



## Effect of Sudarshan Kriya on male prisoners with non psychotic psychiatric disorders: A randomized control trial



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### ABSTRACT

**Objectives:** To investigate whether Sudarshan Kriya and related practices (SK&P) can lead to increased global assessment of functioning (GAF) and increased feeling of wellness in male prisoners with a non psychotic psychiatric disorder.

**Methodology:** This is a six month parallel randomized controlled study with sample size of 230 male prisoners. Participants meeting inclusion and exclusion criteria were assigned to a study or control group by simple random allocation in which random allocation sequence was generated using a random number table. Each individual study participant was involved in a daily program of SK&P for six weeks. Each individual control participant was instructed to sit in an armchair with his eyes closed and gentle attention to their breath for duration of six weeks. To be included in this study, a participant must be a male prisoner diagnosed to be suffering from a psychiatric disorder (except psychosis and bipolar affective disorder [BPAD]) by ICD-10 (DCR) criteria with age between 18 and 65 years.

**Results:** Majority of subjects were unemployed married individuals, educated until undermatric level and not having occupational skills of more than an unskilled labor level. Practicing SK&P for six weeks led to improvement in mean  $\pm$  SD score of study participants in GAF, anxiety (ANX), depressed mood (DEP), positive well being (PWB), general health (GH), self control (SC), vitality (VT) and total positive general well being (PGWB). Change in mean  $\pm$  SD score of study participants when compared with control participants was statistically significant in terms of GAF, ANX, DEP, PWB, GH and PGWB. Increase in SC and VT scores was statistically insignificant when compared with control participants.

**Conclusion:** Practicing SK&P helps in improving GAF, PWB, GH and total PGWB of an individual. SK&P also causes significant reduction in anxiety and depression levels. Effect of SK&P on SC and VT is insignificant.

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## 1. Introduction

Sudarshan Kriya Yoga (SKY) is a multi-component program that includes yoga movement, breathing, meditation techniques, group processes and yoga philosophy (Janakiramaiah et al., 2000). Sudarshan Kriya and related practices (SK&P) includes (1) three stage slow resistance breathing (Ujjayi), (2) bellows breath (Bhastrika) a high frequency forceful breathing technique, (3) om chant, (4) Sudarshan Kriya, (SK) and (5) alternate nostril breathing (ANB) (Brown et al., 2013). This breathing technique is practiced by millions worldwide. It is claimed to be effective in

improving well being and peace of mind. In practitioners of SK&P, significant increase in mental alertness (beta activity) was observed in the left frontal, parieto-occipital and midline regions of the brain, as compared to controls (Bhatia et al., 2003). Practitioners of SK&P were found to have significantly greater antioxidant production and lower blood lactate levels which might be one of the contributing reasons of greater resilience to daily life stress as noticed in SK&P practitioners (Sharma et al., 2003).

SK&P has been most widely studied in depression; upon practicing SK&P, 68% dysthymic patients (Bhatia et al., 2003) and 73% patients suffering from melancholic depression (Naga Venkatesha Murthy et al., 1998) showed remission. SK&P takes three weeks in showing its antidepressant effects (Naga Venkatesha Murthy et al., 1998) and in patients suffering from dysthymia and melancholic depression after 90 days of using SK&P, P300

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Evoked response potential (ERP) amplitude readings return to normal (Naga Venkatesha Murthy et al., 1997). SK&P although inferior to electro-convulsive therapy (ECT) can be a potential alternative to drugs in melancholia as a first line treatment (Janakiramaiah et al., 2000). Due to its advantage of fostering the patient's autonomy and self reliance SK&P is likely to be a more acceptable and efficacious alternative to medical management of dysthymia for both acute treatment and relapse prevention. It also has the advantage of cutting health care costs (Janakiramaiah and Gangadhar, 1998).

The practice of SK&P has been found to reduce tension and anxiety. The autonomic symptoms of high anxiety such as headache, dizziness, chest pain, palpitations, sweating and abdominal pain respond well (Boyd, 1995). Benefits of SK&P as potentially valuable adjunct to standard pharmacotherapy is also proven in patients with generalized anxiety disorder (GAD) or treatment resistant GAD (Katzman et al., 2012) and PTSD (Carter et al., 2013). PTSD from sexual abuse benefits when SKY breathing is combined with traditional psychiatric and psychological therapies (Sageman, 2004) though its independent effectiveness still needs to be proven.

SK&P is also effective in mass disaster (Descilo et al., 2010) and increasing longevity (Brown and Gerberg, 2009).

Though efficacy of SK&P has been proven in multiple disorders and situations, comparing various studies so far has been difficult due to variable expertise of therapist, sampling techniques, geographical variations, daily time spent in doing SK&P, use of controls and the time period of the study.

