

CHAPTER - I

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“Yoga is not an ancient myth buried in oblivion. It is the most valuable in oblivion. It is the essential need of today and the culture of tomorrow”

- Swami Satyananda Saraswathi.

Yoga is the science of right living and, as such, is intended to be incorporated in daily life. It works on all aspects of the person: the physical, vital, mental, emotional, psychic and spiritual (**Satyananda Sarawati, 2002**).

Yogamaharishi Dr. Swami Gitananda Giri says, “Breath Is God”. It should be noted that the words which we use for breathing are associated with our relationship to the Universe in which we live. In German, the word "to breathe" is "Atman", the same as the Sanskrit word for the "Self". In Sanskrit the word for breath is "Brahman" or "God". (**Swami Gitananda Giri, 2006**)

Yoga is a spiritual science for the integrated and holistic development of physical, mental and spiritual aspects of our being. The recent advancement in the field of research has proved that Yoga normalizes physiological and psychological functioning of man. WHO defines health as “The state of complete physical, mental and social wellbeing and not merely absence of disease or infirmity”. The vital aspect is that of “being” healthy as well as “feeling” healthy. The qualitative aspect of health is considered important in Yoga and other Indian systems of medicine. The Bhagavad Gita defines Yoga as equanimity at all levels which may also be taken as the perfect state of health where there is physical homeostasis and mental equanimity giving rise to a healthy harmony between the body and mind. According to the Hathapradipika, one of the traditional Yoga texts, it is a safe and reliable practice that can be done at any age. Whether young, old or very old, sick or debilitated, one who

is vigilant attains success in all yoga, by means of practice, provided they abide to the rules and regulations properly- Hathapradipika I:64.(G.P Bhatt,2004)

The Yogic concept of health and disease (as explained in Yoga Vashishtha) enables us to understand that the cause of physical disorder sprouts from the mind. Adhi – the disturbed mind is the **cause** and Vyadhi - the physical disease is the **effect** that is manifested. This is the basis of the psychosomatic and somatopsychic ailments. Yoga aims at enabling the individual to attain and maintain the “**Sukhasthanam**”, defined as the dynamic sense of physical, mental and spiritual wellbeing.

Yoga is the original mind-body medicine that has enabled individuals to attain and maintain *sukha sthanam*, a dynamic sense of physical, mental and spiritual well being. Bhagavad-Gita defines Yoga as *samatvam* meaning thereby that Yoga is equanimity at all levels, a state wherein physical homeostasis and mental equanimity occur in a balanced and healthy harmony. Yoga focuses on harmony between mind and body. Yoga derives its philosophy from Indian metaphysical beliefs. The word yoga comes from Sanskrit language and means union or merger. The ultimate aim of this philosophy is to strike a balance between mind and body and attain self-enlightenment. To achieve this, yoga uses movement, breath, posture, relaxation and meditation in order to establish a healthy, lively and balanced approach to life. (www.yoga.iloveindia.com)

To achieve this Yogic integration at all levels of our being, it is essential that we take into consideration the all encompassing multi dimensional aspects of Yoga that include the following: a healthy life nourishing diet, a healthy and natural environment, a wholistic lifestyle, adequate bodywork through Asanas, Mudras and

Kriyas, invigorating breath work through the use of Pranayama and the production of a healthy thought process through the higher practices of Jnana Yoga and Raja Yoga.

Yoga works towards restoration of normalcy in all systems of the human body with special emphasis on the psycho-neuro-immuno-endocrine axis. In addition to its preventive and restorative capabilities, Yoga also aims at promoting positive health that will help us to tide over health challenges that occur during our lifetime. This concept of positive health is one of Yoga's unique contributions to modern healthcare as Yoga has both a preventive as well as promotive role in the healthcare of our masses. It is also inexpensive and can be used in tandem with other systems of medicine in an integrated manner to benefit patients.

