

EVALUATION OF SIDDHA SAMADHI YOGA FOR ANXIETY AND DEPRESSION SYMPTOMS: A PRELIMINARY STUDY^{1,2}

ELISA HARUMI KOZASA, RUTH FERREIRA SANTOS,
ADRIANA DOURADO RUEDA, ANA AMÉLIA BENEDITO-SILVA,
FELIPE LEITE DE MORAES ORNELLAS, AND JOSÉ ROBERTO LEITE

*Department of Psychobiology
Universidade Federal de São Paulo*

Summary.—Siddha Samadhi Yoga is a program in which meditation is associated with *pranayama* (breathing exercises). 22 volunteers with anxiety complaints (M age = 42.8 yr., $SD = 10.3$) were assigned to two groups: 14 attended the yoga group, and 8 attended a waiting-list or control group. They were evaluated before the intervention and 1 month after it on the State-Trait Anxiety Inventory, the Beck Depression Inventory, Tension Feelings Self-evaluation Scales, and the Well-being Self-evaluation Scales. A significant reduction in scores on anxiety, depression, and tension was found in yoga group, as well as an increase in well-being in comparison with the control group.

The high prevalence of anxiety and depressive disorders and the general population interest in complementary therapies to cope with them increase the need to investigate their effectiveness (Jorm, Christensen, Griffiths, & Rodgers, 2002; Jorm, Christensen, Griffiths, Parslow, Rodgers, & Blewitt, 2004). Among such therapies, meditation may be effective in relieving symptoms of anxiety and depression (Dillbeck, 1977; Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000; Larzelere & Wiseman, 2002; Krisanaprakornkit, Krisanaprakornkit, Piyavhatkul, & Laopaiboon, 2006). On the other hand, yoga may modulate the stress response (Kamei, Toriumi, Kimura, Ohno, Kumano, & Kimura, 2000). Meditation, such as Transcendental Meditation[®], may also be helpful, increasing the social quality of life (Assimakis & Dillbeck, 1995).

Some research on *pranayama* (yogic breathing exercises) have shown associated benefits. Sudarshan Kriya Yoga, which involves pranayama, has had an antidepressant efficacy in melancholia (Janakiramaiah, Gangadhar, Murthy, Harish, Subbakrishna, & Vedamurthachar, 2000). Brown and Gerbarg (2005) reported that technique may also be effective for anxiety, stress, and depression.

Siddha Samadhi Yoga is an innovative program in which meditation

¹Please address correspondence to Elisa H. Kozasa, Ph.D., Department of Psychobiology, Universidade Federal de São Paulo, UNIFESP, R. Napoleão de Barros 925, São Paulo, SP, Brazil or e-mail (hkelisa@terra.com.br).

²This study was supported by the Associação Fundo de Incentivo à Psicofarmacologia (AFIP). Acknowledgements are given to Siddha Samadhi Yoga instructors, Rishi Prabhakar, Lakshmi I. Krishnam, and S. Mohandas.

(Samadhi) and *pranayama* are associated in a brief sequence. Although physicians (especially those who received this yoga training in India) recommend this practice as a complementary therapy, scientific investigation is required. In this preliminary study, changes in scores on several inventories after this form of yoga for volunteers with anxiety complaints were evaluated.

METHOD

Participants were 22 volunteers who reported anxiety complaints. They were recruited through advertisements near the university, stating a meditation and breathing exercise intervention would be evaluated for anxiety complaints. To select volunteers without previous history of psychiatric or neurological disorders, the Structured Clinical Interview for DSM Disorders was used to screen according to the diagnostic criteria established in the DSM-IV American Psychiatric Association, 1994). From an initial group of 146 volunteers, 22 were selected, 2 men and 20 women. Their ages ranged from 19 to 61 years (M age=42.8 yr., SD =10.3), none was taking psychotropic drugs or was in psychotherapy. Also, they were inexperienced in meditation and yoga. In the Samadhi yoga group were 14 (M age=41.3 yr., SD =7.8) and 8 in the waiting-list control group (M age=44.0 yr., SD =11.3).

