Original Article

Effect of integrated *Yoga* module on positive and negative emotions in Home Guards in Bengaluru: A wait list randomized control trial

B Amaranath, Hongasandra R Nagendra, Sudheer Deshpande

Department of Yoga and Life Science, S-VYASA Yoga University, Bengaluru, Karnataka, India

Address for correspondence: Mr. B Amaranath, No.33/04, Gangappa Complex, DVG Road, Basavangudi, Bengaluru - 560 004, Karnataka, India.
E-mail: b_amaranath@yahoo.co.in

ABSTRACT

Background: The beneficial aspect of positive emotions on the process of learning and the harmful affect of negative emotions on coping with stress and health are well-documented through studies. The Home Guards (HGs) are working in a very stressful situation during election, managing traffic and other crowded places. It is quite essential in present day circumstances that they have to manage their emotions and cope up with different stressful situations.

Objective: To study the efficacy of integrated *Yoga* module (IYM) on emotions (positive and negative affect [PA and NA]) of HGs.

Methods: A total of 148 HGs both males and females who qualified the inclusion and exclusion criteria were randomly divided into *Yoga* group (YG) and control groups (CG). The YG had supervised practice sessions (by trained experts) for 1 h daily, 6 days a week for 8 weeks along with their regular routine work whereas CG performing their routine work. Positive affect negative affect scale (PANAS) was assessed before and after 8 weeks using a modified version of PANAS.

Results: PA in YG had significantly increased ($P < 0.05$) whereas it had decreased significantly ($P < 0.05$) in CG. Other positive effect in YG had significantly increased ($P < 0.001$), whereas it had decreased significantly ($P < 0.001$) in CG. NA in YG had significantly decreased ($P < 0.001$), whereas it had significantly increased ($P < 0.001$) in CG. Other NA in YG had significantly decreased ($P < 0.001$), whereas it had significantly increased ($P < 0.01$) in CG.

Conclusions: The results suggested that IYM can be useful for HGs to improve the PA and to decrease NA score. Moreover, IYM is cost-effective and helps HGs for coping up with emotions in stressful situations.

Key words: Home Guards; negative affect; positive affect; *Yoga*.

INTRODUCTION

Security and police personnel are playing a very important role in controlling law and order in the society and protected the country even in ancient days.[1] Today, Home Guards Organization (HGO) shares the above duty with the security and police personnel. HGO is an independent disciplined and uniformed body of volunteers constituted under Karnataka Home Guards (HGs) Act, 1962, under Karnataka Home Department. HGs' Services have become indispensable during fairs, festivals, sports, elections, and for daily traffic control. Nowadays, Bengaluru HGs assist Bengaluru city Traffic Police, Regional Transport Office, Bangalore University, Food Corporation of India, Karnataka State Road Transport Corporation, and many more organizations.[2]

Normally, the HGs work in stressful situations; hence, facing the realities of life is tough for them. Stress is not viewed as a singular event, but as a transaction between an individual and the environment that makes demand on all available

Access this article online	
Website: www.ijoy.org.in	Quick Response Code
DOI: 10.4103/0973-6131.171719	

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Amaranath B, Nagendra HR, Deshpande S. Effect of integrated *Yoga* module on positive and negative emotions in Home Guards in Bengaluru: A wait list randomized control trial. Int J Yoga 2016;9:35-43.

coping resources of the body-mind complex. This involves cognitive appraisal and coping processes. When these resources are taxed, and the responses exceed the coping abilities, it can result in distressful negative emotions.[3] These precipitate aggressive behaviors such as anger, fear, distress, and irritability. Stress and coping are closely related to affect or emotions because they are affected by cognitive appraisal.[4] Thus the heightened stress responses that result in negative affect (NA) and distress, are reflections of an inability to cope with demanding situations.[5]

An emotion is defined as a mental and physiological state associated with a wide variety of feelings, thoughts, and behaviors. It is a prime determinant of the sense of subjective well-being and appears to play a central role in many human activities.[6] Watson *et al*. measured these emotions under two major categories namely positive and NA. Pleasant emotions of different intensities may be grouped as "positive affectivity" (PA) and unpleasant emotions under "NA".[7]

Negative affect

NA can be termed as a state of aversive mood and subjective distress. It is seen that self-esteem of a person is affected, and the quality of relationship with others gets deteriorated.[8] This not only leads to the cause of anxiety and depression but also narrows down the attention. The fear leads to withdrawal behavior where the situation demands for survival[8] depending on the capacity to cope up with different situations.[9] The characteristics of low NA[7] are calmness and contentment.

