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Yoga: A Scientific Lifestyle

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Abstract

Yoga originates from the word Yuj or union. It symbolizes the union of one's spirit with that of the divine. The process of achieving this is methodically simple, but requires determination and self-control. It also requires a healthy body, not only a physically fit body. To establish this harmonious balance in physiological processes, the yogis follow the eight progressinve steps of Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi. These techniques are ideal for the preventative, promotive curative and the rehabilitative aspects of health (Baride et al 1994). In this review we look into the physiological basis of the effects of yogic practices. This is an attempt to consolidate the effort of various scientists to rediscover an ancient science called yoga.

Introduction

The Disciplines of Yoga

Yoga is not a religion, it is a philosophy of life. This intellectual follows Jnana Yoga, the way of wisdom and discernment Karma Yoga emphasizes selfless action and service, while Bhakti Yoga is for those who seek god through love and devotion. Raja Yoga is for those contemplating individual who control the mind by concentration. It lays emphasis on Hatha Yoga, the practice of Asanas (posture) and Pranayaman (breath control). Asanas stretch the muscles and increases their tone. The stretching massages the organs in the local vicinity, stimulates blood circulation and increases their secretion. Pranayama or yogic breathing involves the use of abdominal, upper and lower thoracic muscles in a rhythmic, and coordinated manner. Breath holding may accompany inhalation and exhalation. The idea of deep breathing is to accumulate, prana the source of energy known to maintain the body. Scientifically, deep slow breathing may strengthen the respiratory muscles, increase their compliance, increase the oxygen intake and its diffusion into the lungs, and ultimately lead to an increase in the ventilation perfusion ratio. Increase in the oxygen uptake may also increase metabolism. However, different types of pranayama exist like Ujjayi, Bhastrika, Nadi Shodhana, Sitali etc. in Ujjayi, inhalation is via the nostrils and exhalation is through a half closed glottis producing a low continuous sound. Nadi Shodhana involves alternate nostril breathing generally accompanied by breath holding in a rhythm. In surya Bhedana the person inhales through the right nostril and exhales through the left nostril. In sitali inhalation is through the mouth with the tongue rolled to produce a "sss" sound and exhalation is through the nose. Bhastrika involves the rapid movements of abdominal muscles.

Additional Yogas include Kundalini Yoga, Dhyana Yoga Mantra Yoga, Laya Yoga, Shanti Yoga, Mudra Yoga and Yantra Yoga (Iyengar, 1995). However, the complete description of yogic practices is beyond the scope of this review.

The Physiological Concept

Yogic procedures maintain normal body function. The affect higher fuction of the central nervous system (C.N.S.) like perception, planning, execution of tasks, learning and memory. Yoga with breath control techniques increases the cerebral blood flow (Reader 1993). Meditation or Dhyana trains the mind to concentrates on an inner or outer object, channelises the thoughts in an attempt to get beyond mental distraction. It improves coherence between the two cerebral hemispheres signifying synchronization of logical and intuitive function. It increases alertness, along with relaxation. Alertness decreases the reaction time of the brain. Twelve weeks of yoga is known to decrease the visual and auditory reaction time (telles et al 1995, UMa et al 1989). Pranayama alone and Mukh Bhastrika have shown similar effects (Borkar and Pednekar 2003, Ananda Balayogi Bhavanani et al 2003). Similarly, planning and execution of any task, thought to be a frontal lobe function is enhanced. Yoga accompanied with meditation for a month has shown decreases in time required to perform certain tasks (Manjunath and Telles 2001). Spatial tasks are enhanced during left nostril breathing and verbal tasks during right nostril breathing. Breathing through a particular nostril also improves spatial memory scores (Naveen et al 1997). Perception of nay geometrical illusion is influenced by retinal, cortical and cognitive judgmental factors. A decrease was observed following practice of focusing and defocusing (Telles et al 1997, Vani et al 1997). Similarly, the process of learning involves selection, choosing, decision making and other higher brain functions. However, maze learning may improve due to repeated performance rather than yoga alone (lelles et al 2000a). the ability to perform rapid fractionated movements depends upon monosynaptic connections between the cortex and the ventral horn cells of spinal card. Dexterous or skilled actions depends upon speed of grosss movement of the hand and arms steadiness, rhythm, coordination of eyes and motor control. This was seen to improve after yoga. Presumably a reduction in anxiety can account for these benefits (Telles et at 1994, Manjunath and Telles 1999). Nevertheless, higher functions of the C.N.S. is augmented by a yogic lifestyle.

