

Impact of Yoga on Human Immune System for The Disease Free and Quality Life: A Comprehensive Research Review

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ABSTRACT

*Man remained eager to live a disease free and quality life since the dawn of human civilization and looked towards Nature which resulted in the advent of Natural Therapy. He subsequently started realizing the values of breathings' magnitudes for a better and longer life looking towards natural surroundings and animals which led the emergence of therapeutic concepts of **Meditation** and **Physical and Mental Practices** broadly in the category of **Yoga**. The **Mind- Body** coordination, their communion to nature, strengthened the concept of **Yogic Sciences**. So, it became mandatory to value to our **Inner Dimensions of Life** such as ethics, morality, divinity, rationality, spirituality etc. for a natural and better lifestyle. An area to enjoy healthy life is the natural **Yogic Practices**.*

*Similarly, **Ayurvedic Science**, targeting disease free and quality life without ayurvedic herbal drugs, was founded by the greatest sages, scholars and pennants on the basis of their researches, comprehensions and realizations. It advocates the value of reasonable, seasonal and pro to body foods, exposure, thinking and actions as "**Chaturangini Sena**" to fight against diseases of all types. We must keep in mind that our body is the best drug/ pharma/biochemical industry synthesizing and secreting all that is needed for our wellness and better health. All these inputs resulted in conferring a disease free, better and quality life to human beings by enhancing the concept of **Longevity**.*

*In ancient times, modern day Immunology or Immune System was not identified but the concept of in-built power and vitality did prevail. Thus, the attempts for exploring the empowering of disease fighting and body saving system- the immune system, continued. Besides, the Ayurvedic cum Natural Food habits, behavioral aspects, life styles etc., the roles and impacts of Yogic Practices, to empower the immune system and related responses for better protection, were explored targeting the concept of diet therapy over to drug therapy. The effects of several poses of yoga on immune structures like thymus, spleen, bone marrow, various blood cells and their syntheses and secretions, like cytokines of several types, have well been reported. Both humoral and cell mediated immunological responses have been studied with promising results. These yogic practices appear as immune facilitators, rejuvenators, revitalizers for human immune system. These research findings serve as lead researches for mankind specially in the times when we are bewildered with a large number of diseases and health complications. The issues like clinical standardization, reproducibility and credibility of results for the global acceptability to these yogic practices are extremely important and need to be addressed by establishing a new exciting discipline- **Yogic Immunology**. The observations will be deliberated during the presentation.*

Key words- Human Immune System, Yogic Practices, Various Diseases, Mind/Body Medicine, Clinical Standardization, Global Credibility, Yogic Immunology.

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Introduction

Ever since the dawn of human civilization, the quest for a disease free and quality life remained in the centre stage for human beings and subsequently he started looking eagerly towards the Mother **Nature**. It ultimately resulted in the advent of **Natural Therapy** aiming at **Yoga**. Further, he consequently started realizing the values of breathings' magnitudes for a better and longer life looking towards natural surroundings and animals which led the emergence of therapeutic concepts of **Meditation** and **Physical and Mental Practices**. The **Mind- Body** coordination, their communion to nature, strengthened the concept of **Yogic Sciences**. So, it became mandatory to value to our **Inner Dimensions of Life** such as ethics, morality, divinity, rationality, spirituality etc., for a natural and better lifestyle. An area to enjoy healthy life is the natural **Yogic Practices**.

Historical Perspectives of Yoga: -

In Sanskrit Yoga communicates for “yoke” or “union” of Mind, Body and their reflections. It is immensely warranted for the sound Mind-Body condition with absolute magnitude of eternal peace and harmony. Asanas – poses, Pranayama -breathings, Meditation- Dhyana, Kriyas – cleansing processes are considered as the **souls of Yoga** (Lalvani & Vilma. 2004). Yogic science has its deeper relations with Vedas. The entire deliberations would go futile without the praise

