

YOGA FEDERATION OF SERBIA

# YOGA - THE LIGHT OF MICROUNIVERSE



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September 23-24, 2010  
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**Prof. PhD Predrag K. Nikić**  
**International Academy for Yoga Teachers Education**  
Yoga Federation of Serbia

**Introductory lecture**

**Yoga – the light of microuniverse**

Difference in the deepness of understanding yoga philosophy and practice influenced that variety of yoga schools appeared all around the world. Purpose of all paths is one – achieving the state of Samadhi – meaningful unity created of vibrant self-knowledge, experiences and tendencies. Some schools recommend devoted solitude in order to achieve self-realization (self-knowledge); some schools recommend devoted life in the ambience of ashram; some religious schools recognize yoga techniques as the method to achieve the highest experience; yet, some yoga schools create meaningful reality for themselves and wellbeing of the environment by devoted, dedicated self-improvement, outstaying illusions and consumer philosophy in the everyday life challenges.

We are often asked which pathway is the right one. We shouldn't have dilemma. All pathways that take to unity (self-realization) are the right pathways. Every yoga approach has inexhaustible possibilities and beauty of the difference of vibrant creations of one. That's the beauty of yoga system. Yoga is not a uniform that everybody has to wear. Yoga is the path of wisdom, beauty and freedom in movement, in emotions, thoughts and behavior. Yoga is our path that represents our steps which leave the traces in time. Let them be steps of goodness, because goodness is a special state of harmony of wisdom and love. Yoga is the maximum that we can achieve today, yoga is NOW. We create future today.

In India, there was lighted an eternal flame of truth and it is upon all of us to maintain that fire by insighting into its immense substantiality. Being a professor at the University of Belgrade, in my personal search for the truth while I was studying hatha, bhakti, raja and tantra yoga, the door of science have also opened to me. Science is an opened book and its pages may be written in a clearly defined procedure. When I was going through the book which is not so old, I didn't find any page saying about contribution of the yoga philosophy, yoga practice and yoga life. It wouldn't be the truth to tell that yoga is not mentioned there, but I say it's not mentioned in the extent that yoga deserves.

I was taught that the others are not to be blamed for oversights. What you see is amiss, CORRECT IT. If you wonder when – now. If you wonder where – here. If you wonder who – you.

## Conceptual distinction

In the literature, we meet the concept of yoga where there haven't been made an essential difference between system and technique. It is very important to demarcate two concepts: the first, yoga – as the comprehensive system of self-improvement and the second, yoga techniques. Yoga is the philosophical system, but also the method of self-improvement. Yoga is the life style that comes out of the yoga life philosophy. But yoga techniques can be efficient tool to maintain health, physical and mental. A number of medical workers use different yoga techniques in their work. Many psychotherapists emphasize efficiency of the yoga techniques in the therapeutic processes.

Yoga techniques are also used in the form of recreation or sports. World Yoga Sports Federation has been formed. Many recreational centers around the world offer yoga exercises (asana) to their users as an efficient form of recreation. Bearing in mind that yoga is a kind of ability for establishing harmony between bodily, emotional and cognitive abilities, I believe that we can perceive yoga concept as the form of intelligence.

Yoga as the system should be clearly separated from the benefits that are possible to be obtained by implementation of different yoga techniques confirmed by growing number of scientific papers. Scientific accuracy is demanded. It is not eligible to say that yoga is a tool for the stress overcoming, but that yoga techniques (indicate techniques) help increment of the stress amortization. It is not correct to say that yoga helps the weight loss, but that yoga techniques (indicate techniques) help in normalization of all system, including the weight. Therefore, given effects of the practice of yoga techniques are not the aim of the yoga system, but secondary gain. Yoga asana help to overcome scoliosis, spondylosis, kyphosis, but it is not the aim of yoga as a system, it is its accompanying benefit.

Here we meet with two different approaches to yoga. Approach to yoga as an integral system of self-improvement where individual accepts values that yoga recommends and that come out of the yoga philosophy. Individual – yoga practitioner is directed to achieve insights that deepen his/her wisdom. All yoga techniques (kriya, bandha, mudra, asana, pranayama, prathyahara, dharana, dhyana) serve to gain the final unity (achievement of the state of high awareness, enlightenment – Samadhi).

Narrow scientific field in my scientific-research work was an influence of emotional intelligence on the management process. Results of the scientific research conducted in 2008 show the presence of the higher level of emotional intelligence in masters and instructors when compared to control group made of long time practitioners of yoga asana, pranayama and dhyana as well as the higher level of EQ in practitioners who practice certain yoga techniques for a number of years comparing to those who have just starter to practice. We can conclude that practicing yoga asana, pranayama and dhyana techniques significantly help practitioner in accepting emotional competences.



## **Even the longest way starts with a single step**

Yoga has been practiced and organized in the form of societies and centers since the sixties years of the twentieth century in Serbia. Yoga gathered seekers who recognized its advantages by practicing it. Representatives of almost all yoga schools from different countries had been visiting Belgrade. And today, representatives of different yoga schools, different approaches to yoga and the ways of living are present in Serbia. Yoga Federation of Serbia cherishes the attitude of respect of differences. There exist: hatha, bhakti, raja, tantra and all other integral approaches to yoga.

At the International Yoga Conference (Rome, 2008), we gained support of all relevant yoga organizations from the world to start International Scientific Interdisciplinary Yoga Conference, to start International Yoga Festival and for our school to become International Academy for Yoga Teachers Education, with a seat in Belgrade. International Academy for Yoga Teachers Education educates future yoga instructor with participation of domestic and international scholars (scientific authorities and authorities of the yoga practice).

Realization of the mentioned initiatives enabled verification of the contribution of yoga practice on the highest academic level, it helped popularization of yoga as a discipline which refines everyday living in all aspects of life; it enabled retrieval of the recognizable and acceptable place for yoga instructors in the social environment creating preconditions for implementation of the yoga instructor profession in the register of occupations.

The first Scientific International Interdisciplinary Yoga Conference organized by our Yoga Federation of Serbia gathered researchers from different countries and different scientific fields: medicine, philosophy, economy, management, psychology, sociology, occupational psychology, management of human resources, psychotherapy, physiotherapy, etc. For the first time, articles with the theme of yoga written by the scientists from different scientific fields have been presented at the highest international level. Scientific articles Proceedings is in front of us: Yoga – light of micro-universe, from the Conference held in Belgrade, that will contribute to the clearer understanding of the phenomenon of yoga and benefits that may be obtained by practicing yoga. Yoga is the pathway for brave, wise and persistent.

Let there be love and harmony with the environment within us

**Prof. Dr. Arun Raghuvanshi**

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## **STUDIES ON NEURO-ENDOCRINOLOGICAL CORRELATES OF YOGIC PATHWAYS**

**Summary:** *Homeostatic mechanisms are hormonally regulated by different endocrine glands. This function is regulated by two parts of the autonomous nervous system: sympathetic and parasympathetic. Since the whole nervous system is controlled by anterior and posterior parts of hypothalamus, we can say state that the whole mechanism is controlled by the brain region. Hypothalamic region is supported by limbic system, including amygdala, hippocampus and a few more smaller structures. Yoga practicing stimulates work of endocrine system which is directly connected with activity of the energy centers (chakras) and energy pathways (channels – nadis). Correct functioning of ida, pingala and sushumna nadi directly influence the limbic system and mechanisms of homeostasis. Limbic system is responsible for regulation of the homeostatic (self-regulated) mechanism. This system carries out its regulatory functions through the hypothalamic region. Taking into consideration importance of the effects that are accomplished by yoga practicing, there is a growing need for scientific research of yoga practice with the aim of better understanding of these phenomena. By scientific researches, we reach the essence of the yoga mechanics and dynamics, with approach that really represents 'thinking-out-of-the-box', from the field of expended awareness.*

**Key words:** *endocrine system, nervous system, chakras, nadis, yoga, Kundalini yoga.*

### **Introduction**

In western scientific thought, there has been a dichotomy in perception of body and mind – they are treated separately. There is the same approach in treating a patient. But the Ayurvedic Vaidhyas (Indian traditional healers) and yogis have had a holistic approach. There is no doubt that body- mind inter relationship was clearly understood by the ancient yogis. That's why the fundamental book of yoga – Yoga Sutra by Patanjali begins with the two aphorisms that define yoga as “a discipline” (1.1) and “restrain of the modifications of mind” (1.2), where yoga brings balance of physical, mental and spiritual states and the whole harmony of the human personality – inside and outside.

Patanjali systematized knowledge about yoga, making it a scientific discipline, almost 2.500 years ago. In 1893, Swami Vivekananda declared yoga as

a scientific discipline, when he said – "The aphorisms of Patanjali are the key source of Raja Yoga and form its text book. Yoga is one of the most important sciences". Dr. Sarvepalli Radhakrishnan (1957) wrote: "Patanjali's yoga assumes that we all have inexhaustible reservoirs of life that we draw from. It formulates the methods of attaining our deeper functional levels. The yoga discipline is concerned with the purification of the body, mind and soul, and preparing them for the life mission. Since the human life depends on the nature of citta (mind-stuff), it is always in our reach to transform our nature by controlling citta.

With devotion and concentration we can even overcome our ills. The normal limits of the human vision are not the limits of the Universe. There are other worlds than that which our senses reveal to us, other senses than those which we share with the lower animals, other forces than those of material nature. If we have faith in ourselves, than "supernatural" is also a part of the natural. Many people go through life with eyes half closed, with dull minds and heavy hearts, even those who have had moments of awakening fall back into somnolence."

Yoga acquired status of a scientific discipline only in 21st century, supported and authenticated by the inquiries of almost 100 years, and specially in the past four decades, because of interest shown by some devotees, lending a new life to yoga.

In his book "Yoga Sutra: Yoga – Alpha and Omega", Osho said: "Patanjali is the scientist of the inner. His approach is that of a scientific mind: he is not a poet. And in that way he is very rare, because those who enter into the inner world are almost always poets, those who enter the outer world are almost always scientist. Yoga is concerned with your total being, with your roots. It is not philosophical. So with Patanjali we will not be thinking and speculating. With Patanjali we will be trying to know the ultimate laws of being: the laws of its transformation, the laws of how to die and how to be reborn again, the laws of a new order of being". Patanjali is a rare flower. He has a scientific mind but his journey is inner. That's why he became the first and last word: he is the alpha and the omega. For five thousand years nobody could improve upon him. It seems he cannot be improved upon. He will remain the last word – because the very combination is impossible. To have a scientific attitude and to enter into the inner is almost impossible. He talks like a mathematician, a logician. He talks like Aristotle, and he is a Heraclitus. Patanjali is like an Einstein in the world of Buddhas. He is a phenomenon. If you follow Patanjali's instructions, you will realize that he is as exact as any mathematical formula. Simply do what he says and the result will happen. No belief is need, you simply do it and know. It is activity to be done, know and confirm."

### **Psycho-physiological implications of Yoga**

There is noticeable close relation between Indian twin disciplines – Yoga and Ayurveda, when one studies the original ancient yogic and ayurvedic (ancient Indian medicine) scriptures and associated literature. The very first thing

one comes to realize with the in-depth study of yogic philosophy and ayurvedic medicine is that the yogis and Vaidyas (Ayurvedic healers) were having a clear understanding of the mind-body interrelationship, and utilized it in yoga and medicinal practices for integral healthy and happy life, adopting it as a way of life, almost 2500 years ago. This knowledge reached to China in early times with spreading of Buddhism from India to China during the reign of King Ashoka (304 BC – 232 BC), and in modern times to the west with increase of intellectual interaction between east and west and with the dawn of the New Age movement in latter years of the 19th century.

In India, yoga (science of essential realization) and ayurveda (medical science) grew side by side strengthening each other from the very beginning. This is clearly reflected in the famous Shivananda's verse dedicated to Patanjali – who praised the sage with gratitude as follows:

“Yogena Chittasya paden vacham,  
Malam sarirasya cha vaidyake-na  
Yopakarottam pravaram muni-nam,  
Patanjalim Pranjalir anato'smi.”

With great reverence I bow with hands folded to Patanjali,  
The most excellent of sages, who removed  
Impurity of consciousness through yoga  
Impurity of speech through word (grammar) and  
Impurity of the body through medicine (Ayurveda)

Richness, significance and contribution of both ancient tradition of yoga and ayurvedic medicine in enhancing quality of human conditions has been described in details in modern literature about yoga, psychology, medicine, and related scientific disciplines. Carl Jung (1978) indicated that yoga is “one of the greatest phenomena that the human mind has created.” George Feuerstein (1996) emphasizes significance of yoga: “As a spiritual discipline, yoga has universal validity. It is a practical approach to self-understanding, self-transcendence, self-transformation, and self-realization. Although it has grown out of the Indian cultural experience and was developed in close association with Vedic and non-Vedic religious life, in its highest purpose and most refined articulation, it is equally meaningful and efficient outside of India.”

About ayurvedic medicine, Virender Sodhi, M.D. from the American School of Ayurvedic Sciences in Bellevue, Washington, says: "Disease is the result of a disruption of the spontaneous flow of nature's intelligence within our physiology. When we violate nature's law and cannot adequately persists the results of this disruption, then we have disease." Pointing to the central philosophy of 'Aurveda, famous bestsellers-writer Deepak Chopra, MD says: "The first question an ayurvedi physician asks is not 'What disease does my patient have?' but 'Who is my patient?' By 'who', the physician does not mean about your name,

but how you are constituted." Elaborating this point, Vasant Lad, ayurvedic physician and Director of the Ayurvedic Institute in Albuquerque, New Mexico, says: "'According to Ayurvedic principles, by understanding oneself, by identifying one's own constitution, and by recognizing sources of doshic disorders, one can not only follow the proper guidelines to cleanse, purify and prevent disease, but also uplift oneself into a realm of awareness previously unknown."

### **Yoga and modern psychology**

In his article "Yoga and Modern Psychology", R.S. Bhogal (2002) writes: "Modern psychology, an offshoot of the western philosophy, in its attempt to look more scientific, seems to have become divorced from these metaphysical but practical quests. Yoga, often termed as Indian psychology, not only deals with these problems convincingly but also delves deeper... the discipline of yoga and modern psychology evidently differ... However, their common interest in solving the existential problems raises a hope of developing a pragmatic synthesis between these two, which in turn may enrich both the sciences." Unlike psychoanalysis, yoga alone proposes both transcendental consciousness (Atman or Self) and phenomenal consciousness (mind-brain and their dynamics) as inherent part of psychosomatic assets, apart from the practically sound metaphysical reasoning pertaining to the meaning and purpose of human life and living."

Application of yoga along side with modern medicine has given excellent results. In an article "The Power of Yoga", Richard Corliss (2001) mentions : "In 1998, Ornish published a new study in the American Journal of Cardiology, stating that 80% of the 194 patients in the experimental group were able to avoid bypass or angioplasty by adhering to lifestyle changes, including yoga." He also argued that lifestyle changes, by practicing yoga, would save money to the individuals and society. The average cost of the treatment of patient in the control group was more than \$47,000.

Analyzing the role of yoga in mental health, Richa Sharma(2004) states: "The last four limbs of Paranjali's Yoga: Prathyahara (sense withdrawal), Dharana (concentration), Dhyana (meditation) and Samadhi (enlightenment) have direct relation with the mental processes. Pratyahara is the stage where channeling of the psychic energy takes place. By concentration on the supreme self, on connection of the body and mind sources, individual integrates asleep energy flows. Newly emergent discipline called the psycho-neuro-immunology (PNI), substantiated the link between the mind and the body.

### **Yoga energy pathways and their correlates**

It is scientifically established importance of the nervous system in maintenance and development of the human, and ultimately in evolution of the consciousness of individual. Yogis and ancient Indian healers were aware of anatomy and physiology of the human body, which is confirmed by ancient literature. Certain

techniques for maintaining healthy body, mind and spirit have been developing in India for centuries integrated and infused in daily living of a common man through religious and cultural influences. That's the reason why the happiness index of an average Indian has always been comparatively high in spite of all the odds throughout the ages, till present uncertain times around the world. References related to human body structure and functions are scattered invariably throughout Indian philosophy, scriptures and general literature. As about nadis and chakras and yogic philosophy, the Indian philosopher Kabir of Bhakti age (Devotional period 1400-1600) sang: "Jheenee-Jheeni Beeni Chadriya" in which he has described the details of the subtle body system of chakras and nadis. He has used an analogy familiar to a Weaver, as he himself was a humble weaver, a translation of one such poem is given here:

"Only He knows as He is the Eternal.  
What is the wrap (lengthwise thread) and what is the weft (cross threads)?  
What are the threads from which the Chadr (Cloth/body) is woven?  
Ida and Pigla are the wrap and weft.  
Shusumna are the threads from which the Chadar (human body)  
Five are the elements and three are the qualities of the chadar!"

The system of chakras and nadis have an important place in the Yoga philosophy and practice, which has been extensively elaborated and discussed in ancient scriptures of Yoga, specially Hatha yoga and Tantra Yoga. Mechanism of yoga effects is the most visible in the systems of chakras and nadies, which specifically and the most directly correlates with nervous and endocrine system. Swami Satyananda (1996) says: "On a physical level, chakras are associated with the major nerve plexuses and endocrine glands in the body. Many asanas have particularly powerful and beneficial effect on one or more of these glands or plexuses, for example, Sarvangasana (Shoulder stand) exerts strong pressure on the thyroid gland in the throat region which is associated with the Vishuddhi Chakra (Throat Chakra). Practicing this asana stimulates correct activity of thyroid gland and its functions. Pointing to the effects of Shoulder stand (Sarvangasna) on health, B.K.S. Iyengar (1991) says: "The importance of Sarvangasna cannot be over emphasized. It is one of the greatest boon conferred on humanity by our ancient sages. Sarvangasna is the mother of asanas (postures). As mother strives for harmony and happiness in the home, so this asana strives for the harmony and happiness of the human system."

K.N. Udupa (1996) traced further: "The human body maintains a constant environment, even though our environment continually under goes changes. All the homeostatic mechanisms are regulated by body hormones, secreted by various endocrine glands. However, even this function is further regulated by the two parts of the autonomous nervous system: sympathetic and parasympathetic. Since the entire nervous system and the endocrine system is controlled by the anterior and the posterior parts of the hypothalamus, it can be stated that the entire mechanism

is controlled by this region of the brain. Hypothalamic region is further supported by the limbic system including amygdale, hippocampus and several other minor structures. It is this limbic system which is predominantly responsible for the regulation of homeostatic (self-regulating), mechanism. This system carries on its regulatory functions through the hypothalamic region. Among the various functions conducted by the hypothalamus the regulation of temperature, eating and drinking are very important ones. This area also regulates our emotions such as anger and fear. A particular emotional state is further regulated by the amygdale, which is part of the limbic system.” Important classical texts related to energy centers (chakras) and endocrine and nervous system are: “Shiva Samhita”, “The Shat-Chakra-nirupana”, “Shakti and Shakta” (1951), “The Chakras” by Charles W. Leadbeater (1927, 1996).

## Discussion

In the scientific article entitled “Neurophysiology of Enlightenment, Dr. Robert Keith Wallace (1974), Professor of Physiology, at the 26th Congress of Physiological Sciences, held in New Delhi in October 1974, said: “In the last few decades there have been established the neuro-physiological criteria for awaken, dreaming and sleeping states of consciousness. With the advancement of implementation of the transcendental meditation, this decade is establishing the criteria for the fourth state of consciousness (enlightened state). As the sophistication in research is increasing along with the increasing practice of more than half a million meditators in the world, inevitably the criteria for higher states of consciousness is forth coming, and it will not be long before the neuro-physiological standards for the state of enlightenment are firmly established. This will be the supreme achievement of modern physiological sciences which connect the ancient descriptions of enlightenment with the results of scientific research on meditation in the fields of physiology, psychology and sociology.”

It is a privilege of modern scientists to be able to objectively verify the effects of the practice of different yoga techniques. According to Dr. M.L Gharote (1990), yoga and meditation have been investigated mainly for their effects on psychosomatic disorders. The results show that yoga discipline can be to the significant extent instrument for lowering hypertension and treatment of asthma. Many studies done on the effects of yoga techniques practice have been proved effective in reducing heart disorders, normalization of the blood pressure, hypertension, reduction of advent of gastric ulcers, hyperacidity and headaches. In several countries, drug addictions and alcoholics have also been positively helped to free themselves of their addictions through a combination of techniques of meditation, techniques of breathing and asanas.

Yoga, along with affecting body muscles, helps in the improving the functions of the whole system of an individual. Asanas indicate the most directly that medical studies continue to show that regular meditation works magical in reducing blood pressure and stress-related illnesses, including heart disease. Brain

images show that regular practicing of asanas (yoga postures), meditation and breathing techniques (pranayama) help to calm the most active sensory-assaulted parts of the brain. Beneficial effects of meditation on cholesterol level have been reported by M.J. Cooper, M.M. Aygen (1979), B.K. Anand (1991), Calderon, et al. (1999), Rashmi Vyas and Nirupama Dikshit (2002). A decrease in sympathetic discharge and better ability to overcome stress can be cited as possible mechanism for this change (in cholesterol level). In research conducted by Rashmi Vyas and Nirupama Dikshit (2002), the level of physical activity in the examinees was similar, but those who meditated had a significantly lower cholesterol level. In summary our study indicates that practicing Raja yoga meditation confers significant benefits in respiratory functions, cardiovascular system and lipid profile, as well as all body functions which continued to improve further with yoga meditation practice.

Connecting “fight-or-flight response” and relaxation response with yoga, Richard Faulds, president of the Kripalu Center elaborates that the autonomic nervous system is divided into the sympathetic system, which is often identified with the “fight-or-flight response”, and the parasympathetic – which is identified with what's been called the relaxation response. When you do yoga – the deep breathing, the stretching, the movements that release muscle tension, the focus on the presence of relaxation in the body – you initiate a processes that turns the “fight-or-flight” system off and the relaxation response on. That has a beneficial effect on the body. The heartbeat slows down, blood pressure decreases. The body seizes the chance to turn on the healing mechanisms.”

K.N.Udupa (1976) infers that the practice of Kundalini yoga is mainly directed towards the improvement of the nervous system. Regularly practicing of yoga exercises improve the functions of the brain, spinal cord and autonomic nervous system which will be greatly helpful in maintaining good health and also improving the level of consciousness. Shri Gopikrishna (1971) goes to the extent of advocating that it will be one of the ways by which a person can possibly accelerate evolutionary process of human species. R.S. Bhogal (2000) at another place points out that scientific studies indicating parasympathetic dominance and general autonomic balance, as a result of yoga practices, have been reported by Gahrote (1971). “Yoga practices, by their nature, tone down the heightened hypothalamic, cortical and sympathetic nervous system activity, leading to an inward awareness”, state Bhogal. Therefore, nervous (autonomic balance) and hormonal balance can be restored and maintained through regular practice of yoga techniques (asana, pranayama, dharana, pratyahara...), by utilization of chakras and nadis concept, as advocated by Hatha and Kundalini/Tantra yoga practitioners and scientific researches. Besides mentioned results of researches, number and quality of scientific researches is insufficient. There is a greater need to study, understand, redefine, interpret and reinterpret experiences of beneficial techniques of this old discipline, directing researchers on researching the core of yoga mechanics and dynamics, with indeed an “out-of-the-box thinking” approach, from the field of expanded consciousness.



## Conclusion

Yoga obtained the status of a global culture. This has attracted even the scientists, working in different specialized fields, to conduct researches related to some aspects of yoga. As it is evident from bibliometric studies of M.K. Kulkarni (1996) and S.S. Khalsa (2004), basic scientific researches in yoga began in the early 1920's in India itself, latter followed by England and U.S. in early 60's. Khalsa also point to a gradual increase in publications up till 1989, after which an interest and the numbers of articles have remained at the same level. Lately, research groups from other countries also took interest in conducting scientific researches in yoga, which includes countries like Serbia, Czeck Republic, Spain, Germany, Russia, Italy, Poland, Sweden and The Netherlands. Relevance of yoga in modern world is evident. While summarizing environmental, social and political problems of the present world, George Feuerstein says: "I believe that the looming ecological crisis combined with increasing terrorism will change the face of the Earth in the decades to come. Yoga must be made more relevant to this issue, which involves the practice of yoga as a spiritually based and ecologically sensitive lifestyle." In the paper "Bimodal Consciousness", by Arthur F. Deickman assesses: "The crises now facing the human race are technically solvable. Controlling population, reducing pollution and eliminating racism do not require new inventions. Yet, these problems may prove fatally insolvable, because what is required is a shift in values, in self-definition and in world view on the part of each person for it is the individual consciousness that is the problem. If each person were able to feel and identity with other persons and with his environment to see himself/herself as part of a large unity, he/she would have the sense of oneness that supports the selfless actions necessary to regulate population growth, minimize pollution and end war. The receptive mode is i.e., the yogic approach in which identification, the I-Thou relationship exists."

But these and similar objectives can be realized only if some serious efforts are made to carry yoga forward from a fitness exercise with a difference to the next level of enhancing spiritual contents in its practice and encouraging it as an experimentally proved scientific and authentic way of living, giving meaning to life and fulfilling its purpose of expansion and evolution of human consciousness to the next level of super-mind, super consciousness. Happy and socially responsible life on this very planet, in the very lap of our dear Mother Earth. Looking to the popularity of yoga among the intellectuals and scientists, and from "elites" to the common people, there is no doubt that yoga has emerged not only as a full fleshed scientific discipline but as a culture for the 21st century. Swami Satyananda Saraswati emphasized: "Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow." Bob Smith and Linda B.Smith (1986) have expressed similar thoughts in their book "Yoga for New Age": "Yoga's contribution to truly global culture is immense. Yoga has all the elements to

become a global ethics and culture in the times to come. Yoga for new age is turning to be a new age to yoga.”

We are still aware of the great need for the further scientific interdisciplinary researches of the yoga practice effects (I emphasize the example of the scientific conference in Serbia, in Belgrade), which is the need of the time itself.

*“Ye children of immortality, even those who live in the highest sphere, the way is found; there is a way out of all this darkness, and that is by perceiving Him who is beyond all darkness; there is no other way.”*

*Shevetasvara Upanishad, II.5*

#### References:

1. Anand, B.K. (1991): Yoga and medical science. Indian, J. Physiol Pharmacol, 35(2): 84-87.
2. Bhattathiri (2002): Extend life by Yoga and Meditation, News Finder.org
3. Caldron, R. Jr, Scheider R.H., et al. (1999): Stress reduction and hypercholesterolemia in African Americans: a review: Ethn Dis; 9(3): 451-462.
4. Deikman, A. J. (1971): Bimodal Consciousness. Archives of General Psychiatry, 25, 481–489.
5. Gharote, M.L. (1990): Applied yoga, Kaivalyadham, Lonavala, p.78.
6. Gopikrishna (1971): Kundalini: The evolutionary energy in Man, Berkeley, Shambala.
7. Jung C.G. (1978): Psychology and the East, Princeton University Press, p.85.
8. Khalsa, S.S. (2004): Yoga as a Therapeutic Intervention: A bibliometric Analysis of Published Research Studies, Indian J. Physiol. Pharmacol., 48(3) 269-285.
9. Kulkarni, M.K. (1996): Scientific research on yoga: a bibliometric study, IASLIC Bulletin 1996, 41: 127-130.
10. Leadbeater, Charles W. (1927) (1996): The Chakras, The Theosophical publishing House, Adyar, Madras.
11. Sharma, R. (2004): Hindu Techniques of Mental Health, pp.150, Spring Books.
12. Udapa, K.N. (1976): A manual of Science and Philosophy of Yoga, J. Res. In Indian Medicine, 11-103.
13. Vyas, Rashmi & Nirupma, Dikshit (2002): Effect of meditation on respiratory system, cardiovascular system and lipid profile, Indian J. Physiol Pharmacol., 46(4); pp. 487-491.

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## **CORRELATION BETWEEN ESSENTIAL AND YOGA COMPETENCES**

***Summary:** Yoga is philosophical system and old discipline of self-development. Yoga is present in science and in every segment of everyday life. Today we recognize two approaches to yoga: yoga as a system, i.e. discipline of self-improvement, life style that results from a yoga life philosophy and yoga as efficient techniques.*

*In this article, we consider yoga to be a specific kind of intelligence and bear in mind that yoga is a kind of ability that helps to establish ballance between body, emotional, social and cognitive abilities.*

*We cannot perceive yoga isolated as a desirable capability of an individual, but as a possibility that arises from insight that there are latent potentials within us that may be recognized, understood and used with the aim to achieve the state of unity - Samadhi. We should bear in mind that yoga practice is pervaded with equal dimensions: motor, cognitive, emotional and social. Life is the field of meeting different, sometimes confronted forces: aims, needs, requests, wants and possibilities. Needs are not only material, needs are often not rational, requests are very often emotional and limited with the social pressure of acceptable behavior. Therefore, emotional dimension pervades every life activity. Results of conducted research show that practitioners who completed education for yoga instructors have more developed competences of the essential intelligence, comparing to the control group of non-instructors, they become more self-aware, more sensible for the needs of surrounding and they are more trust worthy, which was measured by estimation of behavior by practitioners, as well as by self-estimation.*

**Key words:** yoga, intelligence, yoga intelligence, essential intelligence, yoga competences

### **Yoga as intelligence**

There is no unique attitude about definition of intelligence, it is more that we can talk about unique disapproval among authors regarding this subject. There are usually more definitions of intelligence: intelligence as capability to learn something new and unknown till that moment, as capability to adjust and manage new situations, capability to formulate abstract terms and capability of abstract thinking, capability of resolving the problems through thinking, capability of perceiving important relation in the problem situation. Definitions of intelligence

may be grouped in three units: definition that perceive intelligence as capability of abstract thinking, definitions that perceive intelligence as capability for learning and definitions that perceive intelligence as capability to manage new situations. The common characteristic to all mentioned conceptions of intelligence is that they are about perceiving relations or resolutions in problematic situations, which are new and unknown for the actor, and that intelligence is capability of resolving problems through thinking. All authors consider intelligence to be a capability for overtaking activity for resolving the problem that is characterized with a difficulty, complexity, abstraction with a condition that problem that has to be resolved haven't been resolved before, i.e. it haven't been experienced before. Therefore, there are divided understandings of the definition of this concept, but also of the question if intelligence is a unique capability or it is composed of a certain number of different special capabilities. Present researches gave partial answer to this question. There have been many researches about this subject in the first half of the twentieth century and popular authors mentioned in this field are Spearman, who stressed that intelligence is a unique general capability, Thurston concluded that intelligence arises by combining seven special factors and one general factor and Guilford concluded that intelligence is made of a huge number of factors. Researching the structure of intelligence have been done by factor analyses and all present results show that success in resolving different problems doesn't depend on only one capability but more of them.

Although concept of the yoga intelligence is new, certain yoga competences have been present in different programs of education for managers since the fifty years of the previous century. Certain yoga techniques have been included in the trainings for managers: programs for education in the communication skills, programs of empathy, programs of the conflict management, program of education for the stress management. Analyzing results of the conducted researches there have been noticed that around two thirds of competences are connected with yoga intelligence. These are: awareness, self-confidence, flexibility, persistence, empathy and capability of compliance with others (Boyatzis, 1982; Lusch and Serpekeuci, 1990; McClelland, 1999; Rosier, 1994-1996; Spencer and Spencer, 1993).

Majority of people enter the world of business without necessary competences. It is confusing that more than a half of employees who filed the questionnaire are not motivated to continue learning and improvement in their work (Harris Education Research Council, 1991). Maybe answers should be searched in the context. Components of the yoga intelligence are taken out of the essential and meaningful context and as such they don't give whole results. We should bear in mind that people spend most of their awaken time at work. Taking into consideration all that, yoga intelligence can help that life become good place for development, health and personal prosperity. We can conclude about capabilities indirectly, only based on successfulness in certain works. Persons with the same education and same practice have different accomplishments in performing certain works. This difference in success is assigned to the capabilities.

If there was the same effort invested in performing the work and if there is the same motivation to perform it, success at work depends on two factors: hereditary basis (inherited disposition) and experience (exercises and previous activities). We consider capabilities to be characteristics of personality that influence the difference in successful performance of the certain works, if there is a similar experience and the same motivation to perform these works successfully. There exist two points of view. One is that there are as much capabilities as there are a sort of works and that we can talk about capabilities for yoga instructor, manager, professors, mechanics and so on. Another point of view has the base in understanding that capabilities shown in different fields of work may be resumed on the limited number of capabilities. This attitude has been supported by the results of factor analysis of capabilities. We meet the attitude that mind and personal characteristics are considered to be different and opposed attributes. Mind is often equalized with the whole cognition that is opposed to feelings. Although methodological reasons impose researchers to research certain part of personality (because of the lack of reliable techniques that could search the whole personality at once), it should be known that person is not made of independent opposed parts but person represents a psycho-physical unity, where the unit is indivisible, complex and unique. Holistic approach tends to explain person and his/her functioning in totality, integrating results from different scientific fields. Many researches show connection between intelligence and non-intellectual characteristics of personality (Lorge, 1940; Wechsler, 1950; Eysenck, 1947; Lynn and Gordon, 1961; Eysenck, 1967; Ismail, Kane and Kirkendall, 1969; Ismail, 1976; Gottfredson, 1982; Nagoshi et al, 1982; McCann and Stewin;1984).

Today, we still meet different approaches and concepts of intelligence. We can talk about biological intelligence, sexual intelligence, business intelligence, emotional intelligence, creative intelligence, social intelligence, moral, ecological and essential intelligence. All mentioned concepts go through the long scientific verifications and examinations. Many contemporary theories of intelligence can be observed as system theories because they are more complex, in many points, than it was the case with the previous theories and they tend to perceive intelligence as a complex system, stresses Sternberg.

### **Concept of the yoga intelligence**

We can define yoga intelligence as capability of using potentials in their wholeness, capability to realize, understand and manage our deepest meanings and goals, capability to recognize all life occasions as the space for transformation and development, taking into consideration that they are unpredictable and counting on the deepness of experienced (adopted) insights, with the aim to attain unity – samadhi.

Yoga intelligence is the concept in its infancy, both theoretically and empirically. It represents a new concept that needs researches about human qualities that it can be connected to. However, taking into consideration that yoga

intelligence functions as a conscious, complex and adaptive system of the mind, qualities of this system look like doubtless the first place where to search for identifying qualities of the yoga intelligence itself. There are used several valid and reliable instruments with good measuring characteristics for estimation of the certain capabilities which are included in the model. Yoga intelligence makes the capability of recognizing differences and uniqueness in consideration of the purpose and sense in mind, emotions and behavior.

Therefore, yoga intelligence is made of capabilities and skills that help successful mastering the challenge of everyday living on the way of self-improvement. We can observe it through the simplified model.

Table 1. Simplified concept of yoga intelligence

YOGA INTELLIGENCE	PERCEIVING, ESTIMATION AND EXPRESSION	ATTENTION ENERGY IMPULSES , PROCESSES, MOVEMENTS BODY IMPLUSES SEXUAL IMPLUSES
	REGULATION	EMOTIONAL IMPULSES THOUGHT IMPULSES CREATIVE IMPULSES
	MANAGEMENT	COMMUNICATION PROCESSES MOTIVATIONAL PROCESSES

It is made of three competences: awareness of energy, body, emotional, mind, communicational and motivational potentials, precise self-estimation and self-confidence. Self-aware yoga practitioners recognize their inner signals and they are capable of recognizing how their potentials influence themselves and their surrounding. Adjusted with values (yama and niyama), they easily determine direction of the action and in complex situation they can easily perceive broader picture. Persons with the higher level of awareness are honest and authentic, they openly speak about their potentials, they speak about the vision that they are directed by with a great assurance. Objective self-estimation allows correct insight into the personal possibilities, capabilities and limitations. The following concept of the yoga intelligence includes previously mentioned components. It is made of the following dimensions: **awareness** is the key component of the yoga intelligence. Self-awareness represents ability of a yogi to recognize his/her energy, body, emotional and mind potentials in time and space. This ability helps in choosing skills that should be developed in order to continue process of self-improvement. Ability of managing oneself relates to the artistry of managing mentioned inner potentials by using wide range of yoga techniques. Self-motivation represents capability of persistence besides facing the failures that are

present along every development pathway. Awareness of the surrounding represents ability of recognizing, understanding and managing the processes that are going on with the surrounding. Therefore, it is implied that an individual who practices yoga will wish to transfer his/her knowledge to the students after attaining higher levels of awareness. Synchronicity represents interaction on energy, non-verbal level that allows non-verbal relation with another persons.

Table 2. Concept of the yoga intelligence abilities overview

YOGA ABILITIES – COMPETENCES – SKILLS		
<b>SELF-AWARENESS</b>  Awareness (1-6) Self-estimation (7) Self-valuation (8)	1	Recognizing his/her own: energy, body and physiological, emotional, mind, creative and motivational processes.
	2	Recognizing locus of attention (focus of attention)
	3	Recognizing personal and overall non-ephemeral existence
	4	Recognizing causality in inner processes
	5	Recognizing uniqueness and unity of all processes
	6	Recognizing purpose and sense in every moment
	7	Knowing his/her own strengths and limitations (personal limits and possibilities)
	8	Objective self-valuation – consideration of the personal values and competences (self-respect)
<b>MANAGING INNER POTENTIALS</b>	1	Managing personal: energy, body and physiological, emotional, mind, creative and motivational processes. (by using yoga techniques: kriya, bandha, mudra, asana, pranayama, pratyahara, dharana, dyana).
	2	Adjustment, i.e. flexibility in changeable situations according to available energy status and present possibilities
	3	Self-control (brahmacharya) – inhibition of all forms of satisfaction in the favor of developmental achievements
	4	Silent and non-intrusive initiative – without withdrawal from the self-improvement
	5	Orientation towards self-development: striving to always do better and accomplish more. Give your maximum and be satisfied with what you attained.
	6	Consistence in values, carrying out yoga practice, emotions and behavior.
	7	Positive approach to the world, oneself and the one's

		life, present and everyday living.
	8	Accepting oneself and reality as it is.
	9	Easiness in obtaining because all self-improvement steps are to be made in the frames of pleasure
AWARENESS OF THE SURROUNDING	1	Ability to recognize and sympathize with emotions that other people feel.
	2	Attentiveness
	3	Awareness of causality of phenomena and unity of all people, creations and ideas
MANAGING RELATIONSHIPS	1	Ethical (integrity, responsibility, sympathy and forgiveness came out of yama and pranayama)
	2	Nurturing relation (support and abetment came out of the relation Master – student)
	3	Unselfishness in helping to the seekers
	4	Catalyst of developmental changes of the students
	5	Resonant influence by the personal example.
	6	Managing relations in the group of students.
	7	Synchronicity (adjustment on energy level)

Ethics emerges from yama and niyama (rules of behavior and ways of compliance). It is made of four components: integrity, responsibility, sympathy and forgiveness. Moral codex for yogi represents capacity for mirroring. Yoga practitioner realizes that he/she raises level of awareness by accepting principles of yama and niyama, but mirroring takes place also from another direction. By development of awareness it is easier to adopt principles of yama and niyama. Ethics is the nature of yoga because self-improvement enables insights of unity which contributes to adoption of the universal human values, choosing humane goals and activities. Person with integrity differs with harmonizes behavior according to the universal ethical principles. Yoga practitioner with integrity do what he/she thinks is the right to do and is supported by accepted ethical values. Person who overtakes responsibility and consequences of his/her actions is able to adjust his/her activities with universal ethical values and principles.

Nurturing relation towards others doesn't include only care for others but also creating climate that that behavior becomes model to the others. Forgiveness is important principle because without tolerance for mistakes and awareness about personal weaknesses we tend to be rigid and nonflexible where there is no understanding for needs of the other person.

### Essential intelligence

Essential intelligence enables us to gain insight into the deeper meaning of the life purpose, as well as the role which that meaning, values and purpose play in



life, strategy and mind processes (Zohar, Marshall, 2004).<sup>1</sup> Essential intelligence represents ability that enables to recognize sense in all activities and integrate essential life values. It puts life in a broader and more refined context. Essential intelligence is made of: flexibility, ability of facing challenges of life, high level of self-awareness, being inspired by the vision and values, hesitating to harm anyone, tendency of finding relation in differences, search for essential answers and independent action. Similarities of essential and yoga intelligence are obvious. Can we say that yoga is a method for attaining essential intelligence. However, yoga intelligence is characterized by completeness in approach. Yoga is the life philosophy, but also a practice. We can speak about essential intelligence, but yoga possesses the pattern to achieve it.

Table 3. Concept of the essential intelligence

ESSENTIAL INTELLIGENCE	ELEMENTS
	Self-awareness
	Spontaneity
	Being led by vision and values
	Holistic approach
	Empathy
	Respect towards differences
	Independent thinking
	Cognitive curiosity
	Moving boundaries
	Positive usage of trouble
	Gratefulness
	Feeling of being invited

Meaning, creativity and purpose are three deepest motivational factors. Essential intelligence, by authors, enables perception and resolving problems of the sense and value. It enables the life and activity to be situated in the broader, more content context of the meaning and to estimate on time if the flow of action and life road have more sense than the other one. Essential intelligence helps the individual in finding and using the deepest inner sources of tolerance; development of the clear feeling that every person is unique and unrepeatable idiom; possibility of perception of the right meaning of event, finding purpose in work; connecting personal values with clear sense and purpose.

By practicing yoga we touch our deepest meaning, deepest values, the most fundamental purposes and the highest motives, finding the way to incorporate all that in our lives and our work. By practicing yoga we raise awareness about inner potentials but also devotion to higher interests, in the name

<sup>1</sup> Zohar, D.& Marshall I: Spiritual capital, The Ultimate Intelligence, London: Blomsbury, 2000.

of humanity and future. Awareness helps to the yoga practitioner to recognize what he/she believes in, to recognize approachable potentials, which he/she tends to and what he/she takes responsibility for.

Therefore, we can perceive yoga intelligence as a capability that helps us to approach the deepest meanings, values, characteristics and the highest motives. Yogi forms moral intelligence – ability to make difference between right and wrong, important and irrelevant. It represents intelligence that helps us to express goodness, truth, beauty and empathy in relationships. Yoga intelligence enables a sort of guiding, i.e. putting experiences form the deeper dimensions of imagination out in everyday life, ours and lifes of our families.

Yoga intelligence influences forming the unity. It enables integration of the many fragementts of life, activity and existence. It helps in cognition of the sense and purpose. Practicing yoga leads practitioner to the contact with deepness of the being and deep sources of the inner potentials. It allows insight and understanding to move from those deepness up to the surface of our being, where we act, think and feel.

Tabela 4.

General characteristics of adaptive systems and yoga intelligence	
COMPLEX ADAPTIVE SYSTEMS	Self-organization
	Bounded instability
	Unpredictibleness of formation
	Holistic approach
	Adaptability
	Evolutive mutations
	Sensitivity on external control
	Questioning
	Changing the context of surrou nding
	Odrer from chaos
	Modesty
	Feeling of being invited
YOGA INTELLIGENCE	Self-awareness
	Spontaneity in steps on the path towards the state of Samadhi
	Yogi is led by vision, mission and accepted values
	Holistic approach
	Development of awareness enables development of empathy in yoga practitioner
	Respect of differences
	Independent thinking without a need for approval

	from others
	Constant search for meaning
	Not accepting limitations and constant pushing the boundaries
	Ability to transform problems into challenges aimed for growth

Trying to constitute concept of yoga intelligence, we didn't reach a simple definition that includes all its aspects. Yoga intelligence influences the way we see and understand the life, world, our basic convictions and our personality. Listed characteristics of adaptive system stimulate creative evolution of the system, so we can perceive them as the principles of transformation inside the system. Mind, awareness and their structured contents represent complex adaptive system that is activated in contact with the field of meaning making the basis of every try of the change of human motives, and thus behavior. Self-awareness enables yoga practitioner to recognize his/her own believes, values and motives, as well as awareness of deepest personal life goals. Spontaneity enables yogi to live in the present moment, but also responsibility for every moment of life. Yogi is led by his vision of the mission and adopted values. His behavior is conditioned by adopted principles and deep believes. Holism is the yoga competence that helps in accomplishing feeling for the system and mutual connection. It provides ability to perceive greater patterns, relations and connections with strong feeling of belonging. By development of consciousness, in yogi enlivens empathy which is basis for universal empathy. Respect of differences implies appreciation of other people and accepting unknown situations regardless of their difference. Relying on the passed deep experiences, yogi strengthens free and independent thinking in him. Yogi obtains ability to maintain his thinking by following humane values regardless the influence of the media, cultural pressures or any other influence. Yogi never forgets that everything is in service of the search for meaning and attaining the state of unity – Samadhi. In every appearance, yogi searches for essence. In every situation, yogi searches for the higher perspective or wider context. Yogi searches for lectures that bring him closer to the self-realization in every situation. Yogi learns from his own mistakes, perceives problems as the chances for growth in self-improvement. Yogi is aware that self-improvement contributes to something much greater than he is. Yogi cherishes outstanding gratitude for knowledge, masters, disciples and he wants to help. By achieving the state of Samadhi, yogi is able to decide to go back to everyday living and help the other to accomplish the same.

### **Indicators of change in the sphere of behavior**

By adopting yoga as a system (life philosophy and practice), there appears change of motivation and its dynamics in an individual. But it is hard to measure and detect that change, if it doesn't express through the change in behavior and

attitudes. More precisely, we cannot notice person's motives, but we can describe and categorize her/his behavior. Starting from the patterns of behavior that are in correlation with the process of yoga intelligence mentioned above, it is possible to describe type of behavior that shows high yoga intelligence and thus the higher motive. That is the type of behavior that we hope to be the part of the people's everyday living, and that could result in the culture of high yoga intelligence.

## Conclusion

Yoga intelligence is the ability to accept to tend to the higher motives and it enables to influence them. Searching for the meaning represents the key trigger that starts the yoga seekers. Yoga intelligence supports searching for the deeper meaning, purpose and values, it enables growth and development with the aim to attain self-realization (Samadhi). Yoga intelligence represents ability of the unlimited insight in the whole existence as such. It gives deeper meaning of knowledge. It gives deeper meaning of knowledge and discovering deepness or importance of the phenomena. Yoga is adaptive intelligence. Yoga intelligence helps in self-understanding, i.e. in recognition of motives that really stimulate behavior. Yoga intelligence enables critical view of the condition as it is from "what could be" point of view. Yoga intelligence enables that we imagine situations and possibilities that still doesn't exist in reality, by resolving old patterns and old ways of thinking. Yoga also have the strength to disintegrate old motives and upraise them to the higher motives, therefore, we should give her more attention in the onward researches.

## References:

1. Bahadur, R., Vasu, S.C. (1914-15): *The Gheranda Samhita*
2. Griffith, Ralph T. H. (1893): *The Sāmaveda Samhitā*.
3. Nikić, P.(2010): Emocionalna inteligencija u menadžmentu i organizacionom ponašanju, Zadužbina Andrejević, monografija, Beograd.
4. Nikić, P.(2010): Menadžment ljudskih resursa u svetlu uticaja socijalne inteligencije menadžera na upravljanje karijerom zaposlenih, Anali Ekonomskog fakulteta u Subotici broj 23, Subotica,
5. Nikić, P.(2009): Emocionalna inteligencija menadžera u funkciji etičkog ponašanja u organizaciji, Anali Ekonomskog fakulteta u Subotici br 22, str. 61-69,
6. Nikić, P. (2008):. Emocionalna inteligencija menadžera u korporativnoj kulturi kao faktor organizacionih promena. "Obrazovanje, nauka i proizvodnja", Zbornik Univerziteta "Sukhov", Belgorod, Rusija
7. Nikić, P.(2009): Emocionalna inteligencija kao izvor referentne moći menadžera u organizacionom ponašanju, Belgorod, Zbornik Univerziteta "Sukhov", Rusija
8. Patandali (1977): Izreke o jogi. Beograd, BIGZ.
9. Sastri, Mahadeva, *The Yoga Upaniśads*, text with commentary of Sri Upaniśad-Brahma-Yogin, Madras, 1920
10. Sivananda, Swami (1995), *The Bhagavad Gita*, The Divine Life Society.
11. Svami Višnu Devananda (2005): Hata joga pradipika. Beograd, Babun.
12. Van Nooten, B., Holland, G. (1994): *Rig Veda, a metrically restored text*, Department of Sanskrit and Indian Studies, Harvard University, Harvard University Press, Cambridge, Massachusetts and London, England.

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## **EFFECTS OF YOGA PRACTICE ON OVERCOMING THE STRESS**

**Abstract:** *In this article, the beneficial effects of yoga practicing to ability of adequate stress response were analyzed. The initial hypothesis was that non-difficult yoga exercise, breathing techniques and relaxation lead to the better tolerating of stressful life situations and to the overcoming of leaking of well-balanced state and feeling of disability. All these benefits would lead to the better insight in problem solving, possibility of energy restoring and efficiency in everyday's living. Also, the one acquires the better insight in its own perception, reactions and behavior in life situations, which enables the overall overcoming the stress.*

*The emotional condition of participants was evaluated using the instrument Profile Index Emotion – PIE (Plutchik and Kellerman, 1974), Yugoslav revision and standardization (Kostić, 1997), which measures eight dimensions, and their scores were compared along these dimensions. The research was conducted during 2009. with the sample of 30 yoga instructors and 30 persons that wasn't practicing yoga nor relaxation techniques, of both genders and different education level, aged from 25 to 61.*

*Statistically significant differences between the group of yoga instructors and group of participants not-practicing yoga were noted, particularly in three dimensions: Depravity, Aggressiveness, and Exploration. This research points out that the following characteristics were more pronounced in the group of yoga instructors: satisfaction with one's personality, feeling for sense of living, absence of emotional tension, direction to the present, foundation in reality, and perspective way of looking to the future. We could conclude that yoga practicing, including yoga ananas, breathing techniques, meditation and relaxation, contribute to the better responding to stressful situations which became daily challenge. Also, better emotional stability, absence of feeling of denying and destruction, and conciseness on reaction principals were also achieved.*

**Key words:** *yoga, relaxation, stress, health, personality*

### **Stress**

The concept of stress was firstly defined in 1936, by Hans Seyle, endocrinologist from Montreal, in his study on adaptivity system, as the “state of non-specific tension in living organism which occurs as reaction on environmental

influences”<sup>2</sup>, “non-specific response of body to any demand for change”<sup>3</sup>, Seyle understood that changes in organs and endocrinous system (controlled by hypophysis) has protective character and are aimed to move all resources within the organism to prepare to overcoming the disturbing influence.

### Definitions of stress

Stress is the state or feeling of a person who considers that the every-day's demands overcomes his/her ability to respond adequately. That state of long lasting tension leads a person to physiological changes, with negative consequences to health condition, causing the feelings of frustration, mental and physical exhaustion.

Šverko, B. et al. (1992) reported that, in psychological sense, “stress is a condition which appears in persons coping with situations that they consider as a threat for their own good, or with situations when their additional efforts are necessary”<sup>4</sup>.

It is also believed that the stress is anything that asks for adaptations, any change in our life circumstances, either positive or negative. Even the thinking about (a thought) or sensing the change (an emotion) cause stress.

The same which is very stressful situation for one person, could be the small inconvenience for another, or even pleasure for some other person (weeding, promotion). It was registered that individuals don't have the sense of stress when they have enough time, experience and resources to cope with a particular situation. Therefore, the amount of stress is individual evaluation and depends on personal capacities of an individual in certain situation, on his/her life perspective and ability to respond productively to different stages, changes and demands in life.

### Sources of stress

The circumstances that cause stress are named as stressors ('hitters'). This could be any change of energy state that excites the receptors. Stressors of high intensity and long lasting have negative effect, because they cause strong stress reaction and they can easy lead to the breakdown of protective vigour. Intensity of stress reaction often depends on the fact if its effect could be neutralized or amortized. Some of stressful situations could be avoided. However, for the individual it is not beneficial to avoid all stressful situations, because only successful coping with these challenges could make a proper response for future

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<sup>2</sup> Nedić, O., Filipović, D., Solak Z. (2001): Profesionalni stres i kardiovaskularne bolesti kod zdravstvenih radnika, Novi Sad, Medicinski pregled.

