for the Beck Depression Inventory. Significant improvements were observed between the pre- and post-experimental times in the relaxation group**

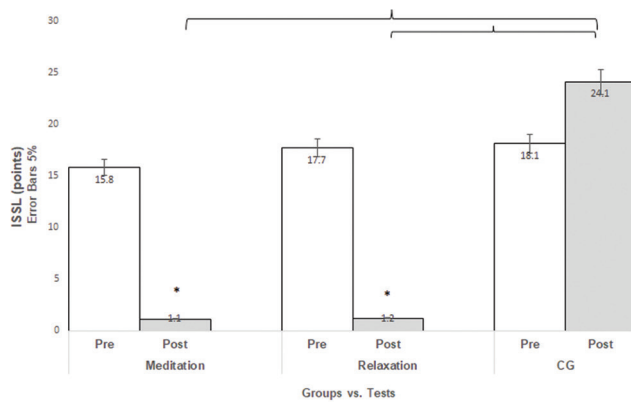
Yoga practice involves different techniques such as physical postures, controlled breathing, deep relaxation (*Yoga Nidra*), and meditation that seem to have a particular influence on one’s mental state.<sup>[12]</sup> Research on the overall benefits of yoga practice has revealed improvements in emotional self-regulation with consequent reductions in depression, stress, and anxiety levels, as well improvements in mood, quality of life, and well-being.<sup>[11,12,23]</sup> Specifically, *Yoga Nidra* is one of the yoga’s most effective techniques, not only for physical or mental relaxation but also for preparing the mind for yogic discipline. It has been termed “sleepless sleep” because individuals learn to enter the state between sleep and wakefulness without loss of awareness.<sup>[16]</sup> In spite of being known as a relaxation-meditation technique, *Yoga Nidra* is, however, qualitatively different from regular relaxation and especially different from seated meditation, mainly for the reasons provided in Table 3. Even though *Yoga Nidra* has been shown to have a significant impact



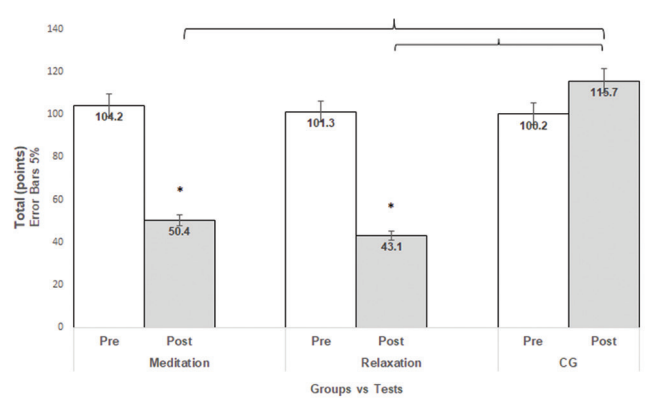
**Figure 4: Improvements in both intervention groups when compared to control group for the Body Sensations Questionnaire. Significant improvements were observed between the pre- and post-experimental times also in both intervention groups**



**Figure 5: Improvements in both intervention groups when compared to control group for the Hamilton Anxiety Rating Scale. Significant improvements were observed between the pre- and post-experimental times in the relaxation group**



**Figure 6: Improvements in both intervention groups when compared to control group for the Lipp's Stress Symptoms Inventory for Adults. Significant improvements between pre- and post-experimental times in the intervention groups were observed**



**Figure 7: The results for the total general score. Intergroup analysis showed statistic differences favorable to both intervention groups when compared to control group**

on the relaxation response,<sup>[16]</sup> contrary to seated meditation, no studies have observed the influence of this practice on stressful occupations, such as teaching.

Teaching is a challenging job. It can generate a high level of anxiety, depression, stress, and fatigue. Hence, this investigation aimed at observing the impact of *Yoga Nidra* and seated meditation at depression, stress, and anxiety levels of college professors.

In the present investigation, data analysis showed that the relaxation group presented better intragroup results in the following variables: BAI, BSQ, and HAM-A (anxiety). Meditation group presented better intragroup results only in the BSQ variable. Intergroup analysis showed that, except for the BDI variable, both intervention groups presented better results than the control group. However, no significant difference was found between the meditation and the relaxation groups. Prepost results indicate that the relaxation group might represent a better intervention in reducing the

anxiety levels although both interventions were effective when compared to the control group. However, there was a tendency toward a greater effectiveness of the *Yoga Nidra* intervention.