The State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Luchene, 1970) of 40 items is presented in two parts: (1) State Anxiety which corresponds to anxiety at the moment of testing and (2) Trait Anxiety which corresponds to the personality trait. The Beck Depression Inventory (Beck, 1978) consists of 21 items on depressive mood or state of mind. These inventories, previously translated into Portuguese and validated for the Brazilian population, were administered (Gorenstein & Andrade, 1996). The analog scales of Well-being and Tension (at the moment of the evaluation and in the 10 previous days) consist of a 0- to 10-cm long line on which respondents mark how well or tense they feel.

The Siddha Samadhi Yoga program lasted two weeks. Participants were instructed to practice 11 *pranayama*, altering the focus of the Ujjayi breathing (to exhale producing sounds from the throat). Each *pranayama* was repeated for five cycles and the complete sequence lasted almost 20 min. Each cycle was performed in a 4/2/5/2 rhythm: 4 times to inhale, 2 to retain the air, 5 to exhale, and 2 to hold with "empty" lungs. Volunteers were instructed to sit on their heels, with knees together (*vajrasana* position) and the spine upright. If needed, they could stretch their legs and resume the sequence.

The *Samadhi* meditation required that volunteers remain seated on a chair, with back straight, while simply observing the spontaneous flow of thoughts for 20 min. A *mantra* was used to interrupt intrusive thoughts. In the Siddha Samadhi Yoga program, like Transcendental Meditation[®], the participant received a specific *mantra* depending on personal characteristics. Volunteers were advised to practice *pranayama* and meditation twice a day. They were evaluated before the training and 1 mo. afterwards. The lacto-vegetarian diet was not adopted.

The control group was placed on a waiting list so the intervention was delayed while the other group was practicing.

The formula for percent change = $100 \cdot [(value\ before - value\ after\ 1\ month) / value\ before]$ was applied to each volunteer's values. Then the median of each group was calculated and a Mann-Whitney test was performed for each of the seven scores to detect median differences in percent change between groups. Significance level was set at $p = .05$. The study was approved by the Committee of Ethics on Clinical Research of the Universidade Federal de São Paulo.

RESULTS AND DISCUSSION

In Table 1 are means and standard deviations of scores of both groups before the program and after 1 mo.

TABLE 1
MEANS AND STANDARD DEVIATIONS FOR BECK DEPRESSION INVENTORY, STATE-TRAIT ANXIETY INVENTORY, WELL-BEING AND TENSION ANALOG SCALES BEFORE AND AFTER 1 MO. OF SAMADHI YOGA

Variable	Control Group				Siddha Samadhi Yoga Group			
	Before		After 1 Mo.		Before		After 1 Mo.	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Depression, points	11.1	7.4	11.0	9.6	15.8	10.2	4.2	3.2
State Anxiety, points	42.1	7.5	41.4	6.9	43.0	12.2	31.5	8.2
Trait Anxiety, points	41.0	10.2	39.3	10.5	47.6	10.5	32.7	8.6
Well-being now, cm	6.3	2.2	6.9	2.3	5.0	2.3	7.9	1.7
Well-being, last 10 days, cm	7.3	2.5	7.0	1.6	6.6	1.7	8.7	1.4
Tension now, cm	5.7	1.4	5.3	3.5	6.5	2.7	2.8	2.7
Tension, last 10 days, cm	6.0	3.2	4.8	3.3	4.6	3.0	1.3	2.1

Table 2 shows significant decreases in scores for depression and anxiety (state and trait) in the yoga group compared with the control group. There was also significant increase in subjective well-being as well as release of tension.