<sup>3</sup> Nedić, O., Filipović, D., Solak Z. (2001): Profesionalni stres i kardiovaskularne bolesti kod zdravstvenih radnika, Novi Sad, Medicinski pregled.

<sup>4</sup> Lazarus, R.S., Folkman, S. (2004): *Stres, procjena i suočavanje*, Jastrebarsko: Slap

similar situations, the one is achieving life skills, and self confidence and self respect.

Lazarus and Folkman<sup>5</sup> describe four types of stressors, or sources of stress. These are:

- Acute, timely restricted stressors (jumping with parachute, waiting for surgery, face to face with wild animal)
- The chain of stressors, or events which appear during a long period as a consequence of some initial event such as loose of job, divorce or death of a close person.
- Chronic interrupted stressors, as conflict visits to relatives or sexual disorders which occur once a day, once a week, or once a month.
- Chronic stressors, as permanent invalid state, parent's arguing or chronic stress at job, which can, but not necessarily, be caused with some particular event, and they last for a long period.

### **Health consequences of stress and possibility of overcoming**

The long lasting psychical stress causes psychosomatic disorders. Biochemical reactions begin in hypothalamus and hypophysis area. The final result of these actions is stimulation of adrenal gland and hyper production of adrenalin, caused by activation of symphatic part of vegetative nervous system. After several seconds, the heart rhythm became faster, muscles get in tension, the pupils spread, and the glucose from liver and muscles releases. This is the way how the organism prepares for fight or running away, by increased amount of sugar in muscles, faster heart rhythm, narrowing of blood vessels, increasing of gastric acid, and increasing of overall alert of organism.

The stress symptoms ring a bell that something is wrong. They are the reflection of overall mobilization of defense vigorous of body, and shouldn't be diminished. They come in different phases of stress exposure and could be of different intensity. The stress symptoms are well recognizable in the area of thinking, emotions, physical health and behaviour<sup>6</sup>.

Emotional blockade, caused by fears and anger make the stomach and thorax, which disables proper breathing. The breathing becomes inadequate, superficial, interrupted, shortened. The thoughts also become confuse and fast, and it is hard to find the solution for the situation.

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<sup>5</sup> Lazarus, R.S., Folkman, S. (2004): *Stres, procjena i suočavanje*, Jastrebarsko: Slap

<sup>6</sup> Lazarus, R.S., Folkman, S. (2004): *Stres, procjena i suočavanje*, Jastrebarsko: Slap

## Yoga techniques

Hatha yoga techniques significantly contribute to the psychosomatic health. It represents an assemblage of techniques which influence to the flexibility of the spine, internal organs, endocrinous system, cardio-vacular system. Using the hatha yoga techniques, the practitioner puts his efforts to get a body which is an adequate instrument for harmoniously functioning of mental activities. Devotional and long lasting practicing of yoga could bring back to the body its natural ability of self-regeneration. Every-day's dedication of time to these simple techniques which needs the deep brings back the life pulsation to every cells, so they become regenerated and released of the difficulties caused by every-day's duties of speedy life.

It is recommended to the practitioner to practice withing the range of pleasure, as his body allows, and during the time body widens its borders, without any pressure. The exercise are to be practiced with full attention to the place of action, the practitioner follows the reactions of his body, and achieves the ability to manage these reactions instead of their management over us and our lives. Appropriate breathing is very important, which means that person has to breath completely, with each exhale to move out all used air, and to move in the maximal amount of fresh oxygenated air with each inhale.

Practitioner can often feel significant benefits, if they used to have troubles caused by fatigue, stress and insomnia. They begin to notice that they have breathed only with the lungs' peaks, and that their brain and other organs didn't receive enough of oxygen. In certain positions, the nerval endings, and the tiny muscles are being engaged, so the body can feel a lot of benefits from these actions. The new pulsation within the organism starts.

Asanas are the positions in which the body can stay without effort, with muscles relaxed, breathing continuously and with attention being directed to the place of action, the place of stretching or strategic place for particular position<sup>7</sup>. Asanas are the only one part of yoga, but for the men from west world who sits for the most of day, they represent the major part of yoga practicing, having the fast and visible effect and preparing the practitioner for the other parts of yoga.

Sports and gymnastics which are based on external effects are the most effective in muscle development, while 'asanas influence the deepness of our inner world, on the one side physically (internal organs, endocrinous system, brain, willing and vegetative nervous system), and on the other side on mental area where they brings us the peace and equanimity which doesn't exclude dynamics and joy. Over the practicing of yoga, we achieve incomparable flexibitly, amazing endurance, without any fatigue or slackness. Besides, the asanas are extraordinary exercise for full concentration<sup>8</sup>.

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<sup>7</sup> Nikić, P. (1999). *Priručnik za kurs za instruktore joge*, Beograd, Akademija samousavršavanja.

<sup>8</sup> Lizbet, A. (196x) *Učim jogu*, Zagreb, Sportska tribina.



## **Importance of the yoga breathing**

To live means to breath – to breath means to live<sup>9</sup>. The breathing is the well-known technique for decreasing the tension, relieving the stress, relaxing. When the person come to the situation that overcomes the persons' abilities for reacting, he usually stays for a second to make several deep inhales and exhales, to clear the mind, release the tension and to be able to think on upcoming steps.

The majority of population breath badly or wear clothes which limits the movements of abdomen and thorax, especially ladies – they breath only with lungs' peaks. In yoga, we distinguish three sorts of breathing: abdominal, toracal and clavicular breathing. Total yoga breathing combining all three sorts and represents the ideal kind of breathing.

The adequate way of breathing is extremely important for calming the heart beating, relaxing the tension and decreasing the stress. Proper breathing should be practiced without any effort. Ideal breathing is deep, slow, quiet and easy, and the exhale is twice longer than inhale. Total yoga breathing (three layered breathing) has effects to plexus solaris, heart, blood vessels, brain and other organs providing overall health condition, physical and emotional.

With breathing we provide the properly functioning of all body and brain functions, we bring the oxygen to the each cell in the organism, while we eliminate the carbon-dioxide.

## **Yoga active relaxation**

Relaxation or energetic restoring is the way to achieve complete physical, emotional and mental relaxation. Relaxation in yoga of yoga nidra is the one of the most powerful methods of relaxation. The person in modern world thinks that he relaxes and relieves while reading, watching TV, smoking, drinking coffee – the senses are completely occupied, the mind is directed to the outside, which don't fit to the scientific definition of relaxation. In yoga, even sleeping can not be truly relaxation. The presence of awareness, the senses must be quiet, retreated from the outer world, and then the relaxation could be used for the development of better memory, increasing of creativity, better attention to the point, transformation of our own nature. The realising from tension, relaxation and the spirit are the secret of change. When the person is in tension, his behavior is changed as well. The real nature of a person appears in the stages released of tension.

## **Object, aim and methods of research**

In this article we are discussing the possibility that the long lasting practicing of yoga can increase the ability of adequate stress response, which is the part of every-day's life. The research is conducted with the group of yoga

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<sup>9</sup> Lizbet, A. (196x) *Učim jogu*, Zagreb, Sportska tribina.

instructors which practice yoga for a several years, though every-day's practicing the postures, breathing techniques and relaxation techniques. The another group of participants in this research were the individuals who didn't practice yoga. The both groups were tested with PIE test for personality, which measures eight dimensions (Incorporation, Protection, Orientation/Uncontrol, Depravity/Deprivation, Oppositionality/Rejecting, Aggressiveness, Research/Exploration and Reproduction), and their scores are compared along these dimensions.

The aims of this research are:

- 1) To determine hypothesized relationship between two variables, yoga practicing and stress resistance.
- 2) To determine hypothesized relationship between yoga techniques (asanas, breathing techniques, relaxation) and the characteristics of the personality which imply the higher or lower stress resistance.

To achieve these aims, we postulated following hypotheses of research:

- 1) The stress resistance is higher in persons who practice yoga techniques than in person who don't practice, i.e. There is statistically significant difference in stress resistance between individuals who practice yoga and individuals who don't practice yoga.
- 2) Self-satisfaction, the feeling of sense of life and absence of emotional tension is higher in the group of yoga instructors.
- 3) Orientation to the present, foundation in reality and perspective looking into the future were more pronounced in the group of the yoga instructors, experiencing the yoga techniques during the years (asanas, breathing techniques, meditation and relaxation).

In this research the variable (factorial), uni-factorial, bivalent plan with independent groups (unrepeated factor) is used.

The sample consists of 60 informants, two groups of 30 informants each. In the first group were included yoga instructors, as the informants who practice yoga, breathing techniques, meditation and relaxation for a long period (4-15 years). This sample was eligible, since it is homogeneous in regard to measured variable. In the second group were included volunteer informants, not-practicing yoga, and this sample was equable by age with the first group. Subjects were aged from 25 to 61 years, 42 women and 18 men.

Control variable in this research in the age of informants.

Independent variable (factor) is the yoga practicing. Two levels of factor are: a) informant practice yoga, b) informant don't practice yoga

Dependent variable is stress resistance (ability of adaptation in stress situations) measured with PIE test (Profil Index Emotion) which measures eight dimensions (see above).

In data analysis we used the methods of descriptive statistics, Chi-square test, t-test for independent samples and analysis of variance.

## Results and discussion

Results acquired using the test Profile Index Emotion (PIE)

For evaluating if the difference by gender in both groups is significant (the sample was not equable by gender, only by age), we determined the frequency of women and men in the sample, as shown in Table 1. It is shown that the sample was consisted of 30% men and 70% of women.

Chi-square test showed as following:

Chi-square test for **control group** showed that there was not significant differences by the gender of informants. Chi-square test for **criteria group** is statistically significant. We can note that there is statistically significant difference by gender in criteria group, i.e. that the yoga instructors are predominantly women. Chi-square test for difference between the number of women in criteria and control group is not statistically significant. Chi-square test for difference between the number of men in criteria and control group is statistically significant, i.e. in control group there is significantly higher number of men than in criteria group.

As the measure of dependent variable, for each group of informants, the arithmetic means were noted for eight dimensions of PIE test. Considering that the plan of research is of variable kind, for the statistic analysis of data we applied the analysis of variance. Statistical significance was tested with t-test.

To determine if there were significant differences by gender in measured variables, we applied **analysis of variance between genders**.

Table 1. Descriptive statistics for measured variables by gender

	gender	N	Arithmetic mean	Standard deviation
Reproduction	Men	18.00	84.72	13.34
	Women	42.00	87.74	13.49
Incorporation	Men	18.00	73.94	20.36
	Women	42.00	77.14	14.51
Uncontroll	Men	18.00	60.28	17.36
	Women	42.00	63.21	15.33
Self-protection	Men	18.00	47.00	15.88

	Women	42.00	47.71	15.17
Deprivation	Men	18.00	35.56	16.62
	Women	42.00	31.67	13.28
Opositionality	Men	18.00	31.28	9.19
	Women	42.00	29.81	13.88
Exploration	Men	18.00	41.28	12.15
	Women	42.00	51.07	13.52
Aggressiveness	Men	18.00	36.56	14.08
	Women	42.00	29.14	12.07
BIAS	Men	18.00	68.67	10.08
	Women	42.00	71.62	8.66

Table 2. Significance of differences between men and women.

	T-test for independent samples		
	T	df	Significance
Reproduction	-0.796	58	0.429
Incorporation	-0.691	58	0.493
Uncontroll	-0.653	58	0.516
Self-protection	-0.165	58	0.87
Deprivation	0.963	58	0.34
Oppositionality	0.411	58	0.683
<b>Exploration</b>	<b>-2.764</b>	<b>35.648</b>	<b>0.009</b>
<b>Aggressiveness</b>	<b>2.073</b>	<b>58</b>	<b>0.043</b>
BIAS	-1.152	58	0.254

As shown in Table 2, the differences in two dimensions between women and men are significant (analysis of variance). Analysis of variance shows that there are statistically significant difference between men and women in dimension Exploration – women have significantly higher score. In the dimension Aggressiveness, men had higher score than women.

**Analysis of variance between the groups** was done to determine if there were statistically significant difference between criteria group – yoga instructors and control group – informants not practicing yoga, in dimensions of PIE test.

Table 3. Arithmetic means and standard deviations of measured variables by groups.

	Group	N	Arithmetic mean	Standard deviation
Reproduction	Control group	30.00	86.33	12.38
	Yoga instructors	30.00	87.33	14.55
Incorporation	Control group	30.00	77.83	12.76
	Yoga instructors	30.00	74.53	19.40
Uncontroll	Control group	30.00	62.00	16.38
	Yoga instructors	30.00	62.67	15.63
Self-protection	Control group	30.00	45.43	17.28
	Yoga instructors	30.00	49.57	12.89
Deprivation	Control group	30.00	37.00	12.64
	Yoga instructors	30.00	28.67	14.91
Oppositionality	Control group	30.00	29.90	10.16
	Yoga instructors	30.00	30.60	14.81
<b>Exploration</b>	Control group	30.00	44.23	11.73
	Yoga instructors	30.00	52.03	14.75
<b>Aggressiveness</b>	Control group	30.00	34.80	13.14
	Yoga instructors	30.00	27.93	12.21
BIAS	Control group	30.00	68.83	9.60
	Yoga instructors	30.00	72.63	8.34

Table 4. Significance of differences between criteria and control group.

	T-test for independent samples		
	T	df	Significance
Reproduction	-0.287	58	0.775
Incorporation	0.778	58	0.44
Uncontroll	-0.161	58	0.872
Self-protection	-1.05	58	0.298
<b>Deprivation</b>	<b>2.335</b>	<b>58</b>	<b>0.023</b>
Oppositionality	-0.214	58	0.832
<b>Exploration</b>	<b>-2.267</b>	<b>58</b>	<b>0.027</b>
<b>Aggressiveness</b>	<b>2.097</b>	<b>58</b>	<b>0.04</b>
BIAS	-1.636	58	0.107

The analysis of variance between groups (yoga instructors and informants not-practicing yoga) shows that there are statistically significant difference in

dimensions Deprivation, Exploration, and Aggressiveness. Deprivation is more pronounced in control group, Aggressiveness as well, while Exploration is more pronounced in yoga instructors group. Significant differences in Deprivation could be attributed to the influence of observed factor, while differences in Exploration and Aggressiveness could be attributed to gender: Aggressiveness is higher in men, while Exploration is higher in women (there are more women in criteria than in control group).

The variable Aggressiveness is influenced by both factors (gender and group), but independently. Our results showed that the difference between these factors there is no relationship.

The variable Exploration is influenced by both factors, in the inter-reacting way, because their influence is not independent, they act together which can be proved from the results (there is interaction between these factors in particular variable).

According to Plutchik, Deprivation stands in average positive correlations with Aggressiveness and Exploration<sup>10</sup>. Also, Aggressiveness is highly negatively correlated with Exploration<sup>11</sup>, which was confirmed in our research. Informants who don't practice yoga has higher score in Aggressiveness, and lower in Exploration, while the opposite was noted for yoga instructors.

Inter-correlations between dimensions of PIE in control group show statistically significant negative correlation between Deprivation and Self-protection. In the group of yoga instructors, we noted statistically significant correlation between Deprivation and Orientation (Uncontroll).

## Discussion

The main idea of this research was to determine if there were a connection between the continuous yoga practicing during the long period (and therefore the subjects were yoga instructors and persons who don't practice yoga) and means of stress overcoming. We hypothesized that every-day's practicing of yoga, breathing techniques, meditation and relaxation enables the better amortization of stress. Informants were tested with Profile Index Emotion (PIE) test.

In recent publications (Orneesh, D., 2007) it was reported that there is correlation between yoga practicing, vegetarian diet and relaxation techniques with breathing tech, and health condition in patients suffering of heart problems, and also that yoga and meditation plays a role in decreasing of stress, increasing of emotion regulation and slowing the effects of brain aging (Benson, H.).

Results of this research show that yoga practicing can be actually associated with the way of reacting to stress. There is significant difference in scores in three dimensions in two analyzed groups, and these are: Deprivation, Aggressiveness and Exploration, which are in average positive correlation according to Plutchik.

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<sup>10</sup> Kostić, P. (2003). *Priručnik PIE – JRS*, Beograd, Društvo psihologa Srbije.

<sup>11</sup> Kostić, P. (2003). *Priručnik PIE – JRS*, Beograd, Društvo psihologa Srbije.

In this research we noted statistically significant difference between men and women in dimensions Aggressiveness and Exploration, and also the difference between criteria and control group in Deprivation.

Particularly important results of our research are those showing significant difference between two groups of informants in dimension Deprivation, independently on gender. Results show that the individuals don't practicing yoga have more pronounced melancholy, sadness, un-satisfaction with one-selves and life perspectives in comparison with yoga instructors. They also feel higher emotional tension and inner emptiness, balderdash of presence and absence of future perspective, they press the troubles and conflicts instead of resolving them. Yoga instructors are more satisfied with their psychological situation which is the presumption for happiness and fulfillment. The person in such emotional state will be ready to react adequately to stress situations and to cope with them.

Those individuals who have higher score in Aggressiveness show higher tendency to arguing, antagonism, destruction. Usually persons living in the world of idea who diminish the reality are highly aggressive. However, high aggressiveness is the sign of natural and health expanse, need for growing and expressing oneself and his potentials, and a sign that the person will fight for his right if needed. Highly aggressive and destructive individuals with tendency to arguing will be hardly functional in stress situations. If we understand aggression as the character denoting assertiveness (standing for oneself and his rights without threatening other individuals), such kind of individuals are expected to be more adaptable in stress situations.

In regard to the fact that our research covered more male informants in control group, we couldn't conclude that the not-practicing of yoga is associated with high score in Aggressiveness.

Results with group of yoga instructors show decreased Aggressiveness and high score in Exploration, or lively need for understanding and knowing environment for presumption that the larger knowledge will bring the better functioning. These individuals use their life experience for coping with outer circumstances. Those are adequate and well-balanced personalities with solid self-control, they accomplish long lasting actions, they are ready to put a long lasting efforts to get to the goal. Using their intellectual efforts, they can successfully control their psychopathology.

In regard to the fact that our research covered more female informants in control group, we couldn't conclude that the practicing of yoga is associated with high score in Exploration.

The group of informants who don't practice yoga has low score in Exploration, which denotes rarely planning of future, disorganization in thinking and activities, and often is a sign of lacking the insight in inner person and his situation. We would need to conduct another similar research with controlling the variable Gender, to conclude that these characters were associated with non-practicing yoga. The only dimension which can be put in conclusion is Deprivation, since there was no gender influence in that case.

Individuals who practice yoga and meditation have better insight in their own perception, reaction and behavior in life situations. Through yoga practicing, we learn to be aware in everyday stress responding.

## Conclusion

Research confirmed that the practicing of yoga, including asanas, breathing techniques, meditation and relaxation, contribute to better navigation in stress situations which are part of our daily life.

With practicing of yoga we achieve better emotional balance, absence of felling of denying and destruction, self-satisfaction, sensing the meaning of life, knowing of our way of reacting – though focusing our attention to actions within our body, slowing and deepening our breathing, balance of breathing and movements, physical and mental relaxation.

In this way, we also encourage the orientation to the presence, foundation in reality and perspectively looking into the future.

## References:

1. Andrijašević, G. (1976): Upanišade: sveti spisi starih Indijaca. Osijek, Glas Slavonije.
2. Benson H. (2000): The relaxation response updated and expanded (25th the anniversary edition) New York: Avon.
3. Benson, H.; Wallace, R. K. (1972): The Physiology of Meditation. Scientific American. Vol. 226, No 2, 84-90.
4. Coulter, H.D., McCall, T. (2001): Anatomy of Hatha Yoga: A Manual for Students, Teachers and Practitioners, Indianapolis, Body and Breath.
5. Kostić, P. (2003). Priručnik PIE – JRS. Beograd, Društvo psihologa Srbije.
6. Lazar SW, Bush G, Gollub RL, Fricchione GL, Khalsa G, Benson H. (2000). Functional brain mapping of the relaxation response and meditation. Neuroreport 2000; 11: 1581-5.
7. Lazarus, R.S., Folkman, S. (2004). Stres, procjena i suočavanje, Jastrebarsko, Slap.
8. Lizbet, A. (196x). Učim jogu, Zagreb, Sportska tribina.
9. Nedić, O., Filipović, D., Solak Z. (2001): Profesionalni stres i kardiovaskularne bolesti kod zdravstvenih radnika, Novi Sad, Medicinski pregled.
10. Nikić, G. (2009): Uvod u psihologiju menadžmenta. Novi Sad, Cekom.
11. Nikić, P. (1994): Tajne samousavršavanja, Beograd, Akademija samousavršavanja.
12. Nikić, P. (2007): Povezanost vrednosnih orijentacija i preferencija životnih stilova menadžera i korporativne kulture, Anali Ekonomskog fakulteta u Subotici, br.18, Subotica.
13. Nikić, P. (1999): Priručnik za kurs za instruktore joge, Beograd, Akademija samousavršavanja.
14. Ognjenović, P., Škorc, B., (2005): Naše namere i osećanja: uvod u psihologiju motivacije i emocija, Beograd, Gutenbergova galaksija.
15. Ornish, D. (2007): The spectrum: a scientifically proven program to feel better, live longer, loose weight and gain health
16. Patandali (1977): Izreke o jogi. Beograd, BIGZ.
17. Svami Višnu Devananda (2005): Hata joga pradiipika. Beograd, Babun.
18. Vlajković, J. (1992): Životne krize i njihovo prevazilaženje, Beograd, Nolit.
19. Vujinović, M. (2009): Antistresni program u funkciji menadžmenta ljudskih resursa, diplomski rad, Alfa univerzitet, Fakultet za trgovinu i bankarstvo, Beograd.
20. [www.yogasavezsrbije.com](http://www.yogasavezsrbije.com) (pristup: septembar 2009.)



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## **PSYCHOLOGY OF YOGA AND YOGA PSYCHOLOGY**

***Summary:** In contemporary times Yoga, like laptops, notebooks, and mobile phones, is ubiquitous. It is unbelievable that it has made inroads in nooks and corners of the world and even in those countries where Communist ideology ruled the roost. The virtues of practicing yoga postures, and other allied techniques are extolled so much that sometimes it has gone from sublime to the ridiculous. On the research front, investigators have approached yoga primarily as a technique of inducing altered states of mind, as stress reduction strategy, as therapeutic adjunct and at times as a technique for promoting positive growth. While these efforts have yielded useful and beneficial results, these efforts have been criticized for their failure to do full justice to the original intention and context in which yoga as a system was developed and established. Hence, there is a necessity to distinguish between psychologists' approach to yoga and Yoga as a psychological system as it was originally conceived in Indian traditions. In this paper this distinction will be elaborated and discussed.*

**Key words:** yoga, yoga psychology, psychology of yoga

### **Introduction**

Perhaps the one system of Indian tradition, which has attracted the attention of both laypersons and of researchers all over the world, is Yoga. Currently yoga has become a populist term and next to computer and mobile, I think, yoga has become a household term worldwide. Whether it is a businessman, a professional, a researcher, a politician, an artist, a student, a sportsperson, a housewife or a patient, each one of them find practicing yoga beneficial in one way or another. Yoga has become the means to achieve health, efficiency, productivity and prosperity. Considering yoga in its original and modern context (see Feuerstein, 1989a, b; Murphy & Donovan, 1997), we can say that the scope of yoga ranges from simple relaxation to profound realization.

### **Psychology of Yoga**

Much of the early research on yoga happened in from the perspective of modern psychology in distinct contexts. First, it was primarily examined as a technique of gaining mastery over what was hitherto considered as 'involuntary nervous system' or autonomic nervous system. Alyce and Elmer Green of

Menninger Foundation were very much influenced by the potentialities of yoga, which they studied in India and found that biofeedback technique to some extent resembles certain procedures in the system of Yoga developed by Patanjali. Since then Biofeedback has been termed as Western equivalent of Yoga by some. The work of biofeedback by Green and Green showed that it is possible to regulate the activity of autonomic nervous system, which was hitherto considered beyond the voluntary control of humans. The experiments conducted on the great yogi Swami Rama in Menninger Foundation in this direction (Science Studies Yoga by Swami Rama and Rudolph Balentine) also aroused much research interest in the potentials of yoga leading to the establishment of The Himalayan Institute for the scientific study of yoga in the United States.

Second, the studies by Olds and Milner on the self-stimulation of certain brain centers by rats, later termed as “pleasure center”, made these researchers to wonder whether it is possible that an organism can give up even basic needs if it found a way to get “pleasure”, which is not extrinsic in origin. This work which was conducted in the context of understanding brain-behavior relationship also made some scientists to wonder whether practicing yoga has similar effects in humans on brain and nervous system.

Third, the researches on Transcendental Meditation of Maharshi Mahesh Yogi in Harvard University by Herbert Benson lead to widespread interest on its potentialities to induce relaxation. Benson coined the term “relaxation response” to describe the many physiological and psychological changes that he and his associates recorded in TM practitioners. This study opened up many vistas of clinical application of meditative practices.

Fourth, researchers interested in the study of consciousness, approached procedures of yoga as a way of inducing altered states of consciousness. Dean Shapiro in one of his classic papers identified that meditation research has progressed in two primary directions viz., as a “self-regulation strategy” and as an “altered states of consciousness”.

Since the above mentioned studies in late 1950s and 1960s, scientific study of yoga have been conducted across the globe in several countries and the studies on the effect of āsana, prāṇāyāma, dhāraṇa and dhyāna are often reported under the broad heading meditation, which also includes many other traditional methods like vipassana, Sufi dervish dance, on the one hand, clinically oriented meditation methods developed by psychologists and psychiatrists. Patricia Carrington (1987) termed meditation as an ‘umbrella concept’, which holds many varieties of ‘procedures and techniques developed with different intent and purpose’. Thus, in the past five decades scientific study of yoga has progressed to unravel its potentialities primarily as a clinical tool in reducing anxiety, stress, depression, etc., and to examine its effects on physiological and psychological functions. Psychodynamic, behavioral, cognitive, humanistic-existential and transpersonal perspectives have been employed in understanding the nature and process of meditative phenomena (Salagame, 2002). In this process yoga is Westernized and globalized and it is no more Indian, like English language is no

more British. Just as English language has many variants like American, Indian, and so on, Yoga also seem to have been adapted to suit local needs and contexts and there are different dialects of Yoga in practice. Most of the contemporary research on yoga is carried out from a universalistic orientation, with a view to understand the essential mechanisms involved in different related procedures/techniques. With this, yoga is often projected in the media in a limited way as practicing certain posture (*āsana*), breathing exercises (*prānāyāma*) and meditation (*dhāraṇa* and *dhyāna*). Even many teachers and training institutions have limited yoga to some bodily exercises.

To take a few examples from the Indian scenario, some researchers have conducted ‘controlled experimental studies’ in order to examine the effect of yoga techniques on certain psychological processes (Kumar, Kaur & Kaur, 1993; Mishra & Dube, 1999; Mohan, 1995; Mohan, Rao & Mohan, 1996; Penjwani, et al. 2000; Rani & Rao, 1994, 1996, 2000; Sridevi, Sitamma, & Rao, 1995, 1998; Telles, Nagarathna, & Nagendra, 1995). Others have utilized them as ‘intervention strategies’ in a bid to promote health and wellbeing (Aminabhavi, 1996;; Geeta, 1998; Janakiramaiah, et al., 1998; P.V. K. Rao, 2003; Sachdeva, 1994; Sujatha, 1999; Triveni & Aminabhavi, 1999; Vempati & Telles, 1999; Verma, 1996-97). These researchers have focused on the use of one or more of the procedures like *āsana*, *prānāyāma*, *dhāraṇa*, *dhyāna*, *kriya*, *bandha*, and *mudra*. Primarily these activities involve regulation of breathing, assuming different postures and gestures, cleaning the bodily systems using water and cloth, manipulation of attention and concentration, and regulating thought flow. Clinically oriented studies among the above, have evaluated the outcome of yogic practices in relation to autonomic parameters like heart rate, blood pressure, respiration rate, rate of oxygen consumption; body weight; serum cholesterol; plasma prolactin; cortisol level; quality and amount of sleep and such other physiological and biochemical indicators. Generally it is reported that these parameters show improvement in the physical health status and well being of practitioners. In contrast, negative emotions like anxiety, depression, dysthymia, hostility, neuroticism, and stress have shown decrement. Thus, studies conducted on yoga are many and varied in their objectives (Salagame, in press).

One of the main problems in evaluating the therapeutic efficacy of yoga is the lack of commonality in the procedures followed. “Yogic life style”, “Induced Yogic Relaxation Training”, “Yoga Nidra”, “Yoga Based Isometric Relaxation”, “Sudarshana Kriya”, “Yoga practice”, and “Yoga training” are some of the phrases used by different researchers, which involve one or more techniques. Since almost all researchers report improvement in the health and well being of the participants, it looks as if anything and everything of yoga seems to have a beneficial effect. It is difficult to assess precisely what are the core components or competencies of yoga that bring about such a result. Most researchers seem to have been rest contented with demonstrating the therapeutic efficacy of yoga, without attempting to understand the mechanisms underlying the relation between the procedure/practice/technique and the neurochemical, neurophysiological and

psychological processes. Thus, it is difficult to tell which techniques work with whom and when. In this matter, yoga instructors seem to have better understanding from their practical experience with practitioners than researchers and there is a need to develop theory driven research designs to study the efficacy of yoga techniques (Salagame, in press).

However, Yoga is not just that. But modern scientific framework because of its philosophical assumptions and derived methodologies limits the scope of yoga. A major problem in all of these researches is the failure to address the primary purpose for which Yoga was originally conceived and developed. Michael West (1986), after reviewing hundreds of such research on psycho physiological aspects of meditation conducted in the Western context exclaimed in desperation as follows. “Why has meditation therefore been practiced for thousands of years in a variety of cultures and religious and philosophical context if this is all that it accomplishes (p. 250)”. What this remark indicates is that researchers miss the original purpose and significance of yoga, and there is a need to go back to its original context (Salagame, 2002). Yoga is a total way of life for self-transformation, to become a more refined human being, and to develop one’s spiritual potentialities. As a spiritual discipline Yoga helps us to go beyond the current understanding of mind through modern psychology, to explore, experience, and expand the range of our psychical potentialities and awareness. In view of this there is a need to distinguish between Psychology of Yoga and Yoga Psychology. Rest of the paper elaborates on this distinction.

## **Yoga Psychology**

Yoga has a long past. Swami Satyananda Saraswati (1997) estimated that yoga dates back to Tantric civilization that existed all over the world ten thousand years ago. Since then it has developed continuously up to modern period. During this long span of time the word yoga has been used with different connotations (see Apte, 1970) and different forms of yoga have come into existence.

Yoga psychology as I have used the term here is an attempt to underscore the point that contemporary approaches to the study of yoga/meditation have not done adequate justice to its original goals. Elsewhere I have stated as follows: “contemporary thrust on meditation is like using a space ship to lift cargo across a ten kilometer distance! (Salagame, 2002, Jacket cover)”. The researchers have failed to appreciate the fact that Yoga is a voyage to an ‘inner space’ and the procedures are like space ship with many tiers, which help in the upward thrust. To use a space ship to lift cargo to an insignificant distance is to grossly underestimate its capacity. Contemporary researches have done this by primarily focusing on treating ailments with āsana, prāṇāyāma, dhāraṇa, dhyāna, kriya, bandha, and mudrā. In a way yoga has become ‘body centered’. Reason for such a development is not far to find.

Modern psychology, though continues to be called Psychology, has become “psyche” less (soul less), under the weight of scientific paradigm. Psychology of

Yoga as now practised is a ‘Soul less Yoga’. But Yoga as originally conceived was with Soul and the Yoga Psychology, in its original is a “Soul full Yoga”. Therefore, we need to think of a paradigm which is inclusive of Soul and it guides research which is “Soul centered”. Without a new paradigm, we cannot understand much of what Patanjali has said or what Upanishads or spiritual teachings of any other tradition are speaking about. As a matter of fact, in India our ancient thinkers did not focus on mental activities and processes, so much so an independent branch dedicated to the study of mind does not exist (Rao, 1960). They were more concerned with Soul and its liberation. Mind was discussed in the context of liberation and therefore it was part of what in India is popularly known as *Ādhyātma*, spiritual pursuit.

In the West, an attempt to develop a new paradigm commenced about four decades ago when some researchers conceptualized Yoga as a technology of inducing ‘altered states of consciousness’ (Naranjo & Ornstein, 1971; Tart, 1969). Nevertheless, it is to be emphasized that even this approach falls short of what is originally understood as Yoga. In Indian intellectual tradition, Yoga is understood as a practical discipline and has always been referred with *Sāṃkhya*, which provides the theoretical basis for the former. According to *Sāṃkhya*, there are two fundamental principles in the universe *Purusha*, usually understood as the principle of pure consciousness or the intelligent principle in the universe and *Prakṛti*, the principle of materiality underlying phenomenal universe. From the paradigm of *Sāṃkhya*, the final goal of Yoga is to differentiate the two and realize the *Purusha*, the principle of consciousness. Within this paradigm, *Prakṛti* is understood of three *guṇa* viz., *sattva*, *rajas*, and *tamas*. These three are translated by many as the primordial essences or principles of illumination, energy, and inertia which in different proportions give rise to both mental and material phenomena. While mental phenomena are primarily dominated with *sattva*, material phenomena are primarily dominated by *tamas*. Therefore, mind-matter is a continuum, not categories as understood in the Western intellectual traditions. While Indian traditions accept the duality between pure consciousness and matter, there is no such conceptualization in the Western tradition.

Modern psychology does not differentiate between mind and consciousness. It does not recognize *Ātman* or *Purusha*. In the Indian traditions these two are identical with consciousness or “pure consciousness” and they are distinguished from mind, *manas* or *chitta* or *anthakarana* (Murthy & Salagame, 2007). What we study in modern psychology is all about the latter, nothing about the former. Therefore, to study one set of process developed from a particular paradigm from another paradigm which does not recognize certain fundamental distinctions is a logical fallacy. The attempts to approach Yoga as Transpersonal Psychology, also does not fulfill the requirement of original purposes, because most transpersonalists fail to draw the distinction between ‘transpersonal’ and the ‘transcendental’ (Salagame, 2010).

This can be illustrated with the example of Patanjali’s definition of Yoga. Patanjali defined Yoga as *chitta vṛtti nirodhah*, which when translated means,

cessation of all the modifications of mental activities that include ordinary or non-ordinary cognition, affect and volition. If one can achieve this condition then the Seer will abide in one's own nature (*tathā drashtuhu swaroope awasthānam*), which is the ultimate Yoga. Therefore, even to consider yoga as psychology of consciousness in the Western sense is incorrect. It was never meant to dwell in the ordinary or extraordinary mental states, though they do occur in the course of achieving the highest goal. Patanjali's interest was not in mental phenomena, which are again expression of Prakṛti, but to "know", Puruṣa. In actuality it is Viyoga, separation of Puruṣa from Prakṛti. Patanjali's Yoga Sūtra delineates this process step-by-step, and hence it has been regarded as a practical manual for transformation of consciousness (Feuerstein, 1989b).

This view can be more clearly expressed with the help of a verse (7th verse) from Mandūkya Upanishad, which perhaps was composed earlier to Yoga Sutra of Patanjali. This verse makes it clear that what is called Ātman is a 'ground state' and is in the backdrop of all the three states, jāgrat (waking), swapna (dream), and sushupti (sleep). These are states of mental activities (as in waking and dream) or the absence of it (as in sleep), but not "pure consciousness". When this was brought to the attention of this author three decades ago, by a practitioner of Vedānta, it was a great revelation to me as a young researcher. It had the effect of "figure-ground reversal" in the Gestalt sense; because I had studied in modern psychology literature that altered state of consciousness refer to alteration in mental functioning, which is qualitatively different from normal waking state (Salagame, 1988, 2002). Thus, the latter was the frame of reference. But, when I listened to the Vedāntin who told me that even waking state is itself an altered state from "pure consciousness" or Turiya, fourth, as Mandūkya Upanishad puts it, it was a "bolt from the blue" experience. Developing these ideas has implications for the understanding of the nature of human cognition and contemporary understanding of Yoga as a whole.

### **Directions to develop Yoga Psychology**

Now I will attempt to delineate a few directions in which research on Yoga Psychology as I have defined above can proceed. I will be citing certain views and attempts made by Indian researchers in this direction, with which I am familiar.

### **Distinction between Sāmkhya and Yoga in Bhagawad-Gita**

Perhaps the earliest text, which deals with yoga in great detail, and provides a classification, is Bhagawad-Gita (BG). As Feuerstein (1989a) has recorded the chronological sequence Mahābhāratha epic, of which BG is a part, was composed between 300 B.C.E - A.D. 300. The life time of Patanjali who authored Yoga Sutra (YS) is 150 B.C.E. Therefore, there are reasons to believe that BG is earlier to YS. We come across at least five different usages of the word

yoga in BG: (1) to designate ‘a way of salvation or liberation’, i.e., Yoga as contrasted with Sāmkhya; (2) as a suffix to refer to the ‘method or means’, as in jñāna-yoga (also called buddhi- yoga) and karma-yoga; (3) to mean ‘action, effort and discipline’; (4) to refer to a ‘state of equanimity’ and; (5) as ‘skillful action’ (Edgerton, 1965; Rama, 1996). These different connotations have been utilized in Indian tradition in different texts and treatises and thus the meaning of yoga is context sensitive. It is interesting to note that each chapter of Bhagawad-Gita is given a title that ends with yoga as suffix viz., Arjunavishādayoga, Sāmkhyayoga, Karmayoga, Jñānakarmasanyāsayoga, Sanyāsayoga, Dhyānayoga, Jñānavijānayoga, Aksharabrahmayoga, and so on, the last chapter being titled mokshasanyāsayoga.

Of primary importance is the clear distinction between the usage of the terms Sāmkhya and Yoga. Bhagawad-Gita makes it clear that, if one consciously chooses “to be”, after exercising discrimination between Self and non-Self, then he or she is free from involving in any kind of activity in the world either for the sake of self or for the sake of the other. There are no compulsions in the action of such a person and he or she has no obligation whatsoever. Further, such a person’s actions will not result in the accumulation of karma for the future nor do they have any consequence in the present. This is the path of Sāmkhya (BG, Chapter 2, Verses -49-51).

Such a person firmly established in the awareness of True Self and being contented in one’s Self (ātmanyevātmanā tushtaha) is known as sthitaprajna. Such a person is said to remain equipoised both in the face of sorrow/suffering and in moments of pleasure and happiness. He or she has conquered desire, fear, and anger and of the firm intellect and is also called a muni. He or she withdraws the senses from external attraction and has conquered the natural tendencies of mind. He or she has not attachment to anyone or anything and accepts good and bad, neither congratulates nor hates (neither likes nor dislikes) and such a person’s awareness is said to be firm (in transcendental Reality or Self) (BG, Chapter 2, Verses – 54-72).

The path of Sāmkhya involves discrimination and the path of Yoga involves action. Lord Krishna, who functions as a counselor to Arjuna, when the latter refuses to fight in the great war between two dynasties –Pandava and Kaurava in Mahābhāratha, tells that action carried out without Self-awareness and for material gains leads to bondage, whereas actions carried out with Self-awareness and without attachment to the fruits of one’s action is liberating. The latter he terms as Yoga or Karma Yoga or Nishkāma Karma or Anāsakti Yoga. To contrast the path of discrimination with that of action, the former is termed in BG as jñāna-yoga (path of knowledge) or buddhi- yoga (path of intellect which discriminates).

In Indian traditions, the path of knowledge involving intellectual discrimination (viveka and vairāgya) was later developed in the Systems like Vedānta in greater detail. However, the System known as Sāmkhya founded by Kapila in 600 B.C.E became the philosophical backbone for the Yoga Sutra of

Patanjali in later years. While the term Sāmkhya used in BG stood for a particular path, the term Sāmkhya used by Kapila represent a metaphysic or a paradigm. It is the latter, which is important in the context of Patanjali.

On the other hand, in BG, Lord Krishna dwells more on the path of action, Karma Yoga. One should note that in Indian culture the Karma Yoga of BG is given more importance than Ashtāṅga Yoga of Patanjali. A layperson in India is more acquainted with the teachings of BG than YS. Mahātma Gandhi, Bāla Gangādhara Tilak, and Gurudev Ranade who were prominent in Indian independence movement were more interested in Karma Yoga or Nishkāma Karma or Anāsakti yoga of Bhagawad-Gita than in Patanjali Yoga. Even Swami Vivekānanda who founded the Rāmakrishna Mission also laid greater emphasis on Karma Yoga or Nishkāma Karma or Anāsakti yoga.

### **Nishkāma Karma /Anāsakti Yoga of Bhagawad-Gita**

Though, Lord Krishna taught about the path of discrimination between Self and non-Self, all human beings are not capable of opting non-action with discrimination of Self and non-Self and all cannot easily conquer one's feelings and emotions, which push them to involve in worldly activities. Bhagawad-Gita, in 18 chapters, deals extensively with the dynamics of human action delineating the sources of human motivation. The major thrust of Gita is that no organism, ever born, can remain inactive and it is in nature's scheme to be active. Therefore, one cannot shy away from action. On the other hand, one should choose to act wisely and consciously, without attachment to the fruits of one's action. It emphasizes that human beings are motivated by certain emotions like desire, anger, avarice, stinginess, attachment, pride, and jealousy, which in contemporary Positive Psychology are referred to as negative emotions. They are responsible for all human misery and suffering. To free ourselves from their limiting influences is considered the most important aspect of the practice of Yoga.

Edgerton (1965) notes that when Bhagawad-Gita speaks of Yoga often it means a different kind of 'disciplined activity'. It is remaining in worldly life and doing one's duty, without selfish interest. It is nishkāma-karma, without expecting any fruits or rewards, with an attitude of non-attachment, anāsakti. These are elucidated in Chapters 3, 4, and 5 of Bhagawad-Gita. Chapter 4 speaks of 'knowledge of renouncing fruits', which is known as anāsakti yoga. It is the "spiritual path that emphasizes performing one's actions without becoming attached to their fruits. This is an alternative for those who do not prefer the path of renunciation (Rama, 1996, p.466)".

Thapa (1983) examined the meaning and implications of the concept anāsakti, particularly with the gross material phenomena and the outcomes of one's actions delineated in the Gita. She identified the dimensions of the concept, traced their linkages with current motivational concepts and developed an instrument for assessing effort and outcome orientations as an individual difference variable. Pande (1990) continued this line of interest in a major



empirical work on anāsakti for her doctoral research (see Naidu, 2002). Pande and Naidu (1992) note that self-realization demands disengagement of consciousness from desires and desires are directives of the sense, spring from the identification of self with the ego and its concerns of ambition, pride, attachment (āsakti) and insistence on mineness (mamatva). “Anāsakti means detachment of the spiritual principle, the basis of consciousness, from the body and the ego. Anāsakti or detachment is a means towards self-realization and it is also an end state because a realized soul is spontaneously anāsakta or detached” (Naidu & Pande, 1992, p.85). The ideal of anāsakti embodies the principles of spiritualism as well as exhortations to pragmatism and action orientation (Pande & Naidu, 1992, p.91). These researchers have operationalized the concept anāsakti based on the descriptions of the attitudes and behavior of a sthitaprajna, which also served as the source for the measure of Anāsakti (Naidu & Pande, 1999). They found that anāsakti or non-attachment was a health-promoting attitude. Another equally important psychological finding was the existence of individual differences in this variable, with a leptokurtic distribution of scores. While Pande and Naidu’s studies revealed that anāsakti is a health-promoting attitude. Tewari (2000) and Tewari & Srivastava (1998) did not find empirical support for it. Nishkāma karma is a radical departure from Western thinking, in which belief in ‘internal locus of control’ (Rotter) is not only considered normal, but also held as an ideal. Achievement motivation is eulogized in the Western context and therefore a concept like anāsakti looks farfetched. There is a need to explore this construct further.

### **Yoga as a way of life**

In practicing yoga the most important aspect is awareness. In our daily life we often function in a habitual way without being aware of many things about ourselves. Sigmund Freud told us that our own desire, emotions, wishes, thoughts, etc., about whose existence we are blissfully ignorant, guide most of our actions. They are there, but we are not conscious of them. This is personal unconscious in Freudian sense.

But, in Indian tradition we find another explanation of unconscious. Gita considers that an ordinary person though he is awake is still in darkness. A verse in Bhagawad- Geeta (Chapter II, 69) says thus: A restrained and self-regulated person remains awake in that which is darkness (night) to all the organisms. Ever awakened ones see that darkness which is a wakeful state to others. Therefore, Gita is concerned with leading a person from unconscious to ever awakened conscious state. Taimni (1961) emphasizes that the ‘theory of the causes-of-affliction’ is the foundation of Patanjali’s system of Ashtāṅga Yoga. Feuerstein (1989a) observes that, “the yoga theory of the subconscious is one of the earliest models of depth psychology” (p. 179). This theory can be found in verse 1 to 27, (see Feuerstein, 1989b), which delineate the psychopathology of human condition and how one should transcend and get liberated. Both Gita and Yoga Sutra trace

the problems of human suffering to our desires, emotions, false identifications, and suggest that the only way to get over is to awaken to one's 'true nature', swaroopa, which is Atman or Purusha.

Awakening to one's true nature involves what is called spiritual Self-awareness, which can be differentiated from psychological self-awareness. Psychological self-awareness refer to becoming conscious of all our interests, attitudes, values, desires, feelings beliefs, needs and so on. Some of them are unconscious as already mentioned. The primary aim of modern psychotherapies is to enhance psychological self-awareness. Spiritual Self-awareness refers to that which is described as Atman in Upanishads and Vedanta and Purusha in Sāmkhya and Yoga. Whether they are same or different is a question that cannot be answered easily and beyond the scope of this essay. While psychological self-awareness is important to lead a well-adjusted and healthy life, it does not guarantee spiritual Self-awareness. All spiritual disciplines are aimed at realization of Self. While Self-realization can facilitate the development of psychological self-awareness, the opposite is not true. While the former requires a vertical leap, the latter is horizontal expansion.

Another aspect of this spiritual awareness is the extraordinary cognitive abilities. Researchers have not paid attention to the concept yogi pratyaksha (J. Sinha, 1958), which is direct cognition unmediated by sensory apparatus. Similarly the various stages of samādhi are not examined by Indian researchers, though there have been a few by Western researchers (see Brown, 1983). Further, Feuerstein notes that most yogins, like most people, "do not have an intellectual bent of mind. But yogins, unlike ordinary people, turn this into an advantage by cultivating wisdom and the kind of psychic and spiritual experiences that the rational mind tends to deny and block out". Yet there are exceptions like Patanjali, Nāgārjuna, Vijnāna Bhikshu and Shankara who were also brilliant intellects besides being adepts of Yoga (ibid, p.168). This point seems to have been missed by many researchers, because of inherent limitations of their perspective.

Haridas Chaudhari regards Ashtānga Yoga as "multidisciplinary approach to ultimate self-realization". He distinguished the eight aspects into three kinds of disciplines viz., ethico-religious, (yama and niyama), physico-vital (asana and prānāyāma) and psycho-spiritual (prathyāhāra, dhāraṇa, dhyāna and samādhi (Chaudhari, 1975). It involves leading disciplined life. Discipline in our ethics and code of conduct (yama and niyama) and in our bodily functioning (asana, prānāyāma and prathyāhāra), which facilitate disciplining the overall functioning of the mind or one pointedness (dhāraṇa) leading to meditative absorption (dhyāna) and transcendence (samādhi). Discipline involves discriminating between what is right and wrong, appropriate and inappropriate, useful and useless, harmful and harmless for spiritual development and incorporating them to our way life. In other words, it means to lead a self-regulated life with constant awareness. In other words, it is an attempt at mastering one's psycho physiological processes with discipline and effort.

Rao (1995) notes that though Patanjali Yoga and Tantra are differentiated, merger of both the systems has resulted in such popular forms as Hatha yoga and Raja yoga. Hatha yoga refers to the traditional formula / discipline aimed at perfect mastery over body. The five groups of techniques being kriyas, āsanas, mudras, prānāyāma and bandhas are practiced in various combinations to restore health of body; elimination of wastes and toxins; and to develop attitudes like courage, serenity etc. On the other hand, 'Raja Yoga' or 'Patanjali's aṣṭāṅga yoga' is a way of life with a set of practices for regulation of mental activities (yogaha chitta vrtti nirodhah-YS 1-1). They are aimed to free consciousness from the processes and identifications related to the prakṛti. Patanjali's first five limbs of eight-fold path are described as the preparatory external form of yoga and the last three limbs as internal and essential form.

However, most contemporary researches on Yoga have given a go by to yama and niyama and they do not find any place in the research designs. Walsh (1999) noted that practicing only āsana, prānāyāma, and dhāraṇa without following the preparatory stages can lead to negative consequences and may not help in realizing the full potentials. Patanjali's Yoga Sutra in dealing with super conscious states and associated phenomena speaks of the link between following yama and niyama and certain siddhis, though their causal relations are not dealt in detail. Gita on the other hand, also emphasizes on remaining in a sāttvic state as the most important aspect of awakened state and yama and niyama represent such sāttvic behavior. Therefore, study of yama and niyama as an integral part of research design is essential.

One such attempt was made by a doctoral student of this author, where yama and niyama were conceptualized as individual difference constructs with the assumption that in a population the aspects of these two can be found naturally as aspects of personality and they are distributed normally. An instrument to measure them as personality dispositions, consisting 10 sub-scales, with eight items in each totaling to 80 items, titled Yama – Niyama Questionnaire was developed (Kalyan Kumar, 1993). The questionnaire found to correlate significantly with sattva characteristics measured by a questionnaire developed to assess triguna (Uma, Lakshmi and Parameshwaran, 1971).

Palsane (1998) identified the following psychological benefits of yoga: 1) Yoga helps in developing impulse control, cultivation of an attitude of detachment, gaining control over the excitation and its potential fallout, leading to maintenance of neuropsychological balance. (2) Meditation is useful in clarifying goals and resolving internal conflicts. (3) Motivational and attitudinal orientations involved in prescription of Yamas and Niyamas are intended to take care of most of the stress producing situations in life. (4) It provides a rational and empirical system of thought and living, and anything that causes disturbances can be examined in the light of yoga. (4) In yoga, like modern psychotherapies, de-emphasizing of ego involvement is emphasized for many abnormal conditions, anxieties and stresses. (5) "Freedom from bondage" in yoga signifies one's liberation from all kinds of fixations and attributes as well as continual feelings of freedom and knowledge.

## **Yoga as a holistic therapy**

Yoga can also be approached from a therapeutic point of view. Bhagavad-Gīta, Patanjali's Yoga Sūtra and Yoga Vāsishtha are the three important texts on yoga, which have a common theme, i.e., overcoming the human suffering that occurs due to a fundamental ignorance of the true nature of one's identity or self. Primarily all three of them elucidate how a false understanding of the nature of one's self is responsible for all the existential predicaments of human beings. Both Bhagavad-Gīta and Yoga Vāsishtha deal with this directly keeping Arjuna and Sri Rama as the central characters involved in existential dilemmas, and expound how one could come out of them through yoga.

Patanjali's yoga can be considered as 'cognitive-psychodynamic-behavioral and transpersonal psychologies all rolled into one' at the same time. Some of the concepts like samskāra, vāsana, and karmāshaya, which are related to depth psychology aspects, need attention. Most contemporary researchers have not paid attention to these concepts probably because they are not amenable for measurement. Rao, (1995) observes that the goal of all philosophies and spiritual techniques including Yoga Sūtra is to liberate oneself from suffering through psycho physiological discipline, knowledge, certain attitudes, and ways of life. Yoga can be blended with Psychoanalytic and Rational Emotive Behavior Therapies or can be used as a part of an eclectic approach, provided that it does not involve any religion, deity etc., and only under the general framework of psychotherapy. This broad framework should contain only clients' issues and needs, and should aim at the following: developing (i) a broader perspective of self and world; (ii) self-discipline; (iii) expanding one's awareness to control body, mind, feelings; (iv) emotions, thoughts and behavior; (v) developing responsibility, acceptance, congruence, and compassion; and (vi) an attitude of witness to life with less ego involvement and more task orientation. Swami Rama's works and other books by the Himalayan International Institute of Yoga Science, USA, can provide a conceptual framework and a set of procedures for yoga therapy (Rao, 1998).