of contributions made by Maharishi Patanjali. He in fact is the one of the crusadors of Yoga. These ancient most texts record Yogic teachings during 1800 – 300 BC. It has been conveniently classified as – **Pre-Classical Yoga**, Buddhist – meditation and ethical thought, Jainism – “liberation of the spirit”, Hinduism – “physical purification process”, **Classical Yoga** – 2nd century AD, Wisdom would be internalized and finally the **Post Classical Yoga** - the body should be treated as a temple: Physical fitness and the Mental health (American Yoga Association, 2005). The utmost relevance of Yoga, with profound degree of clinical bases, may be envisaged in the form of **Complementary** and Alternative Medicine, Mind/body Prevention, General health, Rehabilitation etc. (Cohen et al., 2004). The science of Yoga also proven its worth in rendering the focused and targeted health benefits in the form of Musculoskeletal System, Nervous System, Cardiovascular System (Konar, D. et al. 2000), Musculoskeletal System Exercise, Increased Muscle Strength, Flexibility, Stable Joints, Osteoarthritis, Osteoporosis (Heriza, 2004). Detailed clinical researches were being conducted by Washington State University groups on therapeutic intervention of cervical spondylosis (Raman & Blank, 2001), degenerative disorder of cervical inter-vertebral discs, nerve root irritation, neck pain, brachial neuralgia, vertebro-basilar insufficiency and overall clinical improvements were observed.

Similarly, Yoga exercises using head-down-body up postures were being found clinically meaningful and therapeutically significant in managing and treating effectively hypertension patients. Short term blood pressure was also found regulated by such exercises. Stress suppressed immune system, cardiac risk factor, insomnia, asthma etc. were seen markedly improved with highest degree of clinical satisfaction.

Stress, Human Health and Yoga: -

Yoga has been found instrumental in the extreme situations of stress or anger, where by deep breathings people become calm and cool. Besides, it also helps to enhance to pay attention to how body feels. Brain masters the nervous, endocrine, and immune system, however, it is also a target for these systems in terms of both protection and damage. Stress induces change for adaptation such as Behavioral/Psychological (changes to eating, sleeping patterns, mood, etc.), Physiological (increased blood pressure, heart rate, dry throat, etc.) and Immunological (suppression of immune system). Furthermore, chronic stress effects consistently elevate cortisol and catecholamine levels (stress response chronically activated). Non-immune related disorders such as - diabetes, insomnia, myocardial infarction etc., are also adversely affected due to stresses and such events predispose to disease and immune deregulation – infection, cancer, autoimmune diseases. Depression, resulting from altered immune function causes severe damages. It has been found that the eating of healthier Natural and Seasonal foods, more fruits and vegetables also affect positively to the health. World view on Yoga advocates about practitioners to become a lot happier and feeling like a better person, making better choices and staying out of trouble. Researches have proved that Yoga has made a huge impact on school lives as well by making it a better place with enhanced magnitude of peace and tranquility (Conboy et al., 2013). During the commencement of the Adolescent

age, **several** defiance's in the form of **complications** as stresses- Developmental, Family, Social, Academic, Behavior - apathy, violence, social skills, absenteeism, Mental Health - depression, anxiety, substance abuse, trauma, Academics- grades, dropouts, Physical Health- obesity, diabetes etc., were being observed. Studies conducted show the increasing high rates of early psychiatric disorders. Most likely, the lifetime prevalence of psychiatric problems by age 21 well exceeds 80%, suggesting that the experience of psychiatric illness is nearly universal (Copeland et al., 2011).

Practice Relaxation and Stress Reduction:

Relaxation techniques are immune enhancers. A positive mental attitude makes a big difference in how the body fights disease. Creative visualization establishes belief and optimism. Bio feedback or massage therapy to reduce stress.

