

RESEARCH

Sudarshan Kriya Yoga (SKY) as an adjunctive treatment in mental disorders: the magic unfolds

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Abstract

Background: As the healthcare system is getting complex and difficult to access, a growing number of patients are getting disillusioned with it and looking for alternative, optimal and conducive solutions. People search for complementary therapies as mind/body/spirit connection is steadily becoming a desirable and logical option for most of the people.

Aim: Keeping in view the growing role of Sudarshan Kriya Yoga (SKY) as an adjunctive therapeutic intervention in a variety of health problems, it is relevant to study the effect of SKY as adjunct to conventional treatment in mental disorders.

Material and methods: To examine this, a pre-post research design was adopted for the present study. A purposive sample of 16 inpatients (both males and females) with different mental disorders in the age range of 20-45 years was selected from the Dept of Psychiatry, Post Graduate Institute of Medical Sciences, Rohtak. In the pre-session, the patients were administered Perceived Stress Scale and General Health Questionnaire-12. This was followed by a full course of Art of Living for six days and in the post session, the patients were evaluated with the same tools once again. The data was analysed with the help of t-values.

Results: Highly significant and remarkable difference was observed between pre and post sessions in patients on perceived stress and general health scores.

Conclusion: SKY is useful adjunct and has potential for wider and extensive application in treatment of mental disorders.

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Introduction

There are growing numbers of people turning to natural ways of healing. They opt for simple, traditional, gadget free and practical methods of preventing illnesses and solving everyday health problems. Once the patient begins to identify the relationship of environment, emotional and physical problems, s/he starts striving for optimal and conducive solutions. People search for complimentary therapies when they have a long lasting problem which has not been completely cured by conventional therapies. There is increasing dissatisfaction with conventional therapies not only because of their adverse effects and exorbitant cost but also their perception as being impersonal and too technologically oriented. Additional and complementary therapies are needed to help to calm the emotions, relieve anxiety and increase the general sense of health and well-being. These can help to mitigate the symptoms of the illnesses and side effects of treatments. Some people think that they are offering them more personal autonomy and

control over their health care decisions and are more compatible with their values, world view, spiritual/religious philosophy or beliefs regarding the nature and meaning of health and illness. Moreover alternative therapies have a role in improving overall well-being, preventing illness and promoting health. The main aim of alternative therapies and natural healing is to break the cycle of dependency and allow people to have more control of their own lives.

The emerging field of mind/body medicine explains how thoughts and emotions can powerfully affect brain, endocrine (hormones) and immune system functions. Scientific studies have considered alternative therapies as a strong mind/body/spirit connection and found mind-body interventions, including yoga practices, are effective in the treatment of stress-related mental and physical disorders.[1-3] The relationship between breathing and emotions is bidirectional.[4] Yogic breathing provides a unique and powerful tool for adjusting imbalances in the autonomic

nervous system and thereby influencing a broad range of mental and physical disorders.[5]

Though biomedical science and spirituality appear diametrically opposite, it is heartening to see ancient practices and modern science converging in man's endeavour to live a richer and healthier life. Health, quality of life and even the very length of life are all profoundly affected by our mental and emotional states. In the quest for these goals, Sudarshan Kriya (SK) proves to be an effective alternative tool. SK, a powerful rhythmic breathing technique that facilitates physical, mental, emotional and social well-being, is an integral part of Art of Living (AOL) foundation (a non-profit organisation). 'Su' means proper, 'darshan' means vision and 'kriya' means purifying practice. Therefore SK is a purifying practice whereby one receives a proper vision of one's true self. The breathing pattern of SK harmonises the rhythms of the body and emotions and brings them in tune with the rhythms of nature. The breath connects the body and the mind.[6] Just as the emotions affect our patterns of breathing, we can bring about changes in our mental and behavioural patterns by altering the rhythms of our breath. SK includes two simple yoga techniques - 'Pranayama' and 'Poornayoga'. Pranayama is a technique to govern the breathing process and Poornayoga includes practice of simple yoga postures.[7] SK and its accompanying practices (SK&P) are time-honoured stress management, health promotion techniques whose health benefits are being validated by modern medical science.[8]

Components of Sudarshan Kriya Yoga

The whole process of Sudarshan Kriya Yoga (SKY) involves four phases:

1. Ujjayi Pranayama (victory breath) - Long and deep breathing including breathing in, holding, breathing out and holding.
2. Bhastrika Pranayama (bellows' breath) - Forced inhalations and exhalations for two to three minutes.
3. SK (healing breath) - Slow, medium and fast cycles of rhythmic breathing.
4. Yoga Nidra/deep relaxation for 15 minutes.