## **Yoga as psychology of transformation**

Both Patanjali's Yoga Sūtra and Kundalini Yoga can help develop yoga as psychology of transformation. Most contemporary researches have focused more on the forms of yoga like Hatha Yoga, Raja Yoga, and Kundalini Yoga, without bothering much about yoga as the end state, samatvam, and stithaprajnatva, as described in BG. The ultimate concern of all forms of Yoga is the end state, not the technique. What is common to all of them is that "they are concerned with a state of being, or consciousness, that is truly extraordinary" (Feuerstein, 1989a, p.11, this is samādhi).

Kundalini yoga is an approach to self-transformation, which is based on the understanding that primordial energy is located in human beings and is in a

dormant state and it is possible to change its state from potential to kinetic through certain practices. Tradition has it that the awakened energy called Kundalini Shakti, progresses through a number of points, chakras, in the human being, which are being located in various points from the base of the spine to the crown. While modern anatomical methods cannot find them through laboratory dissection of the human body, many mystics vouch their experiential reality. The passage of awakened energy through different chakras is said to take a systematic course of ascendance from bottom to top, with definite physical, physiological and psychological correlates.

Many investigators have tried to understand the relation of chakras to physiological processes and structures of the gross body. Roney – Dougal (1999) has considered the pineal gland as the physical locus of ājnā chakra, conceived in yogic tradition as being the psychic centre of our being. She explores the yogic idea of ājnā chakra as the command chakra, which regulates other chakra centres. She observes that there are multiple references to the importance of melatonin as the ‘off switch’ for the endocrine gland's output of hormones, working together with the pituitary gland, which is considered to be the ‘on switch’. She suggests that the pineal gland is the physical aspect of ajna chakra; the thyroid of vishuddhi, the breasts of anāhata; the adrenals of manipura; and the gonads of swādhistāna and mulādhāra. These endocrine glands are all positioned at the different chakras, and their functions go very well with the traditional descriptions of the chakra functions. She therefore proposes that the endocrine system is the physiological aspect of the yogic spiritual tradition of the chakras, and that the autonomic nervous system can be equated with the yogic nadis.

This kind of reductionism is problematic. In Indian tradition, three types of body viz., sthūla (gross), sūkshma (subtle) and kāraṇa (causal) are distinguished and Kundalini shakti is understood as primarily rooted in the latter two, with secondary manifestations in the first. Here again, many researchers ignore the indigenous perspectives on such phenomena and resort to reductionism. There is a necessity to examine the notions of three types of body, with reference to recent developments in consciousness studies and in the notion of energy.

### **Sri Aurobindo's Integral Yoga**

Sri Aurobindo's Integral Yoga is another approach for transformation, which is being explored only recently by researchers (Joshi & Cornellsen, 2004; Reddy, 2004).). Sri Aurobindo has synthesized all the different traditions of Yoga with the purpose of helping humanity in self-transformation.

### **Conclusion**

As Yoga has become a worldwide phenomenon there is a need to emphasize the fact that contemporary trends of Yoga is reducing it to certain bodily exercises involving posture and breathing, which is far from what Yoga

really means in its original context. While there is no doubt that there are many therapeutic benefits of Yoga and it also serves to enhance psychological growth as humanistically oriented psychologists conceived it, it should be emphasized that these are only fringe benefits of practicing Yoga. Further, though Yoga is defined as skill in action, in Bhagawad-Gita, it is never meant to be understood as a technique to achieve some temporary gain, with achievement motivation. Neither Bhagawad-Gita nor Patanjali Yoga Sutra defines Yoga in a limited sense in this way. Both view Yoga as a way of living that ultimately lead to transcendental Self-realization resulting personal transformation. Thus, Yoga, as understood in India, is itself a System of Psychology and there is a need to distinguish this from how contemporary psychological perspectives approach Yoga. If one limits only to the latter then one may lose the insights of the former into human nature. Therefore, there is a need to study Yoga Psychology as such. Both Psychology of Yoga and Yoga Psychology can be complementary in advancing our understanding of human behavior.

#### References:

1. Aminabhavi V.A. (1996): Effect of yogic practice on attitudes toward yoga and mental health of adults. *Praachi Journal of Psycho- Cultural Dimensions*, Vol. 12 (2). 117-120.
2. Brown, D. P. (1983): Levels of concentration meditation. In. K.Wilber, D. P. Brown, & J. Engler (Eds.). *Contemporary and contemplative perspectives on meditation*. Boston: Shambala.
3. Geeta, K. A. (1998): Study of the effectiveness of a holistic intervention model in cases of peptic ulcer. Unpublished Doctoral Dissertation, University of Mysore, Mysore.
4. Joshi, K. & Cornellisen, M. (2004): *Consciousness, Indian psychology and yoga*. New Delhi: Centre for Studies in Civilizations.
5. Kumar, K. (1993): Effect of the preparatory stages of ashtanga yoga on personality characteristics. Unpublished Doctoral Dissertation, University of Mysore, Mysore.
6. Kumar, S.S., Kaur, P. and Kaur, S. (1993): Effectiveness of Shavasana on depression among university students. *Indian Journal of Clinical Psychology*, 20(2), 82-87.
7. \*Salagame, K.K.K. (1988). States of consciousness: perspectives from modern psychology. In M.A. S. Rajan (Ed.) *Consciousness: Proceedings of the workshop*. The Academy of Sanskrit Research, Melkote, India
8. \*Salagame, K. K. K (2002). *Psychology of meditation a contextual approach*. Delhi, India: Concept Publishing Co.
9. \*Salagame, K. K. K (2010). Need for the distinction between transpersonal and transcendental. *Consciousness Revolution*. 17<sup>th</sup> International Transpersonal Conference, Moscow, June 23-27.
10. Salagame, K. K. K (in press). Developments in indigenous Indian perspectives: Potentials and Future Possibilities. In G. Misra (Ed.). *Fifth ICSSR Survey of Research in Psychology*. New Delhi: Pearson Education.
11. Salagame. K. K. K. (2002). *Psychology of meditation: A contextual approach*. Concept Publishing Company, New Delhi.
12. Murphy, M., & Donovan, S. (1997): *The physical and psychological effects of meditation*. Sausalito, CA: Institute of Noetic Sciences.
13. Salagame. K. K. K. (2002): *Psychology of meditation: A contextual approach*. Concept Publishing Company, New Delhi.
14. Sinha, J. (1958) : *Indian psychology*, volume 1- Cognition. (2<sup>nd</sup> Ed.). New Delhi: Motilal Banarasi Das. (1996)

15. Sitamma M, Sridevi K., and Rao P.V. K. (1998): Yoga training and cognitive task performance. *Journal of Indian Psychology*, 16(2), 34-39.

Note: \*These papers have been published earlier under the author's first name (Kiran Kumar). The author has switched over to APA format of citation with last name/family name (Salagame).

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## **DIFFERENCES IN PERSONALITY TRAITS AND MOTIVATION FOR RECREATIONAL PRACTICE OF YOGA & FITNESS IN WOMEN**

**Summary.** *Based on numerous studies in sports psychology there is a paradigm that the structure of athletes personality significantly differs from non-athletes, as well as understanding that there are significant differences among athletes involved in different sports. That's the basic theory in our research setting, where we have a sample of 160 respondents (women practicing recreation) and we attempted to determine the existence of differences in personality traits, and self-motivation, comparing the group of those involved in hatha yoga (80 respondents), with those dealing with the fitness (80 respondents).*

*The study used short form of personality test known as the Five Factor Inventory (NEO-FFI), which measures five basic dimensions of personality to the Big-Five model of personality inventory and DELTA-20 (Knezevic, 2008), which assesses 10 modalities of disintegration regulatory functions, the instrument for assessing the functioning of the self-evaluating system GENSEL-40 (Opacic, 1995) and questionnaire for the examination of motivation in sport and recreational activities (by Keith Johnsgard, according to Mikalački M., 1995), which includes the usual list of 10 motives for the practice in sports and recreational activities.*

*The results show that there are significant differences in all three domains investigated psychological observed between the two groups of subjects. In the domain of basic personality structure, respondents involved in yoga have statistically significantly higher scores on the dimension of Openness in relation to the respondents involved in fitness, as well as significantly lower scores on the Neuroticism dimension. In the domain of self-perception or self-concept, there was found that the subjects involved in yoga have significantly lower scores on the subscales Misanthropy in relation to the respondents involved in fitness. The structure of motivation for physical exercise showed that in respondents involved in yoga, motives for skills and vitality are represented to a greater extent than in relation to the respondents involved in fitness, whereas there are the less represented motives for weight loss and beauty. Viewed as a whole, the results show that the structure of personality and motivation to a great extent determines the type of recreational activities and sports which the individuals are involved in.*

**Key words:** *recreation, yoga, fitness, personality traits, self-concept, motivation.*



## Recreation and personality

**Recreation** (Lat. re-creatio – refreshment; entertainment, fun; re-creation) is defined as activity that takes place in an individuals' free time, by free choice, with voluntary participation, in order to rest, refreshment, entertain and meet the needs for movement, playing and socializing (Mitic, 2001). There is a number of values of recreational activities and they reflect in health, education, economic and socio-psychological significance (Blagajac M., 1992). The role of recreation is important in all periods of human life and all ages, as it contributes to positive changes in health, social and psychological terms.

**Psychological effects of recreational exercise** are numerous and positive, and according to previous researches, most effects are the following: improving emotional health, improve mood and motivation, favorable impact on the emotional and social adaptation, strengthening feelings of personal values, reduction of aggression, reduction of general fatigue, positive effect on attitudes related to recreation, physical exercise benefit is reflected in the treatment of manifestations of mental disorders.

**The motivation for engaging in recreation** is different and it grows. People are engaged in recreation in order to meet the specific needs of medical, social, aesthetic and/or psychological nature. Especially in the field of recreation, motivation has a threefold role: determines the type of activity determines persistence in the performance, gives the quality to the feeling of success and satisfaction (which is the most important at the psychological level). (Pajević D., 2003) Motivational incentives for the SRA are to be found in person itself as well as in environmental factors (including at the first place: the living conditions in the family, school and workplace). That the socio-demographic factors are quite influential engaging in the sport showed, among other things, the results of Havelka and Lazarevic (Havelka N., Lj Lazarevic., 1981) and Galic (M. Galic, 1995). Four main reasons for participating in fitness programs are: better physical appearance (attractiveness), health, psychological well-being and weight loss. Another important result of this research is that practitioners' self-assessment of health and attraction was significantly more positive than those who doesn't practice (A. Djordjevic, 2002).

Starting from Maslow model of motivation, Mikalachki gives hierarchy needs to deal with SRA healthy people and disabled workers. Depending on the nature of the sample that the tests are performed on, there are differences in the structure of the motive for the SRA. However, all these studies include one, it would seem, "usual" list of motives that are included in the questionnaire for examining motivation in the SRA: health, fitness, vitality, weight loss, beauty, relaxation, mood, social relationships, achievements and life style (Keith Johnsgard, San Jose State University, USA Journal Sports Medicine, 1985, according to Mikalachki M., 1995).

When analyzing the relationship between personality traits and motivation for engaging in SRA, in modern studies are usually taken into account Five-Factor

model of personality, which belongs to the field of personality psychology that deals with basic structure or basic features of personality, under which involve non-cognitive, time-stable and invariant dispositional constructs that can explain most of the variance of individual differences. Big five model describes personality starting from individual differences in behavior. According to this model, “hyper-space of personality” can be defined and described along five basic dimensions which are derived from: analysis of language, which is based on the logic of lexical hypotheses, comparisons and re-evaluation of empirical data from different personality questionnaires and scales of observation, the results of the factor-analytic studies of self-description of personality and descriptions by others. Five fundamental factors are called domains. They assume different groups of cognitive, affective and behavioral dimensions, which can be grouped in different ways. The narrower traits, on a lower hierarchical level, which further define the content of the basic domain, represent the aspects (facets). Five basic domains consists of: Neuroticism, Extraversion, Openness, Cooperativeness and conscientiousness, and they represent a comprehensive scheme under which it is possible to assess person’s emotionality, interpersonal relationships, the quality of experiences, attitudes, and motivational styles. (Jocic-Djuric, D., Džamonja-Ignjatovic, T. & Knežević, G., 2004)

***Psychoticism as a personality trait.*** Knezevic et al (2005) primarily emphasize the importance of the construct of the regulatory functions disintegration (psychoticism) for the psychology of individual differences, given that the whole experience so far in dealing with the psychology of individual differences suggests that the disintegration phenomena of one of the key constructs (in addition to intelligence and "Big Five") in this scientific field. In the conceptual and operational reconstruction of the personal dimension, the starting point were 26 scales of foreign and domestic authors, aimed for measurement of different symptoms of psychoticism, shizotypality and dissociation. At the end, there were extracted ten factors that determine the trait of psychoticism or disintegration of conative functions (Knezevic, G., 2008), which are: the general executive dysfunction, perceptualna distortion, enhanced awareness, depression, paranoia, mania, social anhedonia, plain affect, somatoform dysregulation and magical thinking. These ten dimensions should be treated as modalities that strongly converge to a single general disposition. The proposed model argues that psychotic disorders represent extreme on a continuum rather than discrete phenomena, as they are treated in medicine, and in that sense, this model agrees with Eysenck's conceptualization of psychoticism. However, in terms of content and operationalization, this and Eysenck's model have significant differences, or more accurately, the overlap is minimal.

***Self-concept.*** The basic characteristics of personality, in addition to peculiarity, unity, consistency, identity and maturity, include self-consciousness (Pajević, 2003). Self-concept or self-perception considers “organized scheme of an experience that person have about themselves” (Opacic, 1995), and as the most comprehensive and concise, this definition is taken as a starting point in

considering in this paper. Self-concept can be defined as the totality of perceptions, thoughts, feelings, evaluation and prediction of the person about himself as the experienced object, as a participant in the interaction with the physical and social environment (Havelka, 2001). The physical self is a particularly important characteristic of personality for sports activities. The term "body schema" or "physical self" is used to express the experience of individual's own physical characteristics and the relationship of the individual to his body. On the choice of type of sport and estimation of body experience strongly influences the perception of the body scheme. Sports enhances the experience of physical self and self-success.

In the need for dealing with SRA, the existence of individual differences, evidence that factors of personality (and therefore of self-concept) determine the motivation for engaging in recreation. Self-concept plays an important role in explaining the motivation for participating or not participating in the SRA (Ulrich, 1978, according to Ascii FH, Kosar SN, AK Isler, 2001). Existing researches had shown if a person is going to practice, how frequent and what recreational activity person will choose, depends on certain aspects of the experience of itself. (Petkovic, S., 2007)

### **Yoga as a system of psycho-physical cultivation**

Yoga in the Indian tradition, in a broader sense, is the name for the various systems of exercise and physical or mental cultivation, which develop and link with certain philosophical and religious teachings. In a narrow sense, the name of one of the six orthodox schools of Hindu philosophy whose tenets and teachings codified Patanjali in Yoga sutras. Early yoga was atheistic system (discipline), and later religious schools used developmental benefits of yoga practice, including the idea of divinity using it as the method to obtain their religious goals. Some systems emphasise three aspects that we find in most yoga: energetic cleansing through the appropriate mode of life and exercise, change of values (moral education) and a spiritual cleansing with mastering the mental energies (Small encyclopedia, Belgrade, Prosveta, 1986). In the Yoga Sutras, it is written about its division: "[General] Rules [patterns of observance] (yama), [rules of discipline] behavior (nyama) [yogic] body position (asana), breath control (pranayama), restraint from the senses (pratyahara), focus and persistence of [attention] (dharana), contemplation (dhyana), and focus [being] (samadhi) are eight members of the [yoga]" (Patandali, Yoga Sutra, Book II, 29 aphorism). The word yoga comes from ancient Sanskrit language which used the traditional spiritual elite of India - Brahman. Yoga means "unity" and "integration" and "discipline", which is why yoga as a system called the unifying or integrative disciplines. Yoga seeks for unity at various levels - aims to unite the polarities. Yoga indicates that an individual is not body, but the body is the instrument of his "I", teaches that there is a dimension of energy being reflected in the thoughts, words and feelings, learn that there is a mind, concrete and abstract, that the concrete mind is a product of

causality and that there is an emotional dimension of being called ananda (bliss). The praxis of yoga is discussed in the Mahabharata, which the most famous instructive part of is the Bhagavadgita, included in the 6<sup>th</sup> book of epic (VI. 23-40), by revelation carrier Krishna, who shows first as a teacher of yoga to a friend and great archers Arjuni, and finally as a universal deity, and says: "Now listen what yoga teaches about that. That knowledge will break the bonds that bind you with action. For yoga, there is no effort in vain and for her there are no obstacles. Even some of this faith and wisdom will set you free of a great fear." and "... in this world there are two ways. One is samkhya, which is the yoga of knowledge, and the other one is the yoga of action. Setting free from actions does not mean to refrain from all acts because by mere inaction you will not reach final liberation." (Mahabharata, (Bhagavadgita-Upanishad)).

Approaches of yoga differ only by dominant element. All approaches to yoga are integral, contain all the elements that Patanjali discusses about in Yoga Sutra. Five major approach of yoga: Hatha yoga, which deals with adjusting the energy, consists of positions (asana) and exercise that are ballanced with breathing and breathing exercises (pranayama), which is generally performed in a sitting position, is the necessary basis for further spiritual development, if one wants to consciously move in this direction. About "choice" says the Katha Upanishad (Yajur-Veda (Black)). "The truth of the Self cannot come through one who has not realized that he is the Self. The intellect cannot reveal the Self beyond its duality of subject and object. They who see themselves in all and all in them help others through spiritual osmosis to realize the Self themselves." (Upanishade, Katha Upanishad). Gjana yoga - yoga of resolution and insight, Bhakti yoga - yoga of devotion to God, Karma yoga - yoga in action, Raja Yoga (Royal Yoga) - the spiritual journey that leads to realization through knowing and managing processes of the mind. There are other types of yoga, used by described yoga types in the certain manner: Nada Yoga - which deals with the focus on internal sound - Nada; Kriya yoga – yoga of the infiltration, considers wriggling of consciousness through psychic channels and energy centers, synchronized with the breath; Mantra yoga - uses sound as a method of purifying the mind and liberation of repressed impressions (samskare). Mantra, for Bhaktis, is the name of God; Yantra Yoga - by focusing on the mystical diagrams (expressed in geometric space power), energies in yogi are focusing, cleansing the mind which makes the basis for merging with cosmic consciousness, which cosmical poweres are expressed through Yantras; Kundalini Yoga - continuation of a Hatha yoga, because more directly routes the yogi on techniques of obtaining awareness and managing energies of energy centers (chakras), balanced energies redirects in the central energy channel (Sushumna), and individual consciousness dissolves in the absolute consciousness. Hatha, Kriya, Mantra, Yantra and Kundalini yoga are included into the very comprehensive and extensive systems - Tantra Yoga (in a broader sense). There are two things that are common to all approaches to yoga - awareness and body, emotional and mind relaxation. Yogi or jogini, who truly mastered yoga, are called yoga master or expert. If yoga master teach others

(which does not do all of them), he/she is traditionally called a guru. Sanskrit word guru literally means "important". According to traditional esoteric sources, the syllable "gu" means a spiritual darkness while "ru" is an act of removal. This means that the guru is a teacher who takes students from darkness into light.

Although yoga appeared as a practical discipline aimed for self-realization, during the past decade it has been affirmed primarily in the West because of its holistic approach, as a preventive, therapeutic, anti-stress training method. The five most common way of practicing yoga today: as a method of maintaining physical fitness and mental health, as kind of sport, as a body therapy, as a comprehensive way of life, as a spiritual discipline.

**Hatha yoga.** All branches of yoga seek for the same goal - enlightenment. Hatha yoga approaches this task through the body, by using the mind or emotions. Hatha yoga practitioners believe that, if the body is not purified and prepared properly, it is impossible to attain higher levels of concentration, meditation and expansion of consciousness. It is advisable to start with the yoga that enables managing over person's own body. Name of Hatha Yoga is derived from the truth where the system is based. Life of our body is based on positive and negative flows and when these flows are in the full balance - we enjoy perfect health. At the ancient language of the East, positive flow is indicated by the letter "HA" which actually means "SUN". Negative flow is called "THA" meaning "MOON". The word yoga has a double meaning. On the one hand it means "merger", while it is a different meaning "yoke". So HATHA YOGA means perfect knowing of these two energies, positive energy of the Sun and negative energy of the Moon, their unification in perfect harmony and complete balance and the ability to completely rule these energies, that managing our "I". Hatha Yoga is not a goal to itself, but rather preparation for attaining higher levels of awareness. In a sick body is very difficult to develop self-awareness and elevate the mind to a higher level. The first level of Hatha Yoga teaches us the art of being healthy. During the voyage from ancient times to modern, Hatha yoga has undergone many changes. Major changes have occurred in recent decades, mainly for the purpose of adjustment to the students from the West. Besides Hatha yoga as an integral and comprehensive source style of yoga, now appear styles that are named by the master who gave his seal to that style or by the quality that this master extracts as the leading one (Vinijoga, Aštanga, Kripalu, Integral, Sivananda, Ananda, Bikram, Kundalini, Somatic Yoga, Yoga hidden language, and many others). (Jesudijan, S. and Elizabeth, "Yoga and Sports", 1981).

### **Fitness as a system of acquiring and maintaining good psycho-physical form**

The concept of fitness is not translatable into Serbian and is multifaceted. Under this notion different authors include: fit, healthy, ready, good, fit, suitable, and so on. From these meanings can be seen that concept or FITNESS or TO BE FIT contains several large fields and aspects of human status, and these are: physical, psychological and sociological status. (Mitic, 2001) Term fitness

contains a representation of a man well adapted to the modern lifestyle. The spirit of the ancient Greeks and their understanding of the inner spiritual and outer physical, that the mind is a carrier of the spirit and if body is weak, spirit is also weak, and transformed into a modern, it means the generally accepted notion, TO BE FIT. The term "fitness" is extensively adopted in the world and in our country, and indicates in the narrow sense (well developed) physical ability (English: physical fitness, or just fitness), and in the wider sense, the physical preparation, and the whole movement of recreational exercise in order to improve the level of physical ability (in the function of health, physical appearance, mood, etc.). It should be noted that the world increasingly uses the term "wellness", which is still more general notion, and indicates the overall human well-being which should be pursued, and in which implementation recreation generally, and especially recreation by physical exercise, has a very important role.

Physical ability (or "fitness") is the ability to perform certain physical activity in a satisfactory way (where the limiting factor may not be ignorance of techniques of the certain activities performers). The aim of physical training is to improve physical capacity (fitness). Primary means of physical culture is a physical exercise (or physical exercising), and the physical exercising is also the primary tool of physical preparation. Physical skills are a complex system, so it is justified to speak about their structure. The most famous authors agree almost entirely that the general structure of the physical capabilities of an individual consists of the following skills: strength, speed, endurance, flexibility and agility. The recreation, the most important physical abilities are the following: aerobic endurance, strength and mobility. In fitness, endurance (primarily aerobic endurance) is the most important physical ability. Durability is the ability to perform certain activities for a long time without reducing efficiency (Zaciorski, 1975).

Aerobic exercise includes the involvement of large muscle groups and lasts long enough, so it enhances the work of the cardiovascular, respiratory and other organ systems, and developing aerobic capacity practitioner. Creator of aerobic exercise as an American physician and physiologist Kenneth Cooper. The greatest popularity and fame has experienced the actress Jane Fonda with her exercise program called Training (Workout). Aerobic exercise with music can be defined as a relatively new form of organizational and methodological practice, intended primarily to the female population, made up to meet the health needs of women, beautiful appearance, activity, socializing, better mood, and so on. Aerobic exercise to music, we can achieve a positive impact on: functional and motor abilities, health, aesthetic and socio-psychological component of the practitioner.

Now, new training programs are occurring in fitness, which are called "group led programs" in the recent years. Under that name are considered training programs different in their content, purpose, use of equipment and devices, but the same in aerobic mode and group training management, with the sounds of music. The following exercises are the most commonly practiced forms: step aerobics,

aqua aerobics, body sculpting or body styling, body pump, kick boxing, tae-bo, spinning, latin, funky, hip-hop, salsa, African, ethnic aerobics; jazzercise, low impact et al. In this country, for all of these programs, we can still use the term Aerobics or fitness programs. (Stojiljkovic et al., 2005).

*Yoga and fitness* can be viewed as modern recreation forms of group led exercising in closed facilities. From the previous presentation of the basic concepts of these two types of physical exercise, yoga and fitness, with a general name for a very wide range of meanings, we see that they are a kind of whole for themselves, entire systems with their independent historical roots, philosophical postulates, theoretical concepts, teleology, practical applications, its own terminology (which is mainly related to the languages of countries, homeland, where it originated), which develop separately without a tendency of mutual communication (although now appears certain eclectic integration efforts through combined programs such as yoga-pilates ), to represent a kind of discursive whole, and that the comparison on specific criteria relevant to this area - the area of recreation, it is very difficult to do without a certain level of simplification. We can say, in language analog to philosophy of science, yoga and fitness to represent the whole paradigm, which are incommensurable and where from one perspective it would be difficult to talk about another.

As shown, each system has several types, forms, methods, techniques and levels of work. However, in modern conditions, common for the groups of students of these practices that are included in our study, as typical representatives of these systems (Hatha yoga and fitness programs) and which are present in their recognizable form in the last 40 or so years in the world and here, is that they are recreational forms of exercises, taking place in the group, led by specifically educated yoga instructor or teacher, and conducted in closed facilities (sports and recreation, fitness clubs and yoga centers), which provide the possibility of training throughout the year (i.e. all seasons ). This is also the difference between them and other forms of sport and recreational activities that can take place: systematically or unsystematically (spontaneous/deliberate, organized/nonorganized), individual, group or team, with or without an instructor or guide, outdoors or in closed space, in existing or specially arranged spaces, with and without equipment or additional equipment in different environments (water, earth, air), with and without virtual devices, etc..

### **Subject, purpose and methods of research**

The idea of this paper is to find out more about the psychological aspects of these two specific subpopulations practitioners. Also, it is assumed that the results would illuminate the reasons for the selection of these, very common, form of recreation for women.

*The general objective* of the conducted research was testing the existence of differences in psychological characteristics of the female population who attend yoga recreational and fitness programs in the dimensions of personality, self-

concept and motivation for physical exercise. They further specify the objectives of establishing these differences separately in each of the three previously mentioned psychological domain, the variables of inventory NEO FFI (a shortened version of NEO PI-R test) and DELTA-20, inventory GENSEL-40, as well as in terms of degree of each of 10 motives for engaging in recreational activities (structure of motivation). Based on analysis of the basic concepts of yoga and fitness as well as specific forms of physical exercise, there is set the general hypothesis that the apparent differences will appear in psychological characteristics of the fans of types of recreation.

*The general method* of the research organization is a systematic–non-experimental research with model of parallel groups. The sample consisted of 160 respondents, with 80 women who attend yoga recreation and fitness.

Control variables examined in this study were: age, educational status (degree of respondents), financial status, recreation experience (length addressing selected recreation) and frequency of recreational exercise.

Independent variables were related to the sort (type) of recreation that subjects practice:

Yoga (Hatha yoga, or Yoga of physical discipline, which includes physical exercises and breathing exercises)

Fitness Programs (integral aerobic programs, which maintains and raises the level of fitness in endurance, strength and elasticity)

Dependent variables included *personality dimensions* (basic personality traits according to the Big Five model) - defined by scores on the NEO personality inventory subscales NEO FFI (shortened version of NEO PI-R test), which measures the 5 main domains of personality: NEUROTICISM, EXTRAVERSION, OPENNESS, COOPERATIVENESS AND CONSCIENTIOUSNESS. In addition, there was especially investigated *dimension psychoticism* (disintegration of the regulatory function) - measured by the questionnaire DELTA-20 (AF) Form S, which are 10 modes of disintegration of regulatory functions (general executive dysfunction, mania, paranoia, somatoform disregulacija, enhanced awareness, perceptualna distortion, depression, flattening affect, magical thinking and social anhedonia) assess the overall score DELTA-tot, as a measure of this dimension.

Dimensions of self-concepts are operationalized through four subscales inventory for assessing the functioning of the self-evaluating system (GENSEL-40), which measures: self-image in different domains (physical, social, intellectual), general self-esteem, externality and the Global (dis)trust in people.

The motivation for physical exercise is operacionalized with the list of 10 "usual" motives for the practice of SRA, established in previous research: health, fitness, vitality, weight loss, beauty, relaxation, mood, social relationships, achievements and life style.

For processing and analysing the data, there were applied methods of descriptive statistics, Chi-square test, t-test for independent samples, analysis of variance and canonical discrimination analysis.

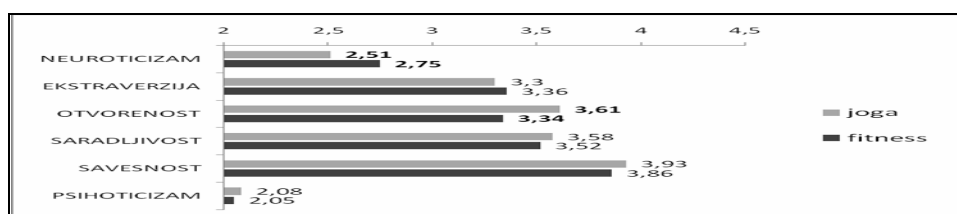


## Results and discussion

The study found that there are statistically significant differences in all three investigated psychological domains: in dimensions of personality, self-concept and structure of motivation for physical exercise, among women involved in yoga and fitness programs, which confirmed the general hypothesis.

As for the differences in personality traits set, there was found a statistically significant difference between women who choose yoga and those who opt for one of the fitness programs at two of the five variables of inventory NEO FFI, ie. in the domains of Openness and Neuroticism, while these differences were not found related to dimension Psychoticism of personality inventory DELTA). (Figure 1)

Figure 1: Arithmetic mean fitness and recreational yogis at the five dimensions of personality (NEO PI-R) and Psychoticism factor (DELTA)



In fact, the results indicate that respondents who engaged in yoga have statistically significantly higher scores on the Openness dimension and significantly lower scores on the Neuroticism dimension, comparing to the respondents involved in fitness, and that the dimensions of Openness and Neuroticism are the best predictors of the type of recreation that respondents are engaged with. On the other dimensions (Extraversion, Conscientiousness and Psychoticism) there is no statistically significant difference between these two groups of patients.

**Openness toward experience**, which is one of the five basic domains of personality, aims to combine an active imagination, aesthetic sensitivity, intellectual curiosity, preference for diversity and independent opinion, the curiosity for developments in intra-psychological and in the interpersonal field. High Openness is not necessarily healthier and preferable, but the value of openness or closeness depends on the situational circumstances and in both cases may provide the person with good functionality in a social system. Further, the domain of Openness is associated with the educational status and measures of intelligence, especially with the aspect of intelligence which is called the “divergence of thinking” but is in general not be considered a measure of intelligence. In light of the factor analysis, cognitive skills are the sixth, an independent factor. Also, the feature “reservation-openness” to some extent may

be in relation with mechanisms of defense that the person prefers, but the facts do not confirm that it is a general defensive reaction, but the trait of personality.

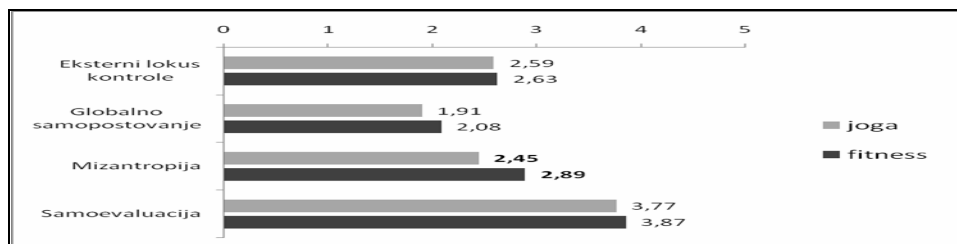
This statistically significant difference in the domain of openness toward experience, where respondents involved in yoga achieve more scores in relation to the respondents fitness, show that yoginis as a subpopulation of recreational athlete demonstrated somewhat more active need for the experience itself and tolerance for what they do not close, comparing to the fitness programs practitioners. They are potentially more curious, non-traditional, unconventional, with the tendency of reviewing authority, prone to the new, with more intensive perceptions of emotion. Openness toward ideas and values does not necessarily mean absence of principles or inability to adhere to a system of values, when it was adopted. In this regard, fitness recreation in relation to yoginis would have a greater tendency toward conventionality in appearance, behavior and preferences, preferring well-known in relation to the new with restrained emotional reaction, inner circle of interest.

**Neuroticism** as a basic personality domain should be distinguished from the notion of "neurotic" and it means a person's general tendency to experience negative affects, to destabilize and difficulty adapt to the new circumstances and stress. Dimension of neuroticism is known since the early work of Eysenck and sets adaptability and emotional stability opposed to the nonadaptability and emotional instability. Persona whit high scores tend to the development of psychological distress, unrealistic ideas, excessive cravings and needs, maladaptive coping responses. Although high values on the scale does not necessarily indicate psychopathology, individuals with clinical syndromes have high N values.

When comparing two groups of individuals involved in recreation, this statistically significant difference in the domain of neuroticism, where devotees of yoga take up slightly lower position with its score on this dimension in relation to the practitioners of the fitness programs, speaks in favor of the possible greater emotional stability, poise, relaxation and ability to cope with stress without panic anxiety of the yoginis, comparing to the fitness practitioners. On the other hand, fitness practitioners, as a group, tend to experience stronger, destabilizing emotions, irrational ideas, weaker impulse control and more difficult adaptation, compared to yoginis.

When it comes to self-concept, there is confirmed statistically significant difference in one out of four variables of the inventory GENSE-L40, that is on the subscales misanthropy, among female recreational who choose yoga and those who prefer some of fitness program. (Figure 2)

Figure 2: Arithmetic mean scores of yoginis and fitness recreational on the four subscales of personality inventory GENSEL-40



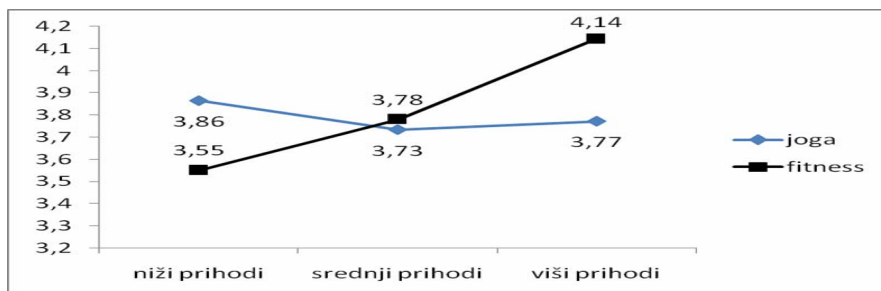
Specifically, respondents who are engaged in yoga have significantly lower scores on the subscale misanthropy comparing to the respondents involved in fitness. On the other subscales (external locus of control, global self-esteem, self-evaluation) there is no statistically significant difference between the two groups of respondents. Also, the data clearly show that misanthropy is the most important predictor in this group of variables, when the criterion becomes type of recreation that respondent will practice.

Out of the four variables measured GENSEL-40 inventory, the first two (self-evaluation, i.e. image of the self in different domains and global self-respect) represent operational descriptive and evaluative components of self-understanding, that is self-concept (Opacic, 1995), while the other two (external locus of control and misanthropy, or global (dis)trust in people) represent mechanisms for preservation of the global image of the self, similarly to the psychoanalytic constructs of rationalization and projection.

When it comes to variables that represent mechanisms for the preservation of the global image of the self, received significantly lower scores on the variables global (dis)trust in people (misanthropy) women who engaged in recreational yoga compared to those who attend fitness classes, speaks in favor of that yoga practitioners as a group showed a lower tendency, to blame other people for their own failures, as well as the tendency to attribute other people negative features, compared to practitioners of the fitness program. In other words, they are less prone to use the projection as a defense mechanism (psychoanalytic vocabulary words) in the service of maintaining a global picture of the self, compared to the fitness practitioner.

Further two-factor analysis of variance indicates the existence of statistically significant interaction between the factors type of recreation and physical status score on the subscales of self-evaluation. (Figure 3)

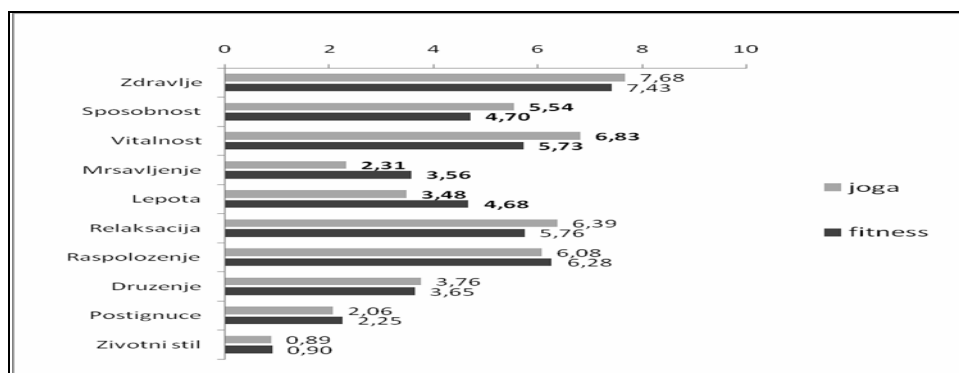
Figure 3: Interaction of the effects of recreation type factors and physical status of the self-evaluation



While in respondents who are involved in yoga there is no major difference in the self-evaluation depending on the amount of income, in women involved in fitness it clearly shows that the score on the scale of self-evaluation increases as the incomes of the respondent grow.

In terms of the structure of motivation for physical exercise, there was defined statistically significant difference in the degree of expression of four out of ten basic motives for exercise and recreational activities, i.e. SRA motives: capability, vitality, weight loss and beauty, among female recreational who chose yoga and those who opt for a fitness program. (Figure 4)

Figure 4: The arithmetic mean score of yoginis and fitness recreational on variables that represent the operationalization of 10 “usual” motives for practicing SRA



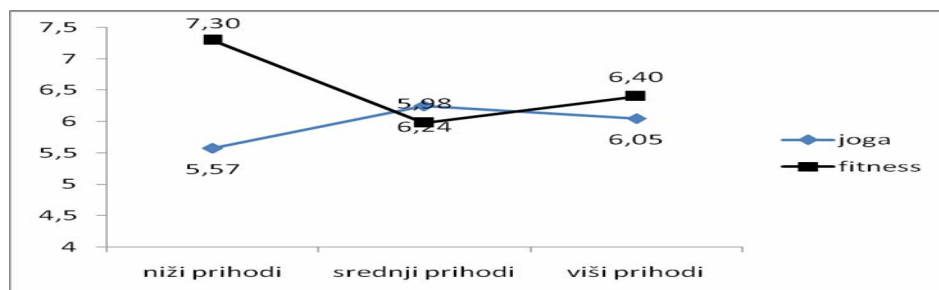
Specifically, in respondents involved in yoga compared to the respondents involved in fitness, skills and motivations of vitality are present in a greater extent and weight loss and beauty themes to a lesser extent. Related to other motives for practicing sports and recreational activities (health, relaxation, mood, social relationships, achievement, life-style), there is no statistically significant difference

between the two groups of respondents. Discrimination analysis also confirmed that among respondents with higher scores on the variables of capacity and vitality there are more those who practice yoga than those who practice fitness, while respondents who have higher scores on the variables beauty of more fitness than yoga.

These obtained differences show that women who practice yoga, as a group, maintenance and improvement of functional and motor (physical) abilities represent the greater incentive to exercise, as well as the preservation of working ability (i.e. satisfaction of the motives of physical ability), and maintaining vitality, extending living and working life, preventing or mitigating declining functions of the body (or the satisfaction of the motives of vitality), compared to the fitness practitioners, to whom it is also important, but to a lesser extent. On the other hand, to women who go to gym and fitness clubs and practice fitness programs, more enthusiasm and incentive to exercise give the desire for regulation of body weight (mass), reduction of subcutaneous fat and the regulation of appetite (or, the satisfaction of motives weight loss), which is partly in connection with strongly expressed motivation to achieve a nice looking, aesthetically beautiful body, grace, slim line, harmony of design and movement (or, meeting the motives beauty), in relation to yogini, to whom it is also important, but to a lesser extent.

It was determined that there is interaction of the effects of factors type of exercise and material status, on the score on mood variables. In fact, in respondents who have lower income, respondents who practice fitness have more pronounced mood motive. (Figure 5)

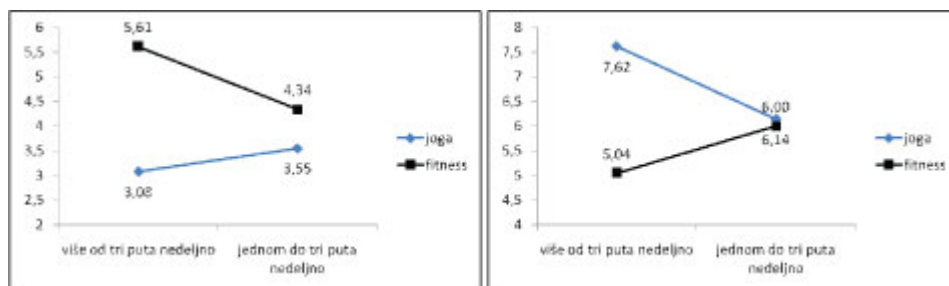
Figure 5: Interaction of effects of the factors type of recreation and physical status on the mood motive



Research has also shown that there is interaction between effects of factors kind of exercise and frequency of exercise, on the score of the variables beauty. As it is already noted, the respondents involved in fitness have more pronounced motive of beauty than respondents who practice yoga, but these differences are more expressed in respondents who exercise more than three times a week, than in patients who exercise once or three times a week. (Figure 6, left). There is also interaction of effects of factors kind of exercise and frequency of exercise, on the

score on variables relaxation. In fact, in respondents who exercise more than three times a week, respondents who practice yoga have great motive for relaxation comparing to respondents who practice fitness. (Figure 6, right)

Figure 6: Interaction of effects of factors types of recreation and frequency of recreation on the motives of beauty (left) and relaxation (right)



**When observing results of our research as a whole**, according to the goals, we can conclude that there are statistically significant differences observed between the two groups of respondents, i.e. recreational women dealing with yoga and women involved in recreational fitness, in all three investigated psychological personality domains. When we observe basic structure of personality, respondents who practice yoga have statistically significantly higher scores on the dimension of Openness, comparing to the respondents who practice fitness, as well as significantly lower scores on the neuroticism dimension. The differences between these two groups of respondents were partially expressed in terms of self-perception or self-concept. It was found that respondents who practice yoga have statistically significantly lower scores on the subscales misanthropy comparing to respondents who practice fitness. The structure of motivation for physical exercise is also in some aspects different. In respondents who practice yoga, it was found that motives of skills and vitality are present to a greater extent comparing to the respondents who practice fitness, whereas there are the less represented motives of weight loss and beauty. Finally, we can conclude that the results of this study indicate that personality and SRA are related, that certain personality traits and the structure of motivation to a great extent determines the type of recreational activities and sports in which individuals are engaged or will engage.

#### References:

1. Andrijašević, G. (1976): Upaništade: sveti spisi starih Indijaca. Osijek, Glas Slavonije.
2. Cox, R. H. (2005): Psihologija sporta, Naklada Slap, Zagreb.
3. Blagajac, M. (1994): Teorija sportske rekreacije, "Logos", Titovo selo.
4. Galić, M. (1995): Kultura i fizička kultura, Svetovi, Novi sad.
5. Havelka, N. i Lazarević, Lj. (1980): Motivacija za bavljenje sportom, Institut za fizičku kulturu, Beograd.
6. Jankov, B. (1992): Psihologija samosvesti, Istraživačko-izdavački centar SSO, N.Beograd.

7. Jesudijan, S. i Hojč, E. (1982): Joga i sport, ''Saznanja'', Beograd.
8. Kejn, E. Dž. (1984): Psihologija i sport, Nolit, Beograd.
9. Knežević, G., T.Džamonja-Ignatović i D. Đurić- Jočić (2004): Petofaktorski model ličnosti, Centar za primenjuenu psihologiju, Beograd.
10. Knežević, G. (2008): A Reconceptualization of Psychosis Proneness as a Personality Trait, University of Belgrade and International Aid Network, Belgrade (u pripremi).
11. Kuper, K. (1975): Novi aerobik, Institut za fizičku kulturu, Beograd.
12. Mahabharata, (Bhagavadgita-Upanishad).
13. Mikalački, M. (1995): Komparativna analiza motivacije za bavljenje sportsko-rekreativnim aktivnostima kod invalida rada i zdravih ljudi, Doktorska disertacija, Fakultet fizičke kulture, Novi Sad.
14. Mitić, D. (2001): Rekreativna, Fakultet sporta i fizičkog vaspitanja, Beograd.
15. Opačić, G. (1995): Ličnost u socijalnom ogledalu, Institut za pedagoška istraživanja, Beograd
16. Pajević, D. (2003): Psihologija sporta i rekreacije, Laktaši: Grafomark, Beograd.
17. Patandali (1977): Izreke o jogi. Beograd, BIGZ.
18. Petković, S. (2007): Povezanost samopoimanja i motivacije za rekreaciju, Diplomski rad, Filozofski fakultet, Beograd.
19. Pokrajac, B. (1992): Psihološki smisao rekreacije, Godišnjak 4, FFK, Beograd.
20. Stojiljković, S. (2005): Fitness, Fakultet sporta i fizičkog vaspitanja, Beograd.
21. Đorđević, A. (2002): Fitness ili šta žene žele, Psihologija danas, 17, Niš.

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## **STRESS REDUCTION THROUGH YOGA NIDRA**

**Summary:** *Relaxation procedures have been receiving growing attention and interest of researchers in the field of health psychology. In the present study one such procedure, Yoga Nidrā, was studied for its effectiveness in reducing stress. Yoga Nidrā consists of resolve making, deep muscle relaxation, breathing exercises and imagery. 95 working mothers were randomly assigned to an experimental (N = 42) or a no treatment control group (N = 53). The experimental group received 30 sessions of Yoga Nidrā, over a one-and-a-half month period. Smith Stress Symptoms Inventory, blood pressure, plasma glucose and haemoglobin were selected as parameters of stress. Pre-test as well as post-test measures were taken. Univariate Analysis of Covariance, holding pre-test scores as covariates revealed that the Yoga Nidrā group was significantly lower than the control group on several parameters. Among those that showed a difference with treatment at both State and Trait levels were Autonomic arousal, Attentional deficit, Depression and Striated muscle tension. Two parameters, Worry and negative emotion and Interpersonal conflict and anger showed a difference only at the State level. Blood Pressure, Systolic and Diastolic decreased, while Haemoglobin levels increased after treatment. However, since the homogeneity of covariate variance assumption was violated for some of the parameters at the State level, viz., Worry and negative emotion, Attentional deficit, Autonomic arousal and anxiety, Striated muscle tension, Interpersonal conflict and anger and haemoglobin, these results have to be accepted with caution. The variance of the glucose scores of the experimental group reduced after treatment while that of the control group did not, as was expected.*

**Key words:** *yoga, nidra, stress, resistance, attention, behavioral medicine.*

Within the area of health psychology, increasing attention has been focussed on behavioural medicine, an area of research and practice that integrates behavioural techniques with the science and application of medicine in order to promote health and prevent, diagnose and treat disease (Masters, Burish, Hollon & Rimm, 1987). The stress-illness link became well established by the middle of the last century, after which researchers turned to various stress reduction techniques to find out whether a decrease in mental stress leads to better health, and to an improved quality of life (Blumenthal & Emery, 1988). Among the many techniques that were so investigated and continue to be investigated because of their promising results, were relaxation strategies, exercise, meditation,



biofeedback, and cognitive interventions. Yoga Nidrā is one such relaxation procedure, propounded by Swami Satyananda Saraswati from Bihar School of Yoga, Munger, Bihar, India. Deep muscle relaxation, observation of the breath, and imagery are the key elements of the technique (Swami Satyananda Saraswati, 1998). The present study attempted to investigate the effectiveness of this practice in alleviating stress.

Continuous exposure to stress affects the body in at least three ways: one, by affecting the central and peripheral nervous system, two, the endocrine system and three, the immune system. Stress results in a decline in the body's overall level of biological functioning due to constant secretion of stress related hormones. Over time, stressful reactions can promote deterioration of body tissues such as blood vessels and the heart. Ultimately we become more susceptible to diseases (Cohen, Tyrell & Smith, 1991).

Relaxation has been the most widely researched topic in the area of alternative medicine to counteract the effects of stress. Relaxation techniques are essentially aimed at reducing arousal in the central as well as the autonomic nervous system, thereby restoring or promoting physical as well as psychological well being.

Exactly how relaxation works to reduce stress is not fully known. But perhaps the best theoretical explanation comes from McGuigan (1984). He says that the mind and the body are two complex interacting systems directly influencing each other. Thus whenever we think, we begin by tensing the muscles of the eyes and the speech regions. Similarly during times of emotion, there is a tension in selected muscles of the body. Hence, by learning to control muscle tension, we can learn to control mental activity and emotion, via changes in the activation of neuromuscular circuits. Wolpe (1982) suggests that in deep muscle relaxation, a state is produced in the autonomic activity that is physiologically incompatible with anxiety. So to the extent that a person's problems are due to anxiety, he can learn to control them through relaxation.

Relaxation training can be used as an easy and effective method in nursing practice. Several other studies have shown the effectiveness of relaxation in reducing sympathetic nervous system activity (for example, Candill, Friedman & Benson, 1987; Davison, Williams, Nezami, Bice & DeQuattro, 1991; Deabler et al., 1973; Jacob, Chesney, Williams, Ding & Shapiro, 1991; Hoffman, et al., 1982; Nakao et al., 1997; Sanderlin, 1991). Relaxation alone has also been shown to have a positive effect on the functioning of the immune system in an elderly population by Kiecolt-Glaser and colleagues (Kiecolt-Glaser et al, 1985). The effect of humour and laughter on immune function and resilience to stress have also received attention (Berk et al., 1989).

Several studies have supported the role relaxation training, of any kind, plays in the treatment of anxiety. In one study, progressive and imaginal relaxation training was used for persons with subjective anxiety. Elderly persons exposed to either of the relaxation procedures reported significant improvement on measures of personal functioning. (Scogin et al., 1992). Progressive muscle relaxation, yogic

postures and imagery are all methods, which induce a state of relaxation. In a study subjects who took part in the relaxation exercises reported that they were calmer and were able to cope better with anxiety (Khasky & Smith, 1999).

Systematic relaxation helps subjects to learn the art of relaxing the muscles, which remain slightly tensed throughout the day, producing fatigue. When subjects master the art of relaxation at will, they generalise it to other stress producing situations as well. This is one major reason why subjects report decreased levels of stress after being trained in the art of relaxation. Besides, imagery helps them to visualise positive and relaxing scenes thereby reducing stress. Tsai (1993), for instance, reported positive results of relaxation training combining meditation and guided imagery on self-perceived stress among Chinese nurses in large teaching hospitals in Taiwan.

### **Yoga Nidrā: A special case of relaxation**

The concept of Yoga Nidrā was first propounded by Swami Satyananda Saraswati from Bihar School of Yoga, Munger, Bihar, India. It is designed as a guided relaxation technique, for the beginning practitioner, who finds it difficult to maintain a passive focus. An experience of most people who begin to practice meditation is that there is an automatic pull to think, which makes it difficult to experience centered states. To avoid this pitfall Yoga Nidrā is composed of a set of instructions that guide the practitioner toward progressively deeper relaxation states.