The dedicated practice of Yoga as a way of life is no doubt a panacea for problems related to psychosomatic, stress related physical, emotional and mental disorders and helps us regain our birthright of health and happiness. It is only when we are healthy and happy that we can fulfil our destiny. With the adoption of a proper attitude and lifestyle through the Yogic way of life, we can rise above our own circumstances and our life can blossom as a time of variety, creativity, and fulfilment. Yoga helps us regain the ease we had lost through dis-ease. This enables us to move from a state of illness and disease to one of health and well being that ultimate allows us to move from the lower animal nature to the higher human nature and finally the highest Divine Nature that is our birthright.

The word *Yoga* is derived from the Sanskrit word *yuj* which means 'to join'. Yoga is a means to bring unity and harmony to the body, mind and emotions; and in spiritual terms a means to bring about the union of the individual consciousness with the universal consciousness. The Sanskrit term *yoga* is most frequently interpreted as the "union" of the individual self (*jiva-atma*) with the supreme self (*parama-atman*).

The ancient definition is at home in Vedanta, the dominant branch of Hindu philosophy, which also greatly influenced the majority of Yoga schools. Vedanta properly originated with the ancient esoteric scripture known as *Upanishads*, which first taught the “inner ritual” of meditation upon, and absorption into, the unitary ground of all existence. **(George Feuerstein, 2002)**

Patanjali defines the word "yoga" in his second sutra, which is the definitional sutra for his entire work: - *Yoga Sutras* 1.2 In order to attain this state practice or abhyasa and detachment or vairagya is necessary. In dealing with the disturbances of the mind Patanjali has two-pronged attack psychological on one side and physiological on the other. Patanjali's writing also became the basis for a system referred to as "Ashtanga Yoga" ("Eight-Limbed Yoga"). This eight-limbed concept derived from the 29th Sutra of the 2nd chapter and is a core characteristic of practically every Raja yoga variation taught today. **(Ananda Balayogi Bhavanani,2011)**

The Eight Limbs are:

- Yama (The five "abstentions"): Ahimsa (non-violence), Satya (Truth, non-lying), Asteya (non-stealing), Brahmacharya (celibacy), and Aparigraha (non-greediness).
- Niyama (The five "observances"): Saucha (purity), Santosha (contentment), Tapas (austerity), Swadhyaya (study of the scriptures, self analysis), and Ishwara-Pranidhana (surrender to God).

- Asana: Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation. Asana is steady posture held with comfort and ease.
- Pranayama (management and control of Prana) "*Prāna*", breath, "*āyāma*", to restrain or stop. Also interpreted as control of the vital life force.
- Pratyahara : Withdrawal of the sense organs from external objects.
- Dharana ("Concentration"): Fixing the attention on a single object.
- Dhyana ("Meditation"): Intense contemplation of the nature of the object of meditation.
- Samadhi ("Liberation"): merging consciousness with the object of meditation.

In the view of this school, the highest attainment does not reveal the experienced diversity of the world to be illusion. The everyday world is real. Furthermore, the highest attainment is the event of one of many individual selves discovering itself, there is no single universal self shared by all persons.

In another classical text *Yoga Yajnavalkya*, yoga is defined as "*jivatma paramatma samyogah*", or the union between the individual self (*jivatma*) and the Divine (*paramatma*).

Union of the self (*jivātma*) with the Divine (*paramātma*) is said to be yoga.

In Bhagavad Gita, Krishna explains to Arjuna about the essence of yoga as practiced in daily lives: (*yoga-stha kuru karmani sanyugam tyaktvā dhananjay siddhy-asiddhyosamo bhutvā samatvam yoga ucyate*) - *Bhagavad Gita* 2.48.

Yoga can surely help regain the ease lost earlier through disease. It can also enable us to attain a dynamic state of mental equanimity where the opposites of experience cease to affect us anymore. This enables us to move from a state of illness and disease to one of health and wellbeing that ultimately allows us to move from a lower animal nature to a higher human nature and finally to reach the highest Divine nature that is our birthright.

