

# The Vagus Nerve and the Healing Promise of The Sudarshan Kriya

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At the center of our bodies resides a long, sinewy nerve that extends all the way from our medullas down through our chests to beyond our stomachs. This nerve, known as the Vagus Nerve, happens to be at a most fascinating intersection, not only between our two physical nervous systems (our central and autonomic nervous systems) but also between our conscious minds and subconscious minds. As such, it also acts as a bridge between our gross bodies and our subtle bodies. And it's a nerve probably 99% of the population have never heard of nor even have a clue where it's located. And yet the Vagus Nerve (ironically pronounced the exact same way as sin city itself, Las Vegas) may be the single most relevant organ in our body relative to our peace of mind and happiness. Research indicates that a healthy vagus nerve is vital in experiencing empathy and fostering social bonding, and it is crucial to our ability to observe, perceive, and make complex decisions. Tests have revealed that people with impaired vagal activity have also been diagnosed with depression, panic disorders, Post Traumatic Stress Disorder ([PTSD](#)), irritable bowel syndrome, anxiety, panic disorders, violent mood swings, fibromyalgia, early Alzheimer's and obesity. Given the state of society today and the vast array of dis-eases associated with unhealthy Vagus Nerves, it doesn't take a medical doctor to conclude that by healing our collective Vagus Nerves, we can heal a lot of societies woes.

Scientists have discovered that artificial Vagus Nerve Stimulation (VNS), through electrical impulses via a surgically implanted pacemaker like device, shows promising results in reducing depression, anxieties and even conditions such as epilepsy and obesity. VNS has also shown positive effects in promoting weight-loss as the signals to the brain of 'fullness' are more easily transmitted. But what if there were a less intrusive and more natural way to stimulate and heal the Vagus Nerve?

## Automated Habit Formation

Human Beings have an Autonomic Nervous System (ANS) that is the body's automatic regulatory system of nerves and controls that do all the background tasks that keep the body operating. The ANS is comprised of three separate subsystems, the Parasympathetic Nervous System (PNS), the Sympathetic Nervous System (SNS) and the Enteric Nervous System (ENS).

The Parasympathetic Nervous System is responsible for many of our resting functions such as lowering heart rate, increasing digestive & gland activity and sexual arousal, the Sympathetic Nervous System is mainly associated with modulation of hormones and neurotransmitters relating to “flight or fight” responses.

The Enteric Nervous System is generally considered by scientists to be involved predominantly with food digestion, waste elimination and sending full/hungry signals to the brain. However, that doesn't explain why 90% of the nerve fibers of the ENS run one way, from the stomach area, through the vagus nerve and up into the brain.

Furthermore, 95% of the body's serotonin is produced in the gut, not in the brain as most people would assume, making it even more likely that the total functionality of the ENS is far greater than managing our gastrointestinal needs. When you stop to consider that 90-95% of our thoughts occur in our subconscious minds, and also the idea that the Enteric Nervous System is also the organ of the subconscious mind, is it any surprise that most of the nerve fibers between the two systems originate in the ENS or that most of the serotonin is also produced in the ENS?

The cerebrospinal system is the organ of the conscious mind and is the channel through which we receive conscious perception from the physical senses, and exercise control over the movements of the body. While the cerebrospinal or central nervous system (CNS) has the brain as its control center, the ENS has a ganglionic mass in the belly known as the Solar Plexus, often referred to as our second brain\*, as its central processing unit and it is in this coprocessor that most of our everyday tasks get executed from. When things in our life become ‘second nature’, they are effectively processed through our ENS rather than our CNS.

It is our Vagus nerve that provides the gateway between the two systems, acting as a bioinformational data bus that routes the impulses going through in both directions. Since the Vagus Nerve acts as the central

switchboard between our two nervous systems, it should not come as a surprise that impaired functioning of this one nerve can lead to so many different conditions and problems.

Our consciousness's natural tendency is to compartmentalize tedious tasks so that the brain can focus on higher priority activities. As we go through life and learn to do things, such as tying our shoes, it would take far too much of our brain's capacity to have to focus on every small aspect of life so once most things are learned with our conscious awareness, they then get handed over to our automatic background systems. Over time more and more repetitive tasks go from originating in our conscious minds to happening in our subconscious minds.

When an athlete is said to be 'in the zone' and performing at near perfect levels, it is because they are practically and literally almost unconscious and functioning entirely through their ENS. And when someone has an intuition, or in other words they have a 'gut' feeling, that information is coming to them through the Solar Plexus and when we say that someone has learned to play a song 'by heart', in reality, it would probably be more accurate to say they learned how to play 'by solar plexus'!

## Why Laughter IS the best medicine

Humans have two natural albeit involuntary methods of VNS that have been long considered to be therapeutic, both laughter and weeping. There is ample scientific evidence suggesting that both laughing and sobbing are extremely beneficial for our health and in the context of Vagus nerve research, it is obvious how these two acts can promote healing and wellness through the increase in vagal stimulation.