Theoretically, Yoga Nidrā is rooted in the model of Pança Koshas or Five Layers. In this model every human being is thought of as existing on five sheaths or layers. The outermost is the body Annamaya, then the sheath of breath or vitality Prāṇamaya, then that of the mind (thoughts and feelings) Manomaya, then the astral or psychic plane Vijñānamaya (phenomena such as telepathy, clairvoyance, premonitions etc are thought to arise from this sheath) and finally the subtlest level of pure consciousness, Ānandamaya kosha. Instructions, therefore, follow the sequence of deep muscle relaxation, followed by observation of the breath, awareness and release of feelings, creative visualization and finally the experience of silence. The practitioner is then gradually brought back to normal wakefulness.

An important aspect of Yoga Nidrā is the resolve or Sankalpa. The resolve is a short positive mental statement that the practitioner is asked to formulate at the beginning of the relaxation process, according to what he/she wants to achieve out of the practice. Practitioners' goals could range from getting rid of addictions, to achieving good health to being able to perform at an examination. It is assumed that one's doubts and fears (called Vikalpas), deeply rooted in the unconscious recesses of the mind, impede one's achievement of goals. During the practice of Yoga Nidrā one's mind becomes silent and highly suggestible. Hence after the creative visualization, the practitioner is asked to recall the statement of the

resolve. This allows the resolve to become engraved in the mind, leading to positive changes in the person's life (Swami Satyananda Saraswati, 1998).

Very few studies have been carried out in the past to investigate the stress-alleviating capacity of Yoga Nidra, though the technique holds a lot of promise. Some studies have been conducted with students who have test anxiety, pregnant women and alcoholics, but most of them have not been done using proper and equivalent control groups.

## Method

Sample for this research has been made of 95 married women with children, working as primary school teachers were. They had all assembled for a two-month residential training program for teachers. They were randomly assigned to either an experimental (N= 42) or a no-treatment control ( N= 53) group. (Initially there were 55 participants in each group but data could be collected on 95 participants as some of them had to drop out of the study before the post test). They were all in the age group of 30 to 45 years. All of them were from low socio-economic status and their work involved hectic teaching schedules plus home visits to motivate illiterate families to send their children to elementary school. One of the reasons that a few participants could not complete the relaxation programme was that they were suffering from low blood pressure and relaxation is contraindicated for such participants.

As a psychological measure, the Smith Stress Symptoms Inventory (SSSI), developed by Jonathan C. Smith (2002)<sup>12</sup> was used. This was used as a pre-test as well as post-test measure. This inventory uses the state-trait approach to stress. There are 70 items in all, 35 in the Trait category and 35 in the State category. There are 6 subscales, developed from the common stress symptoms reported by people. The scale was based on the Smith Stress Costs Inventory (Smith, 1992) and was developed through factor analysis, to measure frequently reported stress symptoms. It was standardised on a sample of 952 college students, 281 male students, 615 females and 56 were unstated. The mean age was 26.57 and sd 8.57. The six stress symptom categories are: *Worry and negative emotion* (WNE), *Autonomic arousal and anxiety* (AAA), *Attention deficit* (AD), *Depression* (D), *Striated muscle tension* (SMT), and *Interpersonal conflict and anger* (ICA). Each subscale yields a state measure and a trait measure. Each item has to be answered on a four-point rating scale ranging from 1 to 4. The Alpha reliabilities for symptom categories range from .76 to .89. *Worry and Negative emotion*: (alpha = .89), *Autonomic arousal and anxiety*: (alpha = .80), *Attentional deficit*: (alpha = .79), *Striated Muscle tension*: (alpha = .76), *Depression*: (alpha = .79), *Interpersonal conflict and anger*: (alpha = .77).

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<sup>12</sup> Smith Stress Symptoms Inventory © 2002, Jonathan C. Smith. Permission was granted for translation and use of the inventory for the present study only.

This scale was translated into Marathi (the local language) with the forward backward method, for the benefit of the subjects of this study. It was then administered to a sample of 200 Marathi speaking people in Pune city in the age range of 30 to 45 years, 100 males and 100 females. The Alpha reliabilities of each of the subscales were as follows:

Worry and Negative emotion: ( $\alpha = .89$ ), Autonomic arousal and anxiety: ( $\alpha = .76$ ), Attentional deficit: ( $\alpha = .73$ ), Striated Muscle tension: ( $\alpha = .72$ ), Depression: ( $\alpha = .74$ ), Interpersonal conflict and anger: ( $\alpha = .58$ ). The Physiological measures were: Blood pressure, Blood glucose levels, and Haemoglobin.

## Intervention

All the subjects completed the Smith Stress Symptoms Inventory. They were pre-tested for blood pressure (an average of three measures was taken for each participant), blood glucose (random) and haemoglobin. Subjects who had low blood pressure were screened out. They were then randomly assigned to either an experimental or a control group.

The experimental group received 30 sessions of Yoga Nidra, each session of half an hour, delivered via a pre-recorded audio tape in female voice. The instructions included resolve making, deep muscle relaxation, observation of breath, evoking sensations of warmth and cold, pleasure and pain, heaviness and lightness in quick successions, creative visualization, recalling the resolve and gradual reawakening. The control group did not receive any treatment.

Both the groups were tested again after one and a half months on the Stress Symptoms Inventory, blood pressure, heart rate, blood glucose and haemoglobin. They were debriefed about the procedure and their doubts answered after the experimental period. The diet was uniform for both the groups for the experimental period.

## Results

Univariate Analysis of Covariance holding pre test scores as the covariates was carried out. The test of homogeneity of covariate variance was carried out to test whether the two groups were equivalent before treatment.

Table 1. Pre-treatment equivalence of the two groups

HOMOGENITY OF COVARIATE VARIANCE					
Source (Interaction)	df	m.s.	F	sig	eta
group * WNETX	1	0.501	2.644	0.107	0.028
group * WNESX	1	1.281	6.606	0.012	0.068
group * ADTX	1	0.225	1.068	0.304	0.012
group * ADSX	1	1.098	5.539	0.021	0.057

group * AAATX	1	2.03	0.000	0.999	0.000
group * AAASX	1	2.203	15.448	0.000	0.145
group * SMTTX	1	0.805	2.515	0.116	0.027
group * SMTSX	1	3.029	8.427	0.005	0.085
group * DTX	1	1.254	3.341	0.071	0.035
group * DSX	1	0.015	0.041	0.841	0.000
group * ICATX	1	0.008	0.04	0.843	0.000
group * ICASX	1	2.36	15.454	0.000	0.146
group * BPSX	1	274.12	2.602	0.110	0.028
group * BPDX	1	189.253	3.138	0.080	0.033
group * HBX	1	1.253	5.549	0.021	0.057

As is clear from the above table, the two groups were different from each other on parameters like Worry and Negative emotion (State), Attention Deficit (State), Autonomic Arousal and Anxiety (State), Striated Muscle Tension (State) and Interpersonal Conflict and Anger (State) before treatment. They were equivalent on all the other parameters before treatment.

Univariate Analysis of Covariance was calculated to test the effectiveness of the intervention.

Table 2. Univariate Analysis of Covariance

ANCOVA							
	TypeIII S.S	Df	m.s.	f	Sig.	B (YN)	Eta
BNETY	0.639	1	0.639	3.304	<b>0.072</b>	-0.166	0.035
BNESY	7.481	1	7.481	36.351	0.000	-0.567	0.283
DPTY	1.859	1	1.859	8.832	0.004	-0.282	0.088
DPSY	8.176	1	8.176	39.306	0.000	-0.592	0.299
PANSATY	1.006	1	1.006	5.823	0.018	-0.207	0.060
PANSASY	5.54	1	5.54	33.573	0.000	-0.489	0.267
TPPMTY	4.192	1	4.092	12.885	0.001	-0.427	0.123
TPPMSTY	5.448	1	5.448	14.023	0.000	-0.489	0.132
DTY	2.036	1	2.036	5.292	0.024	-0.295	0.054
DSY	5.014	1	5.014	13.403	0.000	-0.467	0.127
IKBTY	0.036	1	0.036	0.181	<b>0.671</b>	-0.039	0.002
IKBSY	4.027	1	4.027	22.904	0.000	-0.415	0.199
BPSY	3863.834	1	3863.834	36.045	0.000	-12.92	0.282
BPDY	1314.199	1	1314.199	21.295	0.000	-7.562	0.188
HBY	1.093	1	1.093	4.611	0.034	0.245	0.048

Univariate analysis of Covariance shows that all the 12 subscales of the Stress Symptoms Inventory showed a decrease with the practice of Yoga Nidrā, as is evident from the column showing Beta for Yoga Nidrā. Significant reductions in self-reported stress were found on all the twelve subscales, except for Worry and negative emotion (trait) and Interpersonal conflict and anger (trait) subscale. But since WNES, ADS, AAAS and SMTS were the subscales on which the two groups were initially unequal, it is difficult to estimate the actual effect of treatment. The effect size was small to moderate for all the parameters.

Blood pressure, both systolic ( $F(1,92) = 36.04, p < .01$ ) as well as diastolic ( $F(1,92) = 21.29, p < .01$ ) showed a significant reduction after treatment. The effect size was .282 and .188 respectively. Hemoglobin showed a rise in the experimental group ( $F(1,92) = 4.61, p < .05$ ).

Glucose scores were analyzed in a different way because glucose is a curvilinear variable. Yoga and relaxation have been used as therapeutic measures in the treatment of diabetes. So also, low blood sugar has been shown to be associated with irritability, fatigue, attentional deficit and other symptoms. Since Yoga Nidrā is a process which acts to normalize various functions of the body, it was expected that it would have a normalizing effect on the functioning of the pancreas as well. Hence with Yoga Nidrā it was expected that the glucose scores on the lower side would increase while those on the higher side would decrease. In statistical terms, the variance in the glucose scores would reduce in the treatment group after the practice, whereas in the control group it would not. The results supported this hypothesis. The variance in the treatment group reduced while that of the control group increased.

## Discussion

The sample chosen for the present study was women in the age group of 30 to 45 years. In a study by Thakar and Mishra (1999), about daily stresses experienced by working and non-working women of various age groups, it was found that employed women in the age group of 34 to 43 years reported experiencing maximum stress. It was concluded that coping with teen-age children, ailing in-laws, increased responsibilities of the husband as well as of oneself at the work place, all contributed towards making this phase the most stressful one, in the lives of these working women.

The present study was carried out for a considerably long period of time. A full-length course of the most prevalent form of relaxation training that is, Jacobsonian progressive relaxation training takes as many as 50 sessions. The more abbreviated form of progressive relaxation training takes about 8 to 10 sessions. In a meta-analysis of relaxation studies, Hillenberg and Collins (1982), note that a majority of studies that fail to show any significant differences between relaxation training groups and no-treatment control groups, use an average of only 2.3 sessions. The studies that report significant differences use about twice those many sessions. They also noted that only 5.6 per cent studies about relaxation

worldwide have used more than 10 sessions. In his book on Yoga Nidrā, Swami Satyananda Saraswati (1998) says that about one month of regular practice of Yoga Nidrā is needed to show any considerable change either in personality or for any physical problem. In the present study, the experimental group underwent 30 sessions of Yoga Nidrā over a period of one and a half month.

The results indicate that there was a reduction in stress both in scores of the Smith Stress Symptoms Inventory as well as in the physiological parameters of stress that were tested. Among the Stress Symptoms Inventory subscales that showed a significant decrease were *Attentional deficit* (Trait), *Autonomic Arousal and Anxiety* (Trait), *Striated Muscle Tension* (Trait), *Depression* (Trait), *Depression* (State), *Systolic Blood pressure* and *Diastolic Blood Pressure*. Interestingly, most of the trait scores showed a significant decrease, which means that the subjects learnt to relax and it became a habit. The effect that is achieved during the actual practice of Yoga Nidrā is carried well beyond the practice and gets generalised to other aspects of life as well.

All the other physiological parameters, namely, blood pressure, both systolic as well as diastolic, and heart rate showed equal variance across the two groups. Both Systolic and Diastolic Blood Pressure showed a significant reduction after treatment. This is consistent with other research findings (e.g. Candill, Friedman & Benson, (1987), Sanderlin, (1991)) and so on.

Heart rate showed an increase after treatment but it was not statistically significant. Moreover the effect size is also small. The partial eta squared was only .040, which means that this parameter could not explain more than 4 percent of the variance in the dependent variable.

Results indicated that the variance of the glucose scores in the treatment group decreased after treatment while that of the control group did not. This was in keeping with the hypothesis framed. This being a pilot study with a normal (non-diabetic) sample, the interpretation is tentative and further careful research is warranted. But if stress has been shown to be an important, if not causative, factor in the development of diabetes, this study opens a wide area for research, to find out whether the relaxation can reduce stress and, thereby, restore normal glucose metabolism.

The significant reduction in stress symptoms both self-reported as well as that indicated by the physiological parameters undoubtedly point to the promise that relaxation holds in reducing stress and restoring health. But the present study is not without its limitations. First of all since the sample was limited to female participants, the findings cannot be generalized to include the male population. Secondly, the control group was not given any other substitute task and so the effect of passage of time alone cannot be ruled out. Lastly, the study was not double blind and therefore some amount of therapist's presence affecting the experimental group cannot be ruled out.

No qualitative research and no follow-up was possible as the group dispersed soon after the treatment period. But more in-depth studies with a focus on individual needs are definitely warranted.

**References:**

1. Berk, L.S., Tan, S.A., Fry, W.F., Napier, B.J., Lee, J.W., Hubbard, R.W., Lewis, J.E., & Eby, J.C. (1989): Neuroendocrine and stress hormone changes during mirthful laughter. *American Journal of the Medical Sciences*, 298, 390-396.
2. Candill, M., Friedman, R., & Benson, H., (1987): Relaxation therapy in the control of bloodpressure. *Bibliotheca Cardiologica*, 41, 106-119.
3. Cohen, S., Tyrell, A.J., & Smith, A.P. (1991): Psychological stress and the susceptibility to the common cold. *New England Journal of Medicine*, 325, 606-612.
4. Cohen, S., & Williamson, G.M. (1991): Stress and infectious disease in humans. *Psychological Bulletin*, 109, 5-24.
5. Davison, G.C., Williams, M.E., Nezami, E., Bice T.L., & DeQuatro, V.L. (1991): Relaxation, reduction in angry articulated thoughts and improvements in borderline hypertension and heart rate. *Journal of Behavioral Medicine*, 14, 453-468.
6. Deabler, H.L., Fidel, E., Dillenkoffer, R.L., & Elder, S.T. (1973): The use of relaxation and hypnosis in lowering high blood pressure. *American Journal of Clinical Hypnosis*, 16, ( 2), 75-83.
7. Hillenberg, J.B., & Collins, F.L. (1982): A procedural analysis and review of relaxation training research. *Behaviour Research and Therapy*, 20, 251-260.
8. Hoffman, J.W., Benson, H., Arns, P.A., Stainbock, G.L., Landsberg, G.L., Young, J.B., & Gill, A.(1982): Reduced sympathetic nervous system responsivity with the relaxation response. *Science*, 215, 190-192.
9. Jacob, R.G., Chesney, M.A., Williams, D.M., Ding, Y., & Shapiro, A.P. (1991): Relaxation therapy for hypertension: Design effects and treatment effects. *Annals of Behavioural Medicine*, 13, 5-17.
10. Khasky, A. D., & Smith, J. C. (1999): Stress, relaxation states, and creativity. *Perceptual & Motor Skills*, 88(2), 409-416.
11. McGuigan, F.J. (1984): Progressive relaxation: Origins, principles, and clinical applications. In R.L.Woolfolk & P.M. Lehrer (Eds.), *Principles and practice of stress management*. New York: Guilford Press.
12. Sanderlin, M.A., (1991): The effects of open focus meditation versus progressive muscle relaxation on blood pressure, heart rate and peripheral skin temperature. *Dissertation Abstracts International*, 52, 3(A), 807.
13. Scogin, F., Rickard, Henry C., Keith, S., Wilson, J., et al. (1992): Progressive and imaginal relaxation training for elderly persons with subjective anxiety. *Psychology & Aging*, 7(3), 419-424.
14. Smith, J. C. (1992): *Creative Stress Management*. New York: Prentice-Hall.
15. Smith, J.C. (2002): *Advances in ABC relaxation: Applications and inventories*. New York: Springer.
16. Swami Satyananda Saraswati (1998): *Yoga Nidrā*. (6th ed.) Yoga Publications Trust: Munger, Bihar, India.



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## **ASSESSMENT OF SCIENTIFIC RESEARCH OF YOGA IN MEDICINE**

**Summary:** *In the last decade yoga has taken an important place in research work in the field of medicine. The objective of this study was to assess its value based on the journal's impact factor and on the author's citation. The methodology used index databases are available through KoBSON service. The results show that from 1130 reviewed papers from 160 different journals, leading papers are from India, but they are not in the Science Citation Index. Prestigious medical journals with IF higher than 30, such as Lancet and Nature have a slightly less number of papers. More than half (57.9%) of the journals are in the range of the first 30% of the subject area. According to the citation and the number of papers, the authors retain the supremacy of Swami Vivekananda Yoga Research Foundation, India. Conclusion: There is a need to improve the education of health workers in the field of yoga, and yoga practitioners in the field of scientific medical research methodology aiming to give yoga's full contribution in the field of medicine.*

**Keywords:** *yoga, medicine, validity of scientific research*

### **Introduction**

Science is identified in the broadest sense with knowledge, but not all knowledge could be named as scientific. In addition to science, knowledge can be a healthy-rational (experienced), aesthetic, mythical, religious or an attitude. By its manner, scientific knowledge is distinguished from other knowledge, with the use of scientifically verified methods, as systematic, tested, development, objective and expressed in the form of theories and scientific laws. Science is constantly a critical search for the truth, and just their quest for the truth and deals with yoga.

One of the definitions of yoga says it is the science of health. Probably no one has ever questioned whether the medicine is a science. On the Internet pages of our area can be found that the definition of "Medical science is a science of the disease, and that yoga is a science of health"<sup>2</sup> However, medicine also covers areas such as preventive medicine, traditional medicine, complementary, integrative medicine, quantum medicine, public health and now days more popular - Lifestyle medicine. All these areas have in focus the research and improving health, but with therapeutic effects too. If we talk in the field of health technologies that are applied in medicine, we will see that the above-mentioned areas also include preventive

health technologies that are present in yoga. What makes medicine a science? Scientists, scientific papers, scientific technologies,...? Medicine, like yoga too, has the aim to discover the essence of natural phenomena, to find out their laws and to provide scientific explanation of their practical use. Verifiable results, and their ability to be explained as part of scientific knowledge are some criteria of scientific objectivity, which is exactly what scientists do in the papers. Paper can bring the epithet "scientific" if it is published in the journal in the Science Citation Index (SCI list). Its scientific value is greater if it is published in the journal with higher factor of influence and if the author of highly cited.

This work will be limited to the evaluation of scientific studies that have used yoga techniques in the field of medicine (which definitely is a science), not forgetting that yoga in a broad sense includes practically the overall human knowledge and existence. Today, there is knowledge which can not be explained objectively, or be classified as science, but it does not mean that this knowledge does not exist or that it has less "scientific" value.

### **The aim**

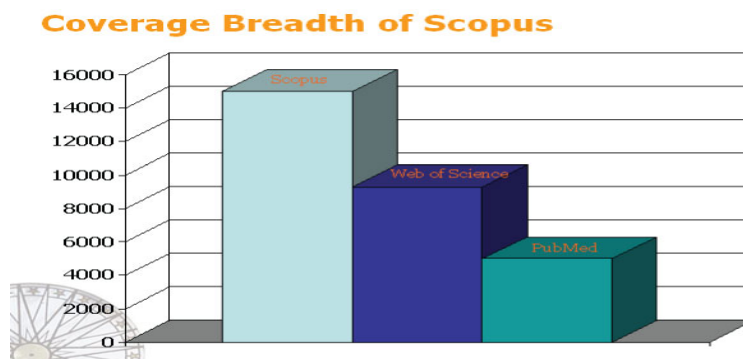
The aim of this paper was to assess the value of scientific research of yoga in medicine. It has researched into the presentation of scientific papers on medical research of yoga in the world, it has determined the impact factor of journals at the scientific thought and the number of authors citations.

### **Metodology**

The research was undertaken in august 2010. The search was done with indexed databases: SCIndex, MEDLINE, SCOPUS and Web of Science via Serbian National library consortia (KoBSON). The keyword was „yoga“. Searching the Serbian citation index (SCIndex) we got data about number of papers in Serbian language. Searching through MEDLINE resulted in data about number of references, review articles and full text articles.

Searching through SCOPUS resulted in data about number of journals with joga investigations, authors productivity, number of articles, affiliations, and research areas. The reason for choice the SCOPUS for searching was that this database has a wide coverage.

Figure 1. Number of articles that cover SCOPUS, WoS and PubMed



Via KoBSON service journal availability in Serbia was searched, which are referred in Journal Citation Report and impact factor (IF) in the last 10 years. Journals were ranked by IF for 2009. year and by the highest IF in the last 10 years. Journal availability via KoBSON is enabled through KOBSON project that is financed by Ministry for science and technology development of Republic of Serbia and refers to the open access journals, journals that exist in a print version in National Library of Serbia since 1984. and all journals with IF from 1981.

Impact factor of scientific journal is a measure of citation of the articles - the numeric value that is obtained by the number of citations for the last two years divided by number of published papers in that journal in those two years. The rankings published by IF was done in three grades: M21 category includes top international journals that are in their specialty classified among the top 30%, M22 category includes prominent international journals that are classified in their discipline between 30% and 50%, and the M23 category includes international journals with IF, which are not classified in the top 50% of its discipline.

Searching Web of Science and SCOPUS databases we obtained number of cited authors. Papers published after 1996 may be searched only by SCOPUS. Papers published before the 1996th could be searched through cited authors by both of databases<sup>4</sup>. For statistics evaluation it was used Microsoft Office Excel 2003 and SPSS v. 13.0.

## Results and discussion

Results of search of SCIndex show that there were published only two papers in the Serbian language pokazuju da su objavljena samo dva rada na srpskom jeziku, od čega jedan nije iz oblasti medicine, of which one is in the field of medicine. Search results in MEDLINE database was given 1432 articles, of

which 212 were review articles, 170 articles in full texts and others in the form of abstracts.

Search results SCOPUS databases were included 1130 articles from 160 different magazines which cover nine biomedical fields: Medicine, Biochemistry, Genetics and Molecular Biology, Nursing, Psychology, Pharmacology, Toxicology and Pharmaceuticals, Neuroscience, Medical profession, Immunology and Microbiology and multidisciplinary areas. Table 1. shows the top 12 journals with the greatest number of papers in the yoga research field. The leading journal is Indian Journal of Physiology and Pharmacology with 91 published papers.

Table 1. Journal distribution by number of papers with yoga topics.

	Name of journal	Number of papers	IF max	IF 2009	Rang for IF max
1	Indian Journal of Physiology and Pharmacology *	91			
2	Journal of Alternative and Complementary Medicine	71	1.685	1.685	M21
3	Alternative Therapies in Health and Medicine **	44			
4	Lancet	29	30.758	30.758	M21
5	Journal of Bodywork and Movement Therapies	23			
6	Indian Journal of Medical Research **	23	1.883	1.516	M22
7	Complementary Therapies in Medicine	23	1.950		M21
8	Perceptual and Motor Skills	22	0.552	0.552	M23
9	Annals of the New York Academy of Sciences	18	2.670	2.670	M21
10	Indian Journal of Medical Sciences **	14			
11	Integrative Cancer Therapies	14	2.264	1.508	M21
12	Alternative and Complementary Therapies *	14			

\* Not available via KoBSON. Indian Journal of Physiology and Pharmacology has open access.

\*\* Available, but without impact factor (IF).

Journal with high IF and most published works is Lancet (IF2009 = 30,758) in which are 29 works. IF values ranged from minimum 0.231 to 34.480 (IF2009medium = 4989 ± 7199; IFmax mean = 5195 ± 7333). Other journals with high IF2009 are Nature, Journal of the American Medical Association, Journal of Clinical Oncology and Circulation (Table 2).

Table 2. Journal with the highest IF in 2009.

	Name of journal	IF 2009	number of articles
1	Nature	34,480	9
2	Lancet	30,758	29
3	Journal of the American Medical Association	28,899	11
4	Journal of Clinical Oncology	17,793	4
5	Circulation	14,816	3

From the total of 160 journals, 84 (52.5%) are available via KoBSON. 27 (32.1%) of them has not IF, but they are on the SCI list. 38 (66.7%) journals of others 57 journals in the period 2000-2009. had maximal IF and they were located in the range of M21, 10 (17.5%) in the M22 and 9 (15.8%) in the range of M23 (Figure 2a). The drop from the maximum IF rank during the 10 years observed interval in relation to the rank in 2009. was in 6 (10.5%) journals, so in 2009. there were 33 (57.9%) journals in the rank of M21, 14 (24.6%) in the M22 and 10 (17.5%) in the M23 (Figure 2b).

Figure 2a. Journal distribution by international rank in their discipline based on IF max during the period 2000-2009.

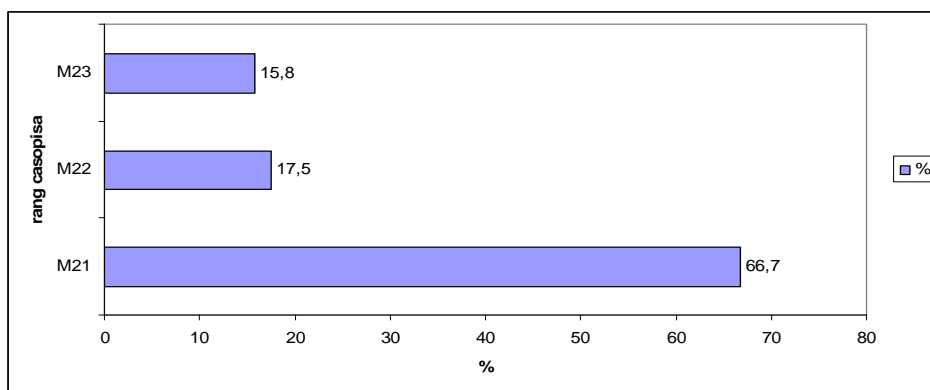
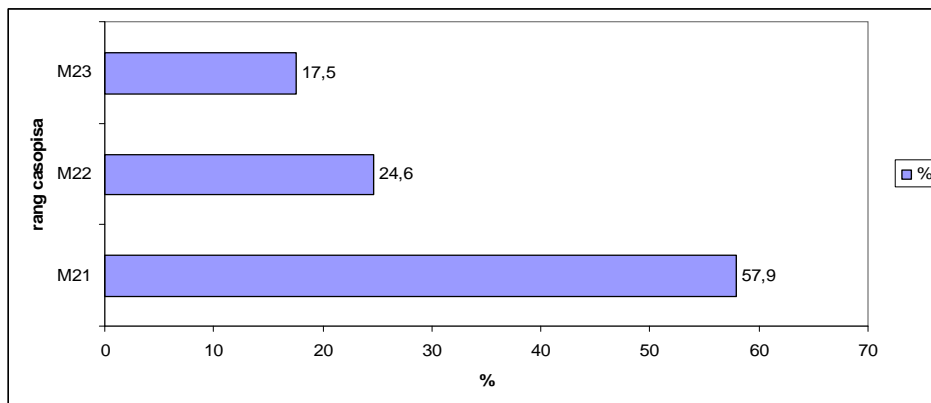


Figure 2b. Journal distribution by international rank in their discipline based on IF in 2009. year.



Most scientific research was published by Swami Vivekananda Yoga Research Foundation in India (Table 3), which team and a large number of associates across India hold primacy in scientific yoga research in medicine. At the same time, they are the most cited authors and their affiliations are the most productive in terms of papers on yoga subject (Table 4).

There are also the authors from America, with high citation rate achieved thanks to one well-cited article and who were very active in the research twenty years ago.

Table 3. Productivity and author citations

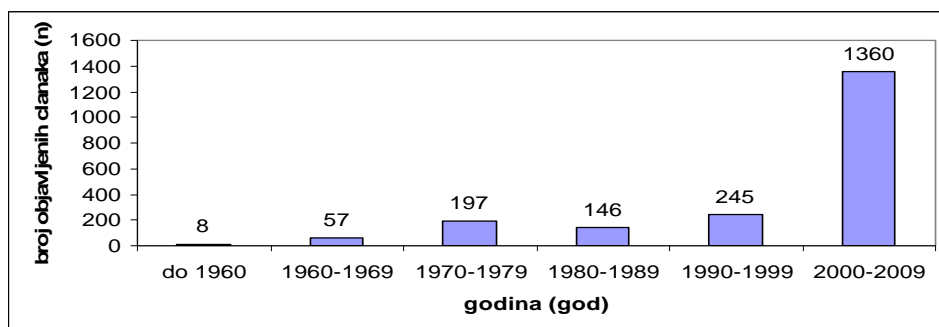
Autor	Broj članaka	Citiranost	Afilijacije
1 Telles, S.	68	606	Swami Vivekananda Yoga Res Fdn, Bangalore, Karnataka India
2 Nagendra, H.R.	29	188	Swami Vivekananda Yoga Anusandhana Samsthana, Bangalore, India
3 Nagarathna, R.	27	143	Swami Vivekananda Yoga Res Fdn, Bangalore, India
4 Nespor, K.	15	99	Charles Univ, Fac Med 1, Prague, Czech Republic
5 Dostalek, C.	11	69	Institute of Physiological Reg. Czechoslovak Academy of Sciences, Prague.
6 Ernst, E.	11	113	Univ Exeter, Dept Complementary Med, Exeter, Devon England
7 Naveen, K.V.	10	56	Swami Vivekananda Yoga Res Fdn, Bangalore, Karnataka India
8 Raghuraj, P.	10	52	Patanjali Yogpeeth, Haridwar 249402, Uttarakhand India
9 Benson, H.	8	247	Division of Behavioural, Medicine Beth Israel Hospital, Boston, United States
10 Bhavanani, A.B.	8	41	Department of Physiology, Jawaharlal Inst. Postgrad. Pondicherry, India
11 Phillips, R.S.	7	422	Div. of Gen. Med. and Primary Care, Harvard Medical School
12 Ikemi, Y.	7	17	Institute of Psychosomatic Medicine, Fukuoka City, Japan
13 Schumacher, H.R.	7	242	University of Pennsylvania, Philadelphia, United States
14 Singh, S.	7	69	Department of Phys., University College of Medical Sciences, Delhi, India
15 Manjunath, N.K.	7	52	Swami Vivekananda Yoga Res Fdn, Bangalore, Karnataka India
16 Udupa, K.N.	7	107	Surg. Res. Lab., Inst. Med. Sci., Banaras Hindu Univ., Varanasi, India
17 Bijlani, R.L.	7	127	Department of Phys., University College of Medical Sciences, Delhi, India
18 Emery, C.F.	6	428	Department of Psychiatry, Duke University Medical Center, Durham, US
19 Desiraju, T.	6	53	Vivekananda Kendra Yoga Res Found, Bangalore, India
20 Blumenthal, J.A.	6	428	Duke University Medical Center, Durham, US

Table 4. Affiliations productivity

Afilijacija	Broj radova
1 Swami Vivekananda Yoga Research Foundation	40
2 Harvard Medical School	28
3 All India Institute of Medical Sciences	26
4 University of California, San Francisco	24
5 VA Medical Center	23
6 University of Exeter	23
Jawaharlal Institute of Postgraduate Medical Education and	
7 Research India	22
8 David Geffen School of Medicine at UCLA	21
9 University of California, San Diego	16
10 Vivekananda Kendra Yoga Research Foundation	15
11 National Institute of Mental Health and Neuro Sciences	15
12 University of Toronto	14
13 University of Pennsylvania	13
14 The University of British Columbia	13
15 University of Washington Seattle	13
16 University of Calgary	12
17 Columbia University, College of Physicians and Surgeons	12
18 Oregon Health and Science University	12
19 UCL	12
20 Duke University School of Medicine	11

Regarding to the publishing year, there were an increase in research interest for yoga in the last decade (Figure 3). The last data shows that in the first six months in 2010. were published 120 articles in the world.

Figure 3. Distribution of published articles by year of publishing



In the last 20 years after the pause of 15 years during the decade of 1970s „Lancet“ began again to publish research in the field of yoga (Table 5). Very slowly, here and there, some articles were published every few years, but here presented authors origine mostly from United States and Europe.

Table 5. Authors and institutions who have published research in „Lancet“ in the last 20 years

Author	Year	Affiliation
Spicuzza L. (3)	2010 (1)	Universita degli Studi di Pavia (2)
Gabutti A. (2)	2004 (1)	Municipal Hospital of Neunkirchen (1)
Montano N. (2)	2001 (1)	Indian Institute of World Culture (1)
Wisniewski A. (1)	2000 (3)	John H. Stroger Jr. Hospital of Cook County (1)
Turner J.A. (1)	1999 (1)	Universita degli Studi di Catania (1)
Tattersfield A. (1)	1998 (1)	Cliniques Universitaires Saint-Luc, Brussels (1)
Subbarazappa B.V. (1)	1997 (1)	University of Washington Seattle (1)
Stanescu D. (1)	1990 (2)	Nottingham City Hospital (1)
Singh V. (1)		University of Washington School of Medicine (1)
Sharma D. (1)		Universita degli Studi di Milano (1)
Sequeira W. (1)		
Roggla H. (1)		
Roggla G. (1)		
Portal C. (1)		
Morris K. (1)		
Kliot M. (1)		
Kapiotis S. (1)		
Jarvik J.G. (1)		
Heagerty P.J. (1)		
Comstock B. A. (1)		
Britton J. (1)		
Bernardi L. (1)		

## Conclusion

Yoga in the last decade has taken an important place in medical science and scientific research with results published in prestigious scientific journals. Most productive researchers are from India, but their work does not meet the strict criteria for journals with high IF. The other centers that are seriously engaged in



exploring yoga are on the American continent. It is, therefore, important to pay special attention to education, medical staff in the field of yoga, and yoga practitioners in the field of scientific research methodology, the way of paper publishing, as well as using modern Internet technologies for knowledge dissemination and use.

**References:**

1. Savić, J. (1999): Kako stvoriti naučno delo u biomedicini. Stara Pazova: SAVPO, str.5-12.
2. Pravilnik o postupku, načinu vrednovanja i kvantitativnom iskazivanju naučnoistraživačkih rezultata istraživača (Službeni glasnik RS, 38/2008).
3. <http://www.med.yale.edu/library/education/guides/screencasts/ca/scopus/>

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## **MODERN COSMOLOGY AND HINDU PERSPECTIVES ON THE UNIVERSE**

**Summary:** *In an attempt to better understand how our Universe was created and what is the origin of the Universe, hence our origin, in this paper we present two different perspectives, which give answers to these questions. According to the most acceptable theory of the Modern Cosmology, the Universe was created by a cosmic explosion, the Big Bang, about 13.7 billions years ago. From that initial creation, the whole Universe continued to expand, created time, space, and matter, which was the base of the formation of stars, galaxies, planets, and life itself. Up to now scientific studies point out that the Universe is filled with both visible and invisible matter. Only a small part of the Universe is what we have been able to detect and observe till nowadays. The rest part of the Universe is assumed to be filled with the so-called dark matter and dark energy. The theories of the Modern Cosmology predict different scenarios of the evolution and the fate of the Universe, but it still not possible to say which of them is correct with certainty. On the other hand, from the perspective of Hindu cosmology, the Universe exists for many billions of years with neither beginning nor end. There has been an infinite number cycles of creation and destruction of the Universe. The present Universe is explained as just one in a series of manifestations. Each manifestation of the universe is unique and follows an order which can be recognized in the form of various physical laws. The energy, which appears in form of everything what we can see, is all the time the same. The energy is everlasting like the time, but only its manifestations change during time. Present apparent universe is created from unmanifested energy, in which it will return back, and then it will again obtain manifested shape. Comparing these two perspectives of the Universe, similarities and differences are explored and discussed in this paper. Conclusions are derived, which show how much the modern science corresponds to ancient Hindu perspective on the Universe, and on which way level of cognition is reached in Hinduism to that the modern science just aspires.*

**Key words:** *cosmology, Hindu cosmology, yoga, universe.*

### **Introduction**

The need to understand the Universe we live in dates from the first civilizations. Issues, where we come from and where we go, are present in all past and present cultures. Throughout the history, philosophers, theologians, and scientists

conducted numerous discussions seeking answers to these questions, however, full compliance has not been achieved till nowadays. The central point of these issues concerns the birth and the ultimate fate of the Universe. Modern science has greatly contributed to the understanding of the Universe, enabling scientists and engineers to construct instruments, with which they carried out numerous measurements and observations. But still, the picture of the Universe that the modern cosmology gives us is still not complete. Many unsolved issues, with which modern science has to face, still remain.

In addition to the view of the Universe explained by the language of modern science, in ancient scriptures Vedas and Upanishads, scientific content describing Hindu vision of the Universe may also be found. Although the modern science still does not give sufficient scientific importance to the ancient Hindu scriptures, many scientific thinkers (for example *Erwin Schödinger*, *Robert Oppenheimer*, *Albert Einstein*, *Carl Sagan*, and other) were amazed at the ancient knowledge and they found their inspiration for scientific quest for answers about the enigma of the universe just in them. Throughout the history, numerous cosmological models were created. One century ago, our picture about the Universe was a young, small, and static universe. Contemporary recent cosmological models more and more look like Hindu picture of the Universe. From the standpoint of modern cosmology, in order to understand the Universe one needs to know different branches of physics such as thermodynamics, classical and quantum field theory, particle physics, and gravity. All of them have developed a lot in recent decades, but despite all effort of modern science, a full understanding has not been reached. The ancient sages from the East knew that we as human beings are faced to the limitations of space and time, which prevents us to comprehend the Universe fully. They also knew about the different path that led them to overcome constraints and achieve ultimate cognition. Their experience is recorded in ancient Hindu texts, and these texts suggest that full understanding is possible through the personal experience of truth, which is the final step on the path to self-realization and full liberation.

In this paper, an overview of the Universe from the perspective of modern and Hindu cosmologies will be presented.. Using the method of comparison, common points of these two conceptions and differences between them will be stated and discussed, all in order to finally understand the extent to which the present scientific picture of the Universe coincides with or differs from the ancient Hindu picture.

## **Modern cosmology**

Cosmology is the branch of astronomy that studies the creation, structure, evolution, and the ultimate fate of the physical Universe. Throughout history cosmologists have brought many cosmological models, and the one that now provides the most reasonable explanation of the origin and evolution of the Universe is called the Big Bang. The first key idea of this theory dates back to the

1916 when Albert Einstein developed a general theory of relativity (hereinafter GTR) and proposed it as a new theory of gravitation. The key concept of this theory is based on the assumption that gravity curves space and time. Physicist John Wheeler described it as: "Matter tells space how to curve, and space tells matter how to move". After introducing the GTR many scientists, including Einstein, tried to apply this theory to the Universe as a whole. To achieve this, it was needed to introduce an assumption about distribution of matter in the Universe. It was assumed that matter in the Universe is homogeneous and isotropic and, consequently, the Universe looks the same, independently from which of its points is observed. The Big Bang theory is based on this assumption and it is called the cosmological principle.

The Big Bang theory is widely accepted by the scientific authorities. According to this theory, the Universe was created about 13.7 billion years ago (with an error of about 1%) by a giant explosion. A moment later, the Universe underwent a sudden exponential expansion (more about the inflationary model can be found in Guth, 1997) from very dense and hot state releasing tremendous energy and created time, space and matter, which condensed over time forming stars, galaxies, and cosmic large scale structures. Today we can see remnants of this hot and dense matter as the cosmic microwave background radiation (hereinafter MBR) that still pervades the Universe.

### **The expansion of the Universe**

For thousands of years, astronomers are looking for answers to questions about the size and age of the Universe, whether the Universe is infinite or limited, and whether it always existed or began to exist at some moment in the past. In 1929 Edwin Hubble made a discovery, which later helped in finding answers to these issues. Hubble observed galaxies outside the Milky Way, and found that the galaxies are moving systematically from us with larger speed as they are farther away from us (Hubble, 1929). Light of galaxies, which were moving away, was shifted towards the red part of the spectrum (the so-called red shift) and that shift was larger for the galaxies, which were at the larger distance from us. This discovery Hubble formulated as the so-called Hubble's law. The consequence of this law is that the Universe expands. Even before Hubble, Einstein had the idea of the expanding Universe because the equation of the GTR yielded this as one of the possible solutions. But even Einstein himself did not believe in this picture of the Universe and he introduced the cosmological constant as an additional term in the GTR equations in order to obtain the solution for static universe. After Hubble's discovery, Einstein realized that the idea of a static Universe was his big mistake. Assuming that the matter in the Universe is homogeneous and isotropic Einstein's equations show that the curvature of space-time can have only three forms, which we will mention later in this paper. From the GTR it follows that matter plays a major role in cosmology. The matter determines the geometry of our Universe up to boundary of the horizon (this is the part of the Universe that we can see).

Beyond these limits, physical conditions of the Universe are different and till now this part of the Universe is poorly known.

### **Ultimate fight of the Universe**

Scientific explanation of the evolution and ultimate fate of the Universe was possible with the equations of the GTR. Using equations of the GTR, gravitational effects on matter can be calculated. Since the gravity is the property of space and time in the GTR, it is equivalent to calculating the dynamics of space and time. Alexander Fridman, 1922, derived the so called Fridman equations based on the equations of GTR, which gave as one of the solutions the expansion of the Universe from an initial singularity. A bit later, in 1927, Georges Lemaître, also suggested a model of an expanding universe from a point, which he called "a primordial atom". He described his model as a "cosmic egg that exploded at time of the creation." This model was the seed of today's well known theory of the Big bang, a name, which was introduced by Fred Hoyle.

Without going into a deeper analysis of the Fridman's equations, we only list their solutions, which represent possible solutions for the fate of the Universe. As we already mentioned, evolution of time and geometry of the Universe depends on its matter density. Assuming that the matter in the Universe is homogeneous and isotropic, it can be shown that the curvature of the space-time can have only three forms. Density parameter ( $\Omega$ ), which was introduced by Fridman, is defined as the mean density of the observed matter of the Universe divided by the critical density (density for which the special geometry of space-time is flat). Depending on the value of this parameter, three possible geometries of the Universe are: closed Universe ( $\Omega > 1$ ), "positive" curvature of space-time as a sphere; open Universe ( $\Omega < 1$ ), "negative" curvature of space-time as a saddle; or "flat" ( $\Omega = 1$ ) Universe. If the Universe is closed, it will expand, but at some point it will stop and collapse into itself and probably it will lead to a new the Big Bang. If the Universe is open, it will expand forever. If the Universe is flat, it will also expand forever but the rate of expansion would be reduced to zero after an infinite time interval. In all three cases, the expansion slows down due to gravity. The key question regarding the fate of the Universe relates to whether the gravitational force is strong enough to stop expansion or even cause collapse of the universe.

Based on observations, although it was known that the Universe is expanding, it was further concluded that the Universe is expanding rapidly. This led scientists to assume that the Universe is filled with some form of strange matter that has negative pressure. To be in a way to give an identity to that unknown force which causes the accelerated expansion of the Universe, scientists called it a "dark energy". It is a hypothetical form of energy that permeates the entire space and increases with the rate of its spreading. The dark energy has the opposite effect of the gravitational attractive force. This unknown component forms about 74% of the Universe. The remaining 22% of the Universe consists of the dark matter and only 4% of the Universe is the "normal" matter, which we can

detect. The dark matter (invisible and undetected matter) and the dark energy have not been directly measured. Their existence is deduced only indirectly, based on their influence on the surrounding space, so that the assumption of their existence is justified.

One of the central challenges of contemporary modern cosmology nowadays is to determine the relative and total density of all the different forms of matter in the Universe. It is essential for understanding the evolution and ultimate fate of the Universe. Since the energy density and pressure contribute to the strength of gravity in the GTR, cosmologists have classified the matter on the basis of equations of state (relation between pressure and energy density). Based on these classifications, following forms of matter are distinguished 1. Radiation. Includes very low mass particles, photons (light) and neutrinos. This form of matter is characterized by having a large positive pressure. 2. Baryon matter. It is "normal matter" and it includes protons, neutrons, and electrons. The pressure of this form of matter has no cosmological importance. 3. Dark matter. It is non-baryon matter, which very weakly interacts with ordinary matter and its pressure has also no cosmological importance. This is the "exotic" form of matter and so far it was not directly observed. 4. Dark energy. It is a form of matter which is considered to be characteristic of vacuum itself it and has a large negative pressure. This is the only form of matter that could cause rapid expansion of the Universe.

In recent years, astronomers carry out measurements of high accuracy to identify the presence and distribution of all forms of matter. Determination of accurate values of two important cosmological parameters, Hubble constant (the rate with which the universe expands) and average density of matter of the Universe, will help cosmologists to discover of (and if) the well-known models gives the best description of the Universe which we live in.

### **The cosmic microwave background radiation**

The Big Bang theory predicts that the early Universe was very small, dense, and warm, and, as it expanded with time, the gas inside the Universe cooled. Therefore it was expected that the Universe should be filled with radiation that came from that early period. Originator of this idea was George Gamow. The first experimental confirmation of the existence of this radiation was achieved in 1964 by Arno Penzias and Robert Wilson, who received the Nobel Prize in 1978 for this discovery (Penzias, Wilson, 1965). This radiation is called the CBR and it originated at the early stages of the Universe, 300 000 years after the Big Bang, before the creation of stars and galaxies. This is the electromagnetic radiation that is the same in all directions and fills the entire Universe. Since this radiation is the rest of the Big Bang, it is usually called the relict radiation. By a detailed study of the physical properties of this radiation, conclusions about the physical conditions that existed in the distant past of the Universe can be drawn (more about the CBR can be found in the paper of Magnus, 2005).

The CBR could be detected only after the construction of radio telescopes that are able to register the microwave region of the spectrum. The National Aeronautics and Space Administration (NASA) with the help of the observations collected by the satellites. The Cosmic Microwave Background Explorer (COBE) and Wilkinson Microwave Anisotropy Probe (WMAP) carried out detailed examination of the CBR with temperature 2.275 K. These tests also confirmed the existence of fluctuations of the cosmological microwave background temperature. These cosmic fluctuations are believed to trace the fluctuations of density of matter in the early Universe. This discovery helped to understand the early Universe and the origin of galaxies and a large-scale structure. Understanding of even earlier, i.e. the initial phase of the Universe, requires measurements from that very early period and it is still an unconquerable peak of modern science.

### **Multiverse and cyclic model of the Universe**

Multiverse is a hypothetical idea that there are multiple possible universes (including ours in which we live), which comprise everything what exists: the entire space, time, matter, and energy, as well as physical laws. Different universes within the multiverse are also called the parallel universes. The name multiverse was introduced by William James and the term was later popularized in numerous books of science fantasy. This name can be encountered also in other branches of science. In physics there are more multiverse hypotheses. Some of them will be mentioned later in the paper. For those who want to learn something more about these hypotheses, we recommend the paper of Tegmark (2003).

Theory of the oscillatory Universe is just one of the cosmological models in which the Universe is an infinite series of self-sustaining cycles. The theory of the oscillating Universe has been predicted by Einstein 1930 on the basis that the Universe is an eternal series of oscillations, and each one begins with a big bang and ends by collapsing back into the singular point. According to this scenario, the Universe is expanding unless the force of gravity causes collapse. At the beginning of the 21st century, with the idea of dark energy, the model of a cyclical universe again became topical.

The cyclical model of the Universe was recently re-proposed in the more amended form by Paul Steinhardt and Neil Turok (Steinhardt, Turok, 2004). In this model, space and time exist forever. The Big Bang is not the beginning of time, but more as a bridge between pre-collapse era and new era of expansion. The Universe goes through infinite series of cycles, within which the Universe contracts, then a burst occurs, and the Universe again spreads out and all this is repeated with cyclical interval of few billion years. Temperature and density of the Universe do not become infinite at any point of the cycle. Seeds for galaxy formation are induced by an instability that grows during the collapse of the Universe. Newly created energy (radiation) and matter automatically fill the Universe during the transition from stage of the complete collapse to stage of the explosion. Each cycle goes through a period dominated by either radiation or

matter. Similarly to the Big Bang theory, the primordial chemical elements are created, the CBR and accelerated expansion of the Universe makes it transparent till the moment, when conditions lead to the contraction and re-collapse. Dark energy has a key role in this model. Gravity plays a major role that cycles do not become infinite.

This alternative model of the Universe does not still have a clear perspective unlike the very well established conventional the Big Bang model. But nevertheless, the fact is that this model, although it offers confirmation of everything what the Big Bang theory provides, it provides additional insight into some questions that the latter theory can not answer.

### **The string theory**

Two major revolutions in science of the twentieth century are the Einstein's theory of relativity and quantum physics. Quantum physics describes the micro world, the world of atoms and subatoms, and forces which act among them, while relativity describes the macro world, space, time, and gravity. Modern science has long been striving to unite these two theories and to find a solution, which would be based on the unification of all fundamental forces of nature, and which would lead to eventual understanding of natural phenomena and of the Universe as a whole.

The Universe at its initial state was at the same time enough small and thick and it is assumed that it was driven by up to now insufficiently known laws of quantum gravity. Insufficient knowledge of quantum theory of gravitation was not a drawback, because objects significantly influenced by gravity (planets, black holes, galaxies) are large enough that the impact of quantum mechanics can be neglected. On the other hand, objects, for which the quantum mechanics is necessary to understand (atoms, elementary particles) are usually small enough that gravity does not affect their structure and behavior. However, conditions at the beginning of the Universe were such that for their study, the knowledge of the theory, which unifies the forces dominating either micro or macro worlds is necessary.

In an effort to develop a theory of quantum gravity a number of scientific theories have been created, including the string theory, the most popular for decades. The string theory is an attempt to unify all fundamental forces of Nature into a single theory under the assumption that Nature is not composed of very small-scale particles, but of super-small strings (having a size of about  $10^{-35}$  m) that vibrate in different ways and at different frequencies so that they are compatible with different types of particles (photons, gravitons, electrons, etc.). According to this theory, our space-time has not only four dimensions (three spatial and one time) but ten space-time dimensions, however, six of them we are not able to notice from our perspective. These additional dimensions make the string theory very complicated and it is still not known how the commonly known physical laws follow from this theory. It is believed that with the reduction of these



ten dimensions to the known four dimensions, the effects of gravitational, electric, and nuclear forces should appear. Thus the string theory could simultaneously explain the composition of the Universe and interactions by forces (more about this theory can be found in the paper of Schwarz, 2000).

There are five string theories, and the theory that unifies all of them is called the M-theory. It comprises eleven dimensions (10 space and one time dimension). The eleventh dimension enabled the synthesis of all five versions of the string theory. In this theory, in addition to the vibrating string, cover and other objects: two-dimensional vibrating membrane, pulsating three-dimensional bubbles and lots of other components. Even today, physicists around the world are looking for a full inspection of the M-theory, but it is still a mystery (what the letter M can refer also to). It is believed that this theory will be the central subject in physical studies in the 21st century.

## Hindu cosmology

In this section, before we exhibit Hindu view of the Universe, we will tell more about the Hindu way of perceiving and achieving cognition and all this in order to better understand the foundations which Hindu cosmology is based on.

Thanks to the preserved scriptures of Hinduism written with the sophisticated Sanskrit language, the ancient Hindu knowledge is still available to us. In these documents, the Vedas are included. The word "*Veda*" comes from the Sanskrit word "*vid*" which means to know, to perceive, so that it can be said that the Vedic science is actually scientific knowledge dealing with the real nature of reality, i.e. essence. In the Hindu scriptures two kinds of knowledge can be recognized: the lower and higher knowledge. Knowledge of the rites, rituals, and scientific study of scriptures is considered as the lower knowledge while the higher knowledge is the knowledge about soul (*Ātman*) and essence (*Brahman*). The basic principle of Hinduism is that each of us carries a spark of the essence and once we fully understand it, our soul unites with the essence (the God) and thus achieves liberation (*Moksha*) from the infinite cycle of rebirths (*samsāra*). There are three basic properties of Brahman: the ultimate existence or consciousness (*Sat*), knowledge or intellectual substance (*Cit*) and Bliss (*Ānanda*). *Saccidānanda* is the highest form of unity of spirit with the essence (*samhadi*).