TABLE 2
MEDIAN PERCENT CHANGE ON BECK DEPRESSION INVENTORY, STATE-TRAIT ANXIETY INVENTORY, WELL-BEING, AND TENSION ANALOG SCALES

Variable	Control Group	Samadhi Yoga Group	Mann-Whitney <i>p</i>
Depression	24	79	.01
State Anxiety	0	22	.02
Trait Anxiety	1	29	.001
Well-being now	4	-47	.06
Well-being last 10 days	13	-30	.04
Tension now	4	62	.15
Tension last 10 days	-3	71	.04

Several previous studies indicated anxiety or depressive symptoms decrease with treatment using Sudarshan Kriya Yogic breathing practice (Brown & Gerbarg, 2005), Mindfulness-based Cognitive Therapy (Teasdale, *et al.*, 2000), and Transcendental Meditation® (Dillbeck, 1977). Present results suggest that after 2 wk. of Siddha Samadhi Yoga both symptoms were reduced and seemed to aid subjective feeling of well-being and tension release. However, as the practices were not evaluated separately (meditation separately from pranayamas), one cannot say either is more effective. Some studies, for example, showed that the *maha mantra* has potential for addressing symptoms related to stress and depression (Wolf & Abell, 2003), so one practice may be more effective than the other. A clinical trial to investigate this is recommended.

REFERENCES

- AMERICAN PSYCHIATRIC ASSOCIATION. (1994) *Diagnostic and statistical manual of mental disorders*. (4th ed.) Washington, DC: Author.
- ASSIMAKIS, P. D., & DILLBECK, M. C. (1995) Time series analysis of improved quality of life in Canada: social change, collective consciousness, and the TM-Sidhi program. *Psychological Reports*, 76, 1171-1193.
- BECK, A. T. (1978) *Depression Inventory*. Philadelphia, PA: Center for Cognitive Therapy.
- BROWN, R. P., & GERBARG, P. L. (2005) Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety and depression: Part II. Clinical application and guidelines. *Journal of Alternative and Complementary Medicine*, 11, 711-717.
- DILLBECK, M. C. (1977) The effect of the Transcendental Meditation® technique on anxiety level. *Journal of Clinical Psychology*, 3, 1076-1078.
- GORENSTEIN, C., & ANDRADE, L. (1996) Validation of a Portuguese version of the Beck Depression Inventory and the State-Trait Anxiety Inventory in Brazilian subjects. *Brazilian Journal of Medical and Biological Research*, 29, 453-457.
- JANAKIRAMAIAH, N., GANGADHAR, B. N., MURTHY, P. J. N. V., HARISH, M. G., SUBBAKRISHNA, D. K., & VEDAMURTHACHAR, A. (2000) Antidepressant efficacy of Sudarshan Kriya Yoga (SKY) in melancholia: a randomized comparison with electroconvulsive therapy (ECT) and imipramine. *Journal of Affective Disorders*, 57, 255-259.
- JORM, A. F., CHRISTENSEN, H., GRIFFITHS, K. M., PARSLAW, R. A., RODGERS, B., & BLEWITT, K. A. (2004) Effectiveness of complementary and self-help treatments for anxiety disorders. *Medical Journal of Australia*, 181, S29-S46.
- JORM, A. F., CHRISTENSEN, H., GRIFFITHS, K. M., & RODGERS, B. (2002) Effectiveness of complementary and self-help treatments for depression. *Medical Journal of Australia*, 176, S84-S96.
- KAMEI, T., TORIUMI, Y., KIMURA, H., OHNO, S., KUMANO, H., & KIMURA, K. (2000) Decrease in serum cortisol during yoga exercise is correlated with alpha wave activation. *Perceptual and Motor Skills*, 90, 1027-1032.
- KRISANAPRAKORNKIT, T., KRISANAPRAKORNKIT, W., PIYAVHATKUL, N., & LAOPAIBOON, M. (2006) Meditation therapy for anxiety disorders. *Cochrane Database Systematic Review*, 25, CD004998.
- LARZELERE, M. M., & WISEMAN, P. (2002) Anxiety, depression, and insomnia. *Primary Care*, 29, 339-360.
- SPIELBERGER, C. D., GORSUCH, R. L., & LUCHENE, R. C. (1970) *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- TEASDALE, J. D., SEGAL, Z. V., WILLIAMS, J. M. G., RIDGEWAY, V. A., SOULSBY, J. M., & LAU, M. A. (2000) Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 64, 615-623.
- WOLF, D. B., & ABELL, N. (2003) Examining the effects of meditation techniques on psychosocial functioning. *Research on Social Work Practice*, 13, 27-42.

Accepted August 13, 2008.