IJBPAS, December, 2023, 12(12): 5522-5530

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

RESEARCH UPDATES IN YOGIC PRACTICES AND TRANSCENDENTAL MEDITATION IN CLINICAL PRACTICES

SAHU M[1], TIWARI A[2] AND GAUTAM VL[3]

1: Research Scholar, Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi

2: JR-III, Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi

3: Professor & Head, Department of Rachana Sharir, Faculty of Ayurveda, IMS, BHU, Varanasi

*Corresponding Author: Ms. Manisha Sahu: E Mail: sahumanisha762@gmail.com

Received 19th Nov. 2022; Revised 16th Dec. 2022; Accepted 1st April 2023; Available online 1st Dec. 2023

https://doi.org/10.31032/IJBPAS/2023/12.12.7611

ABSTRACT

Yoga is an ancient Indian way of life, which includes changes in mental attitude, diet, and the practice of specific techniques such as *yoga asanas* (body postures), breathing practices (*Pranayamas- Anulomaviloma, Bhastrikaand Bhramari*), and meditation to attain the highest level of consciousness. Since a decade, there has been a surge in the research on yoga, but few reviews regarding yogic practices and *Transcendental meditation* (TM) in health and disease. The *Transcendental Meditation* technique or TM is a form of silent mantra meditation, developed by Maharishi Mahesh Yogi. The meditation practice involves the use of a mantra and is practiced for 15–20 minutes twice per day while sitting with one's eyes closed. Keeping this in view, the relevant article were considerable health benefits, includes improving cognition, respiration, reduced cardiovascular risks, BMI (body mass index, blood pressure and diabetes. *Yoga* also improves and ameliorated joint disorders.

Keywords: Yoga, Consciousness, Pranayama, Transcendental meditation, Health

INTRODUCTION:

Yoga is a psycho-somatic-spiritual discipline for achieving union and harmony between our mind, body, and soul and the ultimate union of our individual

consciousness with the universal consciousness. *Pranayama* is derived from two Sanskrit words, namely, *prana,* which means vital force or life energy, *ayama* means to prolong. *Ashtanga yoga* literally means "eight-limbed yoga," as outlined by the sage Patanjali in the *Yoga Sutras*. According to Patanjali, the path of internal purification for revealing the Universal Self consists of the following eight spiritual practices **[1]**.

Transcendental Meditation (TM) is a technique for avoiding distracting thoughts and promoting a state of relaxed awareness. The late Maharishi Mahesh Yogi derived **T**M from the ancient Vedic tradition of India. A mantra is a word or sound from the Vedic tradition that is used to focus your concentration. Transcendental meditation (TM) is one of the techniques of meditation, which involves allowing the mind to dwell on a series of words (called a mantra) given by the meditation teacher, with no effort. If the attention wanders it is allowed to wander till it returns to the mantra. It's a word or phrase repeated over and over again during **meditation.** They're generally sacred in nature – a name or sound that both uplifts you and helps you keep your focus during *meditation.* In other words, they're designed to change you. The *Mantra* meditation helps to induce an altered state of consciousness. Mantras are repetitive sounds used to penetrate the depths of the unconscious mind and adjust the vibration of all aspects of your being. **Mantras** are vibrated through chanting aloud, mental practice, or by listening to them. The **mantra** calms fears, soothes concerns and heals broken hearts. When a person practices yoga, with yogic attitude (attitude of patience, persistent practice, overcoming obstacles within self, that is, trouncing laziness, anger, delusion, and desire for being different or better than others), there are several changes in physiology **[2]**.

Yoga Centres:

Yogic practices like eight-fold of components *yama, niyama, asana, pranayama, pratyahara, dhyana,dharana*, and *Samadhi.Yoga* is not only popular in India including best centres in Tamil Nādu, Mumbai, Karnataka, Mysore, Rishikesh, Uttarakhand, Pune and Chennai but also in western countries USA, Italy, Thailand and Indonesia. Hatha yoga has become popular in North America in recent years. In India, the widely practiced ones are *hatha yoga, raja yoga, jnana yoga*, integral yoga, *karma yoga, bhakti yoga, mantra yoga, kundalini yoga, sahaja yoga, laya yoga,* and many more. *Hatha yoga* includes practice of *asanas, pranayamas,* and *kriyas* (purification techniques including breathing cand Cleansing techniques and *shatkarmas*– six groups of purification practices). Around

900 BC, the ancient sage *Patanjali* evolved the eight stages of yoga which is called as *ashtanga yoga.* As such, integral yoga incorporates hatha yoga, meditation, and pranayama. In the Indian subcontinent, integral yoga is also known as yoga of transformation **[3]**.

