

Research on

# Sudarshan Kriya



# Science of Breath

**Extracts of the Scientific Research Papers Presented at  
AIIMS during the First International Symposium on  
**Sudarshan Kriya** (a rhythmic breathing process introduced  
during Art of Living workshop), Pranayam & Consciousness  
On March 02 and 03, 2002.**

# Research at **AIIMS**

Those practicing **Sudarshan Kriya (SK)** on regular basis claim that their negative emotions gradually turn to positive ones, unnecessary thoughts begin to vanish from mind, and the body begins to look and feel younger and healthier.

Research was initiated by seven departments at **AIIMS, NIMHANS, Bangalore** and by **Bangalore Medical College**

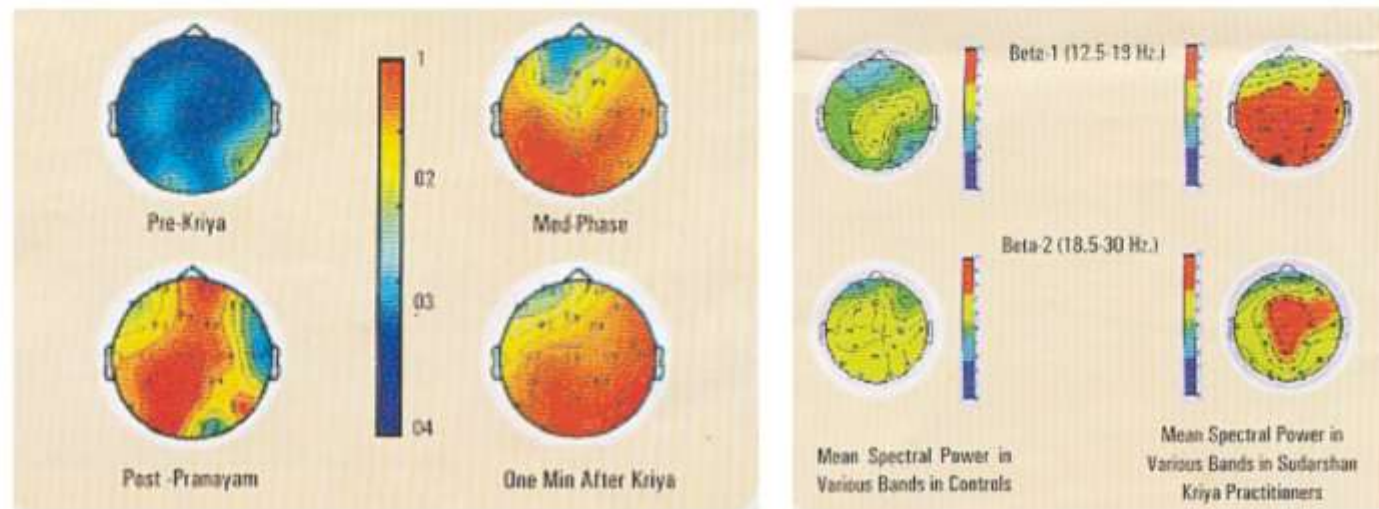
**Physiological and Biochemical parameters related to the brain, endocrine system, immune system and the body's other defensive mechanisms before and after SK** were studied to see not only the immediate changes, but also the long term effects on body and mind.

# Electroencephalogram (EEG):

EEG changes were recorded on 19 *Sudarshan Kriya* practitioners and compared with 15 controls (doctors and researchers from within AIIMS not practicing SK, yoga or meditation), to study the long term effects of SK.

Significant increase in beta-activity was observed in the left frontal occipital and midline regions among *Sudarshan Kriya* practitioners compared to controls ( $p < 0.05$ ). Neurologists interpreted these findings as indicative of heightened alertness.

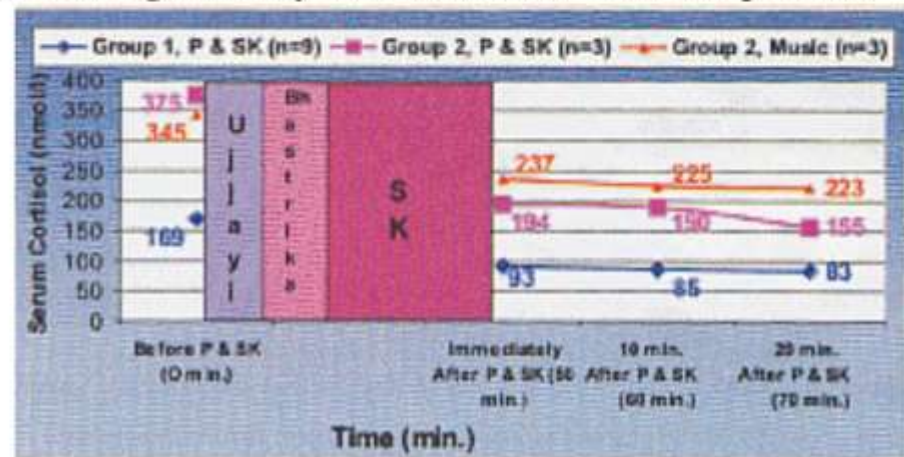
EEG in 5 AOL female practitioners in the age group 35- 45 with similar socio-economic and educational background was studied during SK. Increase in alpha activity was demonstrable in both the hemispheres with interspersed persistence of beta activity. This indicated a state of relaxed alertness.



# Effect on stress hormone-Cortisol:

That **Sudarshan Kriya** practice indeed leads to relaxation, was confirmed further by the measurement of blood Cortisol (a hormone known as stress hormone) in 21 healthy individuals in 35 - 50 years of age.