To understand how to reach the state of Brahman in Hinduism, i.e. the complete cognition about the truth of existence, we come to the place where the ancient Hindu texts coincide with the modern physics more (Sivaram and Devi, 2007). According to Hinduism, the whole Universe is the energy (*prāna*), which can be quantitatively measured as its vibrations, i.e. the amplitude of its waveform. The solid matter is also energy, condensed to the limit of visibility, light from the infrared to the ultraviolet part of the spectrum, is also energy in finer form. Energy in its finest form, the form from which arise all other forms of energy, is a clear white light. This homogeneous field of light includes everything and every quantum of energy is contained in each other and everything is in a continuous

change. This energy field where everything is one represents pure consciousness in Hinduism, and it permeates the entire Universe. And only when we reach the state of no identification with body, senses, and mind through spiritual work (self-development), we reach the state of merging with pure consciousness, i.e. the essence of the Universe. And this is the state of Brahman, the state of our true nature (sat, ċit, ananda), cognition that the whole Universe is inside us. The cognition of Brahman, in addition to a scientific study of the essence, requires also a spiritual development of the individual through the process of committed practice (*nava vidha bhakti*). In Hinduism it is considered that the best instrument of knowledge is a quiet, undisturbed mind in which the reality is reflected. When the mind is in a state of peace and balance, it is possible to reach direct cognition about the nature of things (Frawley, 2006). From that level of peaceful mind, the ancient sages were able to perceive the evolutionary path of the Universe, which we explain further in the paper.

### **Evolution of the Universe in Hindu mythology**

Based on the Hindu cosmology, the Universe has a cyclical nature. In the Hindu mythology, one day in the life of Brahman (supreme creator) takes 4.32 billion years and is called the Kalpa. Every day Brahman creates 14 Manu, the ancestors of humanity, which manifest and govern the world. There are 14 generations of Manu in every Kalpa period. The life of every generation Manu consists of 71 eras Chaturyugas and each era consists of four Yugas: Satya, Treta, Dwapara, and Kali Yuga. The lengths of the yugas are 1728000, 1296000, 864000 and 432000 human years, respectively. Upon completion of one Manu generation, Brahman creates another one. The cycle continues until all 14 generations of Manu are over, which is the end of one Brahman day.

When it gets "dark", Brahman goes to sleep for 4.32 billion years. The next "morning", Brahman creates the following 14 Manus and so on. At the end of the Brahman year, Brahman dies and regenerates again. The cycle is repeated for 100 years of Brahman. Brahman lifetime is 311.040 billion Earth years (it is 100 Brahman's years). Once after the death of Brahma, there is a period of no manifestation with equal length until next Brahman is created. The current period of our Universe is the period of Kali Yuga or the last era of the 71st Chaturyuga. The present Manu is the seventh in a row and his name is Vaivasvat. Kali Yuga is sometimes called "dark age" because it is considered that the people in it are most distant from Brahman, i.e. from the essence. Our Universe began with creation one of the Brahman, and it is now at 51st year of Brahman current life.

### **Cyclic creation and destruction of the Universe**

One of the main features of Hindu cosmology is its rootedness in the picture of the timeless Universe with eternal pulsation. The nature of the Universe is cyclical, there are cycles of manifestation and degradation that are eternal. The

entire Universe exists in two states, manifested and unmanifested ones and cycles of transformation from one of his state to another one continue forever. The current structure and organization of the Universe is unique. The current Universe is just one of an infinite number of unique universes. None of the manifested universes are the same but the energy that creates all cosmic structure is eternal. Therefore, energy has no age, it exists with no beginning and will exist in the future without end.

In the Hindu science, the Universe also represents a manifestation of consciousness as a cosmic intelligence and a universal life force that connects the absolute consciousness with the world of our ordinary experience. The God has a position of creator and represents intelligence that permeates the entire Universe. The nature of the primordial matter is pure consciousness, the existence without vibrations (*anida avatam*), as described in the famous hymn of creation, *Nasadiya Suktam*, RgVeda [X. 129.1]. From the moment of creation the Universe continued to materialize, transforming itself in more and more subtle forms of molecules, creating the world which we live in. The word “Nature” is “Prakriti” in Sanskrit and it has two aspects, the unmanifested one and the one that evolves into a manifested one. Seeds of everything manifested are located in the unmanifested and the seed is eternal, while apparent forms are diverse.

The earliest records that describe the concept of multiverse were found just in Hindu cosmology, in texts such as the Puranas. They expressed the idea of an infinite number of Universes, each with its own gods, each with its inhabitants and planets, and the endless cycle of birth and death and re-creation. In Hindu mythology, Shiva dancing (*Nāta-rajā*) symbolizes the creation and degradation as well as the daily rhythm of birth and death. It is also a steady stream of energy that moves through all apparent forms, creating and destroying the manifested material world. Dance represents the five principles of the manifested energy: creation, destruction, preservation, salvation, and illusion. Shiva dance is a symbol of unity and a rhythm of existence. He played in the ring of fire that represents the pulsation of life and death of the Universe. In the upper right hand he holds a drum whose sound is the sound of creation of the Universe. In the upper left hand he holds a flame to remind that the current creation of the Universe after billions of years will again be destroyed. Everything is in the process of change, the energy is transformed into new apparent forms in the dance (*lila*) of the creator.

## Hindu world view

Hindu world view is based on the following five principles (aspects): God or the essence (*Īśvara*), existence (*Jīva*) or soul (*Ātman*), manifested (i.e. material) world (*Prakriti*), Time (*Kāla*), and action (*Karma*).

On the basis of Vedanta, there are three aspects of God. The first aspect is *Brahman*, the impersonal manifestation of God (eternal unmanifested energy, i.e. the essence). The second aspect is called *Paramātmā* and he represents the personalization of God considering that God is present in all living entities leading

them through themselves, through all aspects of their lives. For example, it is the guiding that inspires and gives creativity to individual in its scientific discoveries, composing music, or any other artistic creation. The third aspect is called *Bhagavan*, or the supreme truth. Cognition about these manifestations of God points to the spiritual development in the scientific study of the essence and can be achieved through a process of committed practice.

*Jiva atma* represents the spirit or the soul of every living being. In the Bhagavad-Gita all living beings are presented as eternal and aware spiritual entities of the supreme God. The difference between the God and other living beings is that consciousness of the supreme existence is universal (pervasive), while the consciousness of the *jiva* or soul is localized (limited) in the body where the soul resides. *Prakriti* represents the energetic manifestation of the God. *Kāla* (or time) is a very important principle of the Vedanta. According to Vedanta, the time has neither beginning nor end, it has existed and will exist forever and the time represents one of the features of the essence. The external world is only the creative play of the illusion (*maya*). Therefore, the world which we know is neither true nor real. The tendency of all the seekers of truth is to find liberation (*moksha*) from the shackles of time and space. *Karma* (or activity) is any activity of living beings. All living entities are attracted by a variety of actions, enjoying or suffering in their fruits. *Karma* is closely connected with the free will of individuals. It is not eternal. The consequences of karma may once change with a proper use of the freedom of the will.

According to Vedanta, the cosmological cycles of creation and destruction are eternally repeated. Living beings (souls) are eternal. The soul and the matter are separate categories of reality. The consciousness evolves. The time is eternal. In Vedanta there is no difference between science and religion because science is an *apara vidya* (material knowledge) and religion is a *para vidya* (spiritual knowledge) and both of them are aspects of the reality (Singh, 2006).

### **Similarities and differences between modern and Hindu cosmology**

Comparative study of modern and ancient Hindu cosmology leads to the conclusion that parallels can be drawn, but that also differences can be found. Hindu science and religion are not fundamentally inconsistent with modern science. This ancient knowledge can be seen as a part of a comprehensive magnificent quest for truth, what is also the primary goal of modern science. When we study ancient knowledge and compare it with modern science, we must keep in mind the fact that most theories of modern science are based on assumptions, which themselves are not valid. Black holes, the curvature of space-time, the Big Bang theory, cosmic strings, etc., are only ideas that are introduced into particular theories. In the Hindu view of reality, the outside world is considered as a grand illusion, but it does not mean that it is wanted to discourage anyone who deals with scientific study in order to understand and grasp the reality and to perceive the

truth. Hinduism is not against the scientific path to the truth as long as it follows also the spiritual development of individual. As we already mentioned, in Hinduism emphasis is put at the higher knowledge because it is itself true. It liberates the individual from the cyclic process of birth and death and all the space time constraints we face.

The idea of expanding and contracting (i.e. cyclic) Universes is an idea that appears in both modern cosmological models and Hinduism. It is amazing that the ancient Hindus have developed such a cosmological scenario that has many similarities with the latest cosmological models.. The very beginning of the Universe is associated with a very small point (*bindu*), in which the whole Universe was concentrated. The Universe continued to expand (*sankocha*) from the point and after a certain interval of time it began to contract (*vakaša*) and then it returns back to the point.

The idea of cyclical manifestations of the Universe points to the similarity with the concept of modern science that physical matter and energy can be mutually converted from one to the other one (Einstein's mass-energy law). Modern science says that there is a continuous flow of creation and annihilation of particles everywhere in the Universe and this has similarities with symbolic meaning of Shiva dance. The difference arises in the perception of primordial matter. In modern cosmology it is the physical (material) "object" while according the Vedanta this physical "object" is pure consciousness (*sat*). Modern science can be categorized as empirical and materialistic because explanations are based on the material principles. If we carefully study even the smallest pieces of matter, we will finally reach the understanding of the world around us. This is the basis of the philosophy of modern science. The Hindu science world around us is explained through the matter and the consciousness. The mutual relationship between matter and consciousness is controlled by the supreme creator, the God.

The basic difference between modern and Hindu cosmology is that modern cosmology is focused on the creation and functionality of matter while Hinduism is more focused on a life itself, i.e. the life force as the basic principle. Modern cosmology is mainly engaged in studying the phenomenon of matter evolution in the Universe. The gap between the material (matter) and the spiritual (life, spirit) is what science still did not succeed to resolve.

Science tends to find answers to great universal questions only from the viewpoint of evolution of matter, while the Hindu approach is more focused on the perception of human existence and the development of the consciousness. In Hinduism, life is not only regulated by matter, as it follows from the scientific point of view, but individual karma (life action) which regulates and creates the life from matter accumulated from the environment. The concept of karma has a central role in the functioning of the Universe (Yamamoto and Kuwahara, 2008).

According to Hinduism, the mysteries of the Universe will forever remain mysteries until the mystery of ourselves is resolved. Only then all our conclusions

about the real nature of the Universe can be postulated. Ancient Hindu teachers penetrated deeply into the inner world, revealing the infinite and eternal reality beyond the finite and limited space and time. They indicate that reality as a field of infinite experience and pure consciousness from which everything else arises. Mystery of the Universe can be solved by developing the awareness up to a state, which leads to full cognition. Reaching this state is the only purpose of life according to Hinduism.

## Conclusion

In this paper we presented two different perceptions of the Universe. From preceding paragraphs we can conclude that the modern cosmology is based on the study of matter and all phenomena derived from it. With the cognition of the matter and of everything that makes the matter, including the forces that control the matter, it is considered that we will achieve a complete understanding of the Universe. On the other hand, the Hindu cosmology emphasizes the human existence and development of consciousness as an instrument for achieving the complete cognition. In Hinduism there is a clear difference between matter and pure consciousness, from which the matter is created and further shaped up. The cognition is possible by releasing the bondage of space and time and unite with pure consciousness. Which way is the right one, or in other words, what is that will lead us into the knowledge of the Universe and us inside it, it remains as subject of a further research. Maybe just a synthesis of these two approaches leads humanity towards a complete understanding and cognition.

## References:

1. Frawley, D., 2006, „Modern Science and Vedic Science“, Life Positive, Delhi, India
2. Grin, B., 2010, „Elegantni kosmos“, Heliks, Beograd
3. Guth A., 1997, „The Inflationary Universe: The Quest for a New Theory of Cosmic Origins“, Massachusetts: Hubble, E., 1929, „A relation between Distance and Radial velocity among Extra-Galactic Nebulae“, Proceedings of the National Academy of Sciences of the United States of America, Volume 15, Issue 3, pp. 168-173
4. Linder, E. V., 2008, Rep. Prog. Phys. 71 056901 (25pp)
5. Magnus, A., 2005, „The Cosmic Microwave Background Radiation“, <http://courses.theophys.kth.se/5A1381/reports/axelsson.pdf>
6. Penzias, A.A.; Wilson, R.W., 1965, „A Measurement of Excess Antenna Temperature at 4080 Mc/s“, Astrophysical Journal 142: 419–421
7. Ranganathananda S., 1991, „Human Being in Depth - A Scientific Approach to Religion“, State Univ. of New York
8. Sagan, C., D'Souza, P. P., 1980, Hindu Cosmology's time-scale for the universe is consonance with modern science, <http://www.rediff.com/news/jan/29sagan.htm>
9. Singh, T.D., 2006, „Vedantic Perspectives of Reality“, rad prezentovan na konferenciji „Continuity and Change - Perspective on Science and Religion“, Metanexus Institute
10. Steinhardt, P. J., Turok, N., 2002, „Cosmic Evolution in a Cyclic Universe“, Phys. Rev. D65 126003
11. Steinhardt P. J., Turok N., 2004, The Cyclic Model Simplified, arXiv: astro-ph/0404480
12. Sivaran, S. B., Devi, A., 2007, „Creation and Annihilation“, Institute of Scientific Research on Vedas, Sri Vani Publications GUNTUR

13. Tegmark, M., 2003, „Parallel Universes“, To appear in Science and Ultimate Reality: From Quantum to Cosmos, honouring John Wheeler's 90th birthday, Cambridge University Press
14. Utukuru, P., 2003, „Ancient Hindu Cosmology and Modern Cosmology“, The Online Forum on religion and Science at <http://www.metanexus.net>, Metanexus Institute
15. WMAP science team of NASA, 2010, „WMAP Introduction to Cosmology“, <http://map.gsfc.nasa.gov/universe/>
16. Yamamoto, S., Kuwahara V.S., 2008, „Modern Cosmology and Buddhism“, The Journal of Orien. Studies, Vol. 18

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## **BRAIN WAVES, SANSKRIT CHANTING AND SACRED SILENCE**

**Summary:** *In this paper we research correlation between brain waves and states of consciousness in contemporary medicine and traditional yoga teachings. We can confirm similarities in consideration of the states of consciousness although traditional yoga approach derives from the distant past when there didn't exist contemporary medical apparatuses as electroencephalograph and scanner. Yoga praxis introduced intonation of mantras as an instrument for spiritual purification and improvement. In this paper we explain correlation between different states of conscious and use of mantras. Yoga praxis knew the influence of Sanskrit mantras chanting (vibrational syllables) and developmental impact of their practice. Sanskrit chanting (intonation) of mantras has been used with the purpose to introduce yogi to the refined (higher) states of consciousness.*

**Key words:** *brain waves, silence, states of consciousness, yoga, meditation.*

### **The brain waves**

The brain is made of some twenty billion neurons which produce electrical signals/impulses. When there is a synchronicity among neurons, which means when they are working together in either activating, refraining or balancing any physical or psychological deed of a person, a very little and rhythmic electrical impulse appears within the synapses, those very tiny junctions in between the neurons chains.

The more neurons are working together in synchronicity, the larger is the amplitude of the electrical oscillation. This amplitude is measured in microvolts. The faster neurons are working together, the higher is the frequency of the electrical oscillation. This frequency is measured in hertz.

Amplitude and frequency are therefore the very basic characteristics which define the brain waves. Those very weak signals can be measured by placing electrodes on someone's scalp with the help of a conductive paste for helping conducting the information. By amplifying the electrical impulses/signals through a EEG-amplifier, they are then sent to a computer which analyses the characteristics, both amplitude and frequency. This is electroencephalography or EEG.

Researchers and scientists are developing the idea not yet identified or proved that the brain might generate some 10 watts of electrical power when it is fully functioning.



Those electrical activities called brain waves have been measured precisely since several decades and it appeared that four different categories could be well identified. Later on it was discovered and understood that the different brain waves corresponded to specific “states of awareness”. The brain waves appeared to be common to any person regardless his/her gender, culture, beliefs and way of life. They are of four types:

- 1) DELTA: 0,5 to 4 cycles per second or Hertz (Hz)
- 2) THETA: 5 to 7 Hz
- 3) ALPHA: 8 to 13 Hz
- 4) BETA: 14 to 30 Hz
- 5) But in very uncommon cases, it was also discovered a fifth kind of brain waves, called GAMMA with a frequency of about 40 Hz, precisely between 31 to 42Hz.

### **Biophysiological observations**

It is now common to hear saying that we only use about 10 percent of our mental capacities, and a big question since very long has been: “Is there a direct link between the biological and physiological activities of the material brain and the logical and imaginative activities of the non material thought processes?” In this regard, researchers have tried to observe which areas of the brain are effectively being activated when different mental activities are going on. Those researches are still on and up to now no final conclusion has been reached. We must therefore keep in mind that all explanations might be uncompleted and nothing should be taken as a clear and neat conclusion.

What is observed is that in a very large number of people, what we call the “average person” is mainly using in his/her daily life the parietal lobes of the brain, which are very active almost permanently during the waking state when BETA and ALPHA waves are operating. Those lobes are said to be stimulated by the “reptilian” brain which governs the very basic instinctive processes of each individual. Also the presence of GAMMA waves seems to be working with a stimulation of the frontal lobes, especially the left pre-frontal lobe. Once again we have to remember that those observations are still in progress and it would be very bold to conclude to any final assertion regarding the link between the material brain and the non material thought processes.

### **The states of awareness**

Going on and deeper with the experimental studies and clinical observations, the researchers finally came to a conclusive point of view which was to be definitely considered as a truth. These four kind of brain waves were operating in a definite state of awareness linked to the relationship one has with the environment, either inner or outer. They are:

- DELTA: activated during the deep sleep and coma.
- THETA: activated during the dream sleep and states of trance.
- ALPHA: activated during the waking state when the body is very relaxed.
- BETA: activated during the waking state when the thought is attentive or concentrated.

The fifth GAMMA is activated in cases of extreme focus and states of ecstasy.

DELTA was identified as the electrical activity of the state of unconscious, with the very basic instinctive activities to maintain the body surviving. THETA, as the activity of the subconscious where emotions, strong feelings and dreams are mainly operating. ALPHA, as the activity where the consciousness of the body and the integration of feelings are driving the person. BETA, as the activity where perceptions, light concentration and mental processes are at the first place.

Finally the fifth GAMMA brain waves were identified as a higher state of awareness not easy to define as the persons measured in such states show difficulties in finding proper words to explain what they are precisely living. But it is commonly accepted that this is a state of a very clear mind linked to a strong sensation of happiness.

Finally, comes the question of the observer itself. What is this function that we call observation ? Is there a particular place or centre within the brain where we observe from and is this “observer” neutral enough to not interpret any of its observations ? Or is observing a non material activity, a living process appearing in between the so called observer and the observed ? And finally could the observing process be the inner dynamic of the GAMMA brain waves activity ?

## **Upanishads and states of mind**

In the classical culture of the Indian Upanishad, one of the basic traditional texts dating back around fifteen centuries, we can see that in spite of almost no clear knowledge regarding the material biological brain areas, very precise and detailed explanations were already given about the non material though processes which are quite well coping with the recent discoveries from our century !

The Mandukya Upanishad, consisting in only a few slokas - short sentences – describes four different awareness activities to which is added a fifth one. Those descriptions are done in term of identification with several though functioning ways.

JAGRAT: the waking state, into which the person is identified with his body, actions, ideas and verbal speech.

SVAPNA: the dreaming state into which the person is identified with his mental images and mental speech and emotions.

SUSHUPTI: the deep sleeping state into which the person seems not to be identified with something in particular. But it only seems as we have no recollection of this *Sushupti* state when we come back to the waking state. It is therefore describe as a state of no more awareness, but a “state of mind” where there is still a process of identification but with a certain *nothingness*.

TURYA: the very translation of this word is the “fourth state”. It is describe as a state of mind which includes the three others first, *jagrat* (waking state), *svapna* (dreaming state) and *sushupti* (deep sleeping state), but also as a state which is linking the passages between those three. In other words, when we pass from the waking to the sleeping or dreaming states, there is a very tiny continuity process that is going through this state of *turya* for a very quick moment. It is also describe as a state of extreme focus with a feeling of very vivid energy as well as deep happiness. This particular *turya* state is finally explained as a state which does not last very long compare to the three others as the waking state (several hours per day), dreaming state (about 100 minutes per night) and the deep sleeping state (several hours per night).

At last, there is this unusual fifth state called TURYATTITA which is simply described as a continuous state of *turya*, meaning that is a state where the person experiments a deep happiness and a full perception of reality. Thousands of yogis have tried to describe this state, always coming to the conclusion that it was not possible to explain clearly what it is and that the only clear understanding could only come from a personal experimentation. Going further into the Mandukhya Upanishad, we also find that this traditional text indicates the using of sounds as tools to experiment the different states of awareness. A deeper understanding to the Sanskrit root meanings of the words themselves is in fact showing that it is not the sounds that are involved, but most surely the vibrations related to those sounds. We then find that each state of awareness is associated with a specific vibration, itself represented by a sounding letter. *Jagrat* (waking state) is associated with the sound “A”, *Svapna* (dreaming state) with the sound “O”, *Sushupti* (deep sleeping state) with the sound “M”, *Turya* (the fourth or in-between state) with the sound “OM”, and finally *Turyattita* (the unusual state almost impossible to describe) with no sound at all, which means with a particular quality of silence.

### **Stable state of mind**

The Indian tradition is very precise regarding the different levels and functions of the human psyche, and we have great difficulties when we are confronted to the question of translation. We must first try to be as clear as possible with the words which are used. The states of awareness are four in number as it has been explained before. Out of these four, three are quite well accepted by the western scientific psychology, the states of wakening (or conscious), of dreaming (subconscious) and of deep sleep (unconscious). The

“fourth state” is not so easy to accept as it cannot be measured objectively, but only felt subjectively. It brings the person to a kind of perception which can be called a state of “intuition”. This kind of intuition needs to be confirmed by the daily experimentation in our life. For example when we have some kind of premonition and that we can effectively watch and practically verify later on that it was a right perception. We then could ask, what is this particular state of awareness which knows without having any object to stand on. Yoga has given an answer to such a question: it says that this state comes from not any object, but from the subject itself, i.e. the Identity, also called sometimes the “I-ness”, this very root of the fact of being oneself alive. This I-ness is said to be precisely this Turyattita, the fifth state, or in other words the function of watching, the higher Self, the Seer, the non personal Energy... and so on, as many different words have been used trying to give intellectual sense to this “thing”. This activity of non personal I-ness is described as being at the origin of each and every sentient being, human, animal, vegetal and mineral (as mineral evolve too, from ordinary stone to precious jewel) and in its nature equal within all reigns of life, but more or less “hidden” by the context (or culture) of each reign.

This non personal state of mind is defined with three qualities: silence, vastness and joy. Regarding the study of the impact of sounds on the being, we have to go deeper into the concept of the meaning of words like sound, vibration, information and silence. The Indian Shaivaite tradition for example says that there are some fourteen different levels -or qualities- of silence and the tiny differences between them are very difficult to grasp only with the cognitive faculties, but need to be perceived as physical experience through the body sensitivity.

We then have a question about the criteria of a scientific research which needs to be proved and should be reiterate at will to be validated as real. This means that any experience must be objective, i.e. there must be a distance, a separation between the observer (the scientist) and the observed (the object that is being studied). When we come to personal experience where the observer and the observed are part of the same person, it is almost impossible to have this scientific approach according to its own definition. We then have to deal with another way of relationship that should include a new creativity from which could arise absolutely new paradigms and totally unknown possibilities. In other words, including the unknown as a part of knowledge. This requires a total openness linked to the passion for discovering, both being dynamic processes which do not stop whenever something is recognized as a real.

Going back to this question of Sanskrit vibrating chanting and its effects on the brain and the mind, we have to take in consideration what the Indian tradition give us a kind of a scale helping us to understand tiny details, some of them playing as key-roles. Inside the using of vocal Sanskrit, there are once again five levels to be defined:

NAMA: the word itself and its signification. We all have noticed that using words to communicate with other is never so easy because of the different interpretations

that each of us give to any particular word, but also because the meaning differs according to the cultural context and personal background. The understanding of words is therefore totally dependent of the intellect, personal conditionings and cognitive functions.

SABDA: the sound. The sound does not have any particular intellectual meaning, but it can be measured in terms of frequency, low or high, volume or power, speed and movement. But if the intellect cannot grasp to a sound, the body can, experiencing sensations, through not only audition, but also kinesthetic perception like inner rhythm, pulsation, movement...

SPANDA: the vibration. The vibration can be defined according its very specific behavior that helps: it is dynamic but does not really move, it is vibrating and stay at the same place. The subjective personal perception of the vibration is made of either soft or strong inner movement that comes and goes but does not really change its location.

VRITTI: the information. The information is explained as a very subtle movement going from one place to another and hence organizing the process of vibrations.

SUNYA: the void. This unusual fifth level, is defined as void which is a quality of silence. Silence is then considered as the very basis of any heard activity, the tantric tradition saying that there are several qualities of silence, from 14 to 18 according to the different schools...

### **Mantra and sankrit chanting**

Trying to find links or correlations between the old traditions and the modern science, we can interpret the Mandukya Upanishad as follow. The vibrating sound “A” stimulates the faculties of perception and the mental concentration inside the awakening state where BETA and ALPHA brain waves are operating. The vibrating sound “O” stimulates the emotions, strong feelings and dreams inside the subconscious state where THETA brain waves are operating. The vibrating sound “M” stimulates the faculties of no objectivity occurring inside the unconscious state where DELTA brain waves are operating. The vibrating sound of “OM” stimulates the extreme focus and ecstasy inside the “fourth state” or turya where GAMMA brain waves are operating. Above all that or deep within, there is an indescribable state of silence where the observer and the observed are one and united.

Going further in this research, when each isolated sound is studied separately, the Indian tradition gives the depths of its intuitive ingenuity. For example, the vibrating sound “A” is declared to be a sound that brings about something out of nothingness. Several letters of the Sanskrit alphabet are said to be contained into the vibration of “A”. The same affirmation is made with the

vibrating sound “O” which is said to sustain any activity as a regular dynamic without changes, and the vibrating sound ”M” to organize any process of deconstruction. At last the vibrating sound “OM” contains the three activities of life, apparition, maintenance and decay. At the very end, Silence is declared to be the very unfathomable basis impossible to grasp or understand onto all these four activities are operating.

Among the 50 letters composing the Sanskrit alphabet, some of the sounds are building up together the faculties of creation resumed in the vibrating sound “A”, some others are building up the faculties of maintenance resumed in the vibrating sound “O” and some others building up the faculties of decaying in the vibrating sound “M”. It is often considered that the whole alphabet is all together resumed in the vibrating sound “OM”, and that the basis of all life lies into an unuttered quality of Silence that cannot be understood.

Linked to the vibrating sound “A” are six *bija mantras* or root-sounds which are chanted loudly and inwardly so to stimulate the whole process of expanding the awareness in all and each of its levels. Linked to the vibrating sound “O” are other *mantras* chanted to stimulate the maintenance of this awareness. And linked to the vibrating sound “M” are again other *mantras* chanted to stimulate the vanishing of this awareness. Linked to the vibrating sound “OM” is the total awareness, then called “Consciousness” which is a state of wholeness where all levels are included. And beyond all these levels of material and non material existence is a perfect and unattainable quality of Silence.

The way of the yogi is not to define all the technical and intellectual particularities of the different *tattwa* – aggregates- which are combining matter and energy at the basis of the every physical existence. The goal of yoga has been given in Patanjali’s *Yoga sutras* as reaching this state of mind made of a deep quality of silence by slowing down the thought process until it becomes absolutely quiet. It is said that when the mind becomes silent, then yoga start. In other words, the state of separation comes to an end and the state of non separation appears, the literally meaning of the word *yoga* being a state of union or unity. The way of the yogi is to look for this potentiality to become his very life. But also to testify the reality of life by his life and through his insights. It is far from any beliefs, superstitions and second hand ideas or ideals. The affirmation of this reality is the manifestation of the very creativity of life which has nothing to prove and no body to convince. The final position of the yogi could be either to become totally anonymous in the world or to be an instructor for students having strong motivation for discovering the sense of the whole life. The teachings themselves are said to belong to ancestral oral tradition where the very meaning is transmitted by the way of speaking. It is poetically said that this speech is in fact the outcome of the silence of the Universe.

**References:**

1. Sastri, Mahadeva (1920). *The Yoga Upanishads*, text with commentary of Sri Upaniṣad-Brahma-Yogin, Madras.
2. Bahadur, R., Vasu, S.C. (1914-15): *The Gheranda Samhita*
3. Griffith, Ralph T. H. (1893): *The Sāmaveda Saṃhitā*.
4. Patanjali (1977): *The Yoga Sutras*
5. Sivananda, Swami (1995), *The Bhagavad Gita*, The Divine Life Society.
6. Bihar School of Yoga (1998): *Hatha Yoga Pradipika*.
7. Van Nooten, B., Holland, G. (1994): *Rig Veda, a metrically restored text*, Department of Sanskrit and Indian Studies, Harvard University, Harvard University Press, Cambridge, Massachusetts and London, England.

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## **CLOSER TO THE ESSENCE OF YOGA EXPERIENCE**

**Summary:** *Lack of appropriately designed (mixed-method approach that incorporates qualitative methodology) can be the challenge nowadays to researchers. There is often no full awareness of the yoga practitioners' experiences during randomised controlled trials. There are a limited number of qualitative studies per se on psychological experiences of yoga practice. This paper presents an in-depth, qualitative study, analysing responses to focus-group interviews regarding individuals' self-reported experiences and health attitudes during yoga practice. Semi-structured interviews were conducted with three yoga groups in order to collect research data. The analysis indicates extraordinary experiences of yoga practitioners on a various levels their bio-psychosocial-emotional functioning. The results section indicates how yoga influences the complexity and multidimensionality of individuals' health and well being.*

**Key words:** *yoga, yoga experience, phenomenology.*

### **Introduction**

Yoga originates from an ancient knowledge that aims to discover the true meaning of human life. It is estimated that yoga has been developing for four to five thousand years, mainly in Asia.<sup>1</sup> Nowadays it is regarded within complementary and alternative medicine as a form of mind-body medicine.<sup>1</sup> An extensive renaissance of yoga is being observed around the globe, as it offers a philosophical system for approaching health holistically. Yoga creates inner, physical and emotional balance through the use of postures called asanas that are combined with breathing techniques, or pranayama,<sup>2</sup> and are based mainly on isometric muscle contractions.<sup>3</sup> Yoga emphasizes physical and spiritual self control and can be regarded as a way of harmonizing the balance between catabolic and anabolic reactions within the body.<sup>4</sup> The yoga practice is related to high levels of concentration and control of the emotions<sup>5</sup> and the main aim of this kind of activity is self-realization, self-exploration and bliss-consciousness through control of consciousness.<sup>6</sup> Yoga also offers guidance regarding dietary habits and self-regulated lifestyle, as well as general, ethical and moral principles.<sup>7</sup> Overall, the main objective of yoga is the achievement of balanced health and well-being, optimal fitness and increased body resistance to illnesses. From the therapeutic perspective it is important to emphasize that when performed correctly, yoga exercises have no adverse effects.<sup>8-9</sup> Nevertheless, competitiveness and the



specific indications and contraindications of different yoga exercises must be respected.<sup>10</sup>

There were several logical reasons for undertaking this study. Firstly, it is hoped that these results will improve understanding of practitioners' psychological perceptions of yoga and contribute to the existing body of knowledge. Secondly, the rationale for this survey was to indicate new pathways for future research from the qualitative, psychological perspective. Thirdly, and perhaps most importantly, yet another logical reason for this survey was to combine the author's previous qualitative studies<sup>11-12</sup> with more empirical data; this study has emerged from the author's earlier research interests, which are summarised in the next paragraph.

The author of this study asserts that yoga exercises promote self-discovery and enhanced well-being in which individuals develop more flexibility and adaptability in their thoughts, emotions and behaviors.<sup>12</sup> The end result is increased mental health awareness, self-organization, willpower and self-discipline through an increased sense of self control while performing the various body postures during yoga practice.

The aim of this study was to explore the practitioners' experiences and their psychosocial states from an idiographic, phenomenological perspective, dedicated to foregrounding the subjective feelings of the participants. More precisely, this study investigates individuals' cognitive patterns, i.e. thought processes and relaxation, concentration, distraction and physical stimuli, the experience of pain peak performance, the precision and quality of movements, proprioception, body awareness and exploration of own self and social processes and interpersonal relationships, emotional reactions and feelings and health benefits associated with yoga practice.

It has been suggested that qualitative research is appropriate for such studies because it allows unlimited exploration of cognitive and attitudinal perspectives and elicits a wide variety of responses from participants.<sup>14-16</sup>

## Method

This qualitative research was conducted in January 2010. Since qualitative design emphasises the analysis of each case there is no requisite number of participants for such a study and hence the sample size is usually small.<sup>17</sup> Three yoga groups with a total of 31 participants (n=31) participated in this survey. All three groups have the same licensed instructor, who has more than ten years' experience of yoga practice. Men and women aged 18–66 in all three groups who were able to complete the interview in English were eligible to participate. The selection criteria included a lower age limit of 18 and at least three years practice of Iyengar yoga in the UK. Prior to the research a formal invitation letter was sent to the instructors and subsequently the author contacted them by telephone for permission to proceed with the study. The groups were approached by the author immediately after their yoga class at their gym, informed about the study and asked whether they would consider taking part in it. The sampling area was

London (UK), and it can therefore be suggested that from a qualitative methodological standpoint the groups represented a reasonably homogenous and purposive sample.<sup>17-18</sup> This sampling method was recommended because the interviewees would possess the necessary knowledge and experience of yoga; provide meaningful answers to the questions; and have the capability to reflect and articulate.<sup>18</sup> The author decided to use this sampling method because yoga practitioners are experts in the field of psychological perception in this form of exercise and the intensity of experiences in this particular group was presumed.<sup>19</sup>

The phenomenological approach was chosen because the psychological perceptions of yoga practitioners are dynamic, contextual and subjective, and have been relatively understudied. By focusing in depth on their explicit experiences this study builds upon the author's previous psychological insights to reveal the underlying phenomena. With this approach, truth and meaning emerge through individuals' interactions between multiple constructions of reality, and need to be understood within their situational context.<sup>18,20-24</sup> All names have been changed to protect confidentiality. All the yoga practitioners in all three groups agreed to participate. No financial reward was offered to participants.

## **Data collection**

Prior to the interview the participants were asked to complete a questionnaire which collected their demographic data. In order to collect qualitative research data, semi-structured group interviews were held. The semi-structured focus group interview has the characteristics of a discussion as well as of an interview and thus allows interviewees a degree of flexibility. It is currently a popular method of data collection in many fields of applied social research.<sup>17-19</sup> The researcher kept to a semi-structured questionnaire with open-ended questions. Content validity was achieved in the way that the structure and content of the questions were scrutinized and validated by qualitative research staff at the University of East Anglia. Topics included practitioners' wide variety of psychological experiences during yoga practice. The practitioners were also asked to express and explore in depth their experiences during yoga exercises and were surveyed on emerging topics. All the participants were encouraged to respond to the questions. The interviews were continued until theoretical saturation was reached, which in all three groups was approximately 40 minutes from the start. To maintain accuracy in the data collection, the author digitally recorded the interviews using an iPod. For reliability, field notes and personal observations and feelings were also recorded after each interview. On the day of each interview verbatim transcriptions were uploaded to a computer and transferred from WAV to MP3 format to serve as raw data for the study.

## **Data analysis**

The data were analysed using inductive content and thematic analysis across and within groups. In this process the author generated fifteen code categories directly from the transcript which were subsequently redefined, resulting in nine categories and creating new understandings of yoga practice with varied levels of specificity. The topics were then examined in relation to their literal and theoretical replications.<sup>20</sup> According to Krippendorff (2004) this may ensure formalization and so the findings can be easier to replicate and/or validate.<sup>25</sup> Finally, connections were made between responses where the level of abstraction was comparable. This resulted in a list of themes on similar levels of abstraction and supporting statements regarding psychological and social experiences during yoga practice that can be found in the transcript within the text. Computer software was not used to analyse the data.

## **Results**

It has been suggested that evaluation of the rigor of a qualitative study is based, in part, on the logic of the emerging theory and the clarity with which it sheds light on the phenomenon under study.<sup>22</sup> Therefore to ensure scientific rigor and the reliability of the research outcomes while analysing the research data the author openly and scrupulously adhered to the philosophical perspective of existential phenomenology.<sup>27-30</sup> Also, with the intention of investigating what it is like to be a yoga practitioner, the author only analyzed the participants' psychological experiences as a separate and distinctive phenomenon embodied in the nature of these exercises. Participants' claims regarding other experiences or phenomena were not included in the data analysis. During the analysis, common themes emerged from the responses and the author noticed that from the phenomenological and the naturalistic paradigm perspectives it was relatively simple to categorize the participants' interpretations into similar domains of psychological experience.<sup>31</sup> It is believed that these categorizations reflect the ontological richness of the presented data. The themes that emerged include cognitive patterns, i.e. thought processes and relaxation, concentration, distraction and physical stimuli, the experience of pain peak performance, the precision and quality of movements, proprioception, body awareness and exploration of own self and social processes and interpersonal relationships, emotional reactions and feelings and health benefits associated with yoga practice.

## **Discussion**

This study illustrates the experiences of yoga practitioners at various levels of psychosocial functioning. Specifically, the sample acknowledged the intrinsic power of relaxation, which is essential for them to perform certain asanas: without appropriate muscle relaxation they are not able to execute specific body

postures. Some stated that relaxation is the key to essential mind-body balance and a sanctuary in which they could become calm and clear informational noise. A pragmatic ability to relax was also observed, or for some practitioners, relaxation is the aim in itself; they attend classes in order to relax, dispose of stress and gain more flexibility or joint mobility. Others suggested that the ability to relax depends on the relative difficulty of an asana; nonetheless relaxation seems to be embedded in the practice of yoga. The more they relax the further they can go using conscious thought processes and/or biofeedback. To the author's best knowledge very few similar results are found in the literature. From the quantitative methodological standpoint, however, the positive effects of yoga asanas presented below are to some extent congruent with those of other researchers. For example, improvement in relaxation itself was noticed.<sup>32-33</sup> Relaxation through yoga training is associated with a significant increase of cardiac vagal modulation<sup>34-36</sup> and therefore yoga may enhance stress tolerance<sup>37</sup> and decrease stress levels in practitioners.<sup>35,38-40</sup> Also, yoga-based relaxation techniques enhance cognitive processes<sup>41-42</sup> and improve mental focus, balance, attention<sup>37,39,43</sup> and concentration.<sup>32-33,44-45</sup> The sample experienced a significant increase in attention to the present moment as measured by the Freiburg Mindfulness Inventory (FMI).<sup>46</sup> They described the psychological and physical effects of relaxation that they experienced, which agree with Danhauer et al.'s (2008) research in which qualitative feedback from participants was predominantly positive and relaxation a common theme.<sup>47</sup> In a study with a similar methodological design, a focus group interview revealed increased relaxation, reduced stress,<sup>14</sup> improved self-knowledge and self-satisfaction.<sup>47</sup> A recent study of students by Supaporn (2009) reflects the main results presented here.<sup>16</sup> For instance, participants' physical gains in this study included improved strength, flexibility, balance, relaxation and concentration, as reported by Supaporn. Other researchers also claim that yoga has a positive effect on flexibility resulting from its effects on balance, stretching, relaxation and strengthening.<sup>15,39,48-50</sup> In the present study the practitioners reported qualitative gains in terms of precision and exactness of movement, quality control mechanisms, individuals' reference points associated with peak performance, and increased mobility and flexibility following yoga classes.

From the social perspective, the present study emphasises the role of group mechanisms or dynamics such as members' social comparison. A group can provide positive inspiration to its members. Clearly there is an emotional-volitional component to attendance of a group. The participants claimed to possess persistence, resistance and internal motivation as well as shared passions, interests and enthusiasm. Yoga can positively and negatively influence the quality and quantity of interpersonal relationships. There was noticeable respect from student to Master, which is congruent to a degree with recent research that found yoga to be beneficial to practitioners' interpersonal relationships,<sup>33</sup> social functioning<sup>13,50-53</sup> and shared group experience.<sup>47</sup> Conversely, the context of the social environment, including interpersonal relationships, community characteristics and discrimination, influences the adoption and maintenance of health behaviours such

as yoga practice.<sup>54</sup> These findings cannot be compared or contrasted with the results of the present research due to methodological differences, but evidence suggests that yoga exercises are beneficial to personal well-being.

### Scopes of the research

The quantitative research methods used in the majority of studies mentioned in the discussion section, and the absence of investigation of the psychosocial dimensions of yoga exercises using qualitative methodologies limit the potential value of this study.

Furthermore, to some extent personal subjectivism and interest in the topic may have shaped some of the arguments presented. However, according to Glaser each single case presented within the scope of a paper can dialectically be understood as both individual and universal, theoretically saturated and representative in its data and findings.<sup>55</sup> The discussion has been opened, and these theoretical categories might and should be part of future debate that contributes the existing body of knowledge.

### Conclusions

Relaxation is embedded in the nature of yoga exercises. Practitioners simply cannot execute certain positions without the appropriate muscle relaxation. Some perceive relaxation as an aim in itself; others aim to gain more flexibility or joint mobility. Yoga practitioners possess highly sophisticated body awareness in terms of the quality of their movement control mechanisms and awareness of peak performance. They can be relatively easily distracted from practice, with physical stimuli found to be the main distractors. Informational noise can also shift their thought from yoga practice, although some experience concentration on the exercises with a constant presence within 'here and now'. They aim to harness their selves and deepen the essential balance the body and the mind. From the social-interpersonal perspective, they are able to express and experience a wide variety of positive effects associated with membership of the group.

### Reference:

1. Shannahoff- Khalsa DS. An introduction to Kundalini yoga meditation techniques that are specific for the treatment of psychiatric disorders. *J Altern Complement Med* 2004 10(1):91-101.
2. Gimbel MA. (1998): Yoga, meditation, and imagery: clinical applications. *Nurse Pract Forum* 1998 9(4):243-55.
3. Kogler A. (1990): Yoga. Jelenia Gora: Psychosomatic Hygiene Publishing.
4. Javalgekar R. (1992): Medical Yoga. Warsaw: Comes Publishing Agency.
5. Kulmatycki L. (1997): Yoga relaxation training and its reception. Breslau: Academy of Physical Education.
6. Grochmal S. (1993): Relaxation and concentration exercises. Warsaw: National Medical Publishing.

7. Narendran S, Nagarathna R, Narendran V, et al. (2005): Efficacy of yoga on pregnancy outcome. *J Altern Complement Med* 2005 11(2):237-44.
8. Telles S, Naveen KV. (1997): Yoga for rehabilitation: an overview. *Indian J Med Sci* 1997 51(4):123-7.
9. Lee SW, Mancuso CA, Charlson ME. (2003): Expectations and outcomes associated with new practice of energy-yoga: Qualitative study. *J Clin Epidemiol* 56 (2003) 920–923.
10. McIver S, McGartland M, O'Halloran P. (2009): Program for Binge Eating 'Overeating is Not about the Food': Women Describe Their Experience of a Yoga Treatment. *Qual Health Res* 2009 19; 1234
11. Supaporn S. (2009): Learning Experience of a Dantien Yoga Course: A Qualitative Study. 3rd Redesigning Pedagogy International Conference Nanyang Technological University, Singapore, 1-3 June 2009.
12. Patton MQ (2002): Qualitative evaluation and research methods (3<sup>rd</sup> ed.). Thousand Oaks, California: Sage.
13. Kjellgren A, Bood SA, Axelsson K, Norlander T, Saatcioglu F. (2007): Wellness through a comprehensive yogic breathing program: a controlled pilot trial. *BMC Complement Altern Med*. 2007 Dec 19;7:43.
14. Malathi A, Damodaran A. (1999): Stress due to exams in medical students: role of yoga. *Indian J Physiol Pharmacol*. 1999 Apr;43(2):218-24.
15. Khattab K, Khattab AA, Ortak J, Richardt G, Bonnemeier H. (2007): Iyengar yoga increases cardiac parasympathetic nervous modulation among healthy yoga practitioners. *Evid Based Complement Alternat Med*. 2007 Dec;4(4):511-7.
16. Satyapriya M, Nagendra HR, Nagarathna R, Padmalatha V. (2009): Effect of integrated yoga on stress and heart rate variability in pregnant women. *Int J Gynaecol Obstet*. 2009 Mar;104(3):218-22.
17. Vempati RP, Telles S. (2002): Yoga-based guided relaxation reduces sympathetic activity judged from baseline levels. *Psychol Rep*. 2002 Apr;90(2):487-94.
18. Brown RP, Gerbarg PL. (2005): Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression. Part II: Clinical applications and guidelines. *J Altern Complement Med*. 2005 Aug;11(4):711-7.
19. Khemka SS, Rao NH, Nagarathna R. (2009): Immediate effects of two relaxation techniques on healthy volunteers. *Indian J Physiol Pharmacol*. 2009 Jan-Mar;53(1):67-72.
20. Chattha R, Nagarathna R, Padmalatha V, Nagendra HR. (2008): Effect of yoga on cognitive functions in climacteric syndrome: a randomised control study. *BJOG*. 2008 Jul;115(8):991-1000.
21. Kumar S, Telles S. (2009): Meditative states based on yoga texts and their effects on performance of a letter-cancellation task. *Percept Mot Skills*. 2009 Dec;109(3):679-89.

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## **YOGA AND SEXUALITY: A NOVEL WAY TO IMPROVE SEXUAL FUNCTIONING**

**Summary:** *Yoga is an ancient practice and has the objective and perceived ability to calm down mind and body. Medical studies about effects of yoga practicing had been conducted worldwide. Many results of the conducted researches show that practicing yoga have value in a plethora of mind and body conditions. In this paper, we have shown its beneficial utility in sexual function. Our first study published in the year 2007 showed that it is useful in treating premature ejaculation (PE). We had compared yoga with fluoxetine, a well known treatment option for PE. We have demonstrated in our subsequent studies (Published in 2010) that yoga is not only effective in PE but also improves all major parameters of males and female sexual functions. Our ongoing studies will test ability of yoga in erectile dysfunction and sexual satisfaction.*

**Key words:** *yoga, sexuality, sexual functioning*

### **Introduction**

*Yoga is a popular form of complementary and alternative therapy. It is practiced both in developing and developed countries alike. In India, the ancient literature indicates that it has been practiced for centuries. Yoga means ‘to unite’. It is a Sanskrit word, possibly designed to show integration of mind and body. Contemporary literature related to yoga didn’t contain lot of scientific description. However, this is not to disparage the value of conducted, insufficiently known empirical researches. Indeed in recent years, efforts have been directed to produce scientific literature related to yoga. Western medicine refers yoga as a ‘mind body’ method. Several of the yoga protagonists and patients claim that it is effective in improving sexual functions and treating sexual disorders. Since, yoga and its putative benefits have long remained mystified; we have conducted 3 studies at different time intervals to verify this claim.*

### **Study one (yoga in premature ejaculation)**

In our first study<sup>1</sup>, a total of 68 patients (38 yoga group; 30 fluoxetine group) attending the Outpatient Department of Psychiatry of a tertiary care hospital were enrolled. It was a comparative trial, wherein fluoxetine, a commonly used selective serotonin reuptake inhibitor was used as a control. Both subjective

and objective assessment tools were administered to evaluate the efficacy of the yoga and fluoxetine in premature ejaculation. Table-1 & Figure-1 depicts the yoga protocol adopted in this study. Similar protocols were designed for rest of the two studies described below<sup>2-3</sup> (please see individual references for detailed protocols). Three patients dropped out of the study citing their inability to cope up with the yoga schedule as the reason. Intravaginal ejaculatory latencies in yoga group and fluoxetine control groups were noted. We found that all 38 patients (25–65.7% = good, 13–34.2% = fair) belonging to yoga and 25 out of 30 of the fluoxetine group (82.3%) had statistically significant improvement in PE.

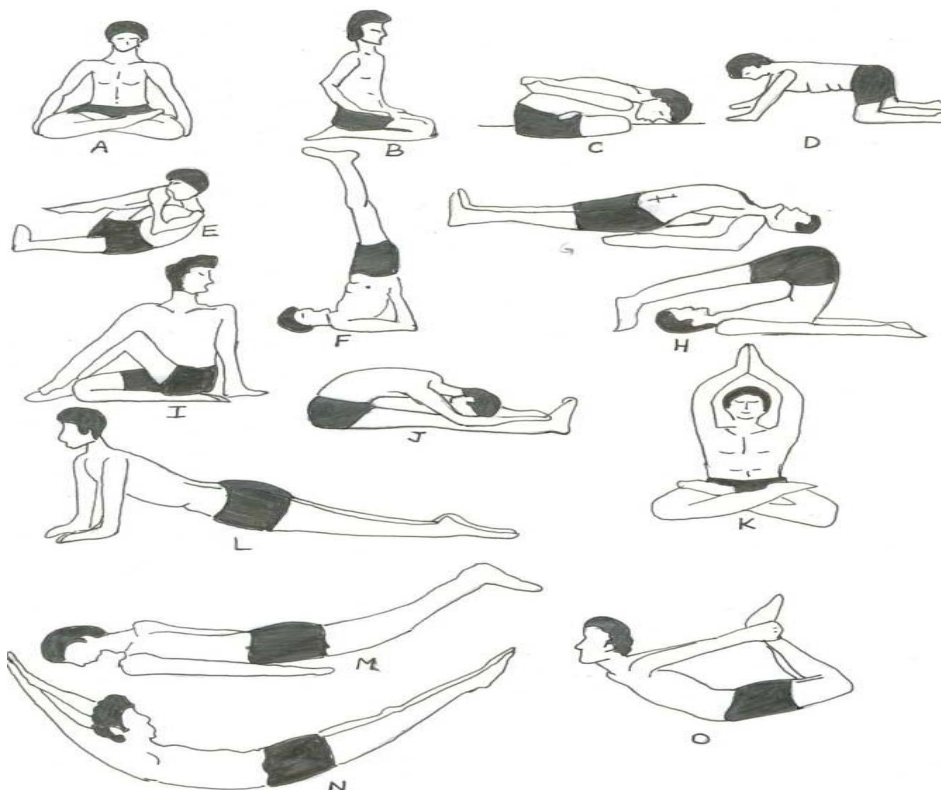


Figure 1: Various yogic postures adopted by participants of first study<sup>1</sup>.

Table 1: Brief description of yogasanas used in the present study<sup>1</sup>

1. *Kapalbhati* (Figure-A, *kapal* = skull, *bhati* = bright; “forehead brightener”) - Sit straight in squatting posture with eyes closed. Put hands on the knees. Fix the chest and consciously contract abdominal muscles.

2. *Vajarasana* (Figure-B, *vajra* = diamond) - Fold legs at knee joints and sit on the legs, and touch the knee caps as shown.