The body is ultimately controlled by the CNS through its relationship with the autonomic nervous system (ANS) and the neuroendocrine processes. Yogic processes have a tremendous influence on the central nervous system. It helps an individual to gain control over the ANS resulting in homeostatic functioning of the body. However, there is no definite model of sympathetic activation or relaxation during practice of meditation and there can be individual variations (Telles and Desiraju 1993a). Selwamurthy et al found that six months of yoga resulted in an autonomic shift towars the parasympathetic nervous system. Susasana is associated with increased sympathetic activity while Shavasana brings about a reduction in the sympathetic response (Manjunath and Telles 2003, Madanmohan et al 2002). Yogic breathing exercises include right and left nostril breathing. These breathing techniques stimulate different divisions of the ANS, thus having useful implications in treating psycho physiological disorders associated with hemispheric and autonomic imbalance (Jella 1993, Shannahoff 1991). Right nostril breathing correlates with the activity phase of the basis rest activity cycle, it activates the sympathetic nervous system as shown by an increase in the oxygen consumption and left

nostril breathing decreased the sympathetic activity as manifested by an increase in the level of volar galvanic skin resistance (Werntz et al 1983, Telles et al 1996).

Studies of EEG and evoked potential have indicated that there is increase in cortical activity along with synchronization. Marked uniformily of frequency, amplitude and electrical activity was observed in all areas of the brain (Khare and Nigam 2000). Nostril rhythm increases the theta rhythm, the mean alpha (a) and beta (b) power followed by reduction in the asymmetry in b band in the EEG (Staneak and Kuna 1994, Stancak et al 1996, Wallace et al 1971). Practice of Santhi kriya has shown to increase a activity in both the occipital and prefrontal area (Satyanarayana et al 1992), while an increase in b activity is reported in those practicing Sudarshan Kriya for a long time (Bhatia et al 2003). Six months of Sahaj Yoga decreases the seizure frequency in patients of epilepsy. Stress reduction is suggested as a probable cause of benefit (Panjwani et al 1995, 1996).

Meditation with the thought focused on the syllable "OM" showed an increase in amplitude with a reduction in latency of middle latency auditory evoked potentials (AEP) (Telles an Desiraju 1993b, Telles et al 1994). Pranayama exercise of Ujjayi and Bhastika also increased the amplitude and decrease the latency of Na wave of middle latency AEP, indicating facilitation of processes of sensory signal transmission. These practices involve the use of various cortical mechanisms and corticofugal control processes that may alter the process of information processing at the level of the brain stem (Telles et al 1992). Similarly in epileptics, improvement in AEP, visual contrast sensitivity has also been observed (Panjwani et al 2000). Yoga thus increases CNS activity, synchronization, improves sensory processing and balances the ANS.

Yoga and Physical Fitness

Yoga is not restricted to any particular age group. It is therapeutic for patients but is is also practiced in normal individual to keep physically fit. A study reporting increased physical fitness in school children practicing yoga has been reported (Gharote 2000). It is thus advisable to start early. Yoga also slows down ageing as shown by a decrease in the reduction of baroreflex, sensitivity with age in subjects who were practicing yoga for five years (Bharshankar et at 2003). Yogic asanas are isometric exercises that involve a coordinated action of synergic and antagonist muscles in bringing about steadiness, flexibility and accuracy of movement. Improvement is seen in static motor performance, hand-eye coordination, grip strength, cardiovascular endurance, anaerobic power, thermoregulatory efficiency and orthostatic tolerance. The practice of Yoga for six months to one year improves performance by increasing stretch duration endurance and decreasing the onset of fatigue (Telles et al 19993a, Dash and Telles 2001, Raghuraj et al 1997).