Positive affect

It is observed that people who are having tendencies to cope up through humor will have greater positive mood and have also shown increased levels of salivary immunoglobulin A, a vital immune system protein.[10] Positive emotions such as hope does contribute to over health benefits accrued by dispositional optimists.[5]

Remedial measures

The coping strategies in respect of occurrence and responding with positive emotions (e.g., positive reappraisal, problem-focused coping, and infusing every event with positive meaning) do help buffering against stress and depressed mood.[11] Such strategies will help the individuals to emerge from critical moments with all new coping skills establishing closer relationship and showing greater appreciation toward life. All such strategies predict an increase in psychological well-being.[12]

Through studies, the benefits of PA in prevention and rehabilitation of stress-related diseases such as hypertension,[13] gastrointestinal disorders,[14] coronary heart disease,[15] and diabetes have been established. It is also established through studies that the higher PA has shown lower levels of glycosylated hemoglobin in normal people, indicating the beneficial effect of PA on diabetic parameters.[16]

The studies have also shown that individuals often adopt complementary health approaches to improve their health and well-being[17,18] or to get relieved from symptoms associated with chronic diseases or the side-effects of use of conventional medicine.[19,20]

Yoga

The ancient *Yoga* from India dating back to thousands of years is now getting the popularity all over the world as a practice of mind-body medicine. Its practices have the potential to promote PA. In the recent survey conducted by the National Center for Complementary and Alternative Medicine in 2015 has shown that overall 34% of adults used complementary and alternative therapies and *Yoga* in 2012.[21] The whole of person's life including physical, mental, emotional, and spiritual aspects are addressed by *Yoga* for prevention of disease and overall well-being of the person. It is also observed that the practice of *Yoga* do benefit the individual for overcoming his negative emotions, which in turn will improve the quality of life of healthy people with increased immunity,[10] better pulmonary functions,[22] and increased life-span.[23]

Yoga and physical health

It was observed that practice of *Yoga* improved joint flexibility,[24] respiratory endurance, and strengthening of muscles[25] in young. *Yoga* practice also improved the dexterity in students.[26] The other documented physical health benefits of *Yoga* are reduction in body fat, improved shoulder flexibility in elderly females,[27] improvement in immunological tolerance,[28] noticeable and favorable changes in neuro-endocrine functions including melatonin and cortisol secretions,[29-31] lower perceived exertion after exhaustive exercise.[32]

Yoga for positive mental health

Continued practice of *Yoga* for 10–30 days has shown increased visual perception,[33] better learning skills,[34] and increased spatial and verbal memory.[35] The integrated practice of *Yoga* has also shown improved cognitive functions in children and adults.

Yoga for positive emotional health

In the studies made for assessing the emotional states of the individual by "Profile of Mood States" after practice of *Yoga* have shown significant improvements in negative emotions such tension, anxiety, depression, dejection, anger, hostility, fatigue, inertia, confusion, and

bewilderment.[36] 10 h practice of *Iyengar Yoga* has shown improvement in the emotional states of the individual with regard to depression, anxiety, negative mood, and fatigue in young adults[37] as reported by the practitioners. In the study to compare *African dance* and *Hatha Yoga*, showed reduced perceived stress and NA with both these practices but the *Hatha Yoga* showed reduced cortisol levels also.[30] Hence, the benefits of *Yoga* practice is that it improves mood and differential effects which may be related to its influence on physiological states of arousal[30] through establishing stable autonomic balance.[38]

Thus, reducing NA and increasing PA is one of the main concerns in management of emotions.

In the present study, we examined the positive and NA outcomes HGs who attended integrated *Yoga* module (IYM) for 2 months; daily 60 min of practice; 6 days a week.

METHODS

Subjects

Five hundred HGs attended motivational lectures. 148 of them volunteered to be in study group. The subjects were randomly divided into *Yoga* group (YG) ($n = 75$) and control groups (CG) ($n = 73$) using random number table.[39] The subjects were selected from field working HGs from various parts of Bangalore Rural District.

Based on a previous study,[40] the effect size was calculated as 0.456, fixing alpha = 0.05, power = 0.95 and hence the sample size of this study was ($n = 75$). This calculation was done using G power.

We have included the subjects of both gender, normal healthy field working HGs and age between 20 and 45 years. Similarly, we have excluded the subjects with any ailments, consuming alcohol, and smoking and those who already practicing *Yoga*.

The Institutional Ethical Committee of S-VYASA approved the study proposal. The informed consent was taken from all subjects before enrolling them in the study.

Design

This is a prospective, randomized, single-blind, control study to measure and compare the positive and NA thereby anxiety and depression of the HGs allotted to YG and CG. The researcher deputed instructors to deliver introductory lectures to the HGs for motivating them to join the study. Gruha Rakshaka Bhavan (HG Administrative office at Bengaluru, Karnataka, was the venue for *Yoga* classes).

Both the groups (YG and CG) were performing their routine work such as maintaining law and order, managing the traffic and public in different government organization such as RTO and Vidhana Soudha and participated in weekly mandatory parades as per HG schedules.

The YG besides doing their normal routine work also did 1 h of IYM practices, 6 days a week for 8 weeks. Daily attendance was taken for all the subjects; *Yoga* trained experts taught IYM to YG. The CG did their normal routine work. The CG was given an option to join *Yoga* classes after the study completion.

Evaluation

The tests were self-administered by examiners before and after 8 weeks of IYM in a disturbance free quiet room.