3. *Yog mudra* (Figure-C, *Yog* = after yogis, *mudra* = posture; “symbol of yoga”) - Take hands to the lower back. Catch the right wrist with the left palm and bend forward.
4. *Marjarasan* (Figure-D, Cat’s posture) - Sit in *vajarasana* and after that be in the cat’s posture and move the spine and neck.
5. *Pavanmukatasan* (Figure-E, hanging in air) - Lie down on your back, bend the legs, bring them inside; clasp them with hands. Now, bring the head up to touch the knee as shown.
6. *Viparita karani mudra* (Figure-F, *viparit* = opposite, *mudra* = posture) - “legs-up-the-wall pose”
7. *Matsyasana* (Figure-G, Fish’s posture) - Lie down flat on the back and bend the neck backwards.
8. *Halasan* (Figure-H, *Hala*=plough) - Lie down flat; then, turn legs overhead while maintaining hands on the ground firmly.
9. *Ardhmatsyendra mudra* (Figure-I, Half-spinal twist) - Sit straight, bend right knee, and put it below buttocks. Now cross the left leg and bring it in front of the right knee.
10. *Paschimottoasana* (Figure-J, Back stretching pose) - Sit with legs straight, touch toes, and try to bend the head forward and kiss the toes.
11. *Paravatasan* ( Figure-K, *Parvata*=mountain; mountain pose) - Sitting with head and spine intact with hands stretched overhead like a mountain.
12. *Bhujangasan* (Figure-L, *Bhujang*=Snake) - Lie down in prone position and transfer weight on palms. Attempt should be made to stretch the back muscles.
13. *Shalabhasan* ( Figure-M, Locust pose) - Lie down on your chest and rest the head on ground. Lift the legs to the extent that the entire body rest on the chest and abdomen. Keep hands firm on ground.
14. *Naukasana* (Figure-N, *Nauka*=boat; Boat posture) - Lying prone and lifting hands and legs in air.
15. *Dhanurasan* (Figure-O, *Dhanu*=Bow) - Body gets a “bow-like shape.”
16. *Bhushirasana* (Figure-P, Preliminary posture of *Shirshashan*)- Sit in *Vajarasana* and touch head on floor with the help of wall.
17. *Hansasana* ( Figure-Q, swan pose; preliminary posture of *Mayurasana*) - Sit in *Vajarasana* and transfer your weight on both palms. Body will hang in air but feet are supported by ground. It gives all the benefits of *Mayurasana* without difficulty. Particularly suited for overweight or old people.
18. *Chakarasana* (Figure-R, wheel pose) -This asana is so named because the body takes the shape of a circle or a semi-circle.
19. *Trikonasana* (Figure-S, Triangle pose) - Stand up, open the legs, and touch the right leg with right hand and move the left arm in air. Look towards fingertips of left hand.
20. *Uddiyana bandha/agnisara* (Figure-T, Rapid abdominal lifts) - Exhale out all air and then draw abdominal muscles under rib cage.
21. *Pranayama* (Figure-U, Breath control) - Sit comfortably with eyes closed in squatting posture. Deep breathing should be done via alternating nostrils as shown.

22. *Shava asana* (Figure-V, Dead posture) - It involves lying relaxed, eyes closed with arms placed on both sides of the body<sup>13</sup>.

### **Study two** (yoga in male sexual functions)

In our second study<sup>2</sup>, we studied 65 males (Age range=24-60 years, average age=40±8.26 years) who were enrolled in a yoga camp and administered a known questionnaire i.e. Male Sexual Quotient (MSQ) before and after 12 weeks sessions of yoga. MSQ scores before and after yoga sessions were used as assessment tools. It was found that after the completion of yoga sessions; the sexual functions scores were significantly improved ( $p < 0.0001$ ). The improvement occurred in scores of all the domains of sexual functions as studied by MSQ (desire, intercourse satisfaction, performance, confidence, partner synchronization, erection, ejaculatory control, orgasm).

### **Study three** (yoga in female sexual functions)

In our third<sup>3</sup>, we recruited 40 females (age range 22–55 years, average age 34.7±8.49 years) who were enrolled in a yoga camp and were given a Standardized Questionnaire named Female Sexual Function Index (FSFI) before and after the 12 weeks session of yoga. It was found that after the completion of yoga sessions; the sexual functions scores were significantly improved ( $P < 0.0001$ ). The improvement occurred in all six domains of FSFI (i.e., desire, arousal, lubrication, orgasm, satisfaction, and pain). The improvement was more in older women (age > 45 years) compared with younger women (age < 45 years).

### **Scope of researches**

Based upon, our studies three involving yoga and sexuality, we feel that yoga is an effective method of improving all domains of sexual functions and perhaps preventing or treating sexual dysfunctions.

We are presently in the process of evaluating yoga in a large number of subjects (both men and women) to know more about the therapeutic potential of yoga. So far, few of the limitations of our studies have been:

1. Small sample size
2. Lack of a control group in two of our recent studies
3. Lack of psychometrical analysis

In first of the ongoing study; we are comparing tadalafil, an important drug for erectile dysfunction and yoga in treatment of erectile dysfunction. In rest

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<sup>13</sup> Publisher's note: Description of asanas is not complete and therefore it is not recommended to practice them based on this description, but only with assistance and guidance of the certified yoga instructors.

of the two, we plan to compare in both men and women the effect of yoga in sexual satisfaction. We have taken people who are walking everyday for one hour as control group. In all of the 3 studies that we are presently undertaking we have taken controls and also doing psychometrical analysis (Hamilton Depression Rating & Hamilton Anxiety Rating Scales). Thus we are removing the drawbacks in ongoing studies to answer questions related to yoga efficacy in a more comprehensive way.

## **Discussion**

Though life style practices like yoga are very old yet psycho-medical approach to sexual problems is not a very old practice<sup>4</sup>. Around 2 decades back, behavioral approaches to treatment of sexual problems started falling out of favour and mainstream medicine started taking charge of these patients. This was probably because biological basis of sexual disorders started coming out and this led urologists and sexologists to try out medical treatment rather than purely psychologically or behaviorally based options. Yoga is an ancient practice that involves both physical postures (*asanas*), breathing techniques (*pranayamas*) and meditation, which aids in achieving the goal of union between the “self and the spiritual”. From an objective angle, it becomes difficult to understand how such a seemingly philosophical practice could become useful in treating sexual disorders. But there has been long standing beliefs that yoga does improve sexual functioning. We have explored the scientific value of this empirical belief and we found that yoga tones up abdomino-pelvic muscles<sup>6</sup>, improves endocrinal functioning, stabilizes and calms down both body and mind and also has some potential spiritual healing ability. On a local level, pelvic-perineal muscles are strengthened by specific yoga postures. Yoga practice improve blood flow to genitals, reduce menstrual problems and improves both male and female sexual problems<sup>5</sup>. Pelvic exercises, for long, have been shown to be beneficial in improving sexual functioning<sup>5</sup>. Yoga could also be improving pelvic muscle strength, in addition to many more things stated above. So, a combination of factors could have been responsible for brining about improvements in men's sexual performance.

## **Popularity and acceptability of yoga**

Yoga is popular maybe exactly because of its natural non-pharmacological approach. It is used as a supporting method in a plethora of bodily and psychological conditions. This paper should also contribute to the acceptance of yoga as an option of supporting method in healing without medicaments.

## Conclusions

Yoga has been practiced by people of India and world at large for long time now. It is accepted widely, cheap, effective and is free from serious side effects. Considering lot of rumors that it has lot of abilities, specially the alleged ability to boost sexual function, we thought it worthwhile to explore the effect and test it scientifically. We have been so far able to bring to surface ability of yoga to positively affect sexual functions. Our studies indicate that yoga is a cheap non pharmacological measure to improve sexuality or has potential to treat sexual dysfunction. After visiting doctor, patients can practice yoga according to the doctor's advices. And people who wish to "boost" their normal sexuality; yoga could be a cheap and an effective way.

## References:

1. Dhikav V, Karmarkar G, Gupta M, Anand KS. Yoga in premature ejaculation: a comparative trial with fluoxetine. *J Sex Med.* 2007 Nov;4(6):1726-32. Epub 2007 Sep 21.
2. Dhikav V, Karmarkar G, Verma M, Gupta R, Gupta S, Mittal D, Anand K. Yoga in male sexual functioning: a noncomparative pilot study. *J Sex Med.* 2010 Oct;7(10):3460-6. doi: 10.1111/j.1743-6109.2010.01930.x.
3. Dhikav V, Karmarkar G, Gupta R, Verma M, Gupta R, Gupta S, Anand KS. Yoga in female sexual functions. *J Sex Med.* 2010 Feb;7(2 Pt 2):964-70. Epub 2009 Nov 12.
4. Brotto LA, Mehak L, Kit C. Yoga and sexual functioning: a review. *J Sex Marital Ther.* 2009 Oct;35(5):378-90.
5. Kegel exercise. [http://en.wikipedia.org/wiki/Kegel\\_exercise](http://en.wikipedia.org/wiki/Kegel_exercise) (accessed on July 30, 2010).
6. Ross A, Thomas S. The health benefits of yoga and exercise: a review of comparison studies. *J Altern Complement Med.* 2010 Jan;16(1):3-12.
7. Sex-asnas to women' rescue: <http://www.fox41.com/story/12005520/sexercises-workouts-to-work-you-up?clienttype=printable&redirected=true> (accessed on July 30, 2010).
8. Complementary and alternative medicine in men's health: <http://www.mdconsult.com/das/article/body/228651238-2/jorg=journal&source=&sp=21537383&sid=0/N/672845/1.html?issn=1875-6867> (accessed on July 30, 2010).
9. Sexercises: workouts to work you up: <http://www.wbay.com/Global/story.asp?S=12005520> (accessed on July 30, 2010).
10. Premature ejaculation: test and diagnosis: <http://www.mayoclinic.com/health/premature-ejaculation/DS00578/DSECTION=tests-and-diagnosis> (accessed on July 30, 2010).
11. Yoga and female sexual functions: [http://www.health.harvard.edu/newsletters/Harvard\\_Womens\\_Health\\_Watch/2010/April/yoga-and-female-sexual-function](http://www.health.harvard.edu/newsletters/Harvard_Womens_Health_Watch/2010/April/yoga-and-female-sexual-function) (accessed on July 30, 2010).
12. Yoga improves premature ejaculation: <http://www.nature.com/nrurol/journal/v5/n2/full/ncpuro1007.html> (accessed on July 30, 2010).

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### **S3 - A CONCEPTUAL MODEL OF INDIVIDUAL AND COLLECTIVE GROWTH WITH ITS APPLICATIONS**

**Summary:** *In this paper we examine and argue on the functionality of S3 model or “Swanand Sahayog Sadhana” – conceptual model of individual and collective development and the role of yoga in conducting the proposed model. Searching for happiness is the goal of every individual. Discovery of individual happiness provides deeper and more meaningful relationship with one’s surrounding. S3 model explains basics of the material and spiritual growth that mutually harmonize and supplement each other. This paper analyzes the extent to which yoga techniques help develop individual and collective consciousness.*

**Key words:** *individual development, yoga, collective development, change.*

#### **Introduction**

S3 is a Conceptual Model for Individual and Collective Growth along with its applications. S3 stands for Swanand Sahayog Sadhana. ‘Swanand’ means being truly happy with oneself and within oneself. ‘Sahayog’ means sharing this happiness with those around oneself. ‘Sadhana’ means efforts that are put in the form of doing some selected yoga practices for experiencing True Happiness and sharing it with others. In the S3 Model basic premise for individual and collective growth is - only those who have addressed their problems fully and adequately to reach the highest peak of individual growth are capable of offering help to others. Happiness and fulfillment come from within. Happiness does not ‘depend’ on external objects, persons or other things. He/She relates well with those objects as he/she did earlier but his/her attitude and approach towards looking at them are completely changed for the better. Due to liberation from the bondage of the objects one is no more enslaved by them but can use them wisely whenever necessary without any entanglement with them.

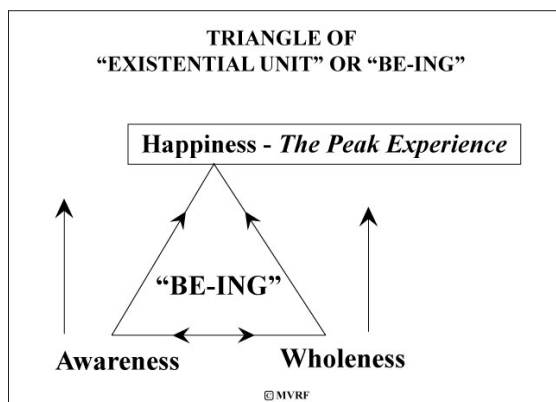
When such person offers help to others for their growth it is a genuine help which comes as sharing of wisdom. It does not inflate helper’s ego nor does it subjugate or cause any kind of damage to the taker’s self image. It is a unique kind of inter-human relation, in which the giver does not feel proud for giving, but feels obliged that the taker has accepted what he/she has offered and the taker feels grateful but not burdened by the help. If such relationship develops among persons who have grown in consciousness through proper yoga practices, they grow individually and also take others along for collective growth.

Individual Growth as conceived by the yoga sages is realization of one's Core Self or the essential Be-ing, which by nature is True Happiness. Experience of profound happiness within oneself brings about radical transformation in one's attitude and approach towards life in general and one's life in particular. It brings profound satisfaction and contentment. In a state of inner contentment, individual emanates energies of genuine love, empathy, care and selflessness. The immense satisfaction follows experience of True Happiness and makes one more 'other-centric' than 'ego-centric'.

All human beings are in search of True Happiness. They try to find it in the external world. But, the Ancient Yoga Wisdom says that it cannot be found there. It can only be found within oneself because it is our very nature or our Be-ing. However, under the influence of illusion and ignorance one tends to search it in the outer world. One also tends to mistake happiness with temporary pleasure. Pleasure is a 'stimulus and sense organ dependant', transient, subjective feeling of wellbeing as against True Happiness, which is a 'stimulus and sense organ independent' lasting feeling of wellbeing. Not being able to find True Happiness outside and inability to experience it within oneself is the main cause of human suffering. Before experiencing True Happiness within oneself one goes through series of pleasures with all the intrinsic limitations that need to be consciously realized for going beyond them and for entering the territory of True Happiness. It is a paradigm shift from pursuit of pleasure, which in reality is far lesser, more contaminated and distorted version of True Happiness, which is our fundamental nature. Those who reach such understanding get easily connected with True Happiness as their common goal. There is a qualitative difference between a group of people coming together with pleasure as their common goal and those who come together for True Happiness. If properly understood and practiced, yoga can be of great help to find True Happiness within oneself. Yoga practices also help silence one's chattering mind, which in effect liberates itself from the influence of illusion and ignorance. True Happiness gets automatically shared with others around in a spontaneous manner. Naturally, the happiness grows multifold and keeps growing.

### **Existential Triangle**

S3 is essentially a conceptual model of individual and collective growth depicted as 'Equilateral Existential Triangle' with Being at its center. True Happiness or Bliss as experienced by the yoga seers and sages being the peak experience of human life occupies the apex of the equilateral triangle. True Happiness is undoubtedly the most fundamental motivation behind all human pursuits. The areas of interest may vary from person to person, but our main goal of life is to enjoy life better and experience more and more happiness. One individual may seek happiness in becoming a scientist, other may aspire to be a lawyer, still other may want to run a business and someone may want to be a player. They all have one goal in common, which is to be more and more happy.



Wholeness and Awareness are two base points of the triangle. They provide strong foundation, which is essential for experiencing True Happiness. Awareness and Wholeness can independently help one experience True Happiness too. Thus, Happiness, Wholeness and Awareness together form the 'Existential Triangle'. It is equilateral, because all the three prongs of the triangle are equally important. Happiness, Wholeness and Awareness are the main supports for human existence. They have free interaction between them. They also have direct access to the essence (Be-ing), which is the very basis of all existence, both individually and collectively and therefore it is at the central position of the equilateral triangle.

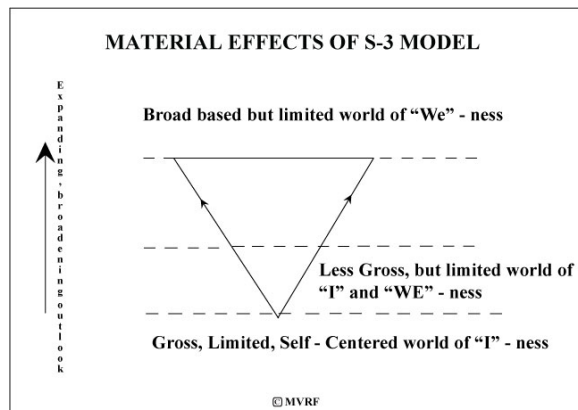
The Be-ing is Whole or Complete in itself. It is Existence-Consciousness-Bliss (Ananda) incarnate. It is All-Knowing, All-Pervasive, Everlasting, Transcendental, Form-free, Passion-Free and Bondage-Free essential core of every individual. Yoga practices help one realize Individual Wholeness within oneself. Once it is realized one begins to see its natural connectedness with the Wholeness of life that surrounds oneself. Experience of True Happiness within oneself is a prelude to the experience of Wholeness within oneself and vice a versa.

Conceptual model described in this paper is to be appreciated through proper experiential understanding of its structure and contents – not through intellectual reflection or gymnastics alone. Experience of Be-ing paves way to realize one's intimate relation with the 'Be-ings' of others. This in turn triggers co-operation and sharing which is full of joy and bliss.

### **Material Effects of S3 Model**

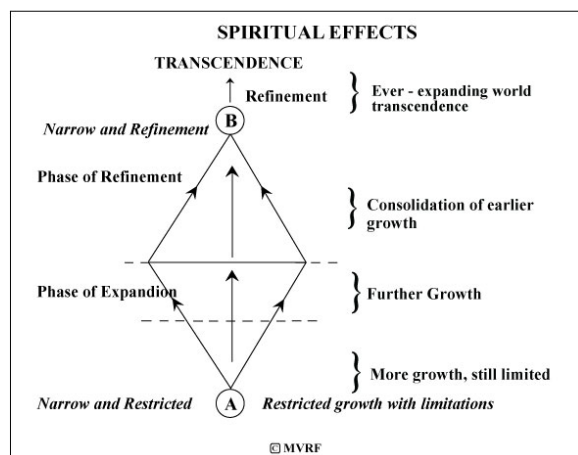
In ideal conditions the existential triangle has True Happiness at its peak and Awareness and Wholeness at its base, but while considering development from material to spiritual, one need to see a different triangle, which is upside down, i.e. tip down and base up. The downward tip of this triangle indicates gross, unstable, limited and self-centered world that is governed by one's small ego. As one proceeds from limited and unstable world of 'I' ness after realizing the

limitations of this world, one starts ascending towards complete and stable world of 'We'-ness.



In between these two destinations lies the less gross, less unstable but still limited and mixed world of 'I' and 'We' ness. As one moves upward from 'I' ness to 'We' ness one automatically expands and broadens one's outlook, which provides much stable and secure base as compared to egocentric, unstable condition from the world of 'I' ness. As one reaches the world of 'We' ness this triangle gets metamorphosed into Existential Triangle.

### Spiritual Effects of S3 Model

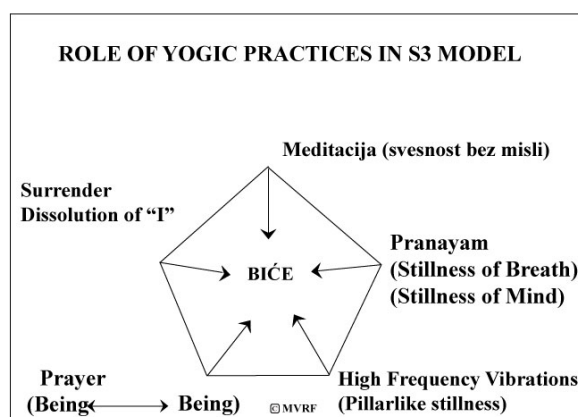


In the process of growth one expands one's vision and outlook from narrowness and restrictedness to broadness and freedom. It is preceded by the phase of refinement and consolidation of earlier growth that moves further to ultimately reach to the peak experience of True Happiness. After consolidation and refinement is over and the peak of True Happiness is reached on the strong



foundation of Awareness and Wholeness, the world of transcendence begins. In this world the happiness grows exponentially and gets readily shared with others. One who has reached the stage of transcendence finds his/her happiness in sharing it with others. The process of development from material to spiritual growth synchronizes well with freedom from gross and subtle dichotomies of life, that tend to push and pull the person to extreme positions. Freedom from these dichotomies is freedom from all suffering. The phases of growth and development begin from the realization of limitations of the gross world, which is full of pleasures and suffering. While living in the gross world with its pain and suffering one begins to realize the basic dichotomies of life like pleasure and suffering as inseparable from each other. Gradually, one learns to accept them as they are and thus transcend them. In the process, the Awareness and Wholeness also get refined and thus become capable of having the peak experience of True Happiness.

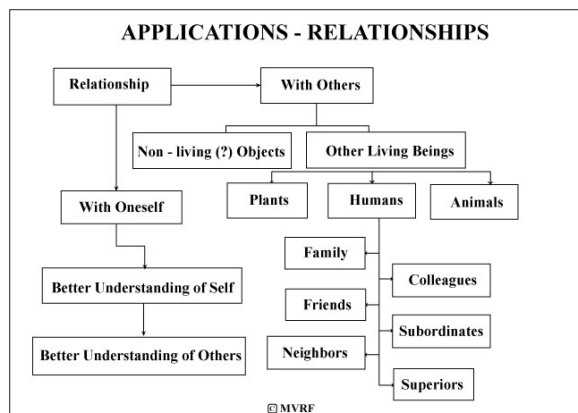
### Role of Yoga Practices in S3 Model



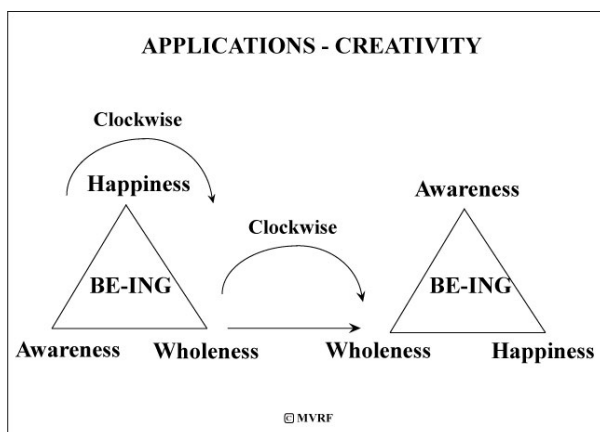
Five practices are found useful in the S3 model. All of them are capable of helping the person experience his/her Be-ing, which occupies the central position of the existential triangle. Meditation helps through No-Thought -Awareness. Pranayam or Yoga Breathing Exercises help to Stillness of Mind. High frequency vibrations produced while Chanting of Yoga Omkar lead to centeredness and state of Stillness, which in effect connects well with one's Be-ing. Through properly performed Prayer of devotion, one gets direct access to the inner Be-ing. True Surrender with perception of wholeness of existence also connects us with the Be-ing.

### Applications of the S3 Model

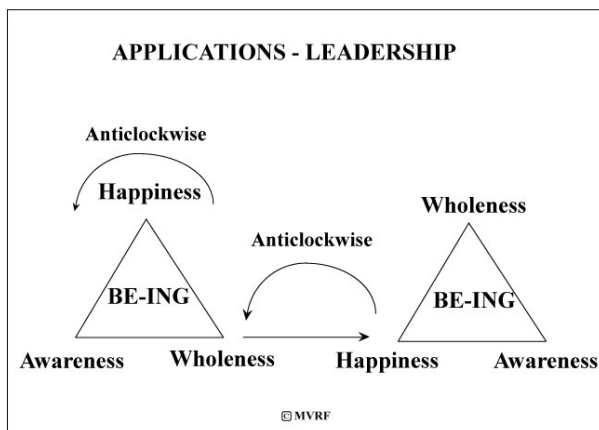
The applications of S3 Model can be seen in Relationships, Creativity, Leadership, Stress Management, Problem Solving and Scholastic Pursuits.



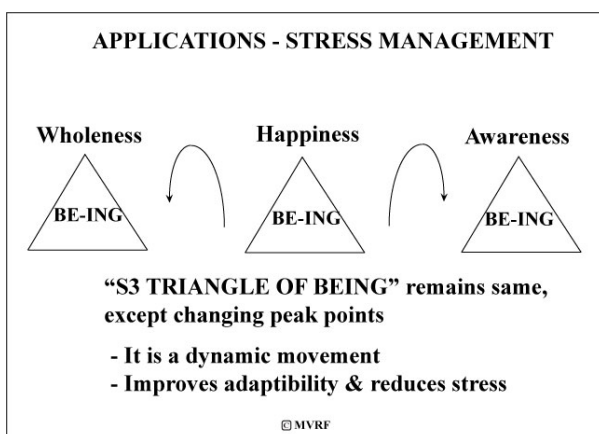
Improvement of relation with oneself helps in better understanding of oneself and others. Improved relation with other living beings like humans, plants and animals improves quality of life. Better relation with apparently inanimate objects brings deep respect for those objects and encourages one to take good care of them and thus help and improve one's environment with long term vision and responsibility. The existential triangle being dynamic in nature and it can rotate from its basic position to attain other forms with different emphasis and importance to Happiness, Awareness and Wholeness.



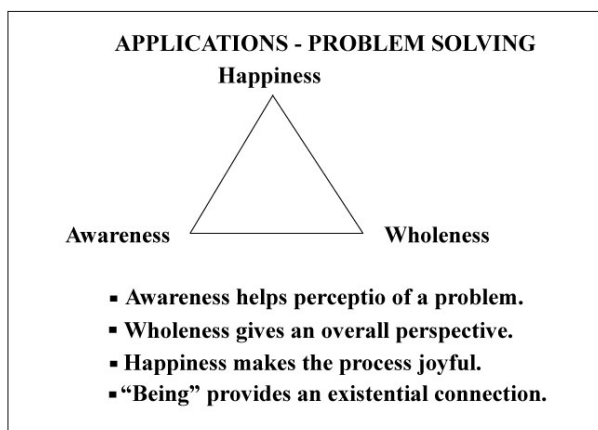
For improving creativity one needs heightened and refined awareness, so Wholeness and Happiness occupy base points.



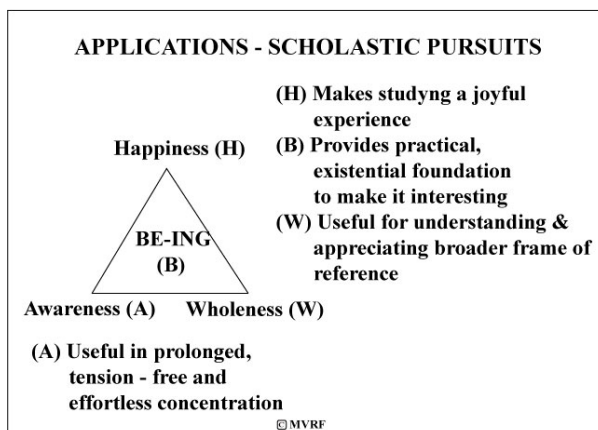
A competent leader needs to take things in perspective and take all-inclusive approach while dealing with difficult situations. He needs to rotate the triangle in anti-clockwise direction.



For dealing with stressful situations, one needs a flexible mind in order to act according to situational demands without much difficulty. In such circumstances the triangle has to rotate in both directions.

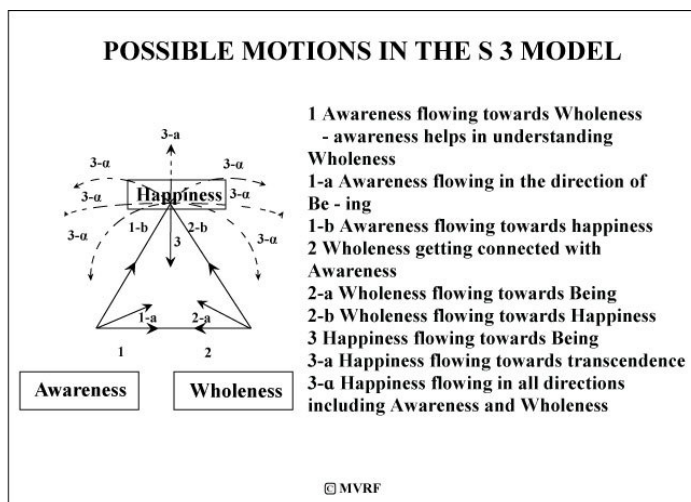


For improving problem solving skills there is no movement necessary in the triangle. Awareness becomes useful in perceiving the problem as it is. Wholeness provides broader perspective. Happiness makes the problem solving process joyful and therefore one doesn't get bogged down by the problem. Be-ing provides sound existential connection.



For providing strength to scholastic pursuits one needs to develop an ability to maintain tension-free concentration for a long period of time, which is made possible through Awareness. Wholeness provides broader frame of reference. Be-ing provides practical, existential foundation to make scholastic pursuit an interesting activity. Happiness makes studying a joyful experience. Naturally, one can study for longer hours without getting tired.

## Possible Motions in the S3 Model



S3 being a dynamic structure it may have different applications according to different motions. Awareness may move towards Wholeness and vice versa. Awareness and Wholeness may move towards Be-ing and/or Happiness. Happiness essentially moves in the world of transcendence, but it may also move in the direction of Be-ing. It may also flow in all directions including Awareness and Wholeness. These motions are concomitant with the situations that are created on one's way to individual and collective growth.

## Conclusion

S3 or Swanand Sahayog Sadhana is a conceptual Model represented by an Equilateral Triangle with Happiness or Bliss at its apex point and Awareness, Wholeness at its base points. Happiness is the main pursuit of life which is reflected in various activities of life. Journey towards Happiness starts from 'I' ness with its limited, restricted world and moves towards 'We' ness. Moving from 'I' ness to 'We' ness is the beginning of real individual growth during which the scope of individual growth expands. 'We' ness provides strong foundation with Awareness as one base point and Wholeness as other. Material Growth gets consolidated on this foundation. One moves further from here towards Happiness or Bliss passing through the Phase of Refinement, which indicates movement from gross to subtle. Experiencing Happiness is the peak point of human growth, after which ever-growing phase of co-operation and collective growth begins. S3 Model has numerous applications depending on direction of tendencies. These applications include leadership, problem solving, stress management, scholastic pursuits and promoting creativity. After the peak experience of Happiness the

phase of transcendence begins, which opens infinite avenues for individual and collective growth.

**References:**

1. Vasu, Srischandra (1933): *Gheranda Samhita*, text and engl. translation, Madras.
2. Griffith, Ralph T. H. (1893): *The Sāmaveda Samhitā*.
3. Patanjali (1977): *The Yoga Sutras*
4. Sastri, Mahadeva (1920). *The Yoga Upanishads*, text with commentary of Sri Upaniṣad-Brahma-Yogin, Madras.
5. Sivananda, Swami (1995): *The Bhagavad Gita*, The Divine Life Society.
6. Bihar School of Yoga (1998): *Hatha Yoga Pradipika*.
7. Van Nooten, B., Holland, G. (1994): *Rig Veda, a metrically restored text*, Department of Sanskrit and Indian Studies, Harvard University, Harvard University Press, Cambridge, Massachusetts and London, England.

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## **YOGA PRANAYAM – IMPORTANCE OF SYSTEMATICAL APPROACH TO BREATHING**

**Summary:** *In this paper we indicate specificity of traditional yoga approach in education during practice of the pranayama technique (control of life energy through breathing). Technique of pranayama may be perceived as a powerful instrument in different forms of help to individuals and in the process of self-development of an individual, to the most extent.*

**Key words:** *yoga breathing, pranayama, motivation, self-realization.*

### **Introduction**

Yoga as method is slowly getting globalized in the last few decades. People from different walks of life and belief systems are taking to yoga training in different types of set-ups with different motivations and objectives such as fitness centers, health centers, spas, holiday resorts, medical clinics along with very traditional yoga ashrams and spiritual retreat centers.

We find that there are different motivating factors and objectives for taking to yoga. Right from exploring one's skills, competence and capacities at the physical level, we find higher objectives such as self-realization. We recognize still higher goals and pursuits in yoga such as transformation of individualized self oriented consciousness into universalized impersonal states of consciousness. Some individuals practice yoga with a competitive spirit and here a constant comparison is made with the performance of others as is seen in competitive games, sports taking us right up to the Olympic level. Sincere scientists in the field of medical sciences also got interested in understanding the states of consciousness achieved through yoga practices such as yoga meditation, pratyahara... Medical world has started recognizing and endorsing the positive contribution of yoga and yoga practices in the management of health and disease conditions such as chronic functional disorders, anxiety and depressive states, rehabilitation of heart patients, asthmatics, back pain, irritable bowel syndrome.

### **Conscious or spontaneous breathing?**

Yoga can be viewed as an education system. Our education starts right from the intra-uterine life and continues after birth in many different ways and in many different directions. Usually the emphasis is on using five sense organs and sensory faculties and different motor abilities in relation to various objects, events, happenings and phenomena in the external world. This education gets closely

related with the development of the human cortex (neo-cortex). On the other hand, in yoga, emphasis is given on working with breathing. It is technically known as **Pranayama**.

We start to breathe after birth and later on we start using our breathing in phonation and articulation of speech to express our feelings and emotions and to communicate our thoughts and decisions with others. We may receive education in singing and talking (oratory/lecturing) which involves breathing. However, we do not get any education in respect of basic breathing and how to work with it.

In traditional yoga (Vedic culture), usually at the age of about 8 to 10 yrs., children in the Brahmin community were introduced to working with breath and breathing under the garb of **Pranayama**. They were also introduced to the sound vibrations of aum/om (pranava) and the recitation of Gayatri mantra (Savitru Mantra). Mantra recitation is very much different from singing and talking. Getting guided by the sound vibration with the help of bone conduction of sound is different from phonation and articulation of speech using air conduction of sound. Usually, **Pranayama** (working with the breath and breathing) and recitation of aum (pranava) and Gayatri Mantra is performed in a stabilized, comfortable and relaxed psycho-physical state (asana). Lotus Posture (Padmasana), Siddhasana, Swastikasana and Vajrasana were the postures (asanas) highly recommended for this purpose. Out of these, Lotus Posture (Padmasana) is held in the highest esteem. Other postures were recommended to help in stimulation of activity of yoga chakras (energy centers), stimulation of porosity of energy channels (prana nadis) and pathways (vayu and prana-margas), so that the pranic energy (Kundalini) could flow freely through the Sushumna channel.

Working with breath and yoga breathing presupposes the ability of the practitioner to be able to withdraw his/her mind (attention) from the outside world and remain connected with the body from inside without the active involvement of the five sensing modalities and voluntary motor activities/actions. Without modification of the natural spontaneous breathing, one has to learn to start to perceive, recognize and experience the flow of in-breath (svasa) and out-breath (prasvasa) through the nostrils. One has to learn to get guided by this **flow of breath** along an internal experiential pathway to certain destination inside the body. In the beginning, yoga practitioners are usually guided by the touch on the surface of the body. Here, we learn to get guided inside the body. It involves different nervous system. Person becomes sensitized to learn, recognize, experience and get guided by the gross physical movements related with breathing taking place at different segments of the trunk (perenium, pelvis, stomach, chest), neck, face, head and the vertebral column. In due course of time, one can learn to perceive and experience similar movements related with breathing in the arms and legs right up to the tips of the nails. This experiential knowledge about the flow of breath guiding the individual inside the body and the experience of the gross physical movements related with breathing taking place at the periphery of the body helps one to understand the yogic concepts and doctrines of Lotuses,



channels of Vayu and Prana, Nadi-shuddhi pranayama, Loma-Viloma pranayama. In the longer run, the individual can be introduced to sense, feel, perceive, recognize and experience the internal “force” (Kriya shakti) being responsible for these movements (phenomena). In medical language, it is the internal pressure change taking place due to the contraction and the relaxation of the thoracic diaphragm. The cause of diaphragmatic movement is the functioning of the inspiratory, expiratory and the pneumotaxic centers in the Medulla and the Pons which represent Reptile brain in the nervous system. Our most natural spontaneous breathing is going on because of the pressure changes taking place in the abdominal and the thoracic cavities. It is independent of our intellectual and emotional activities which respectively involve neo-cortex (human brain) and visceral or limbic brain. Practicing conscious yoga breathing is multi-functional. It provides blood supply for many bodily regions and enables normal functioning of certain organs. In conducted researches it is confirmed that concentration is enhanced for at least 15 days, ability of mindful thinking and reasonable and meaningful speech in people who practice conscious yoga breathing every day.

Traditional yoga gives importance to the recognition and experiencing of the state of consciousness where there is automatic cessation of breathing (kevala kumbhaka). Such a condition will mean quietening the whole brain activity including the activity in the Reptile brain.

## Conclusion

Pranayama may be perceived as a serious tool in the process of stimulating self-development of an individual. Its implementation clearly leads to improvements of the health condition, increases concentration of practitioner and blood supply of different body regions. That blood supply enables vitality of the whole organism. We mustn't overlook importance of purification of the energy dimension of an individual and stimulation of the yoga chakra (energy centers) activity whose activity corresponds the most directly with development of psychological and social functions of an individual. We hope that this paper will inspire more researches in order that technique of correct breathing practice enters schools and helps the health and prosperity of the youth.

## Literatura:

1. Bihar School of Yoga (1998): *Hatha Yoga Pradipika*.
2. Griffith, Ralph T. H. (1893): *The Sāmaveda Samhitā*.
3. Patanjali (1977): *The Yoga Sutras*
4. Sivananda, Swami (1995): *The Bhagavad Gita*, The Divine Life Society.
5. Vasu, Srischandra (1933): *Gheranda Samhita*, text and engl. translation, Madras.

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## **POSSIBILITY OF HEALING WITH YOGA SOUND MEDITATION**

**Summary:** *In this paper there was represented a research about the possibility to achieve health condition by practicing meditations with sound. It is analyzed how does specific sound vibrations influence our body at physical and especially at energetic level? This was observed and measured by computer diagnostics using the methodology of R. Foll at 2006 by yoga studio Nada - Plovdiv, Bulgaria and Dr. D. Todorova, Quantum Physics Center, Sofia. Result shows that, observed at the energetic level, sound meditation harmonize organs and their functioning in the organism and significantly lowers pathological phenomena, i.e. appearance of different disorders. Further researches should examine persistence and stability of the effect that sound meditation has on the human organism.*

**Key words:** *yoga, healing, sound meditation.*

### **Introduction**

In the ancient books our body is defined like **huge sound device**. Some of these sounds - result of different physiological and physicochemical functions in the body – can be magnified and heard. When every components are in harmonious rhythmic sound waves, we are healthy. Dr. Steven Hipern, director of Spectrum Research Inst. California, says that we are all in an ocean of sounds, some of which are compatible with our one frequency /1/. Dr. Hans Jane, Zurich in his dissertation proves that the sound waves can transform every kind of matter /1/. With this research, an observation is made – how the sound waves created with sound meditation can transform and harmonize the physical structures in the man and his energetic condition. In 2006 /January to May/ in Yoga studio Nada – Plovdiv with cooperation of Dr. Todorova from the Center of Quantum Medicine, Sofia started observation of the effect of Meditation with sound.

### **Aim**

This research has the aim to observe whether the condition of human organs and systems could be harmonized with meditative practice with sound. The aim is to observe whether the sound vibrations in this practice influence the human energetic level and how. In this research two meditations were included:

Meditation for peace /Master Choa Kok Sui/ and Meditation with Vedic mantra /Maha Mrityunjaya Mantra/.

## Method

Analysis of many scientific and laboratory researches of acupuncture points, placed on energetic channels in human body and their characteristics shows that it is possible to receive from them the objective information for the human constitution as the whole, for the organs or systems, tissues and cells – the skin electrophysical and bioelectrical parameters are changing. These are methods of electromeridian and electropuncture diagnosis. To this group belongs the method of Dr. Foll, used in this research. In this method with electronic devices were measured electroconductivity of 48 bioactive points /BAP/, placed on palms and feet.

The measurement were made to 16 people from Sofia and Plovdiv before and after group meditative practice with sound, the group includes men and women at age 20 – 60 year and some of them have experience in yoga.

Objects of observance in this research are:

- The change in organs condition / Pathology / before and after the practice
- Asymmetry in the body before and after the practice.

Results in Meditation for Peace /Master Choa Kok Sui/:

Diagram 1.1

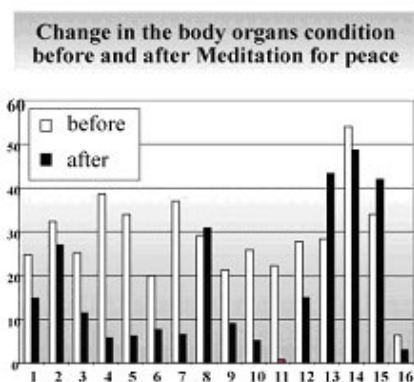


Diagram 1.2

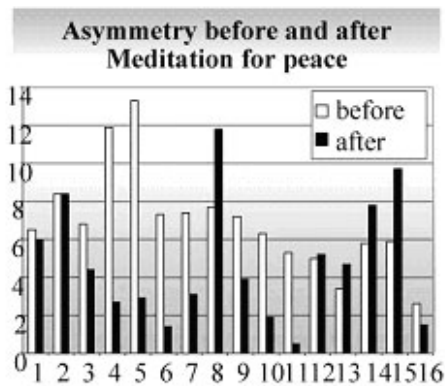


Table 1: Pathology and Asymmetry before and after Meditation for peace

NO. OF PARTICIPANT	PATHOLOGY BEFORE MEDITATION %	PATHOLOGY AFTER MEDITATION %	RESULT	ASIMMETRY BEFORE MEDITATION %	ASIMMETRY AFTER MEDITATION %	RESULT
1	24,8	14,8	positive	6,5	6	positive
2	32,3	27	positive	8,4	8,4	no change
3	25,2	11,4	positive	6,8	4,4	positive
4	38,6	5,8	positive	11,9	2,7	positive
5	34	6,2	positive	13,3	2,9	positive
6	19,9	7,7	positive	7,3	1,4	positive
7	37	6,5	positive	7,4	3,1	positive
8	29,1	30,9	negative	7,7	11,8	negative
9	21,3	9,1	positive	7,2	3,9	positive
10	25,9	5,1	positive	6,3	1,9	positive
11	22,2	0,8	positive	5,3	0,5	positive
12	27,8	14,9	positive	5	5,2	negative
13	28,4	43,3	negative	3,4	4,7	negative
14	54,1	48,7	positive	5,8	7,8	negative
15	34	42	negative	5,9	9,7	negative
16	6,4	3	positive	2,6	1,5	positive

As it seen from the Diagram 1 and 2 and Table 1, the results show positive change – Pathology and Asymmetry in the body decrease significantly after meditation with sound.

## Conclusions

It is reported influence of meditation with sound upon organs energetic condition in human body, measured with Foll's methodology has been confirmed and this influence is definitely positive. This positive effect is clearly observed when meditation with sound has been practiced in a group and effects have been measured immediately after the practice. From quantity values and color diagrams of participants it is observed that, after the practice of meditation with sound, body systems and organs function in the zone of normal functioning or very close to it.

Exceptions are people inclined to high blood pressure and serious heart problems, for which it is recommended not to do meditation with sound.

The effect of this meditation on the fluid structure in human body were researched at April 2005 year from d-r Masaru Emoto, Japan freezing the water which have been present at the same Meditation with sound and then researched in his laboratory.

### Research with meditation MMM

The same method of d-r Foll was used in this research also. Electroconductivity of 48 bioactive points /BAP/ was measured with electronic devices placed on palms and foots. The measurement were made to 16 people from Plovdiv before and after group meditative practice with MMM (Maha Mrityunjaya Mantra). The sample includes men and women at age 20 – 60 year as their experience with yoga and this practice is not one and the same.

Objects of observance in this research again are:

- The change in organs condition / Pathology / before and after the practice
- Asymmetry in the body before and after the practice.

Results in Meditation with Maha Mrityunjaya Mantra:

Diagram 2.1: Pathology before and after Meditation with MMM

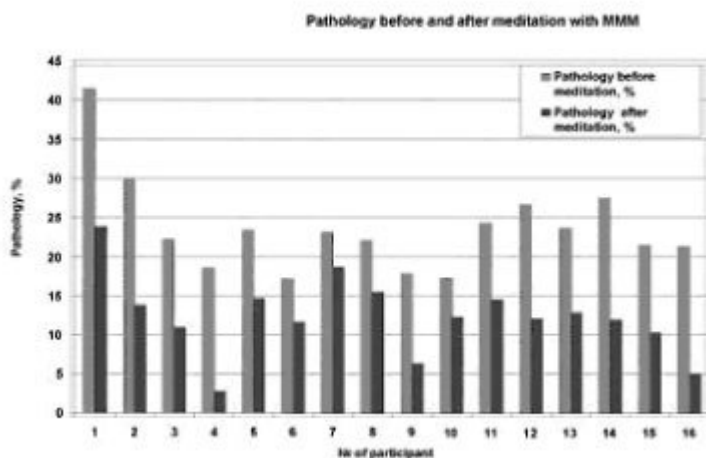


Diagram 2.2: Asymmetry before and after Meditation with MMM

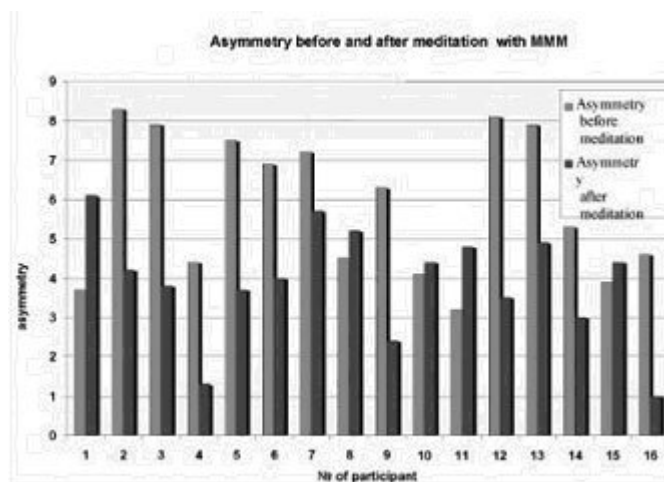


Table 2. Pathology and Asymmetry before and after Meditation with MMM.

NO. OF PARTICIPANT	PATHOLOGY BEFORE MEDITATION %	PATHOLOGY AFTER MEDITATION %	RESULT	ASIMMETRY BEFORE MEDITATION %	ASIMMETRY AFTER MEDITATION %	RESULT
1	41,4	23,8	positive	3,7	6,1	negative
2	29,9	13,8	positive	8,3	4,2	positive
3	22,2	10,9	positive	7,9	3,8	positive
4	18,5	2,8	positive	4,4	1,3	positive
5	23,4	14,7	positive	7,5	3,7	positive
6	17,1	11,6	positive	6,9	4	positive
7	23,1	18,6	positive	7,2	5,7	positive
8	22	15,4	positive	4,5	5,2	positive
9	17,8	6,3	positive	6,3	2,4	positive
10	17,2	12,2	positive	4,1	4,4	negative
11	24,2	14,4	positive	3,2	4,8	negative
12	26,6	12	positive	8,1	3,5	positive
13	23,6	12,8	positive	7,9	4,9	positive
14	27,5	11,8	positive	5,3	3	positive

NO. OF PARTICIPANT	PATHOLOGY BEFORE MEDITATION %	PATHOLOGY AFTER MEDITATION %	RESULT	ASIMMETRY BEFORE MEDITATION %	ASIMMETRY AFTER MEDITATION %	RESULT
15	21,4	10,3	positive	3,9	4,4	negative
16	21,3	4,9	positive	4,6	1	positive

## Results of the research

In result of Meditation with MMM energetic influence on human body is happening. This influence leads to positive change in human organs and systems – confirmed in 48 % of participants. After the practice, body systems and organs are in the zone of their normal functioning or very near to it, no matter whether before the practice they have been in hypoactive or hyperactive condition. It is observed decreasing on a half of Asymmetry in the body. The right and left parts of the body, sympathetic and parasympathetic nerve systems become more harmonized.

## Conclusion

The healing with meditation with sound is possible. Sound vibrations during the meditation have positive influence on energetic and physical level. The effect of this practice is seen significantly immediately after the practice. But how long this condition could be kept and for how long it last to be achieved healing? These questions could find their answers in the next researches.

In the past, healing with sound has been an important part from the ancient Indian medicine. Even today, sound therapy, supported with scientific researches, is very popular in India and it is applied for healing poisoning of snakes, scorpions, lizards and dogs bitings to healing of diseases like jaundice, abdominal typhus, epilepsy and others.

Today, researches of influence and use of sound vibrations are numerous. They show significantly greater relaxation during meditation /3/, improved brain functions /2/, increased production of antibodies /2/, regulation of blood pressure /4/, decreasing the free radicals /5/. German medical doctors have achieved healing with supersonic waves disease of the ears, which couldn't be healed with traditional methods of medicine or through surgery – six patients have been almost immediately healed, the other 6 have had great improvement. A research of sound therapy combined with yoga, made by Dr. L. Lazanio from Vienna, have showed significant positive effect on great number of patients in his sanatorium /1/.

We believe that, in the future, medicine will more and more integrate and synthesize this ancient knowledge common to all mankind, in order to follow its main purpose.

**References:**

1. Shriram Sharma, 2003, Yugantar Chetna Press, “Eternaty of sound and the science of mantras”
2. Alterations in brain and immune function produced by mindfulness meditation, Psychosomatic Medicine Journal, , 65:564-570 (2003)
3. A physiological and subjective evaluation of meditation, hypnosis, and relaxation. Psychosomatic Medicine Journal, Vol 39, Issue 5 304-324
4. Systolic blood pressure and long-term practice of the Transcendental Meditation and TM-Sidhi program: effects of TM on systolic blood pressure. Psychosomatic Medicine Journal, Vol 45, Issue 1 41-46
5. Lower lipid peroxide levels in practitioners of the Transcendental Meditation program, Psychosomatic Medicine Journal, Vol 60, Issue 1 38-41



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## **YOGA AS A METHOD OF PERSONAL DEVELOPMENT**

**Summary:** *The purpose of this research is a verification of yoga practising influence upon certain personality characteristics, as well as a possibility of their change in direction of a more successful functioning. The participants of the research have been attending voluntarily for three months beginners course of integral yoga based on teacher/master Pavlos K. Hassanagas's methodology. The programme includes vyayama (preparatory psycho-physical techniques), asanas, panayama, relaxation techniques and theoretical segments on basic yoga concepts and from applied yoga philosophy. In 33 participants, at the beginning and at the end of the three months long course, an assessment of a personal profile has been conducted, using Plutchik questionnaire Profile Index of Emotions, as well as an evaluation of the ego defence mechanisms' profiles using Kellerman Life Style Index questionnaire. Analyses show that in this short period statistically important differences appear regarding personality profiles of examinees: both traits in the pair anticipation– surprise become more pronounced, but still within the limits of optimal manifestation. More specifically, an interest for surrounding increases and yoga practitioners grow more free and opened toward new experiences; this tendency is even more stabilised as levels of organisation, self-control and conscientiousness increase at the same time. Manifestation levels of emotions of sadness and anger drop which, in relation with other indicators, signifies decreased level of hostility and pugnacity due to enhanced satisfaction with oneself and the quality of one's life, which results in better inter-personal relations. Results of this research show that yoga, along with other benefits its practising bestows, is also a method that helps a person to improve their attitude to their self and their surroundings, that way improving the quality of their own life in general.*

**Key words:** *integral yoga, emotions, ego defence mechanism, personal development*

### **Introduction**

About the influence of yoga practising upon physical and mental health speak subjective, as well as scientifically verified experiences of numerous schools, teachers and practitioners of yoga throughout the world, modern and past. Unfortunately, scientific verification is most often limited to testing yoga effects on physical and physiological level, rather than on mental, and even less on the level of personality. Even the researches that process these areas in most cases

treat the influence of meditative practise on practitioners' personality. The number of researches dealing with the problem of personality alterations under the influence of some comprehensive yoga system of programme is restricted. Even in those cases, the number of individuals practising yoga as a therapy for mental problems (autism, schizophrenia, depressive disorders) is larger. The spur for relation between yoga practising and personal characteristics of yoga practitioners were reports of a few researches of similar interest on one, and reported experiences of Macedonian Yoga Association yoga practitioners on the other side.

A few authors studied the influence of yoga practising in general and specifically of meditation on the decrease of negative and an increase of positive emotional states. Their researches show fall in levels of depression, anger and hostility (Shapiro, 1974; Hahn & Whalen, 1974; Shapiro & Cline, 2008; Lavey, Sherman, Mueser, Osborne, Currier, & Wolfe, 2005). Regular yoga programme practising brings to important improvements in regards of emotional intelligence and emotional competence (Kumari, 2008). Researches that, not only confirm this type of result, but also point to general improvement of mental health are known (Smitha, Hancocka, Blake-Mortimerb & Eckerta, 2007; Lee, Mancuso & Charlson, 2004).