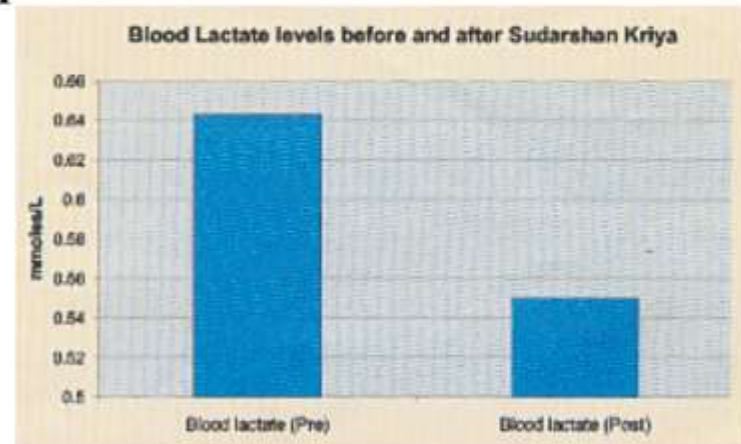
Results were compared among regular AOL practitioners vs. beginners and also among beginners during SK vs. listening to classical music. AOL regular practitioners had lower blood Cortisol level at the base line indicating that they are less stressed when compared to beginners, there was further fall during Kriya suggesting that SK needs to be practiced regularly to maintain relaxed state of mind. Among beginners, fall was greater during SK as compared to when they were listening to music, confirming that SK was indeed more relaxing than listening to classical music.



## Blood Lactate:

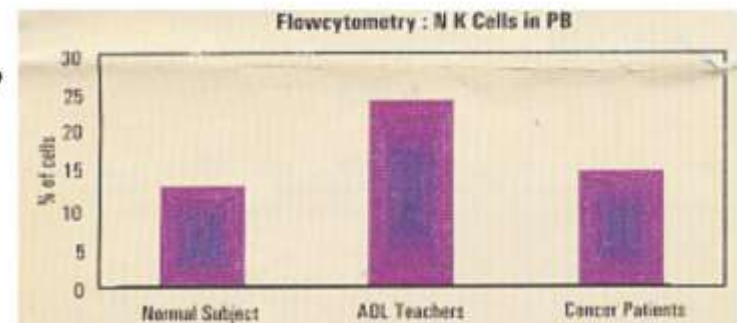
**Blood lactate is another chemical, which increases during stress. Those undergoing police training are a highly stressed group as they undergo intense physical training on a daily basis.**

**Blood lactate was measured in 10 such individuals before and after SK. There was a marked fall confirming that SK induced a state of relaxation.**



## Effect on immune system:

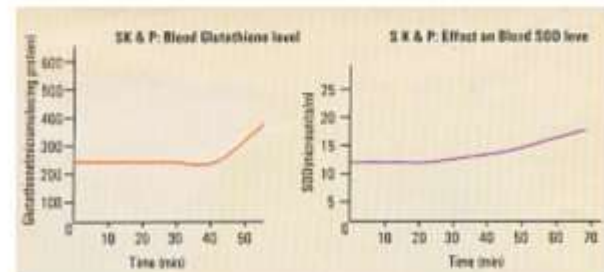
Effect of SK was studied on our immune system, the system which protects us from disease. Natural killer (NK) cells are surveillance cells of immune system and are capable of destroying tumor cells as well as infected cells. These were enumerated in the peripheral blood (PB) of AOL practitioners, normal individuals not practicing SK and cancer patients. NK cells were found to be significantly higher ( $P < 0.001$ ) in AOL practitioners compared to normal individuals and cancer patients. Cancer patients were then subjected to AOL workshop, over three to six months of regular practice of SK, they demonstrated an increase in NK cells. This study is yet an ongoing one, and definite conclusions are awaited.



# Antioxidant enzymes:

The body is repeatedly exposed to chemicals and pollutants in the environment due to which free radicals are generated. These react with oxygen and cause oxidant damage leading to several diseases including cancer. To counteract these out body has a defensive system in the form of antioxidant enzymes.

Studies carried out at AIIMS as well as Bangalore Medical College have indicated an increase in antioxidant enzymes after ( $P < 0.05$ ) indicating improved antioxidant defense.





## **Effect on blood cholesterol:**

**Studies conducted at the Bangalore Medical College demonstrated a significant fall in serum total cholesterol and LDL cholesterol, as well as an increase in HDL cholesterol. This would make SK & P a tool for prevention of coronary heart disease (CHD).**

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## **Effect on depression:**

**NIMHANS of Bangalore recorded a 70% cure in individuals suffering from depression. SK was as effective as drugs without any side effects. This was also both cost effective and self empowering. Following SK, brain wave patterns were found to normalize and serum prolactin increased.**

## **Conclusion:**

**With the regular practice of SK, one experiences flow of positive emotions, replacing anger, frustrations and jealousy. The body feels younger and healthier and the mind feels calmer. EEG, blood cortisol and blood lactate levels reflect a state of relaxation, yet alertness.**

**Increase in NK cells and antioxidant enzymes suggests that regular practice might prevent many diseases including infections and possibly even cancer. Fall in cholesterol may prevent cardiac disease and depression is cured in 70% of cases. Thus, even though further studies are needed, available data so far serves to validate the subjective claims of a healthier body, calmer mind, and balanced emotions.**



# Thank You

Presentation was Designed & Conceptualized by

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