The entire procedure lasts for about 40-45 minutes. SKY course includes some asanas (yoga postures), meditation group process and basic yogic knowledge.

Biochemistry of Sudarshan Kriya

In order to understand the effect of SK on the antioxidant status of individuals, it is desirable to know about free-radical theory. According to this theory, the cells in the body are being constantly damaged and destroyed by oxygen radicals and are detrimental byproducts of cell

reactions.[9] Our body has an antioxidant defense system that constantly searches and destroys these oxygen radicals, much like our immune system, which polices our body for foreign agents such as bacteria and viruses and eliminates them. If the oxidant defense system of our body is weak, then the number of oxygen radicals increases, causing our cells to die quickly. This results in inflammation and plaque within our heart vessels or promotes the cells to mutate into cancer cells. If we reduce the number of oxygen radicals, we improve the antioxidant status in our body and we live longer and lead a disease free life.[10] The rhythmic breathing improves the antioxidant status at the enzyme and the gene level. This also reduces the DNA damage and cell ageing. Through this negative toxins are flushed out and each cell is flooded with new life to energise body and mind. This experience of centredness, freedom and fulfillment releases neuropeptides, which influence the immune system positively and hence the whole physiology. Breathing is under both voluntary and involuntary control via complex feedback mechanism including autonomic visceral networks, brain stem nuclei, limbic system, cortical areas and neuroendocrine systems.

Benefits of Sudarshan Kriya

A number of research studies have appeared independently that attest to the benefits reported by those who do SK as it is a unique method for balancing the autonomic nervous system and influencing psychological and stress-related disorders. There is sufficient evidence to consider SKY to be a beneficial, low-risk, low-cost adjunct to the treatment of stress, anxiety, posttraumatic stress disorder (PTSD), depression, stress-related medical illnesses, substance abuse and rehabilitation of criminal offenders. SKY has been used as a public health intervention to alleviate PTSD in survivors of mass disasters.[11] Yoga techniques enhance well-being, mood, attention, mental focus, calmness, awareness of both - self and surroundings, patience and tolerance, confidence and self-esteem. A growing body of research is extending the associations between emotional disorders and autonomic function through SK across the life span including attention deficit hyperactivity disorder (ADHD), hostility and aggression,[12] anxiety and panic,[13] depression,[14] PTSD.[15] Naga Venkatesha Murthy *et al.*[16] found SKY therapy to be effective in 73% of depressive patients where Janakiramaiah *et al.*[17] reported 67% of remission rate with SKY and suggested it to be effective alternative technique even in severe depression. Patients treated with SKY plus standard treatment had significantly greater reductions in depression, anxiety and cortisol levels than patients given standard treatment and rehabilitation.[18] Some findings have suggested an overall positive influence of SK&P;[19,20] increased mental focus/heightened awareness;[21] lowered levels of blood lactate;[22]

decreased degree of anxiety, depression and stress and increased degree of optimism;[23] regulated emotional response and heightened psychological wellness;[24] relieved both PTSD and depression symptoms in survivors of tsunami.[25] Tsunami was a catastrophe that resulted in wide loss to life and property.[26] Sharma *et al.*[27] suggested that SK may exert its effects on various physiological systems through changes in gene regulation.