While modern medicine has a lot to offer humankind in its treatment and management of acute illness, accidents and communicable diseases. Yoga has a lot to offer in terms of preventive, promotive and rehabilitative methods in addition to many management methods to tackle modern illnesses. While modern science looks outward for the cause of all ills, the Yogi searches the depth of his own self.

“Yield not to the feebleness which says, this task is too difficult and far above my competence. The attempt to do the task itself will give the greatness (of mind) necessary”.

The greatness of your goal lends you greatness and you become as great as your objectives. **(Meena Ramanathan, 2007)**

This two way search can lead us to many answers for the troubles that plague modern man. It is suggested that a two way integration of the experimentally tempered modern science with the experientially modelled science of Yoga can lead us to many answers for challenges plaguing modern humankind such as debilitating chronic illnesses related to ageing, environment, and hedonistic lifestyle. Modern medical advancements provide the rationale for the integration of various traditional healing techniques including Yoga to promote healing, health, and longevity. It is imperative that advances in medicine include the wholistic approach of Yoga to face

the current challenges in health care. The antiquity of Yoga must be united with the innovations of modern medicine to improve quality of life throughout the world.

Dr. Dean Ornish, the eminent American doctor who has shown that Yogic lifestyle can reverse heart disease says, “Yoga is a system of perfect tools for achieving union as well as healing”. The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well being and not merely absence of disease or infirmity. WHO has also in recent times suggested a fourth dimension of spiritual health but has fallen short of defining it without confusing it with religion. From a Yogic perspective it is heartening that the WHO definition gives importance to ‘well being’ that is a vital aspect of ‘being’ healthy as well as ‘feeling’ healthy. This qualitative aspect of health is something that Yoga and Indian systems of medicine have considered important for thousands of years. One of the main lacunae of the WHO definition lies in the use of the term ‘state’ that implies health is something to be achieved ‘once and for all’ with no need for care about it thereafter! It is definitely not so. We need to keep working on our health with great vigour and dynamic enthusiasm for the entire span of our life. If health is to be understood as a ‘state’, then it must be understood as a dynamic state that varies from day-to-day and often from minute-to-minute. **(Bhavanani AB, 2013)**

The ancient art and science of yoga, yes, it is an art and it is a science. Art is something of our right brain and science is something of our left brain and yoga does look at integration and balance between both the right and the left brain, reconnecting, re-integrating, re-uniting. Now along the way different aspects of yoga which was not invented, it was discovered. It is something that goes back into time immemorial that Lord Shiva taught Parvati yoga. The word Yoga is synonymous with Truth, One-ness, Samadhi, Nirvana, or Moksha. Oftentimes the term Yoga is used to describe what is

in fact Hatha Yoga or Yoga Asana and Pranayama etc. Yoga is the end rather than the means. The means to attain Yoga are accepted to be four in number and they are known as Raja Yoga, Jnana Yoga, Bhakti Yoga, and Karma Yoga. Different Yogic philosophies discuss many paths to achieve Yoga (or Self Realisation) and it is understood that all paths lead to the same endless Ocean. Understanding this we are free of judgment of ourselves and others. We all have our own path. All systems of Yoga are based on developing our awareness and learning to respect and accept who we are. This Body and Mind of ours is an instrument to marvel, that help us to manage our life and realise our purpose. The cause of all suffering is ignorance. This same Body and Mind that experiences this suffering is the very same instrument that will allow us to experience the Self that is Truth. So the call comes to “Wake Up” and not to waste the opportunity this life has given you.