Masking

The invigilators coded and saved the answered questionnaires response sheets (QRS) for scoring latter. A psychologist not involved in group formation or class supervision valued the coded QRSs. Another person decoded the QRSs only after noting the scores both before and after data was completed.

Assessments

Assessment was done using the positive affect negative affect scale (PANAS) questionnaire developed by Watson *et al*.[7] The PANAS is a 20-item questionnaire designed to measure PA and NA. It has ten questions each to measure positive and negative emotions, referred to as PA and NA. The internal reliability (Cronbach's coefficient alpha) is 0.86–0.96 for PA and 0.84–0.87 for NA of the PANAS.[7] Narasimhan *et al*. in her study has added nine (four positive and five negative) questions for his study, which are referred as other PA (OPA) and other NA (ONA).[40] The PANAS, OPA, and ONA domain scores were analyzed and interpreted separately since the questions that were added had not been tested earlier for validity and reliability.

Data extraction

The participants rated all questions on a 5-point scale of 0–4. (0-not at all, 1-a little, 2-moderately, 3-quite a bit, and 4-extremely) reflecting the extent to which they experienced the emotion during the past 1 week. All 29 questions were intermixed in the questionnaire. They were carefully isolated for obtaining the individual scores for the four domains, i.e. PA, NA, OPA, and ONA. Incomplete answer sheets were discarded.

Intervention

Yoga group

The YG HGs besides doing their routine work participated in *Yoga* practice also. They were given IYM from the integrated set of *Yoga* practices used in earlier studies on the effects of *Yoga* for positive health.[41] The basis of developing the integrated approach is ancient *Yoga* texts[42] for total physical, mental, emotional, social, and spiritual levels[43] developments. The techniques include physical practices *(Kriyās*, *A¯sanās*, a healthy *Yogic* diet), breathing practices with body movements and *Pranayama*, meditation, lectures on *Yoga*, stress management, and life-style change through notional corrections for blissful awareness under all circumstances (action in relaxation). Qualified *Yoga* teachers taught *Yoga*. They taught the group the IYM [Table 1] for 2 months; daily 60 min of practice; 6 days a week.

Control group

The CG did no *Yoga* practice but did their routine work only. However, the CG subjects could opt for *Yoga* classes as part of the study after study duration.

Statistical analysis

Data were analyzed using R-Statistical software. This calculation was done using G power.[44]

Data at baseline were assessed for normal distribution using Shapiro–Wilk's test in both the groups. The

Table 1: Details of the IYM practices

Duration	Names	Benefits
5 minutes	Breathing practices	Brings into action all the lobes of the lungs for full utilization
	Hands in and out breathing	
	Dog breathing	Normalizes the breathing rate
	Tiger breathing	Makes the breathing uniform, continuous and rhythmic
	Straight legs raise breathing (alt. Both)	
5 minutes	Loosening exercises	Prepares the joints for better flexibility to move on to postures
	Jogging	
	Forward and backward bending	
	Side bending	
	Twisting	
	Pavanamuktasana kriya	
25 minutes	*Asanas*	Balance and harmony
	Standing	Great speed in movement due to agility
	Ardha cakrasana	Flexible body
	Pada hastasana	Supple but stone hard when the need arises
	Sitting	Relaxation in action and hence conservation of energy
	Vajrasana	
	Supta vajrasana	Tranquility of mind and clarity of thought
	Halasana or Mayurasana	
	Prone postures	
	Dhanurasana	
	Supine postures	
	Sarvaingasana	
	Matyasana	
	Ardha Sirsasana or Sirsasana	
5 minutes	Deep relaxation technique	Deep rest to cells
		Stress reduction
		Rejuvenates the tissues
		Unfolds the latent impressions buried within the subconscious mind
10 minutes	*Pranayama*	Brings mastery over *Prana*
	Vibhagey Pranayama	
	Naoicuddhi Pranyama	
	Çitale, Setkari, Sadanta Pranayama	
	Bhramare Pranayama	
	Nadanusandhana	
	OR	Cleanses the body removes the toxins
	Kapalabhati	It desensitizes the possible hyper sensitivity
	Meditation – *Om* Meditation	Provides deep rest to the system
		Calms down the mind
		Reduces metabolic rate, blissful awareness freshness, lightness expansion at mental level.. emotional equipoise improves concentration, memory, and creativity
10 minutes	Lectures	Cultures the emotions
		Removes ignorance and wrong notions
		Stable personality

IYM = Integrated Yoga module, DRT = Deep relaxation technique

independent sample *t*-test was performed to assess the significant difference between the groups and paired samples *t*-test for within the group.

RESULTS

Demographic data

There were 75 subjects in YG and 73 subjects in CG. The age range was between 20 and 50 years. They were 36 females in YG and 31 in CG, 39 males in YG and 42 in CG. There were 49 married people in both YG and CG. There were 26 unmarried in YG and 24 in CG.