The mechanism of yogic breathing may invlve improvement in oxygen consumption with better oxygen delivery, utilization and minimal energy expenditure as seen in subjects who practiced pranayama. A higher work rate with reduced oxygen consumption per unit of work without increase in blood lactate levels is reported (Raju et al 1994). There is an accompanied increase in peripheral blood flow, along with a decrease in body weight (Selwamurthy et al 1983, Satyanarayana et al 1992, Telles and

Desiraju 1992a, Bera and Rajpurkar 1993, Ray et al 1986). Regular and continuous use of any muscle prevents fat deposition, increases flexibility and heightens performance Ujjayi with long and short kumbak (breath holding) may exert their effects by alterations in the skeletal muscles activity, ANS discharge, and cerebral blood flow. Breath holding with a short kumbak increases oxygen consumption, while a long kumbak during Ujjayi decreases oxygen consumption, and metabolic rate (Telles and Desiraju 1991). Siddhasana is also known to increase oxygen consumption, and metabolic rate compared to shavasana (Raj et al 1994). Virasana likewise induces a hyper metabolic state temporarily characterized by increased ventilation, and enhanced sympathetic activity. This gets neutralized on assuming a shavasana posture (Raj and Ram 1993a). Yoga can improve exercise performance by increasing flexibility, psychological motivation and decreasing heart rate, minute ventilation, oxygen consumption/unit work and respiratory quotient (Ray et al 2001, Raju et al 1997). Above all, yoga increases the subjective well being in subjects (Malathi et al 2000).

Yoga and Biochemical Change

The benefits of yoga are accompanied by biochemical changes. After three months of yoga, significant increase in the level of creatinine phosphor kinase and decrease in pyruvate to lactate ratio indication increased muscular activity with anaerobic metqbolism was noted (Sahay et al 1982). A decrease in lactate,catecholamine, dopamine beta hydroxylase, cholinesterase, monoamine oxidase, and cholesterol has been reported. A similar reduction in blood glucose, cholesterol, dopamine beta hydroxylase, monoamine oxidase, and increase in urinary ketoteriods has been reported in sports teachers after three months of training (Telles et al 1993b, Delmonte 1985; Udupa et al 1975). Three months of Kriyas, yoga and vegetarian diet decreases urinary excretion of adrenaline, nor adrenaline, dopamine, aldosterone, and serum testosterone and leutenising hormone. Cortisol levels decrease in blood along with increased excretion (Kamei et al 2000; Sehmidt et al 1997). The biochemical changes indicate a hypometabolic state (Selwamurthy et al 1983, Wallace et al 1971, Raj and Ram 1993b). Regional glucose metabolism in the CNS is altered during meditative relaxation (Herzog et al 1990). Improvement in glucose homeostasis, with reduction in fasting blood sugar, hyperglycemia, glycosylated hemoglobin, and dose of oral hypoglycemic drugs required after 6, and 12 weeks of yoga in Non Insulin Dependant Diabetes patients (NIDDM) has been observed (Monro et al 1992; Jain et al 1993). The changes are suggestive of decrease in stress, sympathetic activity, better glucose utilization and exercise tolerance.

Yoga and Hormonal Balance

The glandular activity in increased and hormonal profile is balanced. There is a decrease in cortisol, growth hormone, and thyroxin. On the other hand, prolactin levels increased with no change/decrease in catecholamine. There may be notable difference in the effect of diffeent types of asanas and exercises. Suryanamaskar influences the skeletal muscle with less influence on the vital organs. Yogic practices increase the protein bound iodine (PBI)' improve the thyroid and adrenocorticoid factions. Sarvangasana rehabitates the thyroid gland (Delmonte 1985; Udupa et al 1975). Ujjayi with long and short kumbak

effects adrenomedullary secretions (Telles and Desiraju 1991). Melatonin production believed to be psycho-sensitive, may bring about the psychological benefits of yoga therapy in stress management (Massion et al 1995).