Exercising yoga has a positive effect on personality in general, as well as on students' academic achievement (Krishnan, 2006). Practising meditation leads to enhancement of self-actualisation level (Alexander, Rainforth & Gelderloos, 1991; Seeman, Nidich & Banta, 1972), improvement of self-image, increase of ego strengths, increased tolerance and decreased sensitiveness to criticism, higher level of spontaneity, authenticity and trust, as well as improved sociability (Fehr, Nerstheimer, & Torber, 1972; Berg & Mulder, 1976). Practising yoga in its full form leads to development of higher levels of trust and self-sufficiency, creativity and dexterity (Venkatesh, 2005). Yoga influences the reduction of depressive symptoms and the preservation of this trend through the time (Bennett, Weintraub & Khalsa, 2008), and it also causes increase in satisfaction with one's own life (Philbin, 2009). Practicing meditation makes the meditation practitioners more sensitive to other people's feelings and promotes the capability for a warm interpersonal contact (Hjelle, 1974). In accordance to these results, we expected that yoga practicing, meditation being integral part of it, will bring about the change in personality characteristics in the direction of a better experience of our self and other people, and also to improvement in social interaction and interaction with the surrounding in general.

Researches show that yoga practitioners are paying more attention to the present moment, they have more opened attitude toward experiences with higher level of acceptance in comparison with other people, as well as developing a deeper insight in the process of understanding certain situations (Shelov, Suchday & Friedberg, 2009). Further results show that meditation practising decreases the number of situations experienced as problematic (Boese & Berger, 1971). We assume that this would lead to decrease in ego defence mechanisms usage and a better balance in already used mechanisms.

Related to this are the subjective statements of the practitioners of Yoga Federation of Macedonia, ascertaining decreased tension, irritability and apathy, increased psychological stability, self-control, self-criticism and self-trust, and reduced discomfort in contacts with other people. As there are certain parallels between the results of conducted researches and the changes mentioned by the yoga practitioners, we conducted this research expecting scientific confirmation of the subjectively witnessed changes. It analyses the nature of the relation between yoga practising on one hand and ego defence mechanisms on the other. The purpose of this study is to identify personality profiles, ego defence mechanisms profiles and general defence direction at the beginning and at the end of the course, as well as to detect differences in profiles at the beginning and at the end of the course.

The research was conducted on an apposite sample of 33 practitioners of integral yoga beginners course (11 men and 22 women) at the age of 15 to 60 (average age is 28). Respondents were Yoga Federation of Macedonia participants in the period from January till April 2005 whereby the 75 minutes classes were held twice a week. The programme was based on the methodology of the teacher Pavlos K. Hassanagas and it includes vyayama (preparatory psycho-physical technique), asanas, pranayama, relaxation techniques (Hassanagas, in print ) and theoretical segment on basic concepts of yoga and from applied yoga philosophy – about diet, hygiene, social relationships, shatkarma, triguna concept, the basic postulates of yama and niyama (Hassanagas, 2009).

For the personality profile estimation Plutchik's questionnaire PIE (Profile Index of Emotions) was used, that measures 8 basic adaptation behaviours characterising 8 basic emotions, or personality traits: joy, sadness (reintegration), trust, disgust (rejection), surprise (orientation), anticipation, fear and anger, as well as a tendency to appear in a socially more acceptable sight measured with bias scale. The following was used as interpretation quota: < 40% - low level of emotion manifestation; 40% - 60% - optimal level of emotion manifestation; 60% - 100% - high level of emotion manifestation.

To define ego defence mechanisms' profiles and the degree of general defence direction Kellerman's questionnaire The Life Style Index was used; it measures 8 ego defence mechanisms: denial, regression, repression, compensation, projection, intellectualisation, displacement and reactionary formation, but also person's general defensive direction. Interpretation quota are: < 40% - low level of ego defence mechanisms usage; 40% - 60% - optimal level of ego defence mechanisms usage; 60% - 100% - high level of ego defence mechanisms usage. The data was processed using quantity analysis, as well as t-test for large and correlated groups.

## **Elaboration**

Group's personality profile (Image 1) obtained at the beginning of the course using Profile Index of Emotions shows that there is an expressed tendency

of appearance of the emotion of joy (80.3%) and of trust (74.5%). Within the limits of optimal manifestation are emotions of fear (57.0%), surprise (51.1%), anticipation (47.8%) and sadness (41.4%). The least manifested are emotions of anger (29.9%) and disgust (27.7%). On bias-scale, the group shows high tendency toward manifestation of socially acceptable behaviour (68.5%).

In relation with emotions that have a very high level of manifestation – trust and joy – their opposed emotions - disgust and sadness - were considered, which have a high manifestation level that confirms that there is no pathology in the appearance of the first two. High level of trust is typical for person opened to the surrounding, prone to cooperation and helping, kind, susceptible and gullible. That is confirmed by low level of disgust – accepting every task, incapability to reject anything and to personally withdraw from any situation.

High level achievement at joy dimension, combined with low achievement at sadness, indicates happy persons satisfied with their lives, friendly with other people, persons who like to socialise and to work in a group.

Let us further consider emotions within limits of optimal manifestation. Surprise and anticipation were considered in relation to each other. As two opposed emotions, at the same time both optimally manifested, they indicate a group which, in regard with new situations, has a fine balance between rashly behaviour and an adventurous spirit on one hand and caution and anticipation on the other hand. These are the persons that do not avoid new situations, but on the contrary seek for diversity and new experiences, in an organised, conscientious and cautious way. They like order and planning, in a proportion which allows them easier adaptation and plasticity.

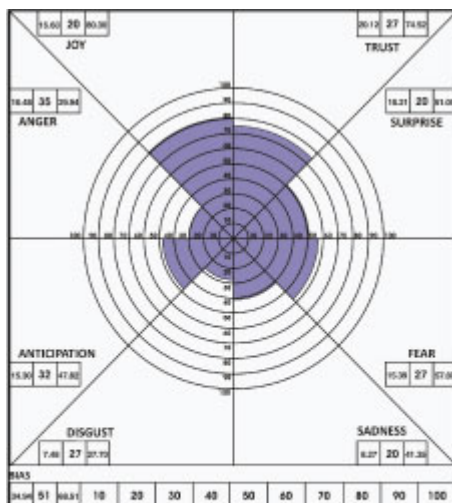
Second optimally manifested emotion is fear, which explains presence of a certain dosage of timidity, passivity and avoidance of leadership roles. Additionally it is accentuated with a low level manifestation of opposed emotion – anger. This explains lack of willingness to fight and to stand up for oneself and ones' own rights.

Achievement on the bias-scale is high, yet within moderate limits and it could be indicating a tendency to more successful adaptation.

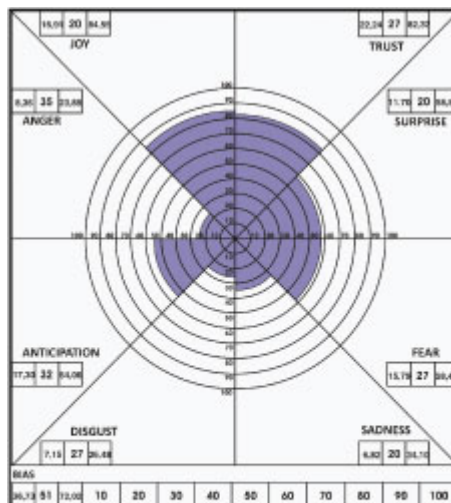
All this shows that yoga practitioners are opened toward the surrounding and trusting, with developed moral principles, who strive to adapt to life situations, exploring it conscientiously, non-aggressive, yet slightly passive which could prevent them from achieving their aspirations. They accept novelties, if they work in favour of their better adjustment and in an interest of achieving a better interaction.

The profile obtained after the second measurement is similar to a great extend to the one obtained with the first measurement, following the same tendencies which existed in the first profile (Image 2). Again, joy and trust (82.4%) are the most emphasized emotions. In the frame of the limits of optimal manifestation are surprise (58.5%), fear (58.45%) and anticipation (54.1%), while the lowest manifestation tendency shows emotions of sadness (34.1%), disgust (26.5%) and

anger (23.9%). Again, on the bias-scale the group shows strong tendency to socially acceptable behaviour manifestation (72.0%).



*Image 1. Personality profile estimated with a Profile Index of Emotion questionnaire at the beginning of the course*



*Image 2. Personality profile estimated with a Profile Index of Emotion questionnaire at the end of the course*

Observing characteristic emotions individually, the level of occurrence varies only with emotion of sadness, which level of occurrence is now within the limits of low, while previously it was within the limits of optimal manifestation.

Consideration of pairs of opposite emotions shows that the changes have occurred in three out of four pairs in the direction of a better balance. Pair surprise-anticipation, where both emotions' manifestation level is increased, is still within the limits of optimal manifestation for both emotions, which means that the need for new experiences is still well balanced with the need for order and planning. In the case where there is a high manifestation tendency of both emotions trust and joy, their two opposite emotions, disgust and sadness, are again within the limits of low manifestation. Again, that tells us that these persons are opened and cannot avoid any kind of situation; persons who like to socialize and be with people. Only the pair fear- anger shows lower balance in the second testing. Namely, emotion of fear, even with the rise still shows the tendency to optimal manifestation, while the motion of anger has even lower manifestation tendency, which emphasizes an impression that there is a dose of passivity and a lack of willingness to fight. An appearance of a higher average on the bias-scale may indicate presence of a certain process in the direction of researching their level of adaptation to the surrounding, resulting in insecurity and imbalance, which the respondents are trying to cover up manifesting a more acceptable image of their selves.

Statistical analyses, however, shows that there are statistically significant differences between the personality profile at the first and at the second measuring. At the end of the course more emphasised are the trades of surprise ( $t(32)=2,514$   $p<0.05$ ) and anticipation ( $t(32)=2.948$   $p<0.01$ ), while sadness ( $t(32)=2,184$   $p<0.05$ ) and anger ( $t(32)=2,332$   $p<0.05$ ) show decrease.

In relation to ego defence mechanisms, the results obtained at the Life Style Index at the beginning of the course (Image 3) show that the following ego defence mechanisms are the most dominant at the practitioners: projection (57.3%), intellectualisation (52.0%) and denial (50.2%). They are all within the limits of optimal usage, while the mechanisms of repression (29.1%) and displacement (28.8%) are the least used mechanisms, at the same being under the limit of optimal usage. General defensive direction is optimal (42.7%) although it is closer to the lower limit, showing that this is a group of persons that do not have difficulties facing conflict situations and problems, as well as assimilation of new and different experience in life. Ego defence mechanisms are used in extend which does not obstruct healthy functioning, without the risk of disturbing personal integrity. On the contrary, existence of a strong, healthy personality is a condition for the low level usage of ego defence mechanisms. Those persons are realistic, self-criticising in a positive sense.

This conclusion is confirmed by observing all ego defence mechanisms individually – none of them exceeds upper optimal usage level. Generally, the obtained profile shows persons who need a certain amount of time to face a conflict situation. In favour of that speaks the fact that the most used ego defence mechanism is projection, followed by denial, both mechanisms enabling neglecting either entire conflict situation or merely its particularly unpleasant parts. These persons are warm and not very critical. Usage of intellectualisation indicates that, when facing reality, these persons put the intellect first, and emotions second. Further, they have more difficulties with accepting a loss in life and they try to compensate it in some other way, which is indicated by optimal usage of ego defence mechanism compensation. Optimal usage of reaction formation indicates a tendency of the respondents to avoid certain emotional experiences that bring pleasure and to experience emotions opposite to them, which leads to manifestation of behaviour opposite to the real one. It is important to stress that all this is within the limits of healthy functioning and that it does not mean avoiding facing conflict situations, but facing them with the usage of these ego defence mechanisms.

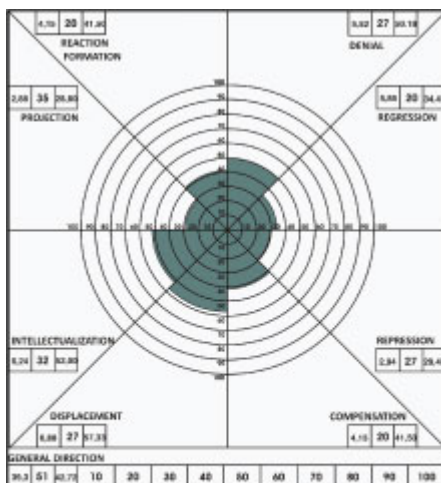


Image 3. Ego defence mechanisms profile estimated by Life Style Index at the beginning of the course.

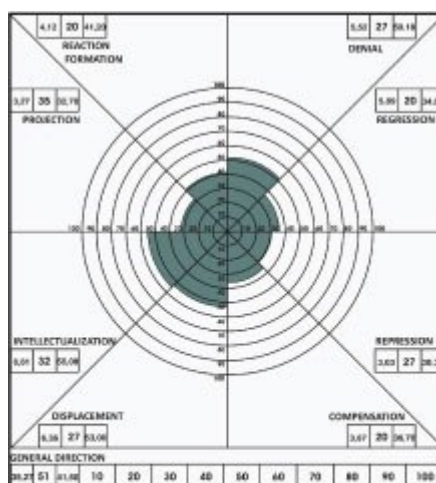


Image 4. Ego defence mechanisms profile estimated by Life Style Index at the end of the course.

Results obtained using the Life Style Index at the end of the course (Image 4), define a profile similar to the one obtained in the first measurement. Again, general defence direction is optimal (41.6%), and the most dominant ego defence mechanisms are intellectualisation (55.1%), projection (53.%) and denial (52.6%) – all within limits of optimal usage. The least used mechanisms are displacement (32.7%) and repression (30.3%). Statistical analysis confirmed the results of the quality analysis and did not show significant differences in ego defence mechanisms usage at the beginning and at the end of the course.

## Conclusion

Analyses of the research results show that during this short period of time occur statistically significant differences in regard with the examinees' personality profiles at the beginning and at the end of the course: significant differences have been affirmed referring to four emotions, i.e. personality traits – at the end of the course surprise and anticipation become more emphasized, while emotions of sadness and anger are less emphasized.

Both traits in the pair anticipation – surprise become more emphasized, but still within the limits of optimal manifestation. Since there is a pair of opposite emotions, the change in the manifestation level of both of them indicates a general change in behaviour directed toward the surrounding and the exploration of it, as well as toward new experiences in general. More specifically, an interest in the surrounding grows and yoga practitioners become free and more opened toward new experiences, and this tendency is even more stabilised with the parallel

increase of levels of organisation, self-control and conscientiousness. The level of the manifestation of the emotions sadness and anger decreases too, which in relation to other indicators, means decreased level of willingness to fight and hostility in favour of increased satisfaction with one's self and with the quality of one's life. Taking action to achieve one's own goals becomes more important, yet not on the account of others' welfare, which relieves the tension in relations and results with better inter-personal relationships.

Even though this seems contradictory, basically it is about the change in perception of one's surrounding, and in the future probably about the image of the world as a whole. The environment is not viewed anymore solely as a source of frustrations and potential obstacles one needs protection from, but on the contrary, as a sum of potential possibilities to realise one's own needs and goals. The perception of other persons is altered as well. More positive view on surrounding widens onto people which are part of it, and then their roles in examinees' lives are seen as less burdening and more positive. An interest for other people is decreased in a positive way, because the respondents are quite likely starting to experience a process of focus shifting from others to their selves and to their own needs. Therefore, they become more opened toward new experiences and active researching of the surrounding to find new experiences. A deeper revealing of their wishes, desires, needs and tendencies cannot be satisfied any more with familiar patterns. There is a need for environmental, "outside" novelties, to say so, that would match the "inner" ones and support them. Increased levels of conscientiousness and organisation keep increased the level of exploration under control and allow correct insights and understanding of new situations. The satisfaction with ones' self is thus increased, a person begins to harmonise, becomes more tranquil, and therefore levels of anger and willingness to fight decline. In other words, in the eyes of yoga practitioners, the world becomes "a better place to live in" and live with others.

Although changes in the level of ego defence mechanisms usage were registered, analysis show there weren't any statistically significant changes in ego defence mechanisms usage profile and in the degree of practitioners' general direction at the beginning and at the end of the course. One of the reasons why that happened is certainly the fact that the research was conducted on an suitable sample, which brings along certain limitations too.

But the greatest was the influence of the time distance between first and second questionnaire filling, which was very short and insufficient for any greater change to happen. Ego defence mechanisms are relatively permanent characteristics and they change only after the changing of those behavioural patterns that condition them. Because during this research, emotional and to them congruent behavioural changes started happening, it is realistic to expect that it would take a longer period for changes in ego defence mechanisms to appear. We believe it would be good to repeat a research of this kind, with a longer period between the first and the second questionnaire filling. And it would be very useful if the respondents would be monitored through time – if the measurements could



be repeated every three months within a period of a year, which could provide a more detailed insight into the nature and the speed of changes, as well as into the type of changes occurring.

Obtained results are in a great extend in accordance with the results of researches mentioned at the beginning of this paper. It confirms that yoga practising influences the development of positive feeling, stabilisation of practitioners' emotional states and a better treatment of one's self. Self-confidence grows and so does the confidence in other people, openness toward the world is increased and the quality of inter-personal contacts is improved. What this paper additionally points to is that emotional changes are not that important per se, but serves more as a base for long term changes in yoga practitioners' personalities. That emotional stabilising is a foundation for setting personal characteristics which further lead to new changes in higher personality levels, toward opening self-realisation possibilities through benevolent perception of environment and their place in it and toward achieving more realistic and better quality inter-personal relations.

The results indubitably indicate existence of an active process of self-exploration and gradual change. Yoga programme conceived at this way provides valuable base for changes at the level of persona to start happening - the possibility for active attention directing toward self. The other characteristics of yoga practising in addition to that- continual following of one's self and one's reactions in classes and in everyday activities, research and appreciation of one's possibilities, developing a sense for one's own needs (Hassanagas, in print). The whole process is supported by other yoga practising benefits – improved general health which helps restore a general feeling of wellbeing and safety; improved concentration and mental capacity, which is a base to achieve understanding of the development process, as well as stabilising mental activities which further leads to serenity of mind and contributes the clarity in insight into all situations of life (Hassanagas, 2009). Theoretical and philosophical background of yoga practise is a stimulus to discover new aspects of one's self and their life, as well as questioning the existing ones. The image of one's self and of the world gradually changes, widens and reintegrates.

The end of this paper is probably the right place to state the following: although we speak here about yoga, we always have to consider the fact that this is about certain yoga program and concept and not about yoga in general. One of the basic variables that has to be taken into consideration in this kind of research is exactly this one because not everything that is considered as yoga today, leads to same and similar results. Only the yoga program conceived in a way to embrace a person holistically and in its wholeness can result with effects that signify basic and essential change of the personality of the person and which are a further base for appearance and development of typical yogic characteristics at the participants – yama characteristics, as well as the ability for vairagye and viveka for example. Without such an approach to the human being, we cannot expect a development of true yogic qualities.

Results of this and similar researches show that yoga, despite all of the benefits its practising enables, is also a method which helps a person to improve their attitude to their self and their surroundings, thus improving the quality of their life in general.

#### References:

1. Alexander, C. N., Rainforth, M. V., & Gelderloos, P. (1991): Transcendental Meditation, self-actualization, and psychological health: A conceptual overview and statistical meta-analysis. *Journal of Social Behavior and Personality*. 6 (5), 189-247.
2. Bennett, S. M., Weintraub, A., & Khalsa, S.B.S. (2008): Initial Evaluation of the LifeForce Yoga Program as a Therapeutic Intervention for Depression. *International Journal of Yoga Therapy*. 18 (1), 49-57.
3. Berg, W. P. van den, & Mulder, B. (1976): Psychological research on the effects of the Transcendental Meditation technique on a number of personality variables. Findings previously published in *Gedrag: Tijdschrift voor Psychologie (Behavior: Journal of Psychology)* 4: 206-218.
4. Fehr, T., Nerstheimer, U., & Torber, S. (1972): Study of personality changes resulting from the Transcendental Meditation program: Freiburger Personality Inventory. Department of Social Affairs, MIU/Forschungsring Schöpferische Intelligenz, Dormagen, W. Germany.
5. Hahn, H. R., and Whalen, T. E. (1974): The effects of the Transcendental Meditation program on levels of hostility, anxiety, and depression. Master's thesis (abbr.), Department of Educational Psychology, California State University at Hayward, Hayward, California, U.S.A.
6. Hassanagas, P. K. (2009): Joga- duhovna odiseja, Joga-sojuz na Makedonija, Skopje, R. Makedonija.
7. Hassanagas, P. K., Sadhana 1, Joga- sojuz na Makedonija, Skopje, R. Makedonija, u štampi.
8. Hjelle, L. A. (1974): Transcendental Meditation and psychological health. *Perceptual and Motor Skills* 39: 623- 628.
9. Krishnan, S. (2006): Personality development through Yoga practices. *Indian Journal of Traditional Knowledge* 5 (4), 445- 449.
10. Lamovec, T. (1989): Emocije i odbrambeni mehanizmi. Zavod SR Slovenije za produktivnost dela Ljubljana, Center za psihodiagnostična sredstva, Ljubljana.
11. Lavey, R., Sherman, T., Mueser, K. T., Osborne, D. D., Currier, M., & Wolfe, R. (2005): The effects of yoga on mood in psychiatric inpatients. *Psychiatric Rehabilitation Journal* 28 (4), 399-402.
12. Lee, S. W., Mancuso, C. A., & Charlson, M. E. (2004): Prospective Study of New Participants in a Community-based Mind-body Training Program. *Journal of General Internal Medicine* 19 (7), 760-765.
13. Philbin, K. (2009): Transpersonal Integrative Yoga Therapy: A Protocol for Grief and Bereavement. *International Journal of Yoga Therapy* 19 (1), 129-141.
14. Seeman, W., Nidich, S. & Banta, T. (1972): Influence of Transcendental Meditation on a measure of self-actualization. *Journal of Counseling Psychology* 19, 184-187.
15. Shapiro, D. & Cline, K. (2008): Mood Changes Associated with Iyengar Yoga Practices: A Pilot Study. *International Journal of Yoga Therapy* 14 (1), 35- 44.
16. Shapiro, J. (1974): The relationship of the Transcendental Meditation program to self-actualization and negative personality characteristics. Doctoral thesis (summary), Department of Psychology, University of Southern California, Los Angeles, California, U.S.A.
17. Shelov, D. V., Suchday, S., & Friedberg, J. P. (2009): A Pilot Study Measuring the Impact of Yoga on the Trait of Mindfulness. *Behavioural and Cognitive Psychotherapy* 37, 595-598.

18. Smitha, C., Hancock, H., Blake-Mortimer, J., & Eckert, K. (2007): A randomised comparative trial of yoga and relaxation to reduce stress and anxiety. *Complementary Therapies In Medicine* 15 (2), 77-83.
19. Zavod SR Slovenije za produktivnost dela. (1990): Upitnik životnog stila i odbrambeni mehanizmi. Ljubljana: Center za psihodiagnostična sredstva.

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## **POSSIBLE APPLICATION OF YOGA IN VICTIMOLOGY**

***Summary.** The paper tends to explore possibilities of application of yoga in victimology as a science on crime victims, in general, and in particular in relation to the following aspects: support to crime victims, including victims of war, during recovery process, prevention of burn-out of those who are delivering services to victims as well as of researchers who conduct interviews with especially vulnerable categories of victims; prevention of victimisation; in facilitating processes of facing the past and reconciliation within postconflict societies.*

*Bearing in mind the scarce literature and research in this aspect of yoga connection with science, the paper is primarily based on the analyses of my personal experience of conducting victimological surveys, supporting victims and on reconciliation and the experiences of others.*

**Keywords:** yoga, victimology, victims, support, reconciliation

### **Introduction**

Victimology, as the study of victims (victima (Latin) - victim and logia (Greek) - knowledge, learning, science), deals with various aspects of people suffering - through the research of various forms of suffering, as well as through assistance and protection of victims and prevention of primary and secondary victimization and re-victimization. Victimology is a relatively young academic discipline. It was founded shortly after World War II, largely influenced by the suffering of people in it. In Serbia, victimology began to develop during the 1970s, but its development has been particularly intensified during and after the wars in the 1990s, especially after the establishment of the Victimology Society of Serbia in 1997.

Among the victimologists there are differences in views regarding the definition of its subject. On the one hand, there is a broader view, according to which victimology needs to deal with all the victims, regardless of what is the cause of their suffering (eg, crime victims, victims of natural disasters, accidents at work, etc...). On the other hand, the supporters of the narrower view, which is dominant in our country, believe that it should focus only on the victims of crime (Konstantinović-Vilić, Nikolić-Ristanović, Kostić, 2009). This view will be accepted in this paper.

This paper aims to examine the possibilities of applying yoga in victimology, seen as the science on crime victims - in general as well as related to the specific aspects of dealing with victims, as follows:

- support and assistance to victims during the recovery from victimization,
- prevention of victimization and re-victimization,
- prevention of burn-out of
  - providers of services to victims
  - researchers who interview vulnerable categories of victims
- facilitating the process of dealing with the past and reconciliation in post-conflict society.

Before I point to the possible application forms of yoga in victimology, I will define the basic concepts of victimology and provide basic information regarding the development of victimology.

### **On victimization and victimology**

Victimization is a process through which someone becomes a victim, whereas the condition of someone becoming a victim is called „being victimised“. Primary victimization refers to becoming a victim of criminal conduct, while the repeated victimization or re-victimization means that a person has become a victim of the same criminal conduct two or more times. In addition to the primary, victims often suffer from secondary victimization. Secondary victimization is the intensification of primary victimization by the negative reaction of social environment and by inadequate or even incorrect response of the law enforcement bodies (Schneider, 1975). Categories of victims which are particularly exposed to secondary victimization are the ones who are considered especially vulnerable because of their age, psychological-physical characteristics or the nature of the crimes which they are exposed to (children, the elderly, mentally ill and disabled persons, victims of sexual offenses, domestic violence, trafficking and war crimes).

In the development of victimology, considering the focus of its interest, there can be seen the following two periods: the period of the so-called first victimology and the period of the second victimology (Gassin, 2007). The first period is the period from its creation to the end of the 1970s, which was characterized mainly by dealing with issues related to the determination of the role of victims in the genesis of crime, therefore, dealing with issues of victims in order to explain criminal behavior. In the 1970s there was a partial move from the questions regarding the role of victims. Instead, victimologists' attention started to concentrate on the problems of victims, regardless of their role in the genesis of crime and regardless of the delinquent. Dealing with the victims becomes dealing with their suffering by finding the best ways to help them. This is the second

victimology, which mainly deals with issues of victim assistance, its position in the criminal proceedings, compensation and treatment, and in recent times also with the position of victims during mediation between the perpetrator and the victim and in the processes of reconciliation in post-conflict societies.

## **Possible forms of yoga application in victimology**

### **Assistance and victim support**

Modern victimology, therefore, puts an emphasis on the support and assistance to victims in order for them to recover from the consequences of victimization, and to help them to re-establish the disturbed control over their own lives. The consequences of victimization can be both physical and psychological, material and social. In addition, psychological effects, of smaller or greater intensity, and of shorter or longer duration, accompany each victimization, regardless of what is the type of crime in question. Here we can discern the first possibility of application of yoga in victimology: the use of yoga as a way of empowering the victims during the process of recovery. In this sense, yoga influences physical stability and fitness as well as the mental stability and self-control, and has an effect on strengthening the feeling of security and satisfaction with oneself and thus enables faster recovery from the consequences of victimization, including post-traumatic stress disorder<sup>14</sup>. Therefore, it is not surprising that yoga is used in the treatment of very severe traumatic experiences such as those that occur in victims of torture (Franklin, 2001), the harshest war rape victims (eg. in Rwanda)<sup>15</sup>, or while providing support to victims of trafficking<sup>16</sup>. Also, the experiences of application of yoga in working with prison inmates (who are also in different ways victimized) indicate its very good effects on their emotional state, reduction of aggression and their general behavior (Saraswati, 1990; Rucker, 2005)<sup>17</sup>.

### **Prevention of victimization**

The successful recovery of the victim has a preventive effect. Namely, repeated victimization is often closely related to the absence of adequate assistance

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<sup>14</sup> Kersten Wills, D., <http://www.yogajournal.com/health/2532>, Retrieved on August 26<sup>th</sup>, 2010.

<sup>15</sup> Experiment with the application of yoga in the treatment of rape victims in Rwanda, which was conducted in the last two years received the support of the United Nations. Organization Project Air, which is in charge of the project is hoping that yoga can also be applied in the same manner in the war-affected areas of Democratic Republic of Congo, Gaza and Afghanistan. - Nelson, S. Rape Victims For Healing Yoga Taught In Rwanda, [http://www.causecast.org/news\\_items/9358-rape-victims-taught-yoga-for-healing](http://www.causecast.org/news_items/9358-rape-victims-taught-yoga-for-healing), Retrieved on August 26<sup>th</sup>, 2010.

<sup>16</sup> [http://www.astra.org.rs/?page\\_id=29](http://www.astra.org.rs/?page_id=29), Retrieved on August 1<sup>st</sup>, 2010.

<sup>17</sup> For some newer experiences see: <http://www.alternativismagazine.com/47/marsh.html>

and support to victims. In other words, the appropriate protection, assistance and support, which empower and strengthen self-esteem and self-control of the victim can prevent the repeated victimization by the same or different criminal behavior. Also, it is known that people who are concentrated, stable and calm are less likely to become victims of crime in comparison to people who are afraid, not concentrated and suffering from feeling of helplessness. Therefore, the practice of yoga can be considered as one of the possible ways to prevent individual victimization.

### **Prevention of burn-out**

In close connection with the provision of assistance to victims is the issue of impact of working with victims on service providers that help them. Working with victims of crime is one of the potential drivers of burning-out and yoga appears here as a possible way to prevent or eliminate the consequences of burning-out of professionals and volunteers who work with victims. Yoga could have a similar effect on researchers who explore the extent and consequences of victimization and the needs of victims, and who are in a position to lead a large number of interviews with traumatized people, and to analyze these experiences later. In addition, one should bear in mind the character of most victimology action research, which, given the nature of the case studies and the vulnerability of the respondents, inevitably involve the provision of the most basic forms of assistance, such as active and emphatic listening or giving information. One of my many experiences of this kind, relating to research in Serbia immediately after the NATO bombing, I described in my book “Surviving the transition: the daily life and violence in a post-communist and post-war society” (Nikolić-Ristanović, 2008).

Based on the analysis and comparison of my personal experiences as a researcher and a provider of support to victims of various forms of violence and victims of war, from the period before and after starting to practice yoga, I can observe the following positive effects:

- easier to cope with the experiences of victims,
- ability to facilitate the perception of the traumatic experience in the context of a broader life experience,
- easier distancing from the experiences of victims, with concurrent easier establishment of communication and expression of empathy,
- the absence of signs of burning-out.

Yoga, then, apparently, has a positive effect on the quality of the overall relationship with the victim and the provided support, while simultaneously reducing the negative effects on researchers, and providers of assistance.

## **Dealing with the past and reconciliation**

In a post-conflict society, such as ours, much of the population, if not all, are in some way victims of war. Therefore, all the aforementioned related to victim support and the prevention of victimization and the possible application of yoga, can be applied more broadly, concerning the consequences of war. In the so-called process of dealing with the past, yoga should have an important place in dealing with psychological and psychosomatic consequences of the war, especially with those persons who were most directly affected by it or participated in it as soldiers. But besides that, dealing with the past involves opening of serious topics, starting conversations about the crimes and their victims, and efforts toward reconciliation between parties in conflict.

Working most directly on the latter aspect of dealing with the past, I have found that following factors have a negative impact on talks about the past and the possibility of reconciliation: unfinished recovery process of a large number of people who are differently affected by war, lack of attention to our own psychophysical health and spirituality, and perhaps even the considering dealing with oneself as a luxury or selfishness. The consequences of this attitude are visible every day, and are manifested as a widespread intolerance, especially towards different people. Unfortunately, the consequences are especially visible in discussions about the past that, very often, instead of reconciliation, lead to deepening of existing or even opening new conflicts.

Taking into account my own experiences and experiences of colleagues from other countries (eg. Northern Ireland), I believe that yoga should find an important place in the context of constructive opening of discussions about the past and the processes that lead to reconciliation. In addition, it may be of particular importance in the part related to one aspect of reconciliation that involves restoring self-esteem, on one hand, and renewal of trust in others, on the other (Srna, 2005). To modern man in general, and especially one that, like the citizens of our country, is going through dramatic changes and has accumulated various traumatic experiences in a relatively short period of time, the hardest things are dormancy and dealing with oneself. However, when accepting the challenge, the results are inevitable. In this sense, a good illustration could be an example of the colleague from Northern Ireland, a former soldier of one of the warring parties, and today a yoga instructor and a peace activist, who is, by talking about his transformation, helping others to learn about themselves, regain lost self-respect, understand each other and reconcile<sup>18</sup>. Also, the calming effect of yoga is noted in the work with the former soldiers, including the participants of the war in Iraq, in the United States<sup>19</sup>.

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<sup>18</sup> I met him at the International Summer School of the Institute of INCORE, in Derry (Northern Ireland), in which he was one of the trainers on the course of interpersonal reconciliation.

<sup>19</sup> Kersten Wills, D. <http://www.yogajournal.com/health/2532>, Retrieved on August 26<sup>th</sup>, 2010.



## Conclusion

Possibility of application of yoga in victimology is evident. The goals of yoga and victimology are similar because they are both focused on supporting people to solve problems they face and establish control over their lives. Both yoga and victimology are interested in the (mental, spiritual) strengthening of people to establish a balance between their inner and outer life, and that really is the most important link between yoga and victimology. Just keeping this in mind, I believe that the possibilities for cooperation between these two disciplines are very broad and significant.

The application of yoga could significantly improve various aspects of working with victims, but also contribute to the prevention of suffering of people by various forms of violence and other criminal behavior. In addition, for the prevention of crime working with people who have problems with aggression, as well as with inmates is of great importance. Also, the popularization and spreading of the practice of yoga can favorably affect the overall recovery of war-affected societies, as well as the process of reconciliation. Connecting yoga with restorative approaches to tackling crime and reconciliation in a post-war society is especially worth considering<sup>20</sup>. However, to propose more specific recommendations detailed studies and monitoring of the effects of yoga in various fields of victimology are necessary.

## References:

1. Franklin, C. (2001) Physiotherapy with torture survivors. *Physiotherapy*, 87(7), pp. 374-377.
2. Gassin, R. (2007) *Criminologie*. Paris: Dalloz.
3. Konstantinović-Vilić, S., Nikolić-Ristanović, V., Kostić, M. (2009) *Kriminologija*. Niš: Centar za publikacije Pravnog fakulteta u Nišu.
4. Nikolić-Ristanović, V. (2008) *Preživeti tranziciju: svakodnevni život i nasilje nad ženama u postkomunističkom i posleratnom društvu*. Beograd: Službeni glasnik.
5. Nikolić-Ristanović, V., Srna, J. (2010) Pomirenje sa sobom i drugima: od pristupa ka modelu. *Temida*, 1, pp. 43-58.
6. Rucker, L. (2005) Yoga and restorative justice in prison. *Contemporary Justice Review*, 8(1), pp. 107-112.
7. Saraswati Satyananda S. (1990) *Joga nidra: relaksacija, meditacija, uvođenje u san*. Beograd: Partizan.
8. Schneider, H.J. (1975) *Victimologie. Wissenschaft vom Verbrechensopfer*. Tübingen: Mohr.
9. Srna, J. (2005) Toward reconciling with ourselves and others. *Psihologija*, 38(2), pp. 117-132.

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<sup>20</sup> On the relationship of restorative justice and yoga see: Rucker, L. 2005. On the Joint Action for Truth and Reconciliation initiative, as a form of application of restorative justice in dealing with the past in Serbia, that could be more effective if it was connected with yoga, see: Nikolić-Ristanović, Srna, 2010.

**Mgr. Danica Bulut - Jakovljević**

## **THE CONTRIBUTION OF YOGA TO THE DEVELOPMENT OF EMOTIONAL COMPETENCES**

***Summary:** During 1990s, there have been started substantial researches on the impact of emotional intelligence on various aspects of human life. In this paper, we considered contribution of yoga to the development of emotional competences through theoretical approach. Two elements of emotional competence were considered – self-awareness and self-control. Self-awareness or emotional awareness as the way of understanding of the manner that emotions influence working behavior and efficient decision making. We concluded that self-awareness represents the first step toward self-control and empathy with other people and that yoga practice may significantly influence that process. In the self-awareness development we listen to emotions and learn from them. Since yoga practice helps to increase self-control, the paper concludes that specific yoga techniques may be used in development of emotional competences and that there are needed further researches in order to examine this phenomenon.*

**Key words:** emotional intelligence, yoga, self-awareness, self-control, self-realization, emotions.

### **Introduction**

The word yoga means unity and comes from the Sanskrit word yuj, which means to unite. In a spiritual light, this unity refers to the union of individual consciousness with the universal one. On a practical level, yoga means the way of balancing and harmonizing body, mind and emotions.

According to Patanjali's Yoga Sutras Yoga affects all four aspects of our mind (reason, intellect, subconscious mind and ego), which enables it to make an individual self-conscious, empathic, motivated or self-adaptive. All these qualities are known as elements of the concept of emotional intelligence. Even Mahatma Gandhi stressed the importance of the emotional dimension of an individual's life. He underlined that the man is conditioned and guided by his heart, not his intellect. He believed that the heart accepts the decisions that the intellect requires reflection on.

Yoga is an integral part of the philosophy of the East, the study of man and the totality of his being. Its goal is to bring about the harmonious development of man's abilities and potential using systematic methods of practice. Practicing yoga affects the establishment of health, and it is also the prerequisite of the

harmonious functioning of all human physiological, biological, psychological, mental and spiritual functions. In 1977 World Health Organization stressed effectiveness of yoga and Ayurveda - traditional Indian medicine, which views a man in his totality and never heals the body alone.

Yoga has been practiced in an organized way in Serbia (in the form of associations and centers) since the 1960s. Still, it could be argued that it experienced a boom during the last 10 or so years with foundation of the Yoga Federation of Serbia, by Prof. PhD Predrag Nikic. Nevertheless, the number of studies dealing with the impact and contribution to yoga to different aspects of life, such as: spiritual, mental, and emotional, is still small. Therefore, I would like to stress the importance of the activities of Yoga Center Serbia and Yoga Federation of Serbia, which initiate scientific research in various scientific fields, perceiving yoga as a scientific discipline, as the experience and philosophy of life.

The starting point of this research is the hypothesis that there is a connection between the practice of yoga and the development of certain emotional competencies. The paper is based on a theoretical comparison of previously conducted research by way of summarizing and analyzing results. Sample was made of 30 participants out of which there were 15 women of approximately 27 years of age. Results didn't show any difference between women and men in effects that yoga practice brings. Results of yoga practice significantly affects the increase in the degree of self-awareness and self-control of the yoga practitioners, but only if yoga has been practiced for more than 3 months continuously. Break-even point is 90 days of continuous exercise. Therefore, we can conclude that the practice of yoga requires continuity in order to achieve results. There is a slight correlation with the role yoga plays in improving sympathy towards others (empathy), and healthy interpersonal relationships, but this may be the subject of another investigation.

Yoga is actually a reunion of the elements separated as a consequence of our way of life. It is a reunion of body, mind and spirit. Thousands of years ago, the Indian Rishis (sages and saints) investigated the nature and the universe immersed in meditation. That is how they discovered the laws of the material and spiritual world and gained insight into the bonds within the universe. From these experiences and insights originated far-reaching and comprehensive system known as Yoga. It gave us valuable and practical guidance for body, mind, concentration, relaxation and meditation. In one part of the Bhagavad Gita (God song) yoga is conceptually defined as proper action: Perform activities that are your true nature, it is your duty. Do not let the fruits of your work be your motivation. Act in accordance with the Creator, free from material desires. Do not be troubled by the success or failure. Such mode of action is called *Yoga*<sup>21</sup>.

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<sup>21</sup> [http://sh.wikipedia.org/wiki/Bhagavad\\_Gita](http://sh.wikipedia.org/wiki/Bhagavad_Gita), 2004, translation Swami Nirmalananda Giri

Yoga is not religion, but a source of spirituality and wisdom, and the root of many religions. Transcending religious boundaries, it shows the path to unity. Yoga comes from India and has its roots in Hinduism. It comprises a colorful variety of methods, exercises and practice of life with spiritual and religious goals. In his book (*Asiatische religiösen Strömungen in Europa*), Frotz Blanke, an authority on Asian religions, suggests that yoga introduces people to a new spiritual world, a new philosophy of life without them being aware of it.

Latest opinion polls indicate that over 110 million people in the U.S., have an interest in practicing yoga. In order to protect its originality, professionalism, competence, teachers, certified instructors and protect people from charlatans, two major global organizations - the International Yoga Federation and Yoga Alliance came into existence.

Numerous studies show that practicing yoga has a wide-ranging effect since it helps balance the physical and mental functions. In this way, yoga helps us perform everyday tasks, solve problems, overcome worries, achieve a higher level of understanding ourselves, the meaning of life and our personal relationship towards ourselves in our environment.

## **Emotional Intelligence**

Emotional intelligence (EI) stems from the concept of social intelligence, which was first identified by E. L. Thorndike in 1920. Salovey and Mayer defined emotional intelligence as: a form of social intelligence that involves the ability of knowing one's own and others' emotions, distinguishing them, and using this information in thinking and acting.<sup>22</sup> A leading expert in the field, Daniel Goleman defines EI as the capacity for recognizing emotions in ourselves and others, self-motivation, and managing emotions in ourselves and the relationships with others. Emotional intelligence determines the potential for learning operative skills that are based on five elements (abilities). According to Goleman's model, those are: self-awareness, self-control, self-motivation, empathy and successful interpersonal relationships, where each element includes a set of different abilities.

Theorists of social and emotional learning have identified a long list of developmental values on which they base their programs. In 2005 the Association of academic, social and emotional learning (The Collaborative for Academic, Social, and Emotional Learning, CASELLE) identified five sets of basic, interrelated, social and emotional competencies: self-awareness (self-awareness, accurate assessment of one's own feelings, interests, values and self-confidence), self management (self-management, the expression and management of one's emotions), social awareness (the ability to take the perspective of others and empathize with them), social skills (establishing and maintaining healthy relationships with others, resisting unwanted social pressure, constructive conflict

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<sup>22</sup> Mayer, J. D., & Salovey, P. (1993). *The intelligence of emotional intelligence*. *Intelligence*, 17 (4), 433-442.

resolution), responsible decision-making (consideration of appropriate ethical standards and social norms, contributing to the welfare of the community).

According to Goleman, emotional competence depends on EI, increases work properties and can be learned. He believes that emotional competence consists of personal competence and social competence. Personal competencies are the ability to deal with our own difficulties, such as: self-awareness, self-control and self-motivation, while social competences refer to the ability to master relationships with others, as well as and empathy and interpersonal relationships. Many authors avoid using the term intelligence when they talk about the same skills and abilities, but resort to other terms, so in literature we can encounter terms such as: emotional coefficient (e.g. Goleman, 1995), emotional literacy (e.g. Goleman, 1995; Dulewicz and Higgs, 2000), emotional competences.

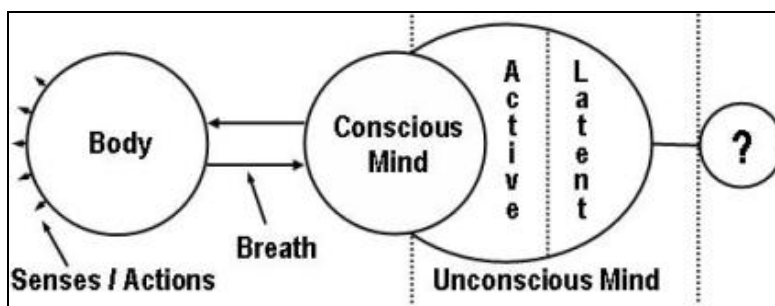
Emotional stability and maturity could contribute to an improved interaction with others and maintaining interpersonal relationships, greater motivation, higher capacity, higher productivity and effectiveness, and above all, better management of communication, while our emotional competence actually indicates how much of our potential we turned into operative skills.

### The contribution of yoga to the development of emotional competence

We live in times when humanity seeks a way out of this modern chaos, a way out of moral and spiritual poverty, disease and internal emptiness that strains all of us. People are looking for a solution, a way to overcome the great stress of the modern age. One of many solutions to human problems is the practice of yoga as philosophy and practice.

Modern ideas in the field of psychology are surprisingly similar to the ideas that were set several thousand years ago in the Samkhya and Yoga darshan. Practicing yoga involves physical, mental, emotional, psychological and spiritual aspect of man. By practicing yoga, all of these aspects are developed, or better put, the dormant abilities of each individual are revealed. Using different methods it awakes and transforms the latent powers of man, points to the path of purity and truth, frees from all forms of ignorance. It's a real spiritual path, where all aspects are integrated so that man becomes a complete being.

Figure 1. Influence of yoga on latent strengths of an individual.



Emotional competencies determine how successfully we can use other abilities that we have to overcome all the frustrating situations that life often leads us into. They refer to learning and achievement, behavior, promotion of health and to the individual, social and health education.

Bennet (Bennet B.) made an interesting attempt to name one style of yoga Emotional Yoga, prompted by the very recognition that long-term practitioners of yoga increase their emotional competences. The development of emotional competences improves and enhances the development of listening skills and the ability to focus attention, responsibility and dedication to work, ways to control impulses and cope with upsetting events.

### **Emotional intelligence, yoga and self-awareness**

EI consists of five elements: self-awareness, self-control, self-motivation, empathy and successful interpersonal relationships. If we view emotional balance as a balance or equilibrium point between cognition and emotion from the perspective of yoga, then the same can be achieved by proper interplay nadis (energy flows) in the energy envelope. The right energy channel (Sun) corresponds with rational thinking, facing the outside world. The left channel (Moon) expresses the emotional dimension of being, facing internal affairs. The central channel has a quality of spiritual evolution. If we look at emotional intelligence from the perspective of the three nadis (Nadis) and three qualities that go with them (modes of), or as a psychological phenomenon, we come to the conclusion that practicing yoga establishes the equilibrium point. Yoga could then be seen as a method that encourages the development of emotional competence (and therefore EI). The true meaning of yoga is a process of self-realization. Goleman identified self-awareness as the most important aspect of emotional competence because it allows self-control. Self-awareness is the first step towards self-control and empathy for others. When self-awareness becomes Self-consciousness, it automatically manages genuine empathy - seeing oneself in others.

Self-awareness, or emotional awareness, is the understanding of the ways our emotions affect our ability to work and the ability of our values to direct our decisions. Those who accurately assess themselves are aware of their strengths and weaknesses, they are reflective, they learn from experience, they are open to candid feedback, new perspectives, continuous learning and developing themselves, they show a sense of humor and perspective about themselves alone. Almost all yoga techniques encourage the development of self-awareness and therefore the capacity of self-control as the key determinants of emotional competence. Very few studies have dealt with this topic. The research results of Professor Nikic indicate the presence of a higher degree of emotional intelligence of teachers and trainers compared with the control group composed of long-time practitioners of yoga. Also, we observed a higher level of EI of practitioners who practice yoga for many years compared with those who have just started practicing it.

Self-control, as a part of emotional competence, is the ability to refrain oneself from disruptive feelings and impulses. While as a step toward self-awareness we listen to our feelings and learn from them, self-control refers to controlling and managing these feelings so that they do more good than harm. Self-control creates a rational side and the time to calm down emotions when necessary. It also helps us to act with intention, not impulsively. Yoga also makes it easier for us to cope with conflict situations without too much stress, to be more relaxed, and to control our actions more easily. At the same time, it also helps the development of competencies.

In one part of his books Goleman also talks about the difficulties of self-control of the mind: the creative mind, in its primordial nature, is rebellious. In it there is a natural tension between the everyday self-control and innovative impulses. It is not that the creative people are out of emotional self-control, it rather comes to their tendency to meet with a wide range of impulses and actions than is characteristic of less adventurous spirit.<sup>23</sup>

Emotional intelligence is a tool that our brain uses to make us self-define and shape the meaning of key concepts such as love, success and happiness. Awakening of the Self, self-consciousness, this is the role of yoga.

## Conclusion

Yoga has developed a very effective practice for the acquisition and improvement of man's mental and physical health. Its benefits are manifold. However, the core one lies in the fact that it can be applied by almost everybody, regardless of gender, age and physical condition. Yoga consists of several thousand light physical exercises, positions (asanas) and breathing techniques (pranayama – a technique for managing life energy, the so-called prana), the mudras and meditations... By practicing yoga, we can achieve psychological and emotional stability, leading to the increase in the degree of self-awareness and self-control of emotions and calmness, which once again brings the individual closer to the next level of (self-) awareness, as it is confirmed by the results of our research. The hypothesis that yoga contributes to raising the level of self-awareness and self-control as important indicators of emotional intelligence, has been provisionally confirmed. We concluded that yoga affects some of the elements of emotional competence.

Self-awareness follows each step in the self-development of the practitioners of yoga. Self-realization is the primary goal of practitioners. By practicing yoga the awareness of self and self in others, leads practitioner through something more than ego, through infinite, universal existence. Practicing yoga encourages the development of sympathy towards others (empathy), which is

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<sup>23</sup> Goleman, D. (1998). *Working with emotional intelligence*. New York: Bantam Books, str. 100.

another component of the concept of emotional intelligence. If we want to lead a life which is happier, more passionate, more intelligent and filled with more awareness, deep purpose and meaning, then yoga is definitely for us. When we learn how to practice yoga, it becomes a powerful instrument of our life. Yoga affects all levels of our being at the same time, i.e. holistically.

#### References:

1. Basham, A.L., (Ed.). (1999): A Cultural History of India, Oxford University Press.
2. Bennett, B.(2002): Emotional Yoga: How the Body Can Heal the Mind, New York: Simon and Schuster.
3. Bhaskarananda, S. (1994): The Essentials of Hinduism, Viveka Press.
4. Bradberry, T. & Greaves, J. (2005): The Emotional Intelligence Quick Book. New York: Simon and Schuster.
5. Gardner, H. (1983): Frames of mind: The theory of multiplr intelligences. New York: Basic Books.
6. Gibbs, N. (1995): The EQ Factor. Time magazine, (1995, October 2).
7. Goleman, D. (1998): Working with emotional intelligence. New York: Bantam. CPI manual (3rd ed.). palo Alto, CA: Consulting Pszchologist Press.
8. Goleman, D.(1995): Emotional Intelligence, Bantam Books, New York.
9. [Griffith R](#), [The Hymns of the Atharvaveda](#) 1895-6, full text, (online at [sacred-texts.com](#)).
10. Nikić, P. (2010): Emocionalna inteligencija u menadžmentu i organizacionom ponašanju, monografija, Zadužbina Andrejević, Beograd.
11. Radhakrishnan, S.; Moore, CA, (1967): A Sourcebook in Indian Philosophy. Princeton.
12. Salovey P. and Grewal D.(2005): The Science of Emotional Intelligence. Current directions in psychological science, Volume 14 -6.
13. Salovey, P., Mayer, J. D., Caruso, D.(2000): The positive psychology of emotional intelligence. U: C. R. Snyder i S. J. Lopez (ur.), The handbook of positive psychology. New York: Oxford University Press.
14. [www.emocionalnainteligencija.com](#)
15. [www.yogacentarsrbije.com](#)
16. [www.yogasavezsrbije.com](#)



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## **FIVE STATES-OF- MIND IN PATANJALI'S YOGASUTRA WITH CONTEMPORARY IMPLICATIONS**

**Summary:** *The aim of this study is to research similarities and differences in scholarly experts' overview of the five states of mind described in Yogasutra's which, according to Patanjali, represent the key set of constructs of our psychological nature and lead to transformation and removal of suffering, taking into consideration relevant literature in the field of psychology, in the light of new approach to psycho-physiological phenomena. This research gives different perspectives of the contemporary and ancient scientists, searching for appropriate conclusions. Conclusions of this study may initiate future researches in the field of understanding the mental processing.*

**Key words:** *state of mind, sutra, attention, restless, dullness, distraction, focus, mind-without-thoughts, suffering.*

### **Introduction**

In this contemporary time, there many systems and cultures breaking down, and there is less available psychological supports coming from family and community. Devastations caused by nature and by wars are leaving more and more people without any basics of life, causing them to question the reason to live. Military personnel, who return from horrific experiences, are finding it very difficult to adjust to a normal way of life. Mainstream psychology has limited tools to bring the minds of suffering people into balance and normal functioning. More interventions are needed. The newer transformational therapies and mind-body medicine techniques are proving helpful, but they are not fully embraced, nor explored.