The educational qualification of the subjects were up to SSLC, SSLC to PUC, and graduates [Table 2].

Changes in positive affect negative affect scale after *Yoga* in *Yoga* group

There was a significant improvement in PA after yoga at a $P < 0.01$ and $P < 0.001$ showing 5.53% and 22.86% changes in PA and OPA, respectively. The NA decreased after yoga at a $P < 0.001$, with 22.23% and 24.92% reduction in NA and ONA, respectively.

Changes in positive affect negative affect scale in control group

There was a significant reduction in PA after yoga at a $P < 0.05$ and $P < 0.001$ showing 7.83% and 18.50% changes in PA and OPA, respectively. There was a significant increase in NA and ONA $P < 0.001$, $P < 0.01$ with 23.23% and 11.71% improvement in NA and ONA, respectively.

Table 2: Demographic data of subjects

Particulars	YG	CG
Number of participants (*n*)	75	73
Age (range)		
20-30	36	41
30-40	28	20
>40	11	12
Gender		
Females	36	31
Males	39	42
Marital status		
Married	49	49
Unmarried	26	24
Educational qualifications		
SSLC	49	37
PUC	20	24
Degree	6	12

YG = Yoga group, CG = Control group

Positive affect

In general, the PA in YG has significantly increased from 19.92 ± 3.89 to 21.02 ± 3.76 ($P < 0.01$), whereas it has decreased significantly from 19.79 ± 3.88 to 18.24 ± 6.38 ($P < 0.05$) in CG [Table 2a and Figure 1].

Other positive affect

The OPA in YG has significantly increased from 8.44 ± 2.42 to 10.37 ± 2.86 ($P < 0.001$), whereas it has decreased significantly from 9.97 ± 2.48 to 8.17 ± 3.27 ($P < 0.001$) in CG [Table 2a and Figure 2].

Negative affect

In general, the NA in YG had significantly decreased from 16.76 ± 7.71 to 13.03 ± 6.63 ($P < 0.001$), whereas it had increased significantly from 17.86 ± 5.29 to 22.01 ± 7.53 ($P < 0.01$) in controlled group [Table 2a and Figure 3].

Other negative affect

In general, the ONA in *Yoga* has significantly decreased from 10.07 ± 3.85 to 7.56 ± 3.95 ($P < 0.001$), whereas it has increased significantly from 10.84 ± 2.82 to 12.11 ± 3.76 ($P < 0.01$) in CG [Table 2a-d and Figure 4].

Further individual question in the PANAS was analyzed.

This table shows the changes in individual items of PA domains (PA and OPA). There was an increase ranging from 0% to 20.73% in the individual items of PA with a negative change − 3.35% in the question "Proud." There was 5.32–39.29% increase in the OPA scores. Question number 15 ("content") indicating the degree of contentment showed the highest degree of improvement (39.29%) in YG. However, in CG, there was a decrease ranging from 0% to 24.30% in the individual items of PA with a positive change 14.45% in the question "Strong." There was 14.38–39.07% decrease in the OPA

Table 2a: Pre- and post-data of PA, OPA, NA, and ONA in YG and CG

PANAS	YG (mean±SD)		*t*	*P*	CG (mean±SD)		*t*	*P*	Between group	
	Pre	Post			Pre	Post			*t*	*P*
PA	19.92±3.89	21.02±3.76	2.45	0.016**	19.79±3.88	18.24±6.38	−2.04	0.0443*	−3.21	0.0016***
OPA	8.44±2.42	10.37±2.86	−5.11	0.0001***	9.97±2.48	8.17±3.27	4.33	0.0001***	−4.33	0.0001***
NA	16.76±7.71	13.03±6.63	−5.11	0.0001***	17.86±5.29	22.01±7.53	4.49	0.0001***	7.70	0.0001***
ONA	10.07±3.85	7.56±3.95	−5.45	0.0001***	10.84±2.82	12.11±3.76	2.49	0.0150**	7.17	0.0001***

Significant level, *$P<0.05$ and **$P<0.01$ ***$P<0.001$, The independent sample *t*-test was performed to assess the significant difference between the groups and paired samples *t*-test for within the group. SD = Standard deviation, YG = Yoga group, CG = Control group, PANAS = Positive affect negative affect scale, OPA = Other positive affect, ONA = Other negative affect, PA = Positive affect, NA = Negative affect

Table 2b: Results of integrated yoga practices in YG and CG

Variables	YG				CG			
	Mean±SD		Pre-post	Percentage changes in YG	Mean±SD		Pre-post	Percentage changes in CG
	Preyoga	Postyoga	*p*		Pre	Post	*p*	
PANAS positive	19.92±3.89	21.02±3.76	0.016**	+5.53	19.79±3.88	18.24±6.38	0.0443*	−7.83
Other positive	8.44±2.42	10.37±2.86	0.0001***	+22.86	9.97±2.48	8.17±3.27	0.0001***	−18.50
PANAS negative	16.76±7.71	13.03±6.63	0.0001***	−22.23	17.86±5.29	22.01±7.53	0.0001***	+23.23
Other negative	10.07±3.85	7.56±3.95	0.0001***	−24.92	10.84±2.82	12.11±3.76	0.0150**	+11.71

SD = Standard deviation, YG = Yoga group, CG = Control group; PANAS = Positive affect negative affect scale. *$P<0.05$,**$P<0.001$ and ***$P<0.001$

scores. Question number 8 "pleased" with positive improvement.