The current study is an attempt to evaluate effectiveness of SK&P in a prison population.

## 2. Objective

To investigate whether SK&P can lead to increased GAF and increased feeling of wellness in male prisoners with non psychotic psychiatric disorder.

### 2.1. Materials and methods

This is a parallel randomized controlled study. The study was conducted at Central Jail Hospital (CJH), New Delhi which is the largest prison hospital setting in India with both inpatient and outpatient departments. During the study period of six months (between 11/1/13 and 10/7/13) participants were enrolled in and randomly assigned to either a six-week SK&P intervention or a six week comparison control group. The study was approved by the Ethics review committee of CJH. Randomization was done using simple random allocation in which random allocation sequence was generated using a random number table. One investigator uninformed in the treatments or assessments generated random numbers for 232 male prisoners to be allocated to two groups in equal numbers with allocation ratio of 1:1. All male prisoners admitted in Central Jail (CJ) fulfilling study criteria were taken. The sample size was decided on the basis of the number of male prisoners suffering from non psychotic psychiatric disorder admitted in CJ for more than six weeks in the previous year.

Each individual study participant was involved in a program of SK&P which he practiced daily for six weeks. Each individual control participant daily sat on an armchair with his eyes closed and gentle attention on his breath for duration of six weeks. Two certified SK&P teachers (trained to lead sessions at Art of Living) taught the procedure to all participants throughout the course of treatment. Only SK&P therapists involved in the study were informed to start the corresponding intervention; the rest of the research team were unaware of the current group allocation. All

participants signed consent forms and they were treated according to the ethical guidelines of Helsinki in 1995 (as revised in Edinburgh 2000). Participants at time of inclusion in the study signed an informed consent form. At time of inclusion in the study, participants were clearly explained that practicing SK&P is part of the research project and that they will continue to receive pharmacological therapy during the course of the study. They were also explained that they are free to drop out of the study at any point of time without any penalty or impact on pharmacological treatment. The assessment tools were applied in the order starting from the Basic Socio-demographic Proforma, mini-mental state examination (MMSE), schedule for clinical assessment in neuropsychiatry (SCAN) based clinical interview, Global assessment of functioning (GAF) and Psychological general well being (PGWB). These assessments were conducted in all participants before starting the intervention and six weeks thereafter. Confidentiality and privacy were maintained throughout the assessment process.

Assessment of all participants took place in the Psychiatry ward of CJH. As pre-decided, the trial was stopped after six months due to non availability of trained therapists. SK&P sessions were continued by some group volunteers who were trained to take SK&P sessions.

#### *Inclusion criteria for participants:*

- (1) Having an interest in SK&P in that they would like to practice it daily for 6 weeks.
- (2) Age between 18 and 65 years.
- (3) Male prisoners diagnosed to be suffering from a psychiatric disorder (except psychosis and BPAD) by ICD-10 (DCR) criteria.
- (4) Patient willing to give written informed consent.

#### *Exclusion criteria for participants:*

- (1) History of substance dependence in past one year.
- (2) Prisoners with co-morbid severe physical illness (like hepatic encephalopathy, severe debilitating illness) that might have hampered the assessment process.
- (3) Prisoners with severe cognitive deficits that might have hampered the assessment process. Prisoners with MMSE score of less than 23 were excluded from the study.

*Procedure followed during SK&P (Brown and Gerberg, 2005a):* In Study participants SK&P components were applied in order of (1) three staged Ujjayi breathing, (2) bellows breath (Bhastrika), (3) om chant, (4) SK and (5) ANB. The breathing practices were done in a sitting posture on the floor. Eyes and mouth were kept closed while breathing through the nose throughout the sessions.

Three stage Ujjayi is a slow, deep resistance breathing technique with respiratory rate of 4–6 breaths per minute. This is accomplished by a slight voluntary contraction of the laryngeal muscles and partial closure of the glottis to increase airway resistance and breath control. Each breath cycle is timed with counts of four during inhalation, four holding the breath, six during exhalation, and two holding the breath. Supplementary instructions were given in three stages that included specific breath cycle ratios, extended expiration duration with shortened inspiration, distinct arm postures, and breath-holds, all of which served to augment the effects of this particular breathing technique. During SK&P this is practiced for approximately eight minutes. Ujjayi tends to be calming and to produce a sense of well-being.

Bhastrika involves forceful rapid deep breathing through the nose at a rate of 20 to 30 breaths per minute. Three one minute rounds of Bhastrika are each followed by 30 seconds of normal breathing. Arm movements are used to increase the force and depth of respiration. This breathing exercise was practiced for approximately five minutes.

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