SK has also remarkable potential to produce the effects like lessened violent behaviour, increased pro-social behaviour and decreased negative, self-destructive behaviour. It also increased the ability to plan ahead, choose effective solutions to problems, improved self-image, enhanced self-awareness and better social and emotional adjustment. Thus SKY provides a 'corrective emotional experience' for healing the cognitive distortions and deep emotional wounds resulting from trauma. SKY treats the cognitive and psychodynamic problems of feeling alone, abandoned and cast out by society by enabling participants to rebuild a sense of caring, tolerant, interdependent community in which they are accepted and valued.[28] SKY relieves stress and develops an individual's mind-body-spirit so that they can be happier, healthier with possibly enhanced life span. In the competitive modern world where environmental pollution, increased pace of life, psychosocial disturbances, erratic eating and sleeping habits and sedentary lifestyle have increased the stress related disorders,[29] adding a time-honoured, evidence-based breathing programme like SKY may facilitate a healthy life.[30] Moreover it has been adopted as an approach to health within alternative medicine.[31] Because of the growing role of SKY to be used as an adjunctive therapeutic intervention in a variety of diseases, specifically in mental problems, it is apparently relevant to study the effect of SKY as an adjunct to conventional treatment in mental patients.

Material and methods

Design: The experimental design was a single group pre and post design.

Sample: A purposive sample of 16 inpatients (both males and females) with different mental disorders in the age range of 20-45 years was selected from the Department of Psychiatry, Post Graduate Institute of Medical Sciences (PGIMS), Rohtak, Haryana, India.

Inclusion criteria

- Indoor patients stable on medication
- Could understand instructions and simple commands
- Consenting to participate

Exclusion criteria

- Patients with mental subnormality
- Patients with active symptoms or electroconvulsive therapy (ECT)

Tools

Perceived Stress Scale (PSS)[32] is a brief, self-administered measure of the degree to which situations in one's life are appraised as stressful. It consists of 14 items and each item is rated on a five-point scale from never (zero) to almost always (four). Positively worded items are reverse scored and the ratings are summed with higher scores indicating more perceived stress. Cronbach's alpha measures of internal consistency for three samples were .84, .85 and .86. A reliability coefficient using a test-retest correlation was found to be .85.

General Health Questionnaire (GHQ)-12[33] is a screening device to assess psychological well-being of individuals. It consists of 12 items and each item is noted on a two-point scale (if the individual opts for any of the first two options, it is rated as zero and if the individual opts for third or fourth options, it is rated as one). A score of two or less indicates that the individual is free from any psychiatric illness. The Cronbach's alpha was .89 while the split-half reliability was found to be .91.

Methodology

The present study was designed to study the effect of SKY as an adjunct to conventional treatment in mental patients. After rapport establishment, the patients were briefed about the entire programme. In pre-session, the patients were administered both the tools to assess perceived stress and psychological health individually. After that a full course of AOL which included rhythmic breathing (SK), yoga, meditation, and group processes including song and dance was conducted for six days. The process is introduced to the participants through a 22-24 hours structured programme called the AOL workshop spread out over six days. SK is a rhythmic cyclic breathing of slow, medium, and fast cycles done three times in a count of 20, 40, and 40 respectively. It is preceded by a three-stage Pranayam in Ujjayi breath, Bhastrika: rapid inhalation and exhalation, and brief chanting. These processes were practiced while sitting with the eyes closed and the awareness focused on breathing. This process ended with rest in a tranquil supine position. It was conducted with the guidance of a certified teacher.

In post-session, these patients were again administered the same tools. After collecting the data, the scoring was done according to the manuals. The data was tabulated and subjected to statistical analyses by computing the mean, the standard deviation (SD) and t-ratio.

Results

The aim of this study was to investigate whether SKY can be of interest in connection with better prognosis in mental patients.

Out of 16 patients who began the course, six patients were dropped as they could not complete the entire course due to some unavoidable management problems. Finally ten patients were assessed for the present study comprising of eight males (80%) and two females (20%) in the age range of 20-45 years with an average of 34.68 ± 6.29 years. The year of schooling was 8.00 ± 4.64 years with a range of zero to 16 years. About 60% of the patients belonged to urban area and the remainders were from rural background, and about 50% of them were married. The duration of illness ranged between four months to ten years with an average of three years two months.

The obtained pre and post test scores were analysed for significance of differences by using t-test. The primary efficacy endpoint was the mean change from pre to post treatment on PSS and GHQ. Results are shown in the table and figure.