In YG, it is noteworthy that the degree of changes in the NA is better, in the range of 11.14–38.01%, than the increase in the items on PA. The ONA descriptor "Disappointed" showed the maximum reduction of 38.01%. There is a positive change in questions Jittery, Guilty, and Hostile in YG.

In CG, there is an increase in NA range of 4.19–42.15%, descriptor "Jittery" showed the maximum increase of 42.15%. The ONA also increase with a range of 0.52–38.40%, with a "Miserable" showed maximum increase 38.40%.

DISCUSSION

The descriptive of negative emotions, "Distressed" and "Disappointed" showed 37.40% and 38.01% reduction, respectively, in YG. Since the HGs are volunteers and they do not have job security, they were in a mood of distress and disappointment. The beneficial effect of the IYM in unwinding the distress and disappointed feeling in HG's that too within a short period of time may be considered as an important contribution of this study.

IYM meant to develop better mastery over the modifications of the mind through introspective awareness to calm down the mind may have increased their level of confidence to make a resolve to change their lifestyle and approached to their life to overcome their guilt, shame, and the related complexes. Similar changes have been reported in a study after Vipassana meditation in Tihar Jail. The inmates of the jail showed reduced hostility, anxiety, and depression with improved sense of well-being and hope for the future in those with or without psychiatric problems.[45] Reduction in aggressive behavior has been demonstrated in normal young volunteers after 12 weeks of integrated *Yoga* program similar to the practices used in this study.[46]

In this study, it has been noticed that negative emotions such as fear, hatredness, and nervousness, which are other forms of anxiety, which leads to stress have reduced drastically. Many studies have shown the stress reducing effect of *Yoga*,[47-49] which supports the observations of our study. The relaxation response after yoga may offer the ability to face the situations in a relaxed state of mind and perform with utter ease and effortlessness. *Yoga* is considered as a special skill of action in relaxation. This was observed with *Yoga* practices in musicians with the relative reduction in performance anxiety, musculoskeletal conditions, and mood and flow experience.[50] *Yoga* practices prior to exams

Table 2c: Changes in individual items of PA

Question number	PANAS PA		
	Descriptor	Percentage change (increase) in YG	Percentage change (decrease) in CG
PA			
2	Attentive	13.11	−17.13
3	Interested	0.0	−24.30
7	Excited	20.73	0.65
10	Strong	0.43	14.45
11	Enthusiastic	4.63	−15.69
17	Determined	5.33	−14.22
18	Proud	−3.35	−3.96
22	Inspired	11.17	−23.26
25	Active	9.85	−6.86
29	Alert	11.82	1.55
OPA			
1	Happy	5.32	−39.07
8	Pleased	25.35	5.52
15	Content	39.29	−14.38
26	Glad	26.99	−15.54

YG = Yoga group, CG = Control group, PANAS = Positive affect negative affect scale, OPA = Other positive affect, PA = Positive affect

Table 2d: Changes in individual items of NA

Question number	PANAS NA		
	Descriptor	Percentage change (decrease) in YG	Percentage change (increase) in CG
NA			
4	Afraid	−26.90	10.07
6	Distressed	−37.40	4.19
9	Upset	−30.06	8.77
12	Jittery	0.93	42.15
14	Guilty	5.33	40.63
16	Nervous	−26.23	15.32
20	Scared	−17.46	32.06
21	Hostile	6.67	108.06
24	Ashamed	−24.75	7.30
28	Irritable	−29.87	26.03
ONA			
5	Disappointed	−38.01	3.14
13	Sad	−28.57	0.52
19	Unhappy	−25.16	26.14
23	Troubled	−11.14	0.61
27	Miserable	−16.26	38.40

YG = Yoga group, CG = Control group, PANAS = Positive affect negative affect scale, ONA = Other negative affect, NA = Negative affect