Yoga and the Mind-Body Therapies: -

An increasing number of people in the United States are using Complementary and Alternative Medicine with Mind-Body Medicine being the most commonly used form ([Barnes et al., 2004](#)). Mind-body medicine focuses on the relationships between the brain, mind, body and behavior and their effects on health and diseases. Immunoglobulin A showed strong evidence for being affected by mind-body medicine. Immunoglobulin A had positive evidence whereas serum Immunoglobulin A did not possibly reflect the faster rate of change of salivary Immunoglobulin A. Salivary Immunoglobulin A may be more reliable for mind-body intervention studies. The relaxation training demonstrated the strongest evidence for a mind-body intervention to influence immune outcomes. Incorporating some type of relaxation training into mind-body medicine therapies may help improve health outcomes through immune system mediation (Helané et al., 2009). Immune outcome changes may differ

in healthy versus patient populations. Immune markers are also influenced by nutrition, exercise, caffeine, sleep, and pharmaceuticals. Mind-body therapies reduce markers of inflammation and influence virus-specific immune responses to vaccination despite minimal evidence suggesting effects on resting anti-viral or enumerative measures (Morgan et al., 2014). Mind-body therapies reduce markers of inflammation and influence virus-specific immune responses to vaccination despite minimal evidence suggesting effects on resting anti-viral or enumerative measures. The efficacy of such behavioral interventions in modulating the immune system suggests that MBTs may also confer immunomodulatory benefits. Activities like deep breathing and meditation to promote stress-reduction and relaxation, which could potentially influence the immune system (Miller et al., 2008). Meditation, including more integrative, mindfulness-based, stress-reduction programs, has also been shown to regulate emotional and affective responses to stress, and therefore may influence the immune system even in the absence of physical activity (Miller et al., 2008). The exercise, one of the most widely-studied behavioral interventions, has been shown to reduce chronic inflammation, enhance immunological memory in the context of vaccination and even reduce sick days associated with the common cold and other upper respiratory tract infections and complications (Wang, 2012., Miller & Cohen, 2001., Miller et al., 2009). A few high-quality studies suggest that MBTs may increase virus-specific, cell-mediated immunity at rest and in response to vaccinations.

In modern times, National Center for Complementary and Alternative Medicine designates MBTs as a top research priority (Medicine TNCfCaA, 2011). Researches carried out on MBTs have found many psychological and health functioning benefits including reductions in disease symptoms,

improvements in coping, behavior regulation, quality of life and well-being (Wang et al., 2010, Wang et al., 2009). Further understanding of the effects of MBTs on the immune system and clinical outcomes will provide insight into and affirm the phenomenon of complementary and alternative medicine therapeutic concepts, thus establishing a new paradigm for understanding health and treating illness. In fact, behavioral interventions targeted at alleviating stress, promoting heightened states of relaxation and encouraging moderate physical activity have been shown to decrease markers of inflammation, particularly among older adults or adults experiencing high levels of psychological stress (Miller & Cohen, 2001, Antoni et al., 2007, DerSimonian & Laird, 1986). The effects of MBTs on the immune system while focusing on two aspects of immunity that are regulated by stress response mechanisms, namely inflammation and anti-viral related immune responses (Haaland et al., 2008). MBTs may play in regulating the immune system and may reduce inflammation. A few high quality studies suggest that MBTs may increase virus-specific, cell-mediated immunity at rest and in response to vaccinations. Thus, the anti-inflammatory effects of MBTs, albeit incomplete, provide insight into the potential mechanisms behind mind-body treatment and the numerous health benefits they confer MBTs impact inflammatory measures and may influence virus-specific, cell-mediated immune responses to vaccination.

Mind/Body Spirituality is unavoidable to Your Wellness: -

Whether its organized religion, prayer, meditation, or mind-body approaches such as yoga or tai chi, your mind, and spirit are in communication with your immune system. Having a rounded spiritual sense and positive outlook on life can enhance immunity

Yoga and Human Diseases Therapy: -

Dunn (2008) reviewed extensively the physiological processes and the therapeutic benefits of Hatha yoga and concluded that various human ailments were found being cured successfully without the aid of drugs. Similar findings were also being reported in cases of diseases treatment with Yoga (Lipton, 2008). Arias et al., in 2006, reviewed various studies concerned with effects of meditation in treating and curing several health illnesses. Yoga over an extended period of time, with a larger sample size, demonstrated benefits to persons with Alzheimer's Disease (AD) and served as means to improve overall quality of life (Lyn et al., 2012). Extending this observation in related areas, Andrielle et al., in 2014, conducted a comprehensive systematic literature review on clinical impacts of creative arts therapy for the treatment of Alzheimer's disease and dementia and found better and clinically efficacious results. Similarly, researches on more severe diseases like schizophrenia were intensively analyzed and reviewed for the anticipated positive and curative roles of Yoga and results were absolutely encouraging in cases of human subjects (Govindaraj et al., 2016).