*Yoga Nidra* has been found to reduce stress and anxiety levels of college students,<sup>[24,25]</sup> and the authors state that it might also have positive results for other age groups and occupations, as in fact we have seen in this study. Previous studies have also shown that employing yoga techniques, such as *Yoga Nidra*, for other conditions (cancer survivors, self-reported emotional distress) result in beneficial effects for depression and mood, as well as anxiety and physical well-being.<sup>[26]</sup> Other studies support our findings.<sup>[27-29]</sup>

Studies have found that the *Yoga Nidra* practice (or “state”) appears to reflect an integrated response by the hypothalamus, resulting in decreased sympathetic (excitation) nervous activity and increased parasympathetic (relaxation) function.<sup>[30]</sup> Results show that there was a significant improvement in positive well-being, general health, and vitality in the *Yoga Nidra*

**Table 3: General differences between seated meditation and Yoga Nidra relaxation**

	<b>Meditation</b>	<b>Yoga Nidra</b>
Posture	Typically a seated practice, where the body is upright and alert	Practiced lying down, in “corpse pose”
Attention	Attention is consciously placed on one anchor - usually the breath, thoughts or a mantra, (although there are many types of meditation)	The <i>Yoga Nidra</i> practice is guided, so attention is allocated and varied throughout the practice. The specific instructions make it easier to relax than in meditation
Consciousness	People can experience multiple states of consciousness within a single meditation. However, usually, one stays in the waking state of consciousness	During <i>Yoga Nidra</i> , one is at the “hypnagogic state,” where he/she is no longer in the waking state of consciousness but has also move past the dreaming state of consciousness and into the deep sleep state. However, the mind is alert and awake

group. The association of *Yoga Nidra* with a shift toward parasympathetic dominance<sup>[30]</sup> is also related to high cardiac vagal control, which, in turn, is related to reduced anxiety and better subjective and objective sleep quality.<sup>[31]</sup> In a study on the effects of *Yoga Nidra* over sleep, the morning practice has been found to increase parasympathetic drive at night causing sleep to be more restorative, which may explain significant improvement in sleep-quality ratings.<sup>[32,33]</sup> The authors state that the probable mechanisms affecting sleep quality and subjectively feeling better and less anxious may be linked to cognitive structuring effects of this practice, which makes the mental processing of external inputs more relaxed. The underlying mechanisms involved with *Yoga Nidra* are not clear at present, but meditation in general is known to target deficits in executive attention that characterize mood and anxiety and psychological symptoms.

Image studies have shown that *Yoga Nidra* activates several brain regions, including the primary sensory cortex.<sup>[34]</sup> The authors also found decreases in regions involved in executive control, emotion processing, and motor planning, consistent with the hypothesis that these functions are dampened during *Yoga Nidra*, increasing both physical and mental relaxation and reducing anxiety levels. In a follow-up study, these same researchers demonstrated that *Yoga Nidra* results in the release of dopamine in the striatum, consistent with decreased motor planning and increased physical relaxation.<sup>[35]</sup>

Even though the results observed in this study regarding *Yoga Nidra* are promising, the analysis of baseline and demographic data showed no significant differences between the groups, except for education years, where the relaxation group (*Yoga Nidra*) showed a higher level of education. One possible hypothesis is that the *Yoga Nidra* instructions could have been better understood by this group due to a higher education level, therefore influencing the results.

In the present study, seated meditation has also been found to reduce anxiety and stress when compared to the control group. These findings are corroborated by a great number of studies. Further, the possible mechanisms through which (seated) meditation works is possibly the

same as *Yoga Nidra*'s: decreased sympathetic activity, increased parasympathetic function, and increased vagal tone and alterations in neurotransmissions.<sup>[12]</sup> However, why has *Yoga Nidra* been shown to be more effective in reducing anxiety levels, both the physical and cognitive symptoms?

In *Yoga Nidra*, it is not necessary to concentrate. The technique is entirely guided and participants just need to follow the instructions and keep the mind moving from point to point, trying to be aware of every experience. In seated meditation, participants needed to count and observe breaths and thoughts or slightly concentrate on them, at least during certain stages. In addition, during *Yoga Nidra*, the *Shavasana* posture (corpse pose) is more relaxed, natural, and easy to perform by individuals of all ages and body types, as opposed to the seated posture, which might represent a challenge for many participants for obvious reasons. In addition, the first contact with a still, seated posture may be demanding for beginners, and as a result, meditation might not be as effective as relaxation in reducing anxiety levels. Some authors state that it might even increase stress levels in the short term. However, the increase in stress is transient and part of the process of becoming mindful.<sup>[36]</sup>

Limitations of this investigation include the small sample size for each group, the sample size determination, and the lack of blindness. It is comprehensible that it is difficult to perform double-blinding studies with yoga, but blinding to the outcome assessors and data analyzer has been reported.

## Conclusions

The present study showed the effectiveness of *Yoga Nidra* and seated meditation in reducing anxiety and stress levels of college professors when compared to the control group. However, there was a tendency toward a greater effectiveness of the *Yoga Nidra* intervention, regarding anxiety. *Yoga Nidra* is easy to perform, does not require a seated posture and concentration, and seems to positively impact psychological variables, such as anxiety and depression. Therefore, it might represent a therapeutic technique with preventive, promotive, and curative value. However, more studies, with different



groups of all ages and occupations, are necessary to better elucidate the mechanisms through which *Yoga Nidra* works.

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### Conflicts of interest

There are no conflicts of interest.

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