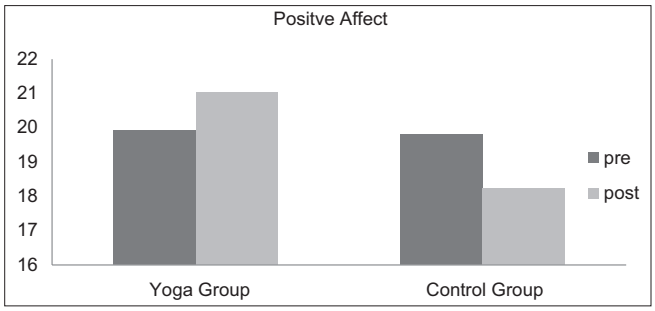

Figure 1: Changes in positive affect

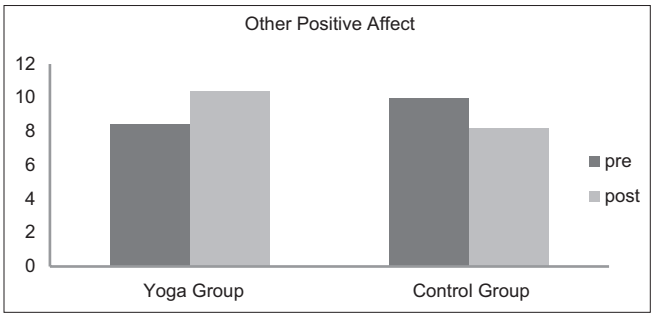

Figure 2: Changes in other positive affect

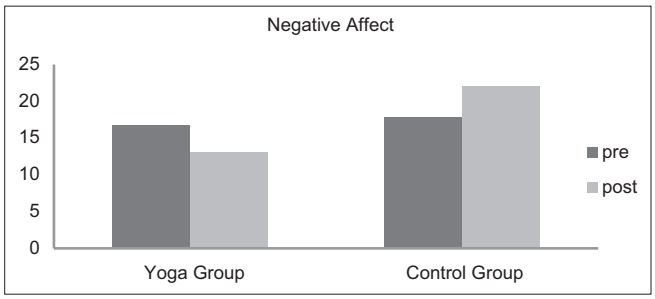

Figure 3: Changes in negative affect

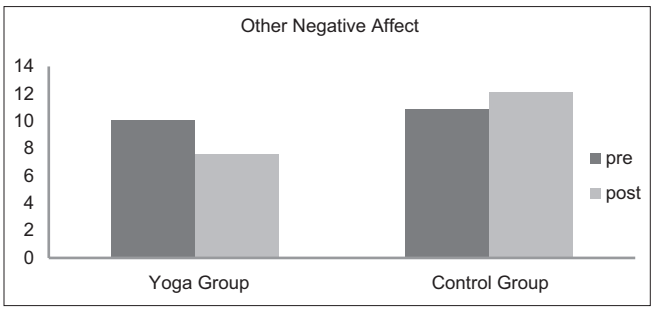

Figure 4: Changes in other negative affect

in medical students showed improved concentration, improved efficiency, increased attentiveness, and significant reduction in number of failures.[51]

"Disappointed, upset, irritable, hostile" are different facets of anger resulting from unsatisfied desires or the inability to cope. All this is described in the *Bhagavadgita* as violent speed of mind resulting in anxiety or depression. These have shown reduction in this study. Benefits of *Yoga* practices for rapid stress reduction and anxiolysis among distressed women,[52] betterment of mood in psychiatric inpatients,[36] and reduction in symptoms of depression[37] are reported.

The perception of vigor "Active" and "Pleased" (q. 25, 8) have increased by 9.85% and 25.35%, respectively. The feeling of wellness was contributed by *Asanas* and loosening exercises, which increases spinal flexibility,[24] dexterity,[26] and stamina.[25]

The integrated *Yoga* program taught in this camp included lectures and practice of bhakti *Yoga* (devotional sessions) that are meant for direct handling of emotions by nurturing the positive emotions of pure love and surrender to the divine as tools for stress reduction and positive health.[53] Similar thinking is expressed by a study, which said that spirituality (faith, selfless service, and pure love) promotes a healthier coping style.[54] An increase in PA "contentment" by 39.29% reflects the calming effect of yoga.

The increase in PA and decrease in NA in YG may be due to better mastery over modification of the mind and calming down of the mind. The yogic techniques have helped the HGs to increase their level of confidence and hence it has become easy for them to overcome NAs.

The other aspect of yoga is relaxation which might have given the ability to the HGs to face the situation in the field in a relaxed state of mind and perform duty in relaxed and effectiveness way, which means relaxation in action and efficiency in outcome.

The results obtained in our study is almost similar to the results of one of the earlier studies Narasimhan *et al*.[40] The other 9 questions OPA and ONA, which was taken from Narasimhan *et al*.[40] variable can be validated.

The strength of our design is the IYM for HGs. It is first test of its kind in HGs where they have been exposed to IYM practice, which shown the beneficial effect to HGs.

CONCLUSION

The results have shown that IYM has increased the PA in HGs and reduced the NA. Further *Yoga* is very cost effective and recommended to HGs. Hence, this study is a solution to train HGs to calm their mind and help them to increase their positive thinking and decrease negative mindset. By this, their service to public will improve and in turn the image of the Department will also go up.

This study is the continuation and suggestion given one of the earlier studies done by Lakshmi *et al*. There was no control in that study and it was suggested to have a CG in future study, which was carried out in our study.

