

Cardiological Advantages Of Stress Releasing Tool : A Review Study On Sudarshan Kriya

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ABSTRACT

Stress is the outcome of increasing daily needs, food habits, changing behavioral patterns as well as thought processes in human being. Increasing luxurious daily needs, environmental pollution, advancing technology, climatic changes, puts an extra pressure on human body. Various tensions in human life leads to stress on every cell and tissue of human body. Such stress has lots of adverse effects on physiology, anatomy and psychology of a person. Sudarshan Kriya brings a natural rhythm in breathing which releases stress, tensions, and depression and also brings an effective control on emotions simultaneously by minimizing stress hormone, Large number of biochemical changes occur in human body including changes in the levels of Cortisol, Nor-adrenaline and Cytokinines in blood. Cortisol level in blood decreases upto negligible while Prolactin, a beneficial hormone, level has been found to increase. The blood lactate levels shown remarkable fall immediately after practicing Sudarshan Kriya. Significant drops in total Cholesterol and Low Density Lipoprotein LDL, as well as increase in High Density Lipoprotein HDL, were observed. Body Mass Index becomes normalized by regular practicing. Mild to moderate hypertension study group has shown reduction in Blood Pressure after practicing it daily. Sudarshan Kriya is taught in special programmes, conducted by Art Of Living Foundation worldwide for all ages. Present study discusses cardiological advantages of Sudarshan Kriya.

KEY WORDS : Cortisol, Nor-Adrenalin, Cholesterol, LDL, HDL, BMI, BP, Sudarshan Kriya.

INTRODUCTION :

Since 1982, a specific process named Sudarshan Kriya is taught in well designed format of courses developed by internationally renowned organization in India, the Art Of Living Foundation Bangalore. People from more than 152 countries are today practicing this technique for stress releasing. For proper metabolism of human body oxygen is required which releases energy through respiration process. During breathing process oxygen is supplied to the cells in the body while carbon dioxide is removed as a waste.

Breathing is organized by inhalation of oxygen and exhalation of carbon dioxide through voluntary action of chest muscles. Several studies have shown that rhythm of the breath is changed and gets disturbed due to stress and other metabolic disorders. Hence breathing is supposed to be the most important function to control the metabolic activities of the body. Breath forms a connective bridge between body and mind and thus the emotions. Sudarshan Kriya, is a rhythmic breathing technique which brings an effective control on emotions . Rhythmic breathing is a unique method for balancing the autonomic nervous system and influencing psychological and stress-related disorders and thereby improving biochemical metabolism of the body. The word Sudarshan means proper vision and Kriya means a purifying yogic action. Through the rhythmic breath we get a proper vision of who we really are. Sudarshan Kriya helps in experiencing rhythm of a Being and through the rhythms of

the breath different seven levels of existence of human being gets harmonize. Sudarshan Kriya and its accompanying practices (SK&P), are time-honored stress management/health promotion techniques whose health benefits are being validated by modern medical science.

OBJECTIVE:

Main objective of the present study is to study the cardiovascular effects of Sudarshan Kriya on human body . Present studies includes review of researches on cardiology and Sudarshan Kriya .

METHOD OF DATA COLLECTION:

The researcher has collected data based on secondary data.

ANALYSIS OF DATA:

Scientific studies suggest connections between body and the mind implying that emotional state and thought processes affect brain, endocrine system and also the immune system. A new discipline has emerged based on these concepts called as Psychoneuroimmunology or body- mind medicine. Perception of stress leads to restlessness, anxiety, irritability or aggressive behavior and/or a state of panic, in extreme cases, even addiction to tobacco, alcohol and/or drugs. Negative emotions surface in the form of hatred/dislike, jealousy, greed, possessiveness, lust, arrogance and anger. Further, inter-personal relationships are adversely affected, work out-put decreases and power of concentration wanes. Efficiency goes down and memory weakens. Patient becomes afraid to acknowledge negativity and so they begin finding fault with others. Complaining, adds further to mental and bodily stress and a vicious cycle here begins. Pulse increases, heart pounds ,perspiration begins, hands become cold and clammy. This is caused by the release of several hormones, chemicals and cytokines from endocrine glands and immune cells in the body, which are activated in response to the perception of stress. While the body can adapt to acute stress and does not suffer much damage, exposure or perception of repeated stressful situations (chronic stress) leads to irreversible physiological changes, resulting in diseased states like high blood pressure, diabetes, heart attacks, asthma, gastrointestinal ulcers, viral infections, migraine/non-specific headaches etc. The main purpose of SK is to provide people from all layers of society, with practical and effective tools , derived from ancient practices on science of breath, to alleviate stress, improve health and increase wellness.