Hatha Yoga is the physical science of psycho-physiological balance. It is the physical science of balancing the equal and opposite energies in our bodies, energies on the right side of the body with energies on the left side of the body. Energies of the right side of the body are in tune with the solar energies, known by the term ‘Ha’, as the Surya, as Pingala. Lunar Energies runs in the left side of the body, known by the term ‘Tha’, as the Chandra, as Ida. These are part of our subtle existence which in yoga we term as subtle channels, the nadis. There are 72,000 of these energy channels running throughout our body, three of the nadis being the most important ones. The most important aspect of the practices in yoga are to culture the spine, how you sit, how you twist, how you bend forward, how you bend back. Most of the yogasanas, the yogic postures manipulate the spine, makes the spine healthy. On either side of the spine are the energies that are called the Pingala running up and down the right side, and the Ida nadi on the left side. Everything that happens on the right side of

your body can be related to your left brain, and that which happens on the left side, is to do with the right brain.

Jnana Yoga is the philosophy of vedanta, it is neither optimistic nor pessimistic, it takes things as they are and shows that the basis of our being is contradiction, that wherever there is good there must be evil, wherever there is life there must be death. Jnana Yoga teaches us that the path to religion and wisdom is renunciation. The vedantist goes beyond nature, beyond maya, beyond a personal God, to discover God is he himself, the one real Self, and is free. We have a unit of universality which is Oneness. In yoga we call it Advaitam, non-duality; the opposite of which is Dvaitam meaning duality. Advaita Vedanta is non-duality, Oneness, and a rationalistic religion that can reach and take hold of intellectuals. Give up desires, give up the illusory world, once there is no delusion, we see Oneness and there is no more misery – this misery comes from ignorance, from separation. Vedanta says that this separation is unreal; it does not exist.

Karma Yoga is the path of action or work, everything we do, physical or mental, is Karma, and it leaves its marks or impressions on us. Karma Yoga is work for work's sake, without selfish motivation, without attachment to the fruits of that action, without caring for the results. According to the circumstances in which we are placed, we must perform our duties. We should go about these duties without fear, without weakness. Karma Yoga is to do the duty that is ours by birth, not to judge the duty of others through our own eyes and culture. Through this work with the sense of duty will come work without any idea of duty – work will become worship. The Karma-Yogi's renunciation is in giving up the fruits of his action and any rewards.

Raja Yoga is the path of meditation providing the scientific and practical methodology to acquire the subtle perceptions required to reach Truth. It does not deny the existence of facts that may be difficult to explain, and it warns us that attributing such facts to supernatural beings will bring dependence and spiritual decay, fear and superstition. It teaches that all knowledge is based upon experience and Yoga is the science that teaches us about religion that allows us to experience God for ourselves, to realise and know truth, not simply follow that which our forefathers tell us is so. Raja Yoga teaches the method to this understanding, this experience. It shows us how to observe the internal states, how to direct the power of attention, how to analyse the mind, how to concentrate to obtain knowledge.

Bhakti Yoga is the path of devotion and love – complete surrender to God. It is a real and genuine search for God that begins, continues, and ends in Love. The Bhakta (devotee) understands that all sects of all religions are manifestations of the same Lord. The renunciation of the Bhakta comes more naturally without any sense of giving up or separation. Instead as devotion to God grows and intensifies; forms, rituals, books, religions, and all limitations and bondages fall off by their own nature. Bhakti fills the heart with the ocean of love and there is no attachment or room for anything but God, all shines with this beauty and love and there are no more distinctions, no resentments, no jealousy, selfishness, or hate. The Bhakta becomes mad with the divine love of God and the universe melts into the infinite ocean of Love

Mechanisms that explain the methodology through which Yoga can be said to work as an integrated mind-body medicine:

- Cleanses the accumulated toxins through various *shuddi kriyas*, the *shatkriyas* and generates a sense of relaxed lightness through *jathis* and *vyayama* type

activities. Free flow in all bodily passages prevents the many infections that may occur when pathogens stagnate therein.