Acknowledgments

Our grateful acknowledgments for all who have helped us in this project particularly Dr. Judo Ilavarasu and Mr. Kuldeep Kumar Kushwah. We are grateful to S-VYASA for supporting this study. We thank the volunteers, teachers, and supporters who participated in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Goyanka J. Srimad Bhagavad Gita Tattvavivecani. 15th ed. Gorakhpur: Gita Press; 1999.
2. Karnataka State HGs Mannual. Karnataka: Karnataka State Government; 1962.
3. Nagarathna R, Nagendra HR. Integrated Approach of Yoga Therapy for Positive Health. 3rd ed. Bangalore: Swami Vivekananda Yoga Prakashana; 2006.
4. Lazarus RS. Coping theory and research: Past, present, and future. Psychosom Med 1993;55:234-47.
5. Carr A. Positive Psychology. Spl Indian Reprint. New York: Routledge; 2008.
6. Santrock JW. Psychology Essentials. 2nd ed. New York: Tata McGraw-Hill; 2005. p. 337-47.
7. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. J Pers Soc Psychol 1988;54:1063-70.
8. Basso MR, Schefft BK, Ris MD, Dember WN. Mood and global-local visual processing. J Neuropsychol Soc 1996;2:249-55.
9. Lazarus RS. Toward better research on stress and coping. Am Psychol 2000;55:665-73.
10. Dillon KM, Minchoff B, Baker KH. Positive emotional states and enhancement of the immune system. Int J Psychiatry Med 1985;15:13-8.
11. Folkman S, Moskowitz JT. Positive affect and the other side of coping. Am Psychol 2000;55:647-54.
12. Davis CG, Nolen-Hoeksema S, Larson J. Making sense of loss and benefiting from the experience: Two construals of meaning. J Pers Soc Psychol 1998;75:561-74.
13. Ostir GV, Berges IM, Markides KS, Ottenbacher KJ. Hypertension in older adults and the role of positive emotions. Psychosom Med 2006;68:727-33.
14. Drossmana DA, Creedb FH, Oldenc KW, Svedlundd J, Tonere BB, Whiteheadf WE. Psychosocial aspects of the functional gastrointestinal disorders. Gut 1999;45:1125-30.
15. Kubzansky LD, Sparrow D, Vokonas P, Kawachi I. Is the glass half empty or half full? A prospective study of optimism and coronary heart disease in the normative aging study. Psychosom Med 2001;63:910-6.
16. Tsenkova VK, Dienberg Love G, Singer BH, Ryff CD. Coping and positive affect predict longitudinal change in glycosylated hemoglobin. Health Psychol 2008;27 2 Suppl: S163-71.
17. McCaffrey AM, Pugh GF, O'Connor BB. Understanding patient preference for integrative medical care: Results from patient focus groups. J Gen Intern Med 2007;22:1500-5.
18. Greene AM, Walsh EG, Sirois FM, McCaffrey A. Perceived benefits of complementary and alternative medicine: A whole systems research perspective. Open Complement Med J 2009;1:35-45.
19. Nahin RL, Byrd-Clark D, Stussman BJ, Kalyanaraman N. Disease severity is associated with the use of complementary medicine to treat or manage type-2 diabetes: Data from the 2002 and 2007 National Health Interview Survey. BMC Complement Altern Med 2012;12:193.
20. Lo CB, Desmond RA, Meleth S. Inclusion of complementary and alternative medicine in US state comprehensive cancer control plans: Baseline data. J Cancer Educ 2009;24:249-53.
21. Survey National Centre for Complementary and Alternative Medicine. Available from: http://www.nccam.nih.gov. [Last cited on 2015 06].
22. Kubzansky LD, Wright RJ, Cohen S, Weiss S, Rosner B, Sparrow D. Breathing easy: A prospective study of optimism and pulmonary function in the normative aging study. Ann Behav Med 2002;24:345-53.
23. Danner DD, Snowdon DA, Friesen WV. Positive emotions in early life and longevity: Findings from the nun study. J Pers Soc Psychol 2001;80:804-13.
24. Ray US, Mukhopadhyaya S, Purkayastha SS, Asnani V, Tomer OS, Prashad R, *et al.* Effect of yogic exercises on physical and mental health of young fellowship course trainees. Indian J Physiol Pharmacol 2001;45:37-53.
25. Madanmohan, Thombre DP, Balakumar B, Nambinarayanan TK, Thakur S, Krishnamurthy N, *et al.* Effect of yoga training on reaction time, respiratory endurance and muscle strength. Indian J Physiol Pharmacol 1993;37:350-2.
26. Raghuraj P, Telles S. Muscle power, dexterity skill and visual perception in community home girls trained in yoga or sports and in regular school girls. Indian J Physiol Pharmacol 1997;41:409-15.
27. Chen KM, Tseng WS. Pilot-testing the effects of a newly-developed silver yoga exercise program for female seniors. J Nurs Res 2008;16:37-46.
28. Solberg EE, Halvorsen R, Sundgot-Borgen J, Ingjer F, Holen A. Meditation: A modulator of the immune response to physical stress? A brief report. Br J Sports Med 1995;29:255-7.
29. Harinath K, Malhotra AS, Pal K, Prasad R, Kumar R, Kain TC, *et al.* Effects of hatha yoga and Omkar meditation on cardiorespiratory performance, psychologic profile, and melatonin secretion. J Altern Complement Med 2004;10:261-8.
30. West J, Otte C, Geher K, Johnson J, Mohr DC. Effects of hatha yoga and African dance on perceived stress, affect, and salivary cortisol. Ann Behav Med 2004;28:114-8.
31. Tooley GA, Armstrong SM, Norman TR, Sali A. Acute increases in night-time plasma melatonin levels following a period of meditation. Biol Psychol 2000;53:69-78.
32. Ray US, Sinha B, Tomer OS, Pathak A, Dasgupta T, Selvamurthy W. Aerobic capacity and perceived exertion after practice of hatha yogic exercises. Indian J Med Res 2001;114:215-21.
33. Telles S, Nagrathna R, Nagendra HR. Improvement in visual perception following yoga training. J Indian Psychol 1995;13:30-2.
34. Telles S, Ramaprabhu V, Reddy SK. Effect of yoga training on maze learning. Indian J Physiol Pharmacol 2000;44:197-201.
35. Manjunath NK, Telles S. Spatial and verbal memory test scores following yoga and fine arts camps for school children. Indian J Physiol Pharmacol 2004;48:353-6.
36. Lavey R, Sherman T, Mueser KT, Osborne DD, Currier M, Wolfe R. The effects of yoga on mood in psychiatric inpatients. Psychiatr Rehabil J 2005;28:399-402.
37. Woolery A, Myers H, Sternlieb B, Zeltzer L. A yoga intervention for young adults with elevated symptoms of depression. Altern Ther Health Med 2004;10:60-3.
38. Vempati RP, Telles S. Yoga-based guided relaxation reduces sympathetic activity judged from baseline levels. Psychol Rep 2002;90:487-94.
39. Motulsky H. Random Number Calculators. Graph Pad Software; 2015.