Non-communicable Diseases (NC Ds): -

These diseases are known as the leading causes of deaths in the world. In most of the middle- and high-income generating countries, NCDs were held responsible for more deaths than all other causes of death combined. NCDs are feared of being escalated by 15% globally till 2020.

Impacts of Yoga Therapies on Human Immune System: -

Yoga resists the autonomic changes and impairment of cellular immunity in stress conditions. Stress causes significant immune response dysfunction. George F. Solomon first demonstrated the influence of stress on immune response in animals and human beings in 1964 (Solomon & Moss, 1964). Our intensive

researches on human immune system, with particular emphasis on immunocompromised diseases, have shown clinically promising, positive and therapeutic effects using Rasayana mode of Natural Ayurvedic Therapy (Tripathi, et al, 1999, Agarwal, et al., 1997, Abbas et al., 1997, Tripathi et al., 2003., Tripathi, 2004). Yoga has been shown to have effects on most physiological systems of the body including how yoga influences the immune changes. Dobbin et al., 1991, also demonstrated that lymphocyte responsiveness and IFN- γ decreased due to stress. The adrenal steroids have been postulated to play an important role in trafficking of immune cells (Cupps & Fauci , 1982) and also increase humoral immunity and decrease cellular immunity (Mason, 1991). The circulating levels of cytokines suggest that yoga also has a beneficial effect on the immune system of the individual. The ability to proactively handle stress in everyday life could alleviate the constant activation of the endocrine system, which in turn, increases the effectiveness of the immune system (Jones, 2003). Yoga is a promising approach for dealing with the stress response. Even the western world has now accepted Yoga as a complementary therapy to assist cancer survivors in managing symptoms such as depression, anxiety, insomnia, pain, and fatigue (DiStasio, 2008 & Ott et al., 2006).

Concluding Remarks: -

The health care and clinical management aspects remain, all the time, top most priorities in the history of human evolution. Nowadays, due to altercated and materialistic life styles and related various other complications, besides wonderful and amazing advancements in modern medical sciences in almost all the spheres of life, people are not enjoying the good health and quality life. The present research analysis on Yoga and the Immune System is being performed by me for searching out promising scopes for the disease free, better and quality life to human beings. Thus, it is also

endeavored to explore possibility of the opening of New Era in Human Health Care Systems. The historical perspectives of Yoga have been discussed at length. Simultaneously, the mind/body issues as medicine, stress and various diseases including both the non-communicable and communicable diseases, the impacts of Yoga Therapy on the Immune System of human beings also attracted ample focus and researches being conducted throughout the globe find suitable and sufficient space here for deliberations. The cellular and molecular aspects of immune responses including various secretions of lymphocytes etc. have been critically and vigorously assessed for their positive roles in conferring disease free and good quality life to human beings.

Future Directions of Research: -

Undoubtedly, reasonable magnitude of clinical researches has been carried out across the globe including India on almost all facets, there is, however, an urgent need realized to take up further researches on Yoga concepts of mind-body therapies, strategizing and devising as

medicines, on elderly and clinical populations with identified immune deregulation to better elucidate potential implications for clinical outcomes. Further research is required to assess appropriate, sensitive, reliable and valid immune outcome measures in mind-body medicine including monitoring mind/body therapies (MBTs) effects in the populations with pro-inflammatory states such as infection, neoplasm, inflammatory arthritis, infarction and tissue injury. Understanding dose response relationship and critical components of mind-body interventions associated with changes in hormone levels, inflammatory and antiviral outcomes, for clinical validation and standardization, will be beneficial for comprehending and unraveling mechanistic pathways. This endeavor will help in realizing the MBTs effects on the immune system and these clinical outcomes will provide a deeper insight in the phenomenon of complementary and alternative medicine therapeutic concepts. Such intensified research programs will help in exploring the possibilities of commencement of new era in human health care systems.

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