Yoga and Psychiatric Disorders

The ability of yoga to bring about a reduction in sympathetic activity is the basis of its use in stress management. Sahaj Yoga practiced for six months was able to increase galvanic skin resistance (GSR), indicating a reduction in sympathetic activity. There was a reduction in blood lactate and VMA activity (Panjwani et al 1995). A range of conditions where yoga is beneficial in psychiatric problems has beem odentified (Vahia et al 1996). Subjects of obsessive compulsive disorder have shown improvement in Yale/Brown obsessive-compulsive scale and perceived stress scale (Shannahoff 1996). Sudarshan Kriya yoga has been used in depression and melancholia (Janakiramaiah et al 2000). A thirty minute session of yogic stretching and breathing exercises produced marked augmentation in perception of physical and mental energy. It increases the feeling of alertness and enthusiasm. It is more invigoration than relaxation or visualization techniques especially when practiced in a group setting (Wood 1993). Reduction in symptoms of perceived stress in psychosomatic disorders like peptic ulcer and hypertension is noted with immediate improvement, while patients with anxiety has a delayed response. The response improved with the duration of treatment (Sethi et al 1982). Similarly, in normal male volunteers a decreased neurotism index, lowered mental fatigability, lowered incidence of subjective complains, and increased performance quotient was observed by scientists. Practice of yoga makes a person psychologically stable and mentally more composed. A decreased neuro humoral responsiveness and decreased neuroticism may be responsible for curtailing the incidence of complaints (Udupa et al 1973). Yoga relaxation techniques involving disengement enhances coping skills (Khasky and Smith 1999). However, coping with specific health problems may require specialized training (Kroner-Herwig et al 1995).

In addition to psychological and psychiatric disorders, yoga has shown beneficial effects as a therapeutic tool for mentally retarded children with an improvement in intelligent quotient (IQ) and social adaptation parameters after one year of integrated therapy (Uma et al 1989). An optional level of stress is beneficial because it can improve performance. Yogic practices reduce anxiety and may help the individual to cope with different types of stressors. A sense of well being, a relaxed mind, improved concentration, attention, memory, and mental efficiency is seen following the practice of yoga. The results indicate a tranquil state of mind during routine activities, accompanied by increased attention during stressful situations (Melathi and Damodaran 1999). It also improves the general well being of an individual and strengthens mental resolve. This forms the rationale of its use in prisoners and children of broken home (Telles and Naveen 1997). However, it has not proven to be of more value than psychotherapy in drug addicts (Shaffer et al 1997).

Yoga and Cardiovascular Response

The cardiovascular system is controlled by the ANS. Yogic procedures differentially affects the ANS. Those that decrease the sympathetic activity are useful in controlling the diastolic blood pressure in mild to moderate hypertensive. Improvement in risk factors may benefit patients of coronary artery disease. Some of the asanas routinely recommended for improvement in cardiovascular function include Halasana, Paschimottasan, Virasana, Siddhasana, Shavasana and nadi shodana pranayama (without breath holding).

Yoga accompanied by breath control increases cardiac output, decreases the hepatic, renal blood flow and increases cerebral blood flow in the peripheral vessels (Reader 1993). Yoga is also associated with a decrease in the heart rate and diastolic blood pressure (BP) (Baride et al 1994). Heart rate alterations in various types of pranayama and in single thought and thoughtless states have been described (Telles and Desiraju 1992 a,b). heart rate increases in Siddhasana and Virasana are likely due to increased metabolism (Rai et al 1994, Rai and Ram 1993b). the effect of inspiratory and expriatory phases of normal quiet breathing, deep breathing and savitri pranayama breathing on heart rate and mean ventricular QRS axis was investigated in young healthy untrained subjects. Pranayama breathing produced significant cardio acceleration and ain increase in the QRS axis during the inspiratory phase compared to eupnoea. These changes were similar to the changes observed during the corresponding phase of deep breathing or savitri pranayama breathing (Madanmohan et al 1986). Marked heat rate variability (HRV), increased amplitude of oscillations as seen during meditation indicate that it is not a quiescent state as generally believed (Peng et al 1999).

Yoga with other regimes like muscle relaxation produces lowering of BP that has favoured as a no-drug therapy (Andrews et al 1982). A study has shown that yoga may be more useful than drugs, but this has been observed in mild and moderate hypertension only (Murugusan et al 2000). Transcendental meditation likewise resulted in lowering of BP in borderline hypertensives. The change is attributed either to an integrated hypothalamic response associated with a decreased sympathetic activity or a placebo effect (Benson et al 1974). In a study after 6 months of yoga training, exercise was found to increase the systolic but not the diastolic BP (Gopal et al 1973).

Yoga is not only an exercise, it is a lifestyle. In a classical paper, Dean Ornish showed that by following a lifestyle of low vegetarian diet, cessation of smoking, stress management training and moderate exercise, a significant number of patients had regression of coronary artery stenosis as analyzed by quantitative coronary angiography. It was suggested that coronary arteriosclerosis was reversed after 1 year withcomprehensive lifestyle changes without the use of lipid lowering drugs. (Ornish et al 1990, Manchanda et al 2000). The effect of yogic lifestyle on some modifiable risk factors has been studied in angina patients and normal subjects with risk factors. The subjects practicing yoga showed a regular decrease in cholesterol, triglyceride, low density lipoprotein (LDL), while the high density lipoprotein (HDL) increased. The effect began four weeks after treatment and continued till 14 weeks thereafter (Mahajan et al 1999).