Effects of Yoga, Pranayama, and Transcendental Meditation (TM):

(a) Rejuvenation/regeneration of cells of pancreas due to abdominal stretching during yoga exercise, which may increase utilization and metabolism of glucose in peripheral tissues, liver, and adipose tissues through enzymatic process **[4]**.

(b) More active practices followed by relaxing ones lead to deeper relaxation than relaxing practices alone, documented by research from Swami Vivekananda yoga research foundation near Bangalore city and possibility of neuroplasticity bringing about changes in the hypo-pituitary–pancreatic axis **[5]**.

(c) Muscular relaxation, development and improved blood supply to muscles might enhance insulin receptor expression on muscles causing increased glucose uptake by muscles and thus reducing blood sugar **[6]**.

(d) The improvement in the lipid levels after yoga could be due to increased hepatic lipase and lipoprotein lipase at cellular level, which affects the metabolism of lipoprotein and thus increase uptake of triglycerides by adipose tissues **[7]**. Yoga postures can lead to improvement in the sensitivity of the b-Cells of the pancreas to the glucose signal and also the improvement in insulin sensitivity in turn can be due to the cumulative effect of performing the postures. Direct stimulation of the pancreas by the postures can rejuvenate its capacity to produce insulin. The regeneration of pancreatic beta cells could occur by yoga exercises that promote blood circulation in the region of the pancreas and yoga asana that stimulate the meridian of pancreas also could assist in some diabetic patients **[8]**. Pranayama practices, stretches the lung tissue producing inhibitory signals from action of slowly adapting receptors and hyperpolarising currents. These inhibitory signals coming from cardiorespiratory region involving vagus are believed to synchronize neural elements in the brain leading to changes in the autonomic nervous system; and a resultant condition characterized by reduced metabolism and parasympathetic dominance **[9]**. TM (Transcendental Meditation**)** seems to influence through modifying activity of ascending reticular activating system and thereby also interact with autonomic centres in the brainstem thus affecting cardiorespiratory and metabolic parameters. Higher melatonin levels could be one

mechanism through which the claimed health promoting effects of meditation occur **[10]**.

Effects of Yoga on:

- **Human body Nervous System-**

In a study to assess the immediate effect of three *yoga* breathing techniques on performance of a letter-cancellation task, the authors reported that there were improved scores and fewer errors on letter cancellation task and suggested that yoga practice could bring improvement in the task which requires selective attention, concentration, visual scanning abilities, and a repetitive motor response. Practicing *asanas, pranayama*, meditation, and *trataka* (concentrated gazing practices), and attending devotional sessions for 10 days led to a significant improvement in fine coordinated movements. *Yoga* practices for a month not only led to a reduced degree of optical illusion created by muller-lyer lines and raised the critical fusion frequency but also improved neural performance, higher critical fusion frequency indicating reduced fatigue and stress level **[11]**.

Respiratory System-

A study with a quest whether yoga could reduce the basic problem in asthma (i.e., airway hyper responsiveness), showed improvement on subjective measures as well as airway hyper responsiveness to methacholine after *sahaja yoga* meditation **[12]**. In a RCT conducted at All India Institute of Medical Sciences, Delhi, India, showed that adding a comprehensive yoga-based mind-body intervention to the conventional treatment improved several measures of pulmonary function in subjects having mild to moderate bronchial asthma, a decrease in exercise-induced bronchoconstriction in the yoga group, particularly in the exercise-sensitive subjects. Yoga improved the QOL and reduced rescue medication use in bronchial asthma, and achieved the reduction earlier than conventional treatment alone **[13]**.

Cardiovascular System-

In a prospective cohort study involving thirty three subjects with (30%) and without (70%) established coronary artery disease (CAD) subjected to a course in yoga and meditation showed significant reductions in blood pressure, heart rate, and body mass index (BMI) **[14]**. A study on Six healthy Asian Indian men and women (18–22 years) who were trained in *Surya namaskar* (sun salutation) for over 2 years participated in the study showed that regular practice of *Surya namaskar* might maintain or improve cardiorespiratory fitness, as well as promote weight management **[15]**.

Diabetes-

A comparison of yoga practice with physical training showed that yoga practice for 6 months reduced fasting blood glucose, lipid

levels, markers of oxidative stress, while physical training also decreased fasting blood glucose but had few of the other beneficial effects **[16]**.

Obesity-

An observational study involving long-term yoga practitioners showed that a consistent, long-term Hatha yoga practice in a nonprobability sample of women over 45 years was linearly associated with declines in BMI even after correcting for non-yogic exercise hours and processed food consumption **[17]**.