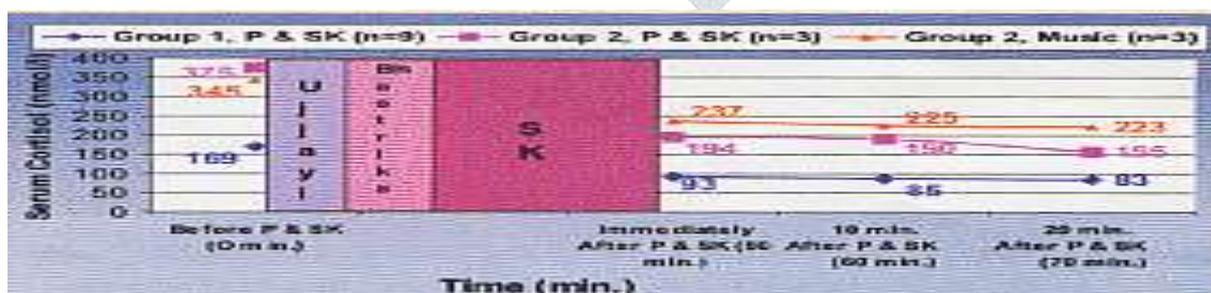
EFFECTS OF SK&P ON CORTISOL :

CORTISOL AND NOR- ADRENALINE:

Cortisol is a stress hormone and it's a steroid hormone produced within the adrenal gland. It is released in response to stress and low blood glucose concentration. As such it functions to increase blood sugar through gluconeogenesis, to suppress the immune system and to aid in the metabolism of fat, protein and carbohydrates. It also decreases bone formation. Cortisol

is a Stress Hormone which is harmful to body while Nor-Adrenaline is a useful Hormone for body. When Cortisol is released in blood, due to stresses, Nor-Adrenaline (NA) or Nor-epinephrine level gets badly affected. NA is synthesized and released by Central Nervous System. It is used as a neurotransmitter by sympathetic ganglia. The general function of NA is to mobilize the brain and body for action. Catecholamines, corticotrophin also increases as a response to stress. Vedhmurthachar A, et al; studied Antidepressant efficacy and hormonal effects of Sudarshan Kriya in alcohol dependant individuals and found out that SK practices are effectively useful for dealcoholisation of addicted patients. Agte V. V and K.Tarwadi done studies on SK as Alternative and Complimentary therapies for treating Type 2 Diabetes. Sharma H, et al has carried out comparative studies between regular practitioners of SK and non practitioners and concluded that SK practitioners exhibit better anti-oxidant status and blood lactate levels. Similar studies were carried out at NIMHANS, Bangalore, which concluded that SK&P indeed leads to relaxation, and was further confirmed by the measurement of blood Cortisol, a stress hormone, in 21 healthy individuals of 35-40 years of age. Regular practitioners of SK had very lower, negligible level of Cortisol in the blood at the base line indicating that they are less stressed and there was further fall during Kriya. Among beginners, fall was greater during SK as compared to when they were listening to music, confirming that SK and P was indeed more relaxing than listening to classical music also. Katzamam M.A. et al, found out that SK relieves anxiety and depression, while Seppala E.M, Descilo et al, and Martin A, have studied Post Traumatic Stress Disorder and symptoms, and reduced stress levels were found out by Kjellgre A, Agte V. V, and Kharya C. Seppala E. M also found that Plasma Prolactin, a well being hormone which is believed to be a key factor in producing depression relief, increased significantly after the very first SK& P session.

Effect of SK & P was studied on human immune system, the system which protects us from disease. (Science Of Breath,AOL).



EFFECTS OF SK&P ON BLOOD LACTATE:

Blood lactate is another chemical which increases during stress. Studies were carried out at All India Institute Of Medical Sciences ,Banglore, on 10 individuals those undergoing police training as these were the highly stressed groups since undergoing intense physical training

on a daily basis. Blood Lactate was measured before and after SK&P. There was a marked fall confirming that SK&P induced a state of relaxation. SK&P significantly decreased lactate (an indicator of tension and stress) in the blood of police trainees. Jyotsana V.P, et al studied Comprehensive rhythmic breathing programme and found out that it improves the quality of life in patients with diabetes. Sharma H., et al concluded that SK practitioners exhibit better antioxidant status and lower blood lactate levels.