Table. Pre and post session mean, standard deviation and t-values on Perceived Stress and General Health

	Pre-session		Post-session		t-value
	Mean	SD	Mean	SD	
Perceived Stress	44.3	11.95	17.60	7.04	8.73*
General Health	9.80	2.30	1.20	1.47	10.29*

*Significant at .01 level, SD=standard deviation

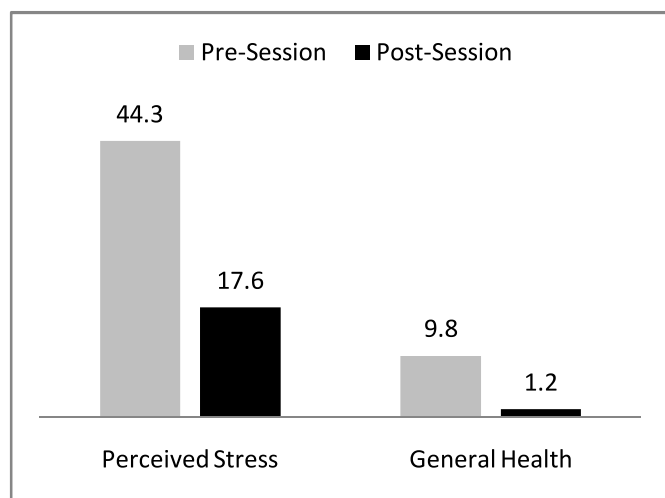


Figure Mean on Perceived Stress and General Health in pre and post sessions.

Discussion

A substantial drop in scores on both the variables viz. perceived stress and general health was observed in the post intervention session as compared to the pre intervention level. When tested for significance of differences, both were found to be highly significant (table). The finding suggests that after the participants had undergone the full SKY course, they reported feeling less stressed and consequently healthier than before.

A reduction in perceived stress was observed in the group after the intervention. In the pre test condition, the mean stress level was 44.30 which declined to 17.60 after the intervention. The t-test value of 8.73 is significant beyond .01 level. The value of a simple, functional method for stress reduction for mental patients may be of significance. To have access to an effective method for stress reduction (i.e. SKY) can lead to better health and a more effective daily life.[34,35] Some authors have reported that stress reduction techniques (SKY practice) might prove useful to reduce physiological stress activation during every day activities.[36]

In a similar study of controlled trial of three comparison refugee groups from the 2004 tsunami, an eight-hour yoga breath programme with SKY resulted in a 60% drop in mean scores on the post-traumatic stress checklist in one week.[24]

In the case of general health also, a decrement in scores in post intervention was observed. This test, which has been designed to identify short-term changes in health and decrements in quality of life, taps depression, anxiety, social dysfunction and somatic symptoms.[37] Therefore, a fall in the scores is indicative of lack of the above and is desirable. In the case of GHQ scores too, a significant decline was observed. The mean value in the pre test condition was 9.80, which came down to 1.20 in the post test condition. The t-value stood at 10.29, found to be highly significant beyond .01 level. Earlier studies have shown that SKY can help relieve a wide variety of psychological and physiological symptoms. During various anti-stress programmes in several populations, SKY has demonstrated significantly reduced anxiety and depression scores, enhanced psychological well-being,[38] indicating stabilisation of mental activity, enhanced brain function, and resiliency to stress.[39-41] Similar results, in the present study, with patient population are indicative of the robustness of SKY as a therapeutic technique.

Subjective reports were gathered and they also add to the validity of results. These reports complement the quantitative data. Patients who had been anxious and perturbed during the pre assessment session had considerably calmed down towards the end of programme.

They reported feeling vastly better following the intervention.

Limitations

The absence of an active control group makes it impossible to control for the expectation effects of the intervention. Future studies could extend our preliminary data by providing an active control comparison group. Moreover, the data for compliance at home and follow up were not recorded. Such data would provide information on long term efficacy and potential benefits of SKY. Future studies should evaluate longer term follow up and compliance with home practice. The small sample size in the current study prohibits its generalisation. More studies planned with this intervention, studying a variety of mental disorders, could generate data which could point towards the potential of adopting SKY practices as a therapeutic strategy for managing mental patients.

Implications

SKY as an intervention for promoting psychological as well as physiological health has much to contribute. Research has started to validate the role of such holistic programmes in generating individual well-being. The most intriguing part of the findings is that results of this magnitude are achieved with just a short intervention programme of six days. Moreover, unlike conventional medicine, SKY practices are cost-effective, well-tolerated tools that can be easily integrated into diverse community care models. The current study well indicates that SKY has the potential to be adopted as an adjunctive treatment in mental disorders.