Yoga psychology is a science that has the aim to understand functioning of the Mind, by researching the methods of accomplishing changes, attaining peace, improvement of concentration and focus of attention. Studying this subject requires thorough research of the psychological patterns, patterns that Patanjali presented in the ancient Sanskrit text known as "Yoga Sutra". Patanjali stated the mind is always in one of five states-of-mind (Aranya 1981; Leggett 1990; Yati 2009; Prasada 1912/1988; Rao 2002; Woods 1927). These states are *kṣipta* = restlessness; *mudha* = dullness; *vikṣipta* = distracted; *ekagra* = one-pointed or single-in-intent; and *nirodha* = without thought.

## Sources

In the ancient Patanjali Yogsutra Sanskrit text, there is a set of constructs that according to Patanjali are key structures which embrace the essential condition of the human mind functioning. Mind is always in one of five mentioned states. The five mind-states are stated as the characteristic support for all mental content of the mind. The states themselves do not refer to content, but rather to the underlying principle of how content is cognized and processed.

This research study compares theoretically and historically and questions (non)existence of connection in interpretation of the mind processing, five states of mind described in Yoga Sutra, by a few key researchers of this subject. The mind-constructs are clearly indicated as psychological principles. However, psychology as a discipline of study did not exist at the time that the Yogsutra was written.

## Importance of Patanjali's states of mind

Psychology as a social science, continues to explore deeper understandings of the principles of the mind. Throughout recorded history written evidence suggests that humankind has sought not only to become self-reflective as represented by the ancient Greek adage, "Know thyself," but also, we have looked for ways to bring harmony and peace of mind to ourselves in the process of knowing more about ourselves. Patanjali's Yogsutra text is presented in four parts. Part One is called *Concentration* or Samadhi. Part two is called *Practices* or Sadhana. Part Three is called *Powers* of the Mind or Vibhuti, and Part Four is called *Liberation* or Kaivalya. Patanjali addresses the characteristics and dimensions of the human mind and the means for attaining the state of liberation. In Part One, Patanjali presents the five states-of-mind, the five cognitive functions, and types of concentration. In Part Two, Patanjali states the *hindrances, prerequisites and methodologies for practice* or Sadhana for transformation. In Part Three, Patanjali addresses the *powers and pitfalls* or Vibhutis that can occur along the journey of removing pain and misery and attaining the liberated state. In Part Four, Patanjali addresses the permanent liberation and a perfect harmony of mind. In this mind-state without thought, in person are expressed qualities of balance and depth. The mind then is in a permanently liberated, or Kaivalya state, which means consciousness alone. The key word here is "alone." This does not mean loneliness. Rather, it means a state-of-mind without thought in which the mind is full of peace, inspiration, light, and consciousness.

Although this ancient document was developed some 2,300 years ago by Patanjali, he was not the first person to write sutras that characterize processes of the mind. Patanjali selected, organized, and compiled sutras in order to explain the mind-states, cognitive processes, dimensions and workings of the mind, how to transform the mind in order to attain permanent liberation.

## Dimensions of the mind functioning

Suffering, awareness, consciousness, attention, and meditation are terms that are essential to this study, but definitions are often ambiguous. Following is a summary of the definitions of these terms as used in this study.

Suffering: In Sutra II.16, Yati (2009) interpreted the term dukham as pain, misery, distress, sorrow, and suffering. This definition of pain and suffering leaves the doors open to include a multitude of situations and emotions like anxiety, fear, stress, jealousy, obsessions, and other unwholesome thoughts and feelings. Yati completed the interpretation of this sutra with the statement, “the pain that has not yet come is to be avoided” (p. 95). The question then arises as to how to avoid the pain and sufferings as they arise. This in fact is a central theme of the Yogsutra. A key solution is to accept the suffering, and then with focus, one can work on developing solutions.

YOGSUTRA FIVE CAUSES OF MENTAL MISERY (Yati’s commentary)	
1	Lack of knowledge or forgetting about separation from memory, thoughts, and experiences recorded in the mind
2 i 3	Operation of principle of opposites in the mind: love and hate, like and dislike, acceptance and aversion. Interests alternate just like an electrical charge.
4	Principle of ego or I sense – nourishing the I sense brings happiness; lack of ego nourishment may bring unhappiness.
5	Principle that life is short and death occurs; principle that we are born, live, and die

Awareness: As it was used by William James, awareness meant the consciousness one has about one’s own mind, or primary awareness. In *The Principles of Consciousness*, William James primarily wrote about primary consciousness, which included all normal explicit awareness of thoughts, perceptions, feelings, or beliefs. The same definition applies to this study. However in this study, awareness also means pure awareness of itself (Rao 2002, p. 32).

Consciousness: According to Rao (2002), James delineated five primary characteristics of consciousness: (1) consciousness is personal and subjective; (2) it is changing and (3) continuous; (4) consciousness has the function of knowing (noetic); and (5) it involves selective attention. Rao further stated that James considered each thought to be owned by the person as part of his/her inner life. For example, when one has pain, it is part of the personal experience of that person only, or when one experiences the red in a rose, it is only that person’s experience (p. 33).

**Attention:** Rao (2002) stated that James considered attention to be the main process in all cognitive activities when the mind shifts, or when it remains stable in one state for a period of time (pp. 44-45). This is closely related to what is meant in the Yogsuta by the mind moving from state to state, as from restlessness to dullness to distraction to single-in-intent to without thought. In each of these stages, an increasing amount of attention span is needed; without it, one cannot move into progressively deeper concentrated states. Attention and concentration are intricately related to every construct contained in the Yogsutra. The five mental states just mentioned, and the five cognitive processes throw light upon the different degrees of attention and concentration. (Aranya, 1981; Leggett, 1990; Yeti, 2009 & 1987/2004; Rao, 2002; Woods, 1927).

**Meditation:** The term meditation has come to mean many things in the western world. It can mean focus and attention on our work, or any worldly activity. It can mean transcendence, or it can mean transformation from one mental state to another, such as restlessness to dullness or distracted to one-pointed which is the meaning in this study. A main focus of this comparative study was to present the Yogsutra's five mental states and their progressive attention levels, which are actually stages of concentration. In Part Two Patanjali's presents principles of breath which help to establish concentration of mind along with methods and practices of meditation. This process in turn removes pain and suffering and brings stillness and awareness of consciousness to the mind.

## **Misconceptions about Yogasutra**

There are two misconceptions in the literature held by many scientists. Techniques presented in Yogsutra were mistakenly considered themethods for "suppression of thoughts". This could not be further from the truth. Concentration of any type at all is not possible without unrelated thoughts moving out of present consciousness. In yoga, we don't do that by suppression of thoughts. Another misconception is that Yogsutra is a manual for practicing yoga asanas. Patanjali talked about yoga, but yoga as integral system which is a tool for accomplishment – self-realization. In this paper we search for links between ancient wisdom of yoga and modern science and how they can complement each other.

## **Five States-Of-Mind**

The first set of constructs that characterizes the mind according to Patanjali's Yogsutra is stated in Sutra 1.2. +These are ksipta = restlessness; mudha = dullness; viksipta = distracted; ekagra = one-pointed, single-in-intent; nirodha = restricted or without thought (Aranya, 1981; Leggett 1990; Yeti 2009; Woods 1927).

# YOGSUTRA, FIVE STATES-OF-MIND AND THEIR QUALITIES

<b>Ksipta</b>	<b>Mudha</b>	<b>Viksipta</b>	<b>Ekagra</b>	<b>Nirodha</b>
RESTLESS	INFATUA-TION	DISTRAC-TED	ONE-POINTED	WITHOUT-THOUGHT
impulsive-ness	stupefied	changeable	single-in-intent	restrained thought / mental functions
attention wanders	absence of discrimination	lack of steadiness	unwavering attention	mind empty of thoughts
	confusion forgetfulness dullness inattentiveness drowsiness, sleep	temporary attention & absorption		consciousness alone

It should be noted that there is an underlying tone in the Yogsutra that continually leads the reader toward the aim of liberation and prevention, reduction and removing pain and misery through restoring of inner harmony.

Aranya (1981) stated that the restless kshiya condition of the mind does not allow one to have sufficient patience or intelligence to understand subtle, deep principles necessary for unification of mind. A transliteration of the Patanjali Yogsutra commentary by the famed ancient Indian sage Sankara of the first century B.C. has been made by Leggett (1990). Leggett’s translation of Sankara’s view, referred to the first state kshiya as impulsiveness, and stated that it remains unified, or sustains itself, as long as there is no interruption. Woods (1927) stated that the first state of restlessness kshiya and the second state of infatuation mudha, can never lead to a unity of the mind, and consequently can never lead to any long term removal of suffering. (Aranya 1981, p. 3; Leggett 1990, p. 51; Woods 1927, p. 3). Restlessness of the mind frequently shifts the content or context. Baers (1997) remarked that “it is the context that leads the mind from one conscious event to another” (p. 126). This triggering “context” can be of the nature of the external world, or it can be from memory, or internal world of the individual.

Tart (1986) wrote about identity states which he describes as a “unique configuration or system of psychological structure.” (p. 118). The nature of the pattern determines what one can and cannot do in a particular state. This would seem to come close to what Patanjali calls states-of-mind. In other words, the state-of-mind that one has, or holds determines the type and quality of understanding, unity of mind, and interactions one has with others. It also influences the type and quality of interpretation of information and materials. Psychology, according to Tart’s identity-states, describes a similar phenomenon as Patanjali’s mind-states (p. 123).

Yati (2009) commented on the five states-of-mind listed in the Yogsutra. He states that the first state kṣipta is the functional core of an individual's consciousness, and it is volatile. This view is comparable to Sankara's view of impulsiveness mentioned above. Yati described the Sanskrit term kṣipta as "the functional core of restlessness that causes the process of destruction and restructuring of internal changes in a person's pattern of existence" (p. 2). Yati spoke about each of the five states having a place in the natural shift of the five states-of-mind. There is a natural grouping of the two lower states of restlessness-kṣipta, and dullness-mudha, and a natural grouping among the other three states of distraction-vikṣipta, one-pointedness-ekagra, and without thought-nirodha state (p. 2-3).

### **Science of harmonious unity**

Yati further noted that a pattern of attention is transitory, and it can be momentary, or it can persist for a period of time. Simultaneously, the states of mind do not operate alone because there is a flow to consciousness. All of the mind states work together in a shifting way. The stretch of time where the mind experiences an ongoing flow, regardless in which state it is, would each one according to Yati, be considered a Samadhi because the operation of the principle of maintaining, or sustaining a particular mind state has occurred. Maintaining a particular mind state assumes the restriction of other states-of-mind (pp. 4-5).

Yati (2009) stated that the restricted aspect of mind automatically works as an intercepting agent holding back intervening and conflicting interests until the dominating interest is fully lived. If this function did not take place, there could be no attention or concentration to perform anything at all. Following the completion of the undisputed interest, the mind becomes satisfied, still, without thought, and attention is centered (pp. 3-4).

Ekagrata one-pointed, or the single-in-intent state-of-mind according to Yati (2009) is a moment of harmonious union, and he places a high value on this state of mind (pp. 3-4).

The overall aim of the Yogsutra text is to explain how to achieve state of liberation and bring about harmony and peace in one's life. In addressing the issue of long term removal of misery in the mind, Aranya (1981) stated that the mind is naturally restless, and that the momentary concentrated states of anger, lust, or infatuation are due to suppressed passions and desires. He further stated that when concentrations on the above emotions or objects of attention cease, distractions will again arise. This type of concentrated mind is addressed again in Part Two of the Yogsutras when the text presents methods and means of attaining and holding the one-pointed state of living-in-the-present. In essence, the mind must not be in conflict with itself; inner conflicts must be resolved. Aranya explains that the long lasting one-pointed state is the only state that leads to knowledge, harmony, and permanent removal of pain and suffering (p. 4).

Rao (2002) referred to Patanjali's states-of-mind as five levels of activity and attention. The first level is *ksipta* where attention wanders. The second level is *mudha*, the state of inattentiveness, or forgetfulness as in drowsiness or sleep. The third level is *vikshipta*, state of distracted steadiness, as when the mind gets temporarily absorbed in its object of attention. The mind at the fourth level *ekagra* gets fully and unwaveringly absorbed in the object of attention to the exclusion of other matters. In the fifth and final level, *nirodha* or *niruddha*, all mental functions are restrained and one experiences consciousness-as-such, undisturbed by any mental function (p. 204).

Leggett (1990) stated in his transliteration of the ancient sage Sankara's commentary that the pain experienced by the mind is an illness, and knowledge is the release of this pain (p. 51). In other words, the acquisition of knowledge brings a settled way of thinking about an issue. For example, a mother who is worried about the safety of her child, has a mind full of anxious thoughts. Upon learning that the child is safe, she no longer has the painful thoughts. The knowledge allows her to drop the anxious thoughts. Leggett (1990) stating Sankara's view, contended that in all five mental states, there is a quality of concentration taking place within the mind. Impulsiveness, the first mental state comes about by itself in the same way that an overfull granary bursts apart. The impulsive state remains steady as long as it does not encounter opposition. Dullness, the second mental state is characterized by confusion and the absence of discrimination. Changeableness or distraction, the third mental state, goes in various directions, and while concentration occurs, it does not last due to lack of steadiness. One-pointed, the fourth mental-state is a stream of similar thoughts such as when one is working out a complex problem. Inhibited or arrested thought, the fifth mental state, is a condition of mind empty of thoughts (p. 55-56).

In presenting the translation of Sankara, Leggett (1990) further stated that due to the common character of persistence, all of the mental states are a *samadhi* because each state is characterized by concentration and steadiness for the period that it persists. The states of attention, concentration, and *Samadhi* are a set of characteristics that bring about awareness, and they are also considered to be methods for transformation.

Woods (1927), a Harvard scholar, stated that the two states of mind known as restlessness and infatuation have nothing to do with yoga of the mind, and even the distracted state is overpowered by intervening content, so it also can hardly be considered to have a unity of the mind. Woods considered the single-in-intent or the one-pointed state of mind to be a yoga or a unified state because it is characterized by a concentration that gives illumination, or understanding of the value of an object or mental content. A one-pointed mind simultaneously causes hindrances and interferences to drop away. Single-in-intent concentration is accompanied by meditation of an object or mental content, so it is considered to be a *Samadhi*. When subtler state of meditation ensues, a deeper stage of *Samadhi* occurs. Woods stated that understanding the *Samadhi* concentrations is a way to understand the operational principles of the mind. He stated that when all

movements of the mind are restricted, there is no consciousness of any object or mind content, and this is one of the states of Samadhi (pp. 3-4). The stages and states of Samadhi will be delineated at a later time.

Levine (1979/1989) contended that states-of-mind generally recognized in mainstream psychology are attitudes, predominant emotions, or moods that act like filters coloring the thoughts and sensations that enter the mind. In other words, states-of-mind in mainstream psychology are like ways of seeing and interpreting experiences. This is in complete agreement with the mind-states as presented by Patanjali. To this writer, it would seem that different attitudes and moods identified by Western mainstream psychology fit respectively into Patanjali's five states-of-mind, and further research into this phenomena could be very interesting. Each of the five mind-states, which also could be called levels-of-attention, brings forth its own attitudes, moods, and interpretations that color thoughts and sensations about an action, phenomena, or knowledge. This includes mental attitudes of all types related to wholesome and unwholesome thinking (p. 26-27; 41-42).

Ajaya (1997) asserted a very meaningful example of how foods can affect the mind state. Restlessness and dullness are created by ingesting the type of foods that disturb both body and mind. In the case of restlessness *ksipta*, it is caused by stimulants and additives (*rajasic* foods) that remain in the body and cause a type of hyperactivity. In the case of dullness *mudha*, it is caused by stale, old items (*tamasic* foods) that increase lethargy. Both hyperactivity and lethargy are chemical imbalances (p. 189-190). These types of issues are relevant for mind-body medicine.

### **States of consciousness and contemporary practice**

This presentation of Patanjali's Yogsutra states-of-mind brings this material in an updated way to make it more relevant for mainstream psychology. It is additional material relative to the way that the West views the mind, and it is exactly that point which makes it a credible contemplation for newer insights about the human mind. Taking a view of the mind through this lens of Eastern psychology of the Yogsutra can make it possible to develop more holistic interventions and therapies for healing in this millennium of mind-body medicine.

Considering society's increasing need for psychological interventions as previously stated, it is very appropriate to explore ancient systems of understanding the mind, especially those containing capabilities and methods for removing pain and suffering. The Yogsutra is full of terminology that embraces psychological concepts and suggestions. This study touches only the tip of the iceberg because the vastness and depth of psychological principles develops progressively in the Yogsutra.

Turning now to the ever growing phenomena of ADD and ADHD, these disorders seem like prime examples of the first two mind-states of restlessness and dullness. If these states are seen as stages in the flow of consciousness, possibly it



will leave room for new types of therapy interventions. By this is meant the way the mind is viewed according to ability to concentrate, and it includes diet and food interventions which to a small degree the West is starting to use. If a person with ADD is able to advance from restlessness and dullness to the mind-state of distraction in the Yogsutra levels of attention, that would be considered a big success. Considering the disorder of schizophrenia, the five mind-states may very well have relevancy for developing methods to restore focus and attention to the mind.

### **Applicability and benefits**

Nearly anyone can identify a personal state of mind according to the Yogsutra categories of restless, dull, distracted, single-in-intent, and without thought. This awareness can help a person increase self-acceptance, and at the same time gain knowledge about other mental states that are integral to the flow of consciousness. For example, “How is the one-pointed state of mind acquired?” There are of course many ways to focus the mind and make it one-pointed, and every person has different preferences. Some obvious examples are focusing on work, playing volleyball, reflection, breathing practices, and any number of inner meditations prepares the mind for focus on other things in life. All of these require attention and focus of mind. Placement of the five basic states-of-mind into mainstream psychology would make the five core psychological constructs more accessible to the Western psychological mind and practice. It provides rich material for further research by social scientists, persons engaged in self-study, and others. Typically the Yogsutra is seen as a spiritual text, but through an investigation of the constructs in the light of psychology, it gives a new dimension of usefulness to the material.

Humanistic and educational psychologies are significantly related to the principles contained in the Yogsutra because they deal with awareness, states of consciousness, and dimensions of the mind. Using this framework, there is plenty of room for including Patanjali’s five states-of-mind into the field of humanistic psychology, and into the evolving transpersonal and transformational psychologies.

### **Conclusion**

In order to draw attention to the new ways of perception of some growing psycho-physiological health problems, patterns titled “five states of mind” can easily be connected to some of the contemporary psychological disorders. According to that, useful steps towards the change and transformation may be derived from this ancient model of knowledge about psychological health and wellbeing. Theorists of social sciences and many others can use this knowledge in order to develop strategies for help to people with attention disorders, traumas and other mental pains, with the aim of their normal functioning. Psychology as a

social science continues its researches toward deeper understanding of the principles of mind. Neurology advances in this direction, but there is a need for much more researches. Through recorded history, written testimonies speak about humans' search not only for attaining self-reflection, as presented by the ancient Greek saying: "Know yourself", but also about the search for the patterns of attaining harmony and personal peace of mind through the processes of improvement the knowledge about self. Yoga Sutra is a line of 200 progressively added sutra's that may be perceived as the patterns of our psychological nature. They make a frame for development of concepts and interventions that will go in direction of the self-research and healing that will not simply cover up the symptoms, but will help to turn back harmony of the soul.

### References:

1. Ajaya, S. (1997): Psychotherapy east and west. Pennsylvania: Himalayan Institute
2. Aranya, S.H. (1981): Yoga philosophy of Patanjali. Albany: State University New York Press.
3. Bentz, V.M. & Shapiro, J.J. (1998): Comparative historical inquiry and theoretical inquiry. In *Mindful inquiry in social research*. Thousand Oaks, CA: Sage.
4. Bharati, S.V. (2001/2004): Yoga Sutras of Patanjali, vol 2, Sadhana-Pada. Delhi: Motilal Banarsidass.
5. Creswell, J. (2003): Research Design. Thousand Oaks, CA: Sage.
6. Creswell, J.W. (2007): Five qualitative approaches to inquiry. In *Qualitative inquiry & research design: Choosing among five approaches*. Thousand Oaks, CA: Sage Publications.
7. Ingleby, D. (1995): Problems in the study of interplay between science and culture. In N.R. Golderberger & J.B. Veroff (Eds), *The culture and psychology reader*. New York: NY University Press.
8. Larson, G.J. & Bhattacharya, R.S. (Eds.) (1987): *Samkhya: A dualist tradition in Indian philosophy*. Princeton, NJ: Princeton University Press.
9. Leggett, T. (1990): Sankara on the Yoga Sutras: A full translation of the newly discovered text. Delhi, India: Motilal Banarsidass.
10. Locke, L.F., Spirduso, W.W., & Silverman, S.J. (2000): *Proposals that work: Guide for planning dissertations and grant proposals* (4th Ed.) Thousand Oaks, CA: Sage.
11. Marecek, J. (2003): Dancing through minefields: Toward a qualitative stance in psychology. In P.M. Camic, J.E. Rhodes, & L. Yardley (Eds.) *Qualitative research in psychology: Expanding perspectives in methodology and design*. Washington, D.C.: American Psychological Association.
12. Rao, K. (2002/1932): *Consciousness studies: Cross-cultural perspectives*. Jefferson, NC: McFarland.
13. Robson, C. (2002): *Real world research* (2nd Ed.). Malden, MA: Blackwell.
14. Tart, C.T. (1986): *Waking up: Overcoming the obstacles to human potential*. Boston: Shambala.
15. Taylor, E.I. (1999): Archival investigation. In M.A. Runco & S.R. Pritzker (Eds.), *Encyclopedia of Creativity*. (Vol. 1, pp. 91-97). New York: Academic Press.
16. Whicher, I. (2002): *Integrity of the yoga darsana*. New York: NY State University.
17. Wilber, K. (2004): *The simple feeling of simple being*. Boston: Shambala.
18. Woods, J.H. (1927): *The Yoga Sutras of Patanjali*. Mineola, NY: Dover. (Original work published 1914.).
19. Yati, N.C. (2009): *Living the science of harmonious union*. New Delhi: Printworks.

**Rada Petrović, BA in Art History**

## **PRESENCE OF YOGA IN ART**

***Summary:** Yoga is a philosophical system which has left its trails over the centuries in different areas of life. The art is no exception either. Art sculptures, drawings, graphics tell about artistic tendencies of the moment in which they originated, tainted with philosophy of life of the region that brought forth the Yoga itself. Tantra Yoga perceives sexuality as the possibility of achieving the enlightenment. In this paper the appearance of love couples in reliefs and sculptures on several temples in India (Khajurako, Konarak, Puri) will be dealt with. The plastic (the sculptures) on these temples represent an important phase in the development of the art in India, which points out to the historical moment and the cultural phenomenon regarding the sexuality which comes from Yoga. In this paper a deeper meaning of erotic sculptures is investigated which is expressed more comprehensive on the temples in India than anywhere else in the world. The presence of metaphysics in India's culture is referred to, which provides a large space for expressing the polarity of the male and the female principle in their eternal mutual play and the strive for the unity and achieving the deeper spiritual experience which is offered by Yoga. Within this context the sexual intercourse is not considered only as a strong act of desire but rather as something which also has a more profound level of cosmological conception, and it is the reminder of the cosmic creative act.*

**Keywords:** art, yoga, sexuality, Tantra yoga

### **Introduction**

Parallelism between sexuality, philosophical consideration of the Universe and religious dogmas is the key feature of the experience of India. In mythology and cosmogony of India, there existed a tendency to represent this presence as a symbol of divine manifestation or as an act of outgrowing of this practice into a meditative praxis. In the experience of Tantra, which originated from Yoga, there is the intention towards deeper meaning of sexual symbolism and towards the experience which as its goal has the transformation of the human being. Tantra does not negate, it does not cancel the strongest primary sexual energy but accepts it as a powerful creative force which has the power to transform, and through this transformation to direct the human being towards the higher experience of existence. Through integration of strongly present sexuality, which was already present in folk tradition, the Tantric practice tends to direct this powerful, basic energy, which sets in motion everything, as well as the existence itself, towards the mystical experience. Now the question arises which ideals were the motives for

decorating entire temples with reliefs and the plastic that had very explicit scenes of love couples in most diverse positions.

Everything that exists within the cosmic order is understood as a manifestation which comes from the embrace of divine couples, so that very often we can see, in the iconography of various schools, and as a regular depiction, the divinities accompanied by their shaktis or in embrace with them. In the epos Vamadevyā, one of the earliest texts, ritual chants are represented through a corresponding number of coital positions.

Thus yoni and lingam become symbols of the creation of the world. Between lingam and yoni there is a correlation, they cannot do without each other. Masculine organ (lingam) corresponds to the secret part of the goddess (yoni). Through transcendental interpretation the lingam loses its literal meaning and becomes the symbol of divine completeness, that is, of the efficiency, from which everything emerges and into which everything returns. Through the act of the worship of lingam one tends to acquire knowledge of the divine principle of creation. In the context of the powerful symbolic which is related to the lingam, there existed regular rituals (for example, washing, applying butter) with the goal to transform the symbolic act of devotion into the meditation. The lingam is often, in some schools, represented as Shiva and as a symbol of his creative power. Through representing it as the penis erectus, the presence of governing over senses is emphasized, which above all is a divine aspect.

Through development of symbolism, the sexuality of yoni is characterized as a wavy motion of cosmic waters with unlimited possibilities of existence. On plastic decoration of the temples in India we can see sculptures of gods and goddesses in overtly sensual sexual positions where the ample roundness through which the presence of pulsating life energy is emphasized. Figures which were displayed with so much openness and sincerity, as never and nowhere before, surely did set the imagination of the observer into motion and aroused various sensations in him/her. Thus different schools within Tantrism interpreted these depictions, this symbolism in different manners, this symbolic, as for example in some schools of “the left path”, where everything is grasped literally and where allegory and real practice are often intertwined.

Regardless of what kind of interpretation is appropriated, images of divine couples are always clear in their representation. Instinctual human passion is unambiguously depicted; it is not negated but its strength is rather appropriated, used and redirected within the process of transformation in the direction of growth and the development as the meaning of life. Vividness of the figures on the temples in India is a powerful trigger for putting in motion of observer’s imagination, either these depictions are interpreted as literal representation through which a transformation follows, or they refer to meditative passing through that experience when figures are interpreted as symbols of living through of the mystical experience of transformation.

It is an important fact that sexuality, as extremely strong life drive has found its expression and integrated itself within the spiritual experience of India, which is hardly to be said for the spiritual practice anywhere in the world. Instinctual life energy is not canceled here, it is not negated, but tends to be governed and redirected towards the higher spheres of the existence. In passing through love experience, love couple pays its respect and in fact strives towards the experience of the divine love couple (Shiva and Shakti, Krishna and Rada), where life is an expression of their eternal love play in accordance with the interpretation of Indian cosmogony. One level of interpretation of the sculptures displayed in their actual immediacy and openness would surely be that the life is the creation, motion, eternal play, but there is certainly also a deeper, hidden level of interpretation which was not easily accessible and was not just for everyone. Similar as in Western gnosis, or alchemy, where we can come to a solution solely through correct interpretation of the symbols, here also a key for correct interpretation is needed. Hidden language of expressing, as we can see in the Upanishads, speaks about the spirit of time, and surely influenced the manner of expressing which was present in Tantras. Therefore, symbolic way of expression had as its aim to protect the true knowledge and to make it hard to access with regard to curious people and those who were not ready for that path. Tantras, in their enthusiasm for passionate depictions of love couples provided the possibility of such an interpretation which could easily slip into a practice which has only erotic attitude, an empty debauchery, in absence of correct Gnostic interpretation and solving of the hidden language. Here also the rule was in power, as in most of Gnostic schools, that the disciple who intends to be initiated, passes a long way of devotion to his/her master, the temptation, devotion to the practice, meditation, and thus goes along the path on which he/she affirms his/her qualities and worthiness of being introduced into a true knowledge. The key for interpretation of tantric texts which describes certain actions (practice) which the disciple carries out is the knowing of the language and the techniques of Yoga. Reading of texts which teach tantric practice might be shocking for an inexperienced reader. Tantra, as the practice which emerged from Yoga, uses same expressions such as the word position (asana) while describing the love position. In the practice of Yoga we have asanas as positions of the body. In both cases the body is a tool in the process of transformation.

Vividness of depictions and artistic beauty of the decorations, as well as the texts of tantric schools, could not remain immune to literal interpretation of displayed and described scenes, so the constant encounter of the profane and the esoteric is present. Natural instinctual force which initiates the mating of the love couple each time becomes for a moment the place of living through of the divine experience, of the bliss of returning into the One. The experience of the bliss of dissolving the limits, depending of how one approaches the act itself, can be only the consequence of the instinctual force within the human being or the conscious experience lifted up to the level of the transcendental, with the wish to prolong the

state of the mystical experience to the point of total transformation, to the state of ananda.

On the plastic of tantric artistic depictions of the temples in India there dominate bodies of love couples, gods and goddesses, which pulsate in life force with an aspiration to transmit religious, spiritual message in the language which has the strong erotic foundation within itself. The authors freely, openly provide their sculptures with ample depictions and combinations of couples.

In the art of tantra and in the tantric practice the female is an active agent, which cannot be said for spiritual practices in regions which are outside of the spiritual experience of India. In Yoga practice the female does not have the prohibition of practicing positions, meditation, and spiritual practice in general. The female thus becomes an inseparable part of the process of transformation through Tantra as a Yoga discipline. The principle of existing of the living beings and everything in general through bipolarity has in its foundation an everlasting desire towards the union into the One, through dynamics which does not negate this bipolarity. Yoga offers the possibility of transformation of the instinctual life force into the means of transcendence.

peculiarity of India's spiritual and religious contribution to world's cultural heritage is that it integrated, in a rather special way, the force of life, the strength of the libido and the sexuality in the process of eternal life cycle of creation. Sexual charge in spiritual practice of India is integrated through the symbolic of the lingam and the yoni, through the symbolism of the love couple into the symbol of the eternity of life. It is only with the appearance and development of the psychoanalysis that in the West the importance of the libido is introduced into the field of the consciousness as the driving life force, in contrast to India where it found its expression centuries ago in spiritual artistic practice, overcoming the level of basic instincts, elevating itself to the level of the cosmic creative act. Contemporary age offers the dilemma of the correct understanding of the texts of Kama Sutra without entering the pornographic experience of the sexuality.

The area of artistic expression, considered historically, regardless what geographical region or time period it belongs, very often had included elements of real life depending on the period to which it belongs and on the spirit of the time itself. Constant energetic charge between masculine and feminine principle, present as a strong expression in the life of every human being, is integrated through artistic expression of the sculptures on particular temples in India. Here eroticism of the expression is not the purpose for itself, but it depicts the elements of strong life pulsation, the area of life activity and interest, lifted to the artistic level of expression. Artistic expression has always had the elements of intertwining with actual reality regardless of which epoch we speak about. Thus, here also we have the integration of the life fact with the desire to induce the strive towards higher spiritual and aesthetic experience.

## Conclusion

Tantra Yoga teaches that in the process of searching and striving for redemption there is no need for any desire to remain hidden, because everything that is given to the human being as an aspect of the existence may become the possibility for knowing the divine. Life and sexuality are inseparable. Sexuality gives both the physical life and the possibility of birth on the higher spiritual level through transformation of the same foundational energy. No matter how open and free are the sculptural scenes on the temples in India, the correct interpretation and understanding requires a bit of the closeness to tantric esoteric knowledge through Yoga, from whose techniques of the control of breath, meditation, practicing of body positions the tantra itself emerged. Therefore, in this paper the tantric figures are viewed as the symbols in which tantric cosmology is pronounced, and the creative energy represented in intertwining of male and female sexuality. These symbols tell us about eternal creative principle. Our task is to read these everlasting messages of the wisdom of Yoga.

## References:

1. Mulk Raj Ananda (1968): Kama Kala, Otokar Keršovani, Rijeka.
2. Giuseppe Tucci (1970): Rati Lila, Otokar Keršovani, Rijeka.
3. Robert A. Yelle (2003): Explaining mantras: Ritual, Rhetoric, and the Dream of a Natural Language in Hindu Tantra (Religion in History, Society and Culture), Routledge, London and New York.
4. Shobita Punja (2000): Khajuraho: The first thousand years, Penguin Books India, New Delhi.
5. Philip Rawson (1978): The art of tantra, Oxford university press, UK.
6. [www.yogasavezsrbije.com](http://www.yogasavezsrbije.com) (pristup 28.05.2010.)

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## **NORMALIZATION OF THE BLOOD PRESSURE WITH YOGA**

**Summary:** *One of the most common health disorders today is hypertension or high blood pressure. It happens when the pressure in blood vessels is higher than normal expected values for age and sex. In this paper we search if yoga can be efficient method for normalization of the blood pressure. Different studies conducted by Datey, Madanmohan, Vijayalakshmi, Patel, Murugesan and Selvamurthy has shown that potential of yoga is efficient preventive method and supporting therapy in normalization of the high blood pressure.*

**Key words:** *blood pressure, yoga, stress, hypertension.*

### **Uvod**

Hypertension may be diagnosed properly only after taking several readings. Doctors know that blood pressure needs to be measured at least two times, and each measurement must be taken on a different day. If the average of these blood pressure readings is more than 140/90, hypertension can be diagnosed. A single measurement of the blood pressure that is more than 140/90 doesn't necessarily confirm hypertension but requires further monitoring.

The primary cause of the hypertension is not unidentifiable in 90% of patients, hence known as "primary" or "essential" hypertension. Most of these patients have no clue to their condition as there may not be any symptoms – giving it the name "the silent killer." Even when symptoms are noticeable they are vague like blurred vision, dizziness, headache, and nausea. Unfortunately, by that time, serious damage may have already occurred in blood vessels, heart, eyes, brain, or kidneys.

In less than 10%, the cause of the hypertension is known, so it is called secondary hypertension. Conditions that can cause secondary hypertension include preeclampsia (hypertension in pregnancy), endocrine disorders, coarctation of the aorta, kidney disease, sleep apnea and medication such as birth control pills.

Risk factors for hypertension include being overweight, having diabetes, being a male over the age of 45 (or a female over 55), being of African American descent and eating a lot of salty foods. Hypertension is worsened by smoking, excessive alcohol consumption, prolonged and poorly managed stress, a diet high in fat and /or salt and lack of exercise. Surprisingly, many medical practitioners start their patients on antihypertensive medication after taking just a single isolated



reading. This is quite disheartening for once you start someone on anti-hypertensives, it is usually a lifelong affair. The baseline understanding to be developed is that you need to be checked at least on two or more different occasions before starting medication.

### **Risks associated with hypertension**

Health problems in the hypertensive don't occur over days, weeks, or even months but are rather found to occur over many years and affects nearly every part of the human body. By adding strain to walls of the blood vessels, hypertension makes them more likely to develop atherosclerosis with a buildup of fat and cholesterol and "hardening" of arteries that in turn puts extra strain on the heart as it pumps blood through the narrowed arteries. Over time this increases the risk of heart disease, stroke, heart attack as well as eye and kidney damage.

### **Managing a Patient of Hypertension**

The initial strategy in managing hypertension should always include a dynamic advocacy of lifestyle changes. However in patients whose BP is extremely high, medications will need to be taken along with other interventions until the condition stabilizes. The aim should be to lower the blood pressure as close to the normal range as possible. Many therapists seem to forget that lifestyle changes are the first step in hypertension treatment. These changes can also help improve the quality of the patient's life as well. We shouldn't be impatient as it may take three to six months before full benefits of lifestyle modifications begin to manifest. These lifestyle modifications include exercising regularly, losing weight, reducing salt consumption, changing over to a heart healthy diet and drinking less alcohol. We must always remember that the control of hypertension requires a lifelong commitment irrespective of whether medications are used or not.

### **Adoption of a yogic way of life**

Tiruvalluvar says in his 1330 versed "Tirukkural", a treatise on right living, "If you look for disease, look for the primary cause of it and then treat it" (*noinaadi noimudhal naadi athuthanikkum vaai naadi vaippach cheyal-Tirukkural 948*).

Yoga enables the individual to attain and maintain a dynamic sukha sthanam that may be defined as a dynamic sense of physical, mental and spiritual well being. The Bhagavad Gita defines yoga as samatvam meaning thereby that yoga is equanimity at all levels (*yogasthah kurukarmani sangam tyaktva dhananjaya siddiyasidhyoh samobutva samatvam yoga uchyate – Bhagavad Gita II: 48*). This may be also understood as a perfect state of health wherein physical homeostasis and mental equanimity occur in a balanced and healthy harmony.

## **Cultivation of right values and attitudes**

The most important part of managing hypertension is cultivation of right attitudes by the development of yogic attitudes towards every part of life. This is vital to reduce the stress that is more often an inner over-reaction than the response to any external stimuli. The attainment of clarity of mind (chitta prasadhanam) through the attitudes extolled by Maharishi Patanjali (maitri, karuna, mudita, upekshanam) is to be inculcated by the therapist. The importance of taking the opposite view towards negative thoughts and actions (pratipaksha bhavanam) as well as emphasis on the cultivation of Karma Yoga, Raja Yoga and Bhakti Yoga principles in daily life.

## **Healthy Heart Friendly Diet**

It should be suggested to patients to eat small meals and there should be adequate amounts of green vegetable salads, fresh fruit juices and sprouts. There should be the minimum possible amount of salt in the diet as salt leads to water retention and a rise in BP. The diet should have adequate potassium and calcium that are present in fruits and low fat dairy products. They help to reduce the BP and fruits are also an excellent laxative too. It is important to maintain good hydration and therapists need to stress the fact that a loss of a few kilos of body weight will help reduce blood pressure.

## **Breath-Body Movement Coordination Practices**

Practices that enhance mind-body harmony through the use of “breath linked movements” should be emphasized. Sukshma Vyayama and Sheetalikarana Vyayama practices as well as the enjoyable Jathis of the Gitananda tradition, meditative practice of the Surya Mantras are useful in this regard. Mentioned asanas, when done slowly harmonized with breath and attention on strategic places and with meditative awareness can also produce psychosomatic harmony.

## **Yoga Asanas**

Modified versions of the following asanas as per physical condition and other associated health problems of the patient may be used. Standing postures such as: Tada Asana, Trikona Asana, Padottana Asana, Hasthapada Asana, Padangushta Asana and Mehru Asana are useful. Prone postures that are of benefit include: Bhujanga Asana and Ardha Shalaba Asana while useful sitting postures include Vakra Asana, Gomuka Asana, Ushtra Asana, Shashaha Asana and Yoga Mudra Asana. The supine postures include Matsya Asana (variations I and II), Pavana Mukta Asana and Eka and Dwipada Uttanpada Asana. Topsy Turvy (inverted) postures may help in resetting baroreceptor reflex mechanisms that regulate blood pressure. This may also be achieved by the ‘head-below-heart’

postures that can do the same if the patient cannot do inverted postures like Sarvanga Asana and Sethubanda Sarvanga Asana.

### **Yoga pranayamas**

Vibhaga and Pranava Pranayama with emphasis on Madhyam Pranayama are beneficial as also Chandra Bhedana and Chandra Nadi Pranayamas that help reduce sympathetic over activity. Savitri, Nadi Shuddhi (Aloma Viloma in the Gitananda tradition) and Bhramari Pranayama are excellent practices to reduce stress. The cooling Pranayamas such as Sheetal and Sitkari also produce a sense of relaxation.

**Shat Kriyas:** For patients who are able to do them, cleansing practices such as Jala Neti and Trataka clear up the head and neck region. They produce a sense of lightness by reducing toxic accumulation in this region.

**Mudras:** Viparita Karani, Shanmuki Mudra and Brahma Mudra are all useful in various ways. Viparita Karani helps by virtue of being ‘head-below-heart’ and also has a profound effect on the psycho-neuro-endocrine axis. Shanmuki Mudra produces a sense of inner calm while Brahma Mudra by virtue of working with breath and vibration (Nada) induces a sense of relaxation and reinvigoration in the head and neck region that reduces stress and normalizes the reflex mechanisms.

### **Yogic Relaxation**

Hatha Yoga Relaxation practices that can be done from Shavasana include Spandha Nishpandha Kriya (alternate tension and relaxation), Marmanasthanam Kriya (part by part relaxation) and Kaya Kriya (dynamic body relaxation). Jnana Yoga relaxation practices such as Anuloma Viloma Kriya and Yoga Nidra can help reduce stress levels and create psychosomatic harmony. Even simple Makara Asana offers an excellent antidote to stress and benefits the patients of all psychosomatic disorders.

### **Dharana and Dhyana**

Concentrative practices that induce a state of meditation include the popular Om Japa and Ajapa Japa. Chakra Dhyana is another useful practice while Mandala Dharana may be done on all Chakras with special emphasis on Anahata Chakra to harmonize Prana Vayu that is based in the heart region.

### **Yogic counseling**

This is a vital component of Yoga Chikitsa when dealing with any lifestyle disorder. Yoga is basically a preventive life-science (*heyam dukhkam anagatham-Yoga Darshan II: 16*). The counseling process is not a ‘one off’ matter but is a

continuous process that starts from the very first visit and continues with every session at different levels.

## Conclusion

Helping the patient understand their condition, finding the root cause of the problem and creating a healthy opportunity for them to change themselves, is the Dharma of the therapist. Yogacharini Meenakshi Devi Bhavanani has defined Dharma as doing the right thing for the right person at the right place and at the right time in the right manner. It may take many months before we start to witness benefits of these yogic lifestyle changes and Yoga Chikitsa practices. We must continue to motivate the patient to keep working on harmony of their mind, emotions and body. It all may seem to be a ‘big ask’, but it is necessary to do all of this if we want inner change that will help to overcome hypertension and help an individual to live in harmony with his/her inner potentials.

## References:

1. Bhavanani Ananda Balayogi. A Primer of Yoga Theory. Dhivyananda Creations, Iyyanar Nagar, Pondicherry. 2008.
2. Bhavanani Ananda Balayogi. Yoga Therapy Notes. Dhivyananda Creations, Iyyanar Nagar, Pondicherry. 2007
3. Katarinen MJ, Puska PM, Korhonen MH, et al. Non-pharmacological treatment of hypertension in primary health care: A 2-year open randomized controlled trial of lifestyle intervention against hypertension in eastern Finland. *J Hypertens.* 2002;20:2505-2512.
4. Murugesan R, Govindarajulu N, Bera TK. Effect of selected yogic practices on the management of hypertension. *Indian J Physiol Pharmacol* 2000; 44(2): 207–210.
5. Norman M. Kaplan. Lifestyle modifications for prevention and treatment of hypertension. *J Clin Hypertens* 6(12):716-719, 2004.

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## **APPLICATION OF YOGA CONCEPT IN THE HEALTH IMPROVEMENT**

**Summary:** *Different yoga techniques can be used as a support in healing disorders, i.e. in bringing health back, in regeneration, recovering and rehabilitation. In this paper we research effects of accepting yoga as a life philosophy, but also effects of yoga practice. Results show that yoga can be recognized as efficient method in medical prevention, in overcoming different disorders, as well as in rehabilitation. Connection of modern medical praxis and yoga practice give extraordinary results and can be perceived as a serious proposal for the further medical orientation.*

**Key words:** *yoga, yoga concept, health improvement, yoga sutras.*

Yoga is a spiritual science for the integrated and holistic development of our physical, mental and moral-spiritual aspects of being. The philosophy of yoga is practical and applicable in our day-to-day living. Yoga has been documented to normalise physiological function and recent advances in the field of research have shown that it has sound scientific basis. Yoga is first and foremost a **moksha shastra** meant to facilitate the individual to attain the final freedom, liberation. One of the important by-products of the yogic way of living is attainment of health and well being. This is brought about by right-use-ness of the body, emotions and mind with awareness and consciousness. This must be understood to be as healthy a dynamic state that may be attained in spite of the individual's **sabija karma** (genetic predispositions) and the environment into which they are born. For thousands years, yoga and Indian medical systems consider health to be important precondition for spiritual growth. The definition of asana given in the Yoga Sutra as **sthira sukham** implies the state of steady well being at all levels of existence (*sthira sukham asanam- Yoga Darshan II:46*).

Through the practice of asana we can attain a state that is beyond dualities leading to a calm and serene state of well being (*tato dvandva anabhighata - Yoga Darshan II: 48*).

Practicing yoga techniques may help to correct the physical ailments. Health disorders can be perceived in phases as they appear:

### 1) Phase of psychic manifestation and yoga practice contribution

This phase is marked by mild but persistent behavioural symptoms of stress like irritability, disturbed sleep and other minor symptoms. This phase can be correlated with **vijnanamaya** and **manomaya** koshas. Practicing yoga techniques (asana, pranayama, dharana, dyana, kriya, mudra, bandha) in this phase is very efficient. Health condition normalizes and sleep becomes regular, deep and refreshing.

### 2) Psychosomatic Phase

If disorder continues, there is an increase in symptoms. Physiological symptoms are characterize this phase. Appearance of occasional hypertension and tremors is directly correlated with manomaya and pranamaya koshas. In this phase, techniques of pranayama (energy control through breathing) are very effective.

### 3) Somatic Phase

This phase is marked by disturbed function of organs. At this stage one begins to identify the diseased state. This phase can be correlated with pranamaya and annamaya koshas. Yoga as a therapy is less effective in this phase and may need to be used in conjunction with other methods of treatment.

### 4) Organic Phase

This phase is marked by full manifestation of the diseased state, with pathological changes such as an ulcerated stomach or chronic hypertension, becoming manifest in their totality with their resultant complications. This phase can be correlated with the annamaya kosha as the disease has become fixed in the physical body. Yoga as a therapy in this phase, in cooperation with a medical doctor, has a palliative and quality of life improving effect. It does also produce positive emotional and psychological effects even in terminal and end of life situations.

Often, however, the early stages of the disease process are overlooked and the final stage is seen as an entity unto itself, having little relationship to one's living habits and cognitive-affective patterns of the patient. This is because modern medicine only looks at the physical aspects and neglects effects of **pancha kosha** and **trisharira** on health and disease.

In order to create an environment conducive to the development of healthy and happy individual and to prevent the lifestyle disorders that are threatening humankind, there would be considered technology and methodology that yoga offers through many practical 'day-to-day' methods of action. Some of these tools for positive health are as follows.

## **Awareness of body, emotions and mind**

Development of awareness is a starting point of yoga philosophy and practice. Awareness brings direct insight, light of knowledge (vidya) and health. Awareness is present in every activity. In practicing asanas (exercises), breathing is synchronized with movement and concentrated attention. Development of awareness is a process. Today, this yoga technique is present in all schools of psychotherapy and in almost every newer concept of intelligence.

## **Improvement of dietary habits**

Most disorders are directly or indirectly linked to improper dietary patterns. Presence of awareness in adoption of the dietary patterns is very important. It shows that individual is aware of importance of his/her health condition and that he/she expresses tendency to actively participate in health creation, by adopting new habits.

## **Physical and mental relaxation**

Relaxation is most often all that most patients need in order to improve their physical condition. Stress is the major culprit and may be the causative, aggravating, or precipitating factor in many psychosomatic disorders. Doctors are often found telling their patients to relax, but never tell them how to do that. Yoga relaxation part of every yoga session is most important for it is during it that benefit of practices done in the session seep into each and every cell producing rest, rejuvenation, reinvigoration and reintegration.

## **Yoga pranayama techniques**

Rapid, uncontrolled, irregular breathing is a sign of illness. Slow, deep and regular controlled breathing is a sign of health. Breath is the link between body and mind and is the agent of physical, physiological and mental unification. When breath is slowed down, metabolic processes are also slowed. That is the moment for renovation, healing and rebuilding. If breath is calm, mind is calm and life is long.

## **Pratyahara (awareness and separation from the sensory impressions)**

To bring the agitated mind under control, and take it on a journey into our inner being is fundamental in finding a way out of the ‘disease maze’ in which patient is entangled like a fly in the spider’s web. Breath work and sensory control are the base of the yoga training of mind. It is conducted with the yoga master guidance.

## **Yoga and types of prana**

Yoga considers reality to be made of energies. Prana is life and without it there cannot be healing. There are different types of prana and each of them is responsible for regular functioning of the certain physiological functions and regions. In patients of digestive disorders, focus must be on the samana vayu whereas in pelvic conditions it needs to be on apana vayu. The fifth chapter of the Hathayoga Pradipika has a detailed analysis of various malfunctions of the vayu and their correction.

## **Improvement of the stress amortization**

Yoga practitioners note that development of awareness improves resistance towards different stressors. Yoga practice is pragmatic. When face to face with the innumerable thorns in a forest, one may either choose to spend all their time picking them up one by one while other thorns continue falling or choose to wear a pair of shoes and walk through the forest. The difference is in attitude. Choosing the right attitude can change everything and bring about a resolution of the problem by healing the core.

## **Yoga practice strengthens self-confidence**

Life is full of challenges that are there only to make us stronger and better. The challenges should be understood as opportunities for change and faced with confidence. Yoga practitioners learn that they have the inner power to overcome each and every challenge. We never get challenges that are beyond our capacity.

## **Facilitate natural emanation of wastes**

Natural emanation of waste from the body is very important and it is attained by practicing shuddi kriyas like dhauti, basti and neti. Accumulation and stagnation of waste materials either in inner or outer environment always causes problems. Yogic cleaning practices help wash out impurities (mala shodhana) thus helping the process of regeneration and facilitating healing.

## **Taking responsibility for personal health**

Patient should understand that ultimately it is him/her who is responsible for his/her own health and well being and must take the initiative to develop health. Yoga fixes responsibility for our health squarely upon our own shoulders and gives us chance to actively participate in our health improvement. If we do healthy things we are healthy and if we do unhealthy things we become sick. No use complaining that we are not well when we have been the cause of our problem.



As Swamiji Gitananda Giri would say: “You don’t have problems - you are the problem.”

### **Health and happiness are your birthright**

Health and happiness are your birthright, claim them and develop them to your maximum potential. Yoga helps in regainin the birthrights and attaining the goal of human life. The art and science of yoga has infinite possibilities for providing answers to most health problems troubling modern humankind. However we often misunderstand this science and want it to be a miracle pill. A pill that we take only once, and want all the problems to vanish into thin air.

### **Conclusion**

Yoga is a wholistic science and must be learnt and practiced with a holistic view. Dedicated practice of Yoga as a way of life is no doubt a good recommendation to medical prevention but also a yoga therapy. It is very important that, along with practicing asanas, individual adopt stated yoga principles and help patients to understand them and integrate them into their lifes. Yoga doesn’t have to be a method for resolving symptoms, but serious proposal for prevention as well as goor method in the process of healing and rehabilitation.

### **References:**

1. *A Primer of Yoga Theory*. Dr. Ananda Balayogi Bhavanani. Dhivyananda Creations, Iyyanar Nagar, Pondicherry. 2008.
2. *Yoga Therapy Notes*. Dr Ananda Balayogi Bhavanani. Dhivyananda Creations, Iyyanar Nagar, Pondicherry. 2007
3. *Four Chapters on Freedom*. Commentary on Yoga Sutras of Patanjali by Swami Satyananda Saraswathi, Bihar School of Yoga, Munger, India. 1999
4. Back issues of *International Journal of Yoga Therapy*. Journal of the International Association of Yoga Therapists, USA. [www.iayt.org](http://www.iayt.org)
5. Back issues of *Yoga Life*, Monthly Journal of ICYER at Ananda Ashram, Pondicherry. [www.icyer.com](http://www.icyer.com)
6. Back issues of *Yoga Mimamsa*. Journal of Kaivalyadhama, Lonavla, Maharashtra.

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