EFFECT OF SK&P ON BLOOD CHOLESTEROL:

Psychosocial stress is a major contributor to hypertension and coronary heart disease(CHD). In CHD, deposits of LDL cholesterol, fat and other substances on the arterial walls slow or block the flow of blood, resulting in heart malfunction. A study was conducted at NIMHANS , to assess the cholesterol levels of individuals before they learned SK&P, as well as after 7 and 45 days of regular practice. Significant drops in cholesterol and LDL(harmful) cholesterol as well as increase in HDL(beneficial) cholesterol were observed. These findings suggests SK&P improves the blood cholesterol profile, and that regular practice may therefore prove to be an effective tool in preventing and arresting hypertension and CHD. To study effect of SK&Y on Lipid Profile, Pulmonary function and Haemoglobin concentration, Anjum Sayyed, Jyotsana Patil et al; conducted 8 days workshop consisting of 150 participants. Out of these 55 were included for study samples. After practicing Sudarshan Kriya, results revealed that, there is decrease in Total Cholesterol, LDL Cholesterol along with significant increase in HDL Cholesterol. They also found significant changes in Pulmonary function, but statistically non significant changes in Haematological parameters. From these observations it can be concluded that Sudarshan Kriya along with some yoga practices, plays a vital role in reducing Total Cholesterol, ($P < 0.05$), LDL Cholesterol ($P < 0.001$), and significantly increase in HDL Cholesterol($P < 0.001$). Spirometric Pulmonary Function tests studied were Forced Vital Capacity, Forced Expiratory Volume in first ,second Peak Expiratory Flow Rate and Maximum Voluntary Ventilation. The results showed improvement in all Pulmonary Function Parameters in all subjects as compared to that before practicing Sudarshan Kriya and Yoga .Thus, Sudarshan Kriya Yoga can be applied as therapeutic implication in the non pharmacological management of cardiovascular diseases and respiratory diseases. These studies proves that for Cardiovascular Diseases, SKY can be effectively used as complimentary treatment for patients. Basic logic lies behind it is that, due to these practices, every cell in the body gets proper oxygen supply, thereby it reaches to every organ through blood vessels improving metabolism of human body.

TABLE 1

Mean values of Lipid Profile in subjects participated before and after Sudarshan Kriya at Kimsu, KARAD, M.S, India; J. Med. Sci., Vol 3, No.1

Biochemical Parameters	Before SKY(N=55)	After SKY(N=55)
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Total Cholesterol mg/dl	170.6 ± 38.9 (104 - 254)	163.4± 26.94* (110 - 225)
Serum Triglyceride mg/dl	72.29±27.26 (37 - 141)	82.07± 34.86 (45 - 205)
Very Low Density Lipoproteins mg/dl	14.36± 5.38 (07 - 28)	17.54± 11.03* (09 - 80)
Low Density Lipoproteins mg/dl	108.70 ± 37.27 (51 - 190)	93.61±25.49*** (42 - 149)
High Density Lipoproteins mg/dl	47±9.88 (30-75)	53.56± 9.66*** (35 - 70)

***P <0.001, * P <0.05, Non Significant as compared to before

An open label intervention study was undertaken by Agate Vaishali.,et al on 26 mild hypertensives & 26 apparently healthy adults of age about 30-60y, for effect of SKY practice for 2 months as complimentary therapy. It was found that there is a considerable decrease in diastolic blood pressure (P<0.01), Serum urea(P<0.01) and Plasma MDA as Oxidative Stress Markers(P <0.05) in case of hypertensives. In maximum number of samples, values above normal range of parameters got lowered while those within normal range remained unaltered.

Some of the researchers Swapna Subramanian, Tamiselvi Elango., et al and also Subramanian S., et al ,studied Role of SK&P on lipid profile and blood cell parameters during exam stress as a randomized controlled trial. For this study, blood samples of 43 engineering students were collected at four intervals namely baseline (BL), exam stress(ES), three and six weeks practice of SK and P during exam stress. Lipid profile and Haematological parameters were measured at all four intervals. Studies revealed that, three to six weeks practice of SK&P, reduced the elevated lipid profile, haematological parameters and improved lymphocyte levels. It was carried out to study in detail for parameters such as ES elevated Total Cholesterol (TC), Triglycerides(TGL), and very low density lipoprotein(VLDL). While Haematological parameters affected by ES included neutrophils, lymphocytes, platelet count, packed cell volume(PCV) and mean cell volume (MCV). It indicated that SK&P practice can overcome ES by improving lipid profile and haematological parameters.