- Adoption of a yogic lifestyle with proper nourishing diet, creates positive antioxidant enhancement thus neutralizing free radicals while enabling a rejuvenating storehouse of nutrients packed with life energy to work on anabolic, reparative and healing processes .
- Steadies the entire body through different physical postures held in a steady and comfortable manner without strain. Physical balance and a sense of ease with oneself enhance mental / emotional balance and enable all physiological processes to occur in a healthy manner.
- Improves control over autonomic respiratory mechanisms through breathing patterns that generate energy and enhance emotional stability. The mind and emotions are related to our breathing pattern and rate and hence the slowing down of the breathing process influences autonomic functioning, metabolic processes as well as emotional responses.
- Integrates body movements with the breath thus creating psychosomatic harmony. In yoga the physical body is related to *annamaya kosha* (our anatomical existence) and the mind to *manomaya kosha* (our psychological existence). As the *pranayama kosha* (our physiological existence sustained by the energy of the breath) lies in between them, the breath is the key to psychosomatic harmony.
- Focuses the mind positively on activities being done, thus enhancing energy flow and resultant healthy circulation to the different body parts and internal organs. Where the mind goes, there the *prana* flows.

- Creates a calm internal environment through contemplative practices that in turn enable normalization of homeostatic mechanisms. Yoga is all about balance or *samatvam* at all levels of being. Mental balance produces physical balance and vice versa too.
- Relaxes the body-emotion-mind complex through physical and mental techniques that enhance our pain threshold and coping ability in responding to external and internal stressors. This enhances the quality of life as seen in so many terminal cases where other therapies are not able to offer any solace.
- Enhances self confidence and internal healing capacities through the cultivation of right attitudes towards life (**Bhavanani AB, 2013**)

Psychosomatic Mechanisms of Yoga:

Yoga understands the influence of the mind on the body as well as that of the body on the mind. This is the principle of *adhi-vyadhi* elucidated in the *Yoga Vasishtha*. It is interesting that modern medicine has only realised this connection in the last hundred years whereas Yogic of India were teaching and practising it for thousands of years. No wonder Yoga may be considered as the original mind-body medicine.

From the Yogic viewpoint of disease it can be seen that psychosomatic, stress related disorders appear to progress through four distinct phases. These can be understood as follows:

Psychic Phase: This phase is marked by mild but persistent psychological and behavioural symptoms of stress like irritability, disturbed sleep and other minor symptoms. This phase can be correlated with *vijnanamaya* and *manomaya koshas*. Yoga as a mind body therapy is very effective in this phase.

Psychosomatic Phase: If the stress continues there is an increase in symptoms, along with the appearance of generalized physiological symptoms such as occasional hypertension and tremors. This phase can be correlated with *manomaya* and *pranamaya koshas*. Yoga as a mind body therapy is very effective in this phase.

Somatic Phase: This phase is marked by disturbed function of organs, particularly the target, or involved organ. 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.

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 has a palliative and quality of life improving effect in this phase. It also has positive emotional and psychological effects even in terminal situations.

Potentialities of Yoga

Extensive research on yoga being done all over the world has shown promise with regard to various disorders and diseases that seem to be amiable to yoga therapy. These include psychosomatic, stress disorders such as bronchial asthma, diabetes mellitus, hypertension, irritable bowel syndrome, gastro intestinal ulcer diseases, atherosclerosis, seizure disorder and headache. It also includes physical disorders such as heart disease, lung disease, and mental retardation. Psychiatric disorders such as anxiety disorders, obsessive-compulsive disorder, depression and substance abuse can also be managed along with other therapies. Musculoskeletal disorders such as

lumbago, spondylosis, sciatica and carpal tunnel syndrome can be tackled with Yoga practices that offer a lot of hope in metabolic disorders such as thyroid and other endocrine disorders, immune disorders, obesity and the modern metabolic syndrome.