Hypertension autonomic fuction tests indicate attenuation of the sympatho-adrenal and rennin-angiotensin acivity. Yogic asanas can modulate cardiovascular responses. The different types of breathing procedures affect the ANS. Right nostril breathing activates the sympathetic nervous system and increases the heart rate. Alternate nostril breathing brings about a blance in the ANS (Shannahoff 1993). Kapalbhati practice shoed an increase in the low frequency band and decrease in the high frequency band of the heart rate variability spectrum indicating increased sympathetic activity (Raghuraj et al 1998). Nadishohdhana pranayama increased both components of HRV. Yogic asanas were found to be effective as tilt procedures in correcting the baroreflex sensitivity in patients, represented by the a index at high frequency, and was seen to increase after 6 weeks of yoga indicating enhancement of parasympathetic activity (Selwamurthy et al 1998; Bowman et al 1997). Sarvangasana is a posture with the body inverted. It is comparable to a negative "g" position. Echo cardio graphic recordings showed a reduction in heart rate and left ventricular end diastolic volume. The sympathetic inhibition is due to stimulation of high pressure baroreceptors and low pressure cardiopulmonary receptors. In this position there is sympathetic stimulation also due to isometric contraction of upper limb and neck muscles to support the body (Konar et al 2000). The net effect of the two will determine the autonomic response. Orthostatic responses were altered such that the cardiac output improved more than peripheral resistance to maintain the BP Shavasana also brings about a faster recovery after treadmill exercise compared to sitting in a chair or lying supine (Bera et al 1998).

Yoga and Respiratory System

The various practices use breathing exercises (pranayama), suryanamskar, dhyana, devotional sessions, asanas, kriyas, and yogic chair breathing (Nagarthna and Nagendra 1985; Singh 1987a; Nagarathna et al 1991). Yogic Kriyas like Kunjal and Vastradhhauti use warm water and cloth for cleaning of nasopharynx, oropharynx oesophaus and stomach. The osmolality of fluid may decrease inflammation and thus reduce the sensitivity of receptors in the bronchi thereby increasing the threshold of provocation. Sutra neti desensitizes nerve endings of the nasal passage making it resistant to allergens. Kapal bhati removes the residual secretions by moving the neck in all directions and forcing out secretions forcefully through the nose. Hence, by this mechanism yoga and naturopathy may both useful in treating asthma (Satya Prabha et al 2001).

Pranayama techniques form an important component of yoga. The types of pranayama generally used are surya bhedana, bhastrika, and nadi shodhana. The idea is to maintain a slow rhythmic pattern of breathing using both nostrils alternately. This produces a balancing effect on the ANS. Short kumbak or breath holding increases O_2 consumption while long kumbak decreases O_2 consumption (Telles and Desiraju 1991). Prolongation of breath holding time with increase in Force Vital Capacity (FVC), Forced Vital Capacity in first second FEVI), maximum voluntary ventilation (MVV), peak expiratory flow rate (PEFR) and lowered respiratory rate has been reported after six weeks of training in pranayama (Joshi et al 1992). Techniques involving focusing on a

single thought resulted in regularity of respiration while in the no thought state there was reduction the rate of regularity of respiration (Telles and Desiraju 1992a). savitri type breathing has a similar effect as deep breathing on cardiovascular parameters (Madanmohan et al 1986). In a study of patients practicing hatha yoga, long term manipulation of breathing by practicing slow deep breathing likely results in overstretching of pulmonary stretch receptors, chronic manipulation results in vagus blockage, thereby vagal manipulation is decreased. This also leads to a conditioning or learning of a pattern of breathing with ample tidal volume and slow rate (Stanescu et al 2001).