Arthritis-

A randomized controlled study to evaluate the efficacy of integrating hatha yoga therapy with therapeutic exercises for osteoarthritis (OA) showed that there were significant differences within (Wilcoxon's, $P < 0.001$) and between the yoga and control groups (Mann–Whitney U, $P < 0.001$) on all the studied variables, with better improvements in the *yoga*than the control groups **[18]**.

Cancer-

A new term, restorative *yoga* (This is a gentle, therapeutic style of *Yoga* that uses props to support the body to deepen the benefits of the poses. It is a soothing and nurturing practice that promotes the effects of conscious relaxation) has been used to describe a gentle form of *yoga* which help females with ovarian or breast cancer to reduce depression as well as anxiety state, and better mental health and overall QOL. There was also a decrease in fatigue. *Yoga* also helped patients with cancer to deal with distressful symptoms and treatment related toxicity of chemotherapy **[19, 20]**.

Immunity-

In study, *Yoga* practice in patients suffering from pulmonary tuberculosis potentiated the body immunity and action of anti-tubercular drugs thereby improving sputum culture, radiography, Forced Vital Capacity (FVC), weight gain and symptoms. *Yoga* postures that twist and compress organs, help massage and rejuvenate immune organs. *Kurmasana* (tortoise pose) which supports the thymus gland could create specific benefits to improve immune function **[21]**.

DISCUSSION:

In the present article we can see the benefits of practicing Yoga, Asana and Transcendental Meditation. Start the practice of Transcendental Meditation (TM) feel more energy, greater clarity of mind, and better health. They become more efficient and energetic in all field of activity. Man's nervous system is the most highly evolved, so the purpose of man's life is to live a state of unlimited energy, intelligence, power, creativity, and bliss of absolute being.TM is also natural for the human body to respond to stressful situations with increased blood pressure, higher heart rate

and breathing rate. Transcendental Meditation can also help people with atherosclerosis, thickening of the artery walls as a result of accumulation of fatty materials like cholesterol. Research shows that practicing of Transcendental Meditation reduces carotid artery intima-media thickness, an indicator of coronary atherosclerosis. Randomized controlled trial results showed that after 16 weeks of Transcendental Meditation practice, patients with metabolic syndrome had lower blood pressure, decreased serum cholesterol, reduced cigarette smoking, lower insulin resistance and improved cardiac autonomic nervous system tone. A randomized controlled study published in 2007 found that practice of Transcendental Meditation improved the functional capacity and quality of life for patients with congestive heart failure. The results of Transcendental meditation showed that the Statistics indicate that one in every 10 black youths have high blood pressure. If practiced over time, the meditation may reduce the risk of these teens developing cardiovascular disease, in addition to other added health benefits **[22]**. Scientific research on the TM & TM siddhi programme documents profound benefits for the individual and for the society. The physiological changes produced during practicing TM **[23]**.

Sharma VK *et al*, (2007), In a study conducted to know the anatomical correlates of long-term meditation, researchers found significantly larger grey matter volumes in meditators in the right orbito-frontal cortex, right thalamus and left inferior temporal gyrus **[24]**.

Lazar SW *et al*, (2005) In a comparative study, the effects of *sahaja yoga* meditation on Electroencephalogram (EEG) in patients of major depression and healthy subjects found an increase in alpha activity in both the groups after 2 months practice of *Sahaja yoga* meditation **[25]**. Van Leuven S *et al*, (2012) A cross-sectional survey involving 347 responses demonstrated long-term *Sahaja Yoga* meditation practitioners experienced better quality of life (QOL) and functional health than the general population **[26]**.

CONCLUSION:

The various avenues of study of *yoga* practices reviewed in the present article indicated considerable health benefits, including improved cognition, respiration, reduced cardiovascular risk, BMI, blood pressure, and diabetes mellitus. It also influenced immunity and ameliorated joint disorders. Despite extensive searches, recent research articles in sighting the Physiological basis underlying the effects of *Yogasanas, Pranayamas* and TM (Transcendental Meditation) were limited.

Further researches exploring the effects of yoga on different organ systems would be invaluable.

REFERENCES:

[1] Astang yoga at http://www.ashtanga.com/html/background.html

[2] Maharshi Mahesh Yogi, Science of Being and Art of Living, Transcendental Meditation^{TM,} Nabhi publications, New Delhi, Reprint 2016, pg. 29-31

[3] https://www.google.com/search?q=yoga+centres+all+over+the+world&oq=yoga+centres+all+over+&aqs=chrome.2.69i57j33l6.16590j0j4&sourceid=chrome&ie=UTF-8

[4] Dang KK, Sahay BK. Yoga and Meditation, Medicine update. In: Singh MM, editor, 1999. pp. 502–512. Part 1, chapters 57 and 58.