Available from: http://www.graphpad.com/quickcalcs/randMenu/. [Last accessed on 2015 06].

40. Narasimhan L, Nagarathna R, Nagendra H. Effect of integrated yogic practices on positive and negative emotions in healthy adults. Int J Yoga 2011;4:13-9.
41. Nagarathna R, Nagendra HR. Integrated Approach of Yoga Therapy for Positive Health. 5th ed. Bangalore: SVYP; 2003.
42. Lokeswarananda S, Taittiriya U. The Ramakrishna Mission Institute of Culture. Calcutta: Ramakrishna Mission Institute of Culture; 1996. p. 136-80.
43. Nagarathna R, Nagendra HR. Yoga. 2nd ed. Bangalore: SVYP; 2003.
44. Available from: http://www.uni-mannhein.de/gpower. [Last accessed on 2015 06].
45. Khurana A, Dhar PL. Effect of Vipassana Meditation on Quality of life, Subjective Well-being, and Criminal Propensity Among Inmates of Tihar Jail, Delhi. Final Report Submitted to Vipassana Research Institute; June, 2000. Available from: http://www.geocities.com/pldhar/publications.htm. [Last cited on 2015 06].
46. Deshpande S, Nagendra HR, Raghuram N. A randomized control trial of the effect of yoga on verbal aggressiveness in normal healthy volunteers. Int J Yoga 2008;1:76-82.
47. Michalsen A, Grossman P, Acil A, Langhorst J, Lüdtke R, Esch T, *et al*. Rapid stress reduction and anxiolysis among distressed women as a consequence of a three-month intensive yoga program. Med Sci Monit 2005;11:CR555-561.
48. Rao RM, Nagendra HR, Raghuram N, Vinay C, Chandrashekara S, Gopinath KS, *et al*. Influence of yoga on mood states, distress, quality of life and immune outcomes in early stage breast cancer patients undergoing surgery. Int J Yoga 2008;1:11-20.
49. West J, Otte C, Geher K, Johnson J, Mohr DC. Effects of hatha yoga and African dance on perceived stress, affect, and salivary cortisol. Ann Behav Med 2004;28:114-8.
50. Khalsa SB, Cope S. Effects of a yoga lifestyle intervention on performance-related characteristics of musicians: A preliminary study. Med Sci Monit 2006;12:CR325-31.
51. Malathi A, Damodaran A. Stress due to exams in medical students – Role of yoga. Indian J Physiol Pharmacol 1999;43:218-24.
52. Michalsen A, Grossman P, Acil A, Langhorst J, Lüdtke R, Esch T, *et al*. Rapid stress reduction and anxiolysis among distressed women as a consequence of a three-month intensive yoga program. Med Sci Monit 2005;11:CR555-561.
53. Nagendra HR. The Science of Emotion′s Culture (Bhakti Yoga). 1st ed. Bangalore: Swami Vivekananda Yoga Prakashana; 2000.
54. Powers DV, Cramer RJ, Grubka JM. Spirituality, life stress, and affective well-being. J Psychol Theol 2007;35:235-43.