Narnolia, P.K et al studied effect of SKY on Cardiovascular Parameters and Comorbid Anxiety in patients of Hypertension. This include study of effect of SKY on Cardiovascular health(SBP, DBP, PR, Lipid Profile) and Hamilton Anxiety score in 100 hypertension

patients. All patients were taking prescribed medicines on hypertension. Study group asked to do SKY one hour daily or at least five times a week for continuous three months after proper training. Statistically significant benefit of SKY was obtained in SBP, DBP, PR, Lipid Profile and Hamilton Anxiety Score in patient of hypertension as decrease in the values of all these parameters on three months of practice of SKY. Effect of controlled breathing exercises, SKY on the psychological status and cardiovascular autonomic tone was studied by Kharya C. et al and found out that SKY has a purely scientific base and is an ideal tool for improving health. Ashwini Dhawan and Rosemary Peter also studied Effect of SKY on Cardiac and Pulmonary functions. Rhythmic cyclical breathing technique of SKY was taught to 50 participants of 20-50 years age group of both genders. Before beginning and after one month of intervention of SKY, the Cardiac autonomic and pulmonary function tests has shown improvement in all parameters of these tests. In this study, all participants practiced SKY minimum for 45-60minutes for six days and was continued for a month as minimum four days a week. Heart rate and blood pressure decreased to $P > 0.05$. An increase in HF and decrease in LF/HF ratio were observed. FVC, FEV1, PEF, & FEV1/FVC were improved $P > 0.05$, it was found out that long term intervention of SKY would be promising and could be used as a complimentary treatment for improved health.

Indicators of cardiovascular diseases are parameters like cholesterol levels in blood, systolic blood pressure, diastolic blood pressure, and the respiratory rate. Somwanshi S.D, Handergulle S.M, Adgaonkar B.D, and Kolpe D.V studied these parameters after giving practice of Sudarshan Kriya for 12 weeks duration to about 30 patients. Comparative study before and after treatment was carried out and it showed that SKY, significantly decreases heart rate values, and Systolic blood pressure SBP and diastolic blood pressure DBP values. Brown R P et al reported that, rhythmical and deep breathing cycles causes significant decrease in heart rate and diastolic pressure. It is due to the balance created in the autonomic nervous system functions by parasympathetic dominance and decreased sympathetic drive. It is studied by Agte V V, Tarwadi K. that, autonomic nervous system functions like Cardiac vagal tone, heart rate variability, chemoreflex sensitivity can be maintained by voluntarily controlling breathing patterns. It is also studied by Janakiramaiah N, Gangadhar B N et al, that rhythmic and controlled breathing leads to increase in concentration of mind. Increased concentration distress the patients as it nullifies the worries resulting in de-stressing the patient. This, accordingly decreases sympathetic activity and thus ultimately decreases heart rate, respiratory rate, and blood pressure as studied by Janakiramaiah N, Gangadhar B N, Naga Venkatesha Murthy P J, Harish M G, Subbakrishna D K, Vedamurthachar A. Studies carried out by Kochupillai V, Kumar P, Singh D et al, revealed that, SKY practices are beneficial for treating cardiopulmonary diseases, autonomic nervous system imbalances, and psychological or stress related disorders.

CONCLUSIONS:

Since ancient times, breathing techniques are often recommended for cleansing the body, and for relaxation and stress management. Sudarshan Kriya is a type of controlled cyclical breathing technique accepted worldwide as it is taught by a nonprofit organization, Art of Living Foundation, in India and worldwide. It is the breath, which forms a controlling bridge between body and mind and the emotions can be easily controlled by controlling breath

patterns. Breath sorts out imbalances in the mind and body. When the mind and emotions become controlled it becomes very easy to achieve balances in behavior and activities. Controlled and relaxed mind only can spread positivity in the society. This forms the basis behind SK practices. With the regular practice of SKY&P, one can experience flow of positive emotions, replacing anger, greed, frustrations and jealousy. The body feels relaxed, mind calmer and thus healthier and younger. Blood cortisol and blood lactate levels reflect a state of relaxation, yet alertness. Increase in Nor-Adrenaline level and decrease in Cortisol level in the blood, proves utility of SK&P. Increase in antioxidant enzymes suggests that regular practice might prevent many diseases including infections and possibly even psychosomatic diseases like cancer. Fall in Cholesterol and blood pressure, can prevent cardiac disease and depression is cured in 80% of cases. Studies on cardiovascular parameters has shown that Sudarshan Kriya practices significantly decreases heart rate, Systolic Blood Pressure, Diastolic Blood Pressure as well as respiratory rate after 12 weeks of regular practice. Studies have revealed that, SKY practices are beneficial for treating cardiopulmonary diseases, autonomic nervous system imbalances, and psychological or stress related disorders.10,(25).

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