However, there is also powerful breathing technique to manually and naturally stimulate the vagus nerve, called the Sudarshan Kriya. Scientists have found that SK&P (Sudarshan Kriya along with the related Practices, of yogic asanas, pranayams (including [Nadi Shodhana](#)) and meditation) can be extremely effective at opening up this vital channel of energy.

In the ancient Sanskrit language, Sudarshan translates to 'right vision' and Kriya mean purification process. The Sudarshan Kriya is rhythmic breathing method that has been known to create profound transformations in the people who practice it. The Sudarshan Kriya has been scientifically proven

to help cure symptoms associated with Post Traumatic Stress Disorder, provide relief for people suffering from addictions of many forms, helps reduce cortisol (the human ‘stress’ hormone), cut down on cholesterol, improve sleep patterns and in general, create a better sense of peace of mind and well being. Basically, the same list of symptoms associated with impaired Vagal activity are all conditions known to be significantly improved through SK&P.

## Scientific Research on Sudarshan Kriya

Scientists in the west have been studying the effect of various forms of breathing exercises on our mental and physical health for many years and Yogis from India have been emphasizing a variety of techniques featuring the breath for thousands of years so this is nothing new, but what is new about the Sudarshan Kriya is just how it works.

Of all the various functions of our autonomic nervous systems, from heart beat, perspiration, hormonal release, gastrointestinal operation, neurotransmitter secretion, etc., the breath stands alone as the only subsystem the conscious mind can put into ‘manual override’ and so it is through manipulation of the breath that we can recalibrate the entire system.

Dr. Richard Brown M.D., Associate Clinical Professor of Psychiatry at Columbia University, is one of the first clinicians to successfully correlate impaired Vagal activity with so many different diseases. He has theorized that SK&P contributes to a state of alert calmness by its effect on the Vagus Nerve, which is vital in transmitting data between our two nervous systems. Dr Brown also suggested that other mechanisms by which SK&P works are by relaxing of stress response systems, neuroendocrine release of hormones, nitric oxide neurotransmission, fear conditioning circuits (prefrontal cortex and limbic system), and thalamic generators.

There are many environmental factors that have been associated with impaired Vagal Activity including stress, excessive adrenaline and hormone secretion, over stimulation from television/film/video games, diet and lack of exercise. Interestingly, brain wave rhythms measured during and after SK&P are similar to those of babies.

One of the foremost research experts on the effects of Vagal nerve stimulation through SK&P is [Stephen Porges](#), PhD. Dr. Porges postulates that the different rhythms of breath in SK&P may stimulate different diameter fibers of the vagus nerve. This makes SK&P unique and likely to have a much wider range of applications and effects than the currently available electronic vagus nerve stimulator.

## **SK&P Promotes Changes at the Molecular Level**

Probably the most exciting scientific findings regarding the benefits of Sudarshan Kriya come from [Dr. Fahri Saatcioglu PhD](#). of Oslo, Norway. In his most recently published [findings](#), Dr. Saatcioglu has provided evidence for how SK&P actually enhances gene expression and alteration which leads to a plausible explanation for how practicing Sudarshan Kriya regularly promotes anti-aging in the body by encouraging DNA strands to repair themselves. According to Dr. Saatcioglu, “during Sudarshan Kriya, yoga and related practices, changes in the way our immune cells use the genetic information in their DNA are increased. This may then result in processes in these cells which may contribute to their function and may also affect the functioning of tissues and organs which then can affect the whole physiology”, adds Saatcioglu, “these data suggest that previously reported therapeutic effects of yoga practices have an integral physiological component at the molecular level”.

## **Effect on Depression**

SK&P has been shown to have a 68%–73% success rate in the treatment of depression, regardless of severity. Relief from depression, determined by psychiatric evaluation and standard psychiatric measures (Beck Depression Inventory, Hamilton Rating Scale for Depression, and others), was experienced within three weeks. At the three-month follow-ups, patients remained stable and in remission. Published studies further suggest that SK&P normalizes patients’ brain-wave patterns, increases serum prolactin (a “well-being” hormone), and has been proven to be as effective as standard anti-depressant drug regimens.

Dr Stephen Larsen, Ph.D., has researched the neurophysiological responses before, during and after SK&P. He conducted experiments measuring EEG (recorded at 19 cortical sites), EKG, heart rate, galvanic skin response, hand skin temperature, pulse plethysmography and blood pressure. He found that SK&P produced significant changes in every physiological measurement. Significant increases in beta activity were observed in the left frontal, occipital, and midline regions of the brain in the SK&P practitioners, as compared to controls ( $p<0.05$ ). These results are interpreted by neurologists as indicative of increased mental focus/heightened awareness in SK&P practitioners. It is striking to note that SK&P practitioners displayed significantly greater mental alertness (beta activity) than the control group of physicians and medical researchers, whose profession requires development and daily use of these very skills. Blood lactate is another biochemical measure of stress. Participants in police training constitute a highly stressed group. They undergo intense physical and emotional training daily. Blood lactate was measured in 10 such individuals, both before learning SK&P and after the first session. There was a significant fall in lactate levels after SK&P, suggesting that it induces a state of relaxation.