[5] http://www.yogajournal.com/for teachers.

[6] Demonte MM. Biochemical indices associated with meditation practice: A literature review. Neurosci. Biobehav Rev. 1985; 9: 557–61. [PubMed]

[7] Tulpule TH, Shah HM, Shah SJ, Haveliwala HK. Yogic exercises in the management of ischaemic heart disease. Indian Heart J. 1971; 2:259–64. [PubMed]

[8] Jerath RJ, Edry VA, Barnes VA, Jerath V. Physiology of long pranayamic breathing: Neural respiratory elements may provide a mechanism that explains how slow breathing shifts the autonomic nervous system. Med Hypotheses. 2006;67: 566–71

[9] Wallace RK, Benson H, Wilson AF. A wakeful hypo-metabolic physiological state. Am J Physiol. 1971;221: 795–9.

[10] Tooley GA, Armstrong SM, Norman TR, Sali A. Acute increase in night time plasma melatonin levels following a period of meditation. Biol Psychol. 2000;53: 69–78. [PubMed]

[11] Telles S, Praghuraj P, Ghosh A, Nagendra HR. Effect of a one-month yoga training program on performance in a mirror-tracing task. Indian J PhysiolPharmacol. 2006; 50:187–90. [PubMed]

[12] Tells S, Hanumanthaiah BH, Nagarathna R, Nagendra HR. Plasticity of motor control systems demonstrated by yoga training. Indian J Physiol. Pharmacol. 1994; 38:143–4. [PubMed]

[13] Telles S, Nagarathna R, Vani PR, Nagendra HR. A combination of focusing and defocusing through yoga reduces optical illusion more than focusing alone. Indian J PhysiolPharmacol. 1997; 41: 179–82. [PubMed]

[14] Vempati R, Bijlani RL, Deepak KK. The efficacy of a comprehensive lifestyle modification programme based on yoga in the management of bronchial asthma: A randomized controlled trial. BMC Pulm Med. 2009;9:37. [PMC free article] [PubMed]

[15] Manocha R, Marks GB, Kenchinton P, Peters D, Salomezzz CM. Sahaja yoga in the management of moderate to severe asthma: A randomized controlled trial. Thorax. 2002;57:110–15.[PMC free article] [PubMed]

[16] Mody BS. Acute effects of Surya Namaskar on the cardiovascular & metabolic system. J Bodyw Mov Ther. 2011;15:343–7.[PubMed]

[17] Gordon LA, Morrison EY, McGrowder DA, Young R, Fraser YT, Zamora EM, *et al*. Effect of exercise therapy on lipid profile an oxidative stress indicators in patients with type 2 diabetes. BMC Complement Altern Med. 2008;8:21. [PMC free article] [PubMed]

[18] Moliver N, Mika EM, Chartrand MS, Burrus S, Haussmann RE, Khalsa S. Increased Hatha yoga experience predicts lower BMI and reduced medication use in women over 45 years. Int. J Yoga. 2011;49: 77–86.

[19] Ebnezar J, Nagarathna R, Yogitha B, Nagendra HR. Effects of an integrated approach of hatha yoga therapy on functional disability, pain, and flexibility in osteoarthritis of the knee joint: A randomized controlled study. J Altern Complement Med. 2012;18: 463– [PubMed]

[20] Danhauer S, Tooze JA, Farmer DE, Campbell CR, McQuellon RP, Barrett R, *et al*. Restorative yoga for women with ovarian or breast cancer: Findings from a pilot study. J Soc Integr Oncol. 2008;6: 47–58.[PubMed]

[21] Visweswaraiah NK, Telles S. Randomized trial of yoga as a complementary therapy for pulmonary tuberculosis. Respirology. 2004 9: 96–101. (PubMed). Jan Gonda (1963), The Indian Mantra, Oriens, Vol. 16, pages 244-297.

[22] https://tmhome.com/benefits/cardiovascular-heart-disease-prevention-and-treatment/

[23] www.tm.org/research for additional information about scientific research studies.

[24] Sharma VK, Das S, Mondal S, Goswami U, Gandhi A. Comparative effect of sahaj yoga on EEG in patients of major depression and healthy subjects. Biomedicine Journal. 2007; 27: 95–9.

[25] Lazar SW, Kerr CE, Wasserman RH, Gray JR, Greve DN, Treadway MT, *et al*. Meditation experience is associated with increased cortical thickness. Neuroreport. 2005; 16: 1893–7.

[26] Van Leeuwen S, Singer W, Melloni L. editation Increases the Depth of Information Processing and Improves the Allocation of Attention in Space. Front Hum Neurosci. 2012; 6: 133.