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References

1. Becker I. Uses of yoga in psychiatry and medicine. In: Muskin PR, editor. *Complementary and alternative medicine and psychiatry*. Vol 19. Washington DC: American Psychiatric Press; 2000. p. 107-45.
2. Benson T. *Timeless healing: the power and biology of belief*. New York: Scribner; 1996. p. 222-34.
3. Jacobs GD. Clinical applications of the relaxation response and mind-body interventions. *J Altern Complement Med*. 2001;7 Suppl 1:S93-101.
4. Ley R. The modification of breathing behavior. Pavlovian and operant control in emotion and cognition. *Behav Modif*. 1999;23:441-79.
5. Sovik R. The science of breathing--the yogic view. *Prog Brain Res*. 2000;122:491-505.
6. The Art of Living. Sudarshan kriya [Internet]. [cited 2013 Oct 26]. Available from: <http://sudarshankriya.blogspot.in/>
7. The Art of Living Foundation. The Art of Living [Internet]. 2013 [cited 2013 Oct 26]. Available from: <http://www.artofliving.org/in-en>
8. The Art of Living. Scientific research on art of living practices [Internet]. [cited 2013 Oct 26]. Available from: <http://www.aolresearch.org/>
9. Jain M. The biochemistry of Sudarshan Kriya. In: *The Times of India*, Sec: Mind over matter; 24 Feb, 2008. p. 27.
10. The Times of India. Section: Mind over matter; 24 Feb, 2008. p. 27.
11. Brown RP, Gerbarg PL. Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression. Part II--clinical applications and guidelines. *J Altern Complement Med*. 2005;11:711-7.
12. Beauchaine TP, Katkin ES, Strassberg Z, Snarr J. Disinhibitory psychopathology in male adolescents: discriminating conduct disorder from attention-deficit/hyperactivity disorder through concurrent assessment of multiple autonomic states. *J Abnorm Psychol*. 2001;110:610-24.
13. Friedman BH, Thayer JF. Autonomic balance revisited: panic anxiety and heart rate variability. *J Psychosom Res*. 1998;44:133-51.
14. Lehofer M, Moser M, Hoehn-Saric R, McLeod D, Liebmann P, Drnovsek B, *et al*. Major depression and cardiac autonomic control. *Biol Psychiatry*. 1997;42:914-9.
15. Sahar T, Shalev AY, Porges SW. Vagal modulation of responses to mental challenge in posttraumatic stress disorder. *Biol Psychiatry*. 2001;49:637-43.
16. Naga Venkatesha Murthy PJ, Janakiramaiah N, Gangadhar BN, Subbakrishna DK. P300 amplitude and antidepressant response to Sudarshan Kriya Yoga (SKY). *J Affect Disord*. 1998;50:45-8.
17. Janakiramaiah N, Gangadhar BN, Naga Venkatesha Murthy PJ, Harish MG, Subbakrishna DK, Vadamurthachar A. Antidepressant efficacy of Sudarshan Kriya Yoga (SKY) in melancholia: a randomized comparison with electroconvulsive therapy (ECT) and imipramine. *J Affect Disord*. 2000;57:255-9.
18. Vadamurthachar A, Janakiramaiah N, Hegde JM, Shetty TK, Subbakrishna DK, Sureshbabu SV, *et al*. Antidepressant efficacy and hormonal effects of Sudarshana Kriya Yoga (SKY) in alcohol dependent individuals. *J Affect Disord*. 2006;94:249-53.
19. Brazier A, Mulkins A, Verhoef M. Evaluating a yogic breathing and meditation intervention for individuals living with HIV/AIDS. *Am J Health Promot*. 2006;20:192-5.
20. Sageman S, Brown R. Free at last. In: Spitzer RL, First MB, William JBW, Gibbon M, editors. *DSM-IV-TR casebook*. Washington, DC: American Psychiatric Publishing; 2006. p. 109-21.
21. Bhatia M, Kumar A, Kumar N, Pandey RM, Kochupillai V; EEG study; BAER study; P300 study. Electrophysiologic evaluation of Sudarshan Kriya: an EEG, BAER, P300 study. *Indian J Physiol Pharmacol*. 2003;47:157-63.
22. Sharma H, Sen S, Singh A, Bhardwaj NK, Kochupillai V, Singh N. Sudarshan Kriya practitioners exhibit better antioxidant status and lower blood lactate levels. *Biol Psychol*. 2003;63:281-91.