Dr. Larsen's results indicate that over a period of time, the practitioner's health becomes more robust, flexible and able to deal with the challenges of stress. This research further reinforces the theory that through the Vagal Nerve stimulation that the Sudarshan Kriya provides, the many conditions associated with impaired Vagal activity can all be addressed.

## **Antioxidant Response to SK&P**

The body is constantly exposed to environmental toxins, and its cells continuously produce normal metabolic by-products. Both of these factors can result in the formation of free radicals. These react with oxygen and cause oxidant damage, contributing to many diseases, including cancer and such cardiovascular diseases as heart disease and stroke. To counteract these free radicals, the human body has a defense system in the form of antioxidant enzymes. A study was conducted to assess the effect of SK&P on antioxidant enzymes. Levels of three major antioxidant enzymes—superoxide dismutase (SOD), catalase, and glutathione—were

all found to be significantly higher in SK&P practitioners than in the matched control group. These data suggest that people who practice SK&P have an improved antioxidant status and an enhanced defense against oxidative stress on the body.

## **Effect on Cortisol, the “Stress Hormone”**

Several studies have demonstrated SK&P leads to a significant reduction in cortisol levels. In one study, blood cortisol, known as the “stress hormone,” was measured in 21 individuals, 35–50 years of age. Regular SK&P practitioners (Group 1) were compared with beginning practitioners (Group 2) during their SK&P sessions. The beginning practitioners were also measured before learning SK&P, while listening to classical music (Group 3). Among beginners, the fall in cortisol levels was significantly greater during SK&P than when listening to classical music, suggesting that SK&P produces a better relaxation response. Regular SK&P practitioners had significantly lower blood cortisol levels at baseline than beginning practitioners, indicating that they experienced less physiological stress under the demands of daily living. The significant further fall in serum cortisol levels, during and following SK&P, among beginning and regular practitioners, suggests that regular practice of SK&P progressively develops greater levels of both relaxation and resilience to stress.

## **The Mind Body Relationship**

The interaction of the conscious and subconscious mind requires a congruent interaction between the corresponding systems of nerves, our Autonomic Nervous Systems and our Cerebrospinal Nervous Systems. Again, the interface between our two nervous systems is made by the vagus nerve, which passes out of the cerebral region as a portion of the voluntary system to the thorax, networking out to our hearts and lungs, and ultimately passing through the diaphragm it loses its outer coating and becomes merged with the nerves of the Solar Plexus, thus establishing a binding connection between the two and making humans the self aware beings that we are.

Having an understanding of the dual nervous systems, the relationship between unhealthy vagal activity and a myriad of diseases, the knowledge of how the health of our nervous systems directly corresponds to our mental health, it makes sense that healing the Vagus Nerve can provide profound benefits.

Practicing Sudarshan Kriya, in conjunction with a comprehensive set of yogic postures and pranayamas, assists in fine tuning the nervous systems and healing this most vital organ. While it seems obvious that the action of SK&P works through Vagus Nerve Stimulation, this is probably a gross oversimplification of the overall beneficial biophysiological effects of the practice and scientists continue to analyze other ways SK&P functions on the nervous systems as well.

## **Sports Performance Enhancement**

Although no specific empirical data has been scientifically gathered yet on enhancing athletic and sports performance through SK&P, it only stands to reason that a technique with the proven benefits of improved intuition, increased clarity of mind, quicker reaction times, greater composure and significantly more stamina and endurance would aid any competitor in any sport increase performance levels.

## **Self Defeating Mental Habits**

In conclusion, there is one more vital piece to this puzzle to ponder over. If you think about the automatic habit forming mechanism in place and how thought patterns (such as the act of tying a shoe) go from the conscious mind to the subconscious mind, it is important to understand that this same transference also happens in the case of mental habits as well. So many of us have self-defeating mental habits such as guilt, blame, victimness, complaining, the sense of lack, defensiveness, etc. and what's important to keep in mind is that many of these thought patterns have been committed to our subconscious thoughts. They've become as automatic as so many other habits and unless we actively bring these mental habits back up into

our conscious awareness, they will continue to persist and bring misery and sorrow into our lives.

It is important to remember that once an impaired Vagus Nerve has been returned back to health, the harmful negative habits that have been accumulated over years of impaired Vagal Activity don't automatically disappear. It is vital therefore, to be mindful of these common mental patterns and bring them to your awareness, back into your conscious mind, so they can be disarmed and removed.

\*While the Enteric Nervous System (which includes the Solar Plexus) has also been called the second brain over the past few decades, the Solar Plexus has been called the second brain in the east for thousands of years.

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### **About the Author**

Frank Huguenard is an author, teacher and documentary film producer, specializing in films on Science and Spirituality. You can see all three of his films, *Beyond Me*, *Beyond Belief* and *Beyond Reason* at his website [www.beyondmefilm.com](http://www.beyondmefilm.com).