Various respiratory parameters improve after yoga. A significant increase in FVC, FEV, FEVI, PEFR, increase in the vital capacity, tidal value increase in expiratory and inspiratory pressures, breath holding time and decease in the respiratory rate is documented to help symptoms of weekly attacks, and scores for drug treatment. Improved exercise tolerance, faster recovery after exercise, decrease in inhaler use, and improvements in bronchial provocation response has also been documented (Gopal et al 1973; Nagarathna and Nagendra 1985; Yadav and Das 2001; Tandon 1978; Singh et al 1990). This effect is not merely due to exercise as the sport teachers with training in physical activity for 8.9 years have also shown improvement (Telles et al 1993b).

Some asanas used for respiratory disease are yogic chair breathing and yogic chair breathing, Vajrasana, Tadasana, Sasankasana, Shavasana, Naukasana, Bhujangasana, Ustrasana, Urdh hastollanasana, Gomukhasana, Ardh Matsyendrasana, Matsyasana, and Makrasana. In specific yogic postures like Siddhasana there is a larger tidal volume, O_2 consumption, CO_2 elimination and minute ventilation compared to shavasana and a relaxed posture of sitting in a chair (Rai and Ram 1993). Shavasana is a calming procedure while cyclic meditation involves yogic psotres along with periods of supine relaxation. It was found that the results in decease in oxygen consumption, respiratory rate and increase in tidal volume compared favorably to shavasanas alone (Telles et al 2000b). during transcendental meditation there is an increase in respiratory rate, minute ventilation, oxygen consumption, and CO_2 elimination, with no change in the respiratory quotient. There was reduction in arterial blood pH, lactate levels, and arterial PO2, while PCO2 remained unchanged indicating a wakeful metabolic state (Wallace et al 1974).

An eight stepped yoga chair breathing procedure consists of neck muscle relaxation, and asanas with breathing exercises. This may reduce the panic anxiety element contributing to aggravation of bronchial obstruction. The effect seems to be acute, but patients have been followed for 54 months with beneficial effects. Similar results to yoga asanas and breathing exercises may be observed by techniques like progressive muscle relaxation, postural drainage, and pink city exerciser (Nagendra and Nagarathna 1986; Singh 1987b; Freedberg et al 1987; Lorin et al 1971). Resistive breathing training requires the person to breath against a resistive load. These respiratory maneuvers may lead to better lolerance of hyperemia, improve the strength and endurance of respiratory muscles and decrease the onset of fatigue. Exercise using a bicycle ergometer and breathing exercises may cause subjective improvement, increase exercise tolerance without lung volume and ventilation in serve obstructive disease by

improving neuromuscular coordination (Brundin 1974). Yogic exercises and asanas may benefit individuals by similar mechanisms.

The various mechanism responsible for the improvement include reduction of psychological over activity, emotional instability, vagal efferent discharge and evacuation of sputum. Slow breathing with the without humidified air has bronchoprotective and bronchorelaxing effect increaded autonomic control, and a positive endogenous corticosteroid release (Nagarathba na d Nagendra 1985; Singh 1987a; Tandon 1978; Singh 1987b; Jain et al 1991). Yogic breathing is also known to decrease the chemoreflex sensitivity to hypoxia and hypercapnia (Spicuzza et al 2000). Pranayama is believed to disease, a psychosomatic imbalance with an increased vagal tone is one of its various etiopathogenesis. Yoga therapy may first bring internal awareness, correct autonomic imbalance, control the breathing, improve the immune status and alter physiological variables. Even one week after yoga therapy, improvements in ventillatory functions is asthmatics have been observed. This could be due to reductions in sympathetic reactivity and relaxation of voluntary inspiratory and expiratory muscles. Both transcendental meditation and yoga have proven to be effective alternate e medicines for controlling symptoms of asthma (Lane 1991; Wilson 1975). Yoga is also valuable in the treatment of COPD (Behera 1998).

Conclusion

The practice of yoga is a tremendous gift from our Indian culture. Only recently have we begun to understand the vast potential and health benefits. However, it has also become fashionable to talk about yoga rather indiscriminately and yoga is assuming a significant commercial potential. It can be argued that the benefits of yoga may be due to the dynamics of group activity and the mere fact that the person is engaged in any exercise. This psychological aspect can influence the physiological state. In this context, it is important to find scientific explanations for the perceived benefits of yoga. This can also help us to select specific items and individualize therapies. However, much more needs to be done and it is only a matter of time when scientific objectivity will be well established. Presently, it is well known that yoga has become internationally accepted.

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