23. Kjellgren A, Bood SA, Axelsson K, Norlander T, Saatcioglu F. Wellness through a comprehensive yogic breathing program - a controlled pilot trial. *BMC Complement Altern Med*. 2007;7:43.
24. Gootjes L, Franken IHA, Van Strien JW. Cognitive emotion regulation in yogic meditative practitioners sustained modulation of electrical brain potentials. *J Psychophysiol*. 2011;25:87-94.
25. Descilo T, Vedomurtachar A, Gerbarg PL, Nagaraja D, Gangadhar BN, Damodaran B, *et al*. Effects of a yoga breath intervention alone and in combination with an exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami. *Acta Psychiatr Scand*. 2010;121:289-300.
26. Pillai RR, Sekar K. Impact of tsunami disaster among children. *Dysphrenia*. 2013;4:21-4.
27. Sharma H, Datta P, Singh A, Sen S, Bhardwaj NK, Kochupillai V, *et al*. Gene expression profiling in practitioners of Sudarshan Kriya. *J Psychosom Res*. 2008;64:213-8.
28. Sageman S. How SK can treat the cognitive, psychodynamic, and neuropsychiatric problems of post traumatic stress disorder. *Proceedings: Science of Breath; International Symposium on Sudarshan Kriya, Pranayam and Consciousness*. New Delhi: All India Institute of Medical Sciences; 2002. p. 28-31.
29. Kochupillai V, Bhardwaj N. Science of holistic living and its global application. *Proceedings of National Symposium on Science of Holistic Living and Its Global Application*. Arogyadham, Sevagram, MGIMS; 2006. p. 11-3.
30. Zope SA, Zope RA. Sudarshan kriya yoga: breathing for health. *Int J Yoga*. 2013;6:4-10.
31. National Center for Complementary and Alternative Medicine. Mind-body medicine: an overview [Internet]. 2005 Aug [cited 2013 Nov 1]. Available from: <http://www.qigonginstitute.org/html/papers/NCCAMmindbody.pdf>
32. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24:385-96.
33. Gautam S, Nijhawan M, Kamal P. Standardisation of Hindi version of Goldberg's General Health Questionnaire. *Indian J Psychiatry*. 1987;29:63-6.
34. Jevning R, Wallace RK, Beidebach M. The physiology of meditation: a review. A wakeful hypometabolic integrated response. *Neurosci Biobehav Rev*. 1992;16:415-24.
35. Benson H, Greenwood MM, Klemchuk H. The relaxation response: psychophysiologic aspects and clinical applications. *Int J Psychiatry Med*. 1975;6:87-98.
36. Vallabh VG, Asmaljee A, Victor N. The effects of stress reduction and stress inducing techniques on the visual system. *Proceedings: Science of Breath; International Symposium on Sudarshan Kriya, Pranayam and Consciousness*. New Delhi: All India Institute of Medical Sciences; 2002. p. 71-5.
37. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, *et al*. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med*. 1997;27:191-7.
38. Malik A, Gupta A, Kohli S. Efficacy of Sudarshan Kriya yoga in enhancing comprehensive well-being. *Indian Journal of Health & Wellbeing*. 2013;4:444-7.
39. Agte VV. Sudarshan Kriya Yoga for improving antioxidant status and reducing anxiety in adults. *Alternative and Complementary Therapies*. 2008;14:96-100.
40. Ramsey CH. Stress-management for law enforcement: pilot study [Internet]. 2003 Jun [2013 Nov 1]. Available from: <http://www.yogabehindbars.org/wp-content/uploads/2011/11/EuropeResearchYoga.pdf>
41. Višnikar H, Meško G. Evaluation of The Art of Living Basic Course as the Anti-stress Program for Police Officers in the Slovenian Police; *Proceedings: Science of Breath; International Symposium on Sudarshan kriya, Pranayam and Consciousness*. New Delhi: All India Institute of Medical Sciences; 2002. p. 64-70.