(Bhavanani AB, 2013)

It is well established that stress weakens our immune system. Scientific research in recent times has showed that the physiological, psychological and biochemical effects of Yoga are of an anti-stress nature. Mechanisms postulated included the restoration of autonomic balance as well as an improvement in restorative, regenerative and rehabilitative capacities of the individual. A healthy inner sense of wellbeing produced by a life of Yoga percolates down through the different levels of our existence from the higher to the lower producing health and wellbeing of a holistic nature.

Streeter *et al* (2012) proposed to explain the benefits of yoga practices in diverse, frequently co-morbid medical conditions based on the concept that yoga practices reduce allostatic load in stress response systems such that optimal homeostasis is restored.

It is well established that stress weakens our immune system. Scientific research in recent times has showed that the physiological, psychological and biochemical effects of Yoga are of an anti-stress nature. Mechanisms postulated included the restoration of autonomic balance as well as an improvement in restorative, regenerative and rehabilitative capacities of the individual. A healthy inner sense of wellbeing produced by a life of Yoga percolates down through the different levels of our existence from the higher to the lower producing health and wellbeing of a holistic nature.

Yoga practices reduce allostatic load in stress response systems such that optimal homeostasis is restored. They hypothesized that stress induces an:

- Imbalance of the ANS with decreased parasympathetic and increased sympathetic activity.
- Under activity of the gamma amino-butyric acid (GABA) system, the primary inhibitory neurotransmitter system.
- Increased allostatic load.

They further hypothesized that Yoga-based practice

- Correct under activity of the parasympathetic nervous system and GABA systems in part through stimulation of the vagus nerves, the main peripheral pathway of the parasympathetic nervous system, and
- Reduce allostatic load.

Streeter *et al*, (2007) proposed that the decreased parasympathetic nervous system and GABAergic activity that underlies stress-related disorders can be corrected by Yoga practices resulting in amelioration of disease symptoms. HRV testing has a great role to play in our understanding intrinsic mechanisms behind such potential effects of Yoga.

Innes *et al* (2005) had earlier also postulated two interconnected pathways by which Yoga reduces the risk of cardiovascular diseases through the mechanisms of parasympathetic activation coupled with decreased reactivity of sympathoadrenal system and HPA axis.

Research: The positive benefits of Yoga research are of vital significance and an understanding of how the various practices work in different conditions and in

normal situations are of great value for both the science of Yoga as well as for the world of medicine.

Yoga therapists can benefit a lot by a scientific understanding of Yoga postures and other techniques. This will bring about a rational approach to Yoga therapy rather than a haphazard application of individualistic knowledge. Under the department of AYUSH, Morarji Desai National Institute of Yoga has created advanced centres for yoga in JIPMER, NIMHANS, AIIMS and DIPAS to promote all aspects of Yoga in these premier medical institutions of India. Various private institutions are running in our country and doing their best to propagate Yoga-Vidya. Yoga therapy is being used both in conjunction with modern medicine or alternative systems of medicine as well as on its own in various centres. Various conditions such as diabetes, hypertension, arthritis, mental depression, bronchial asthma etc have been found to be relieved by yoga therapy and centres such as ICYER at Ananda Ashram, SVYASA, Kaivalyadhama, The Yoga Institute and Krishnamacharya Yoga Mandiram are doing a great deal of work in this field.

Need for coordination: The need of the modern age is to have an integrated approach towards therapy and to utilize Yoga therapy in coordination and collaboration with other systems of medicine such as Allopathy, Ayurveda, Siddha and Naturopathy. Physiotherapy and Chiropractic practices may be used with yoga if needed. Advice on diet and lifestyle is very important irrespective of the mode of therapy that is employed for a particular patient.

Reducing Expenditure: Modern medicine is often criticized for the cost involved in its methods of treatment. Yoga offers an inexpensive method of health that can be added to the medical armoury when required. Yoga only requires the patient's own effort and really doesn't need any paraphernalia. Of course the modern

Yoga industry would rather have us believe that we need tons of yoga equipment to start yoga, but they are awfully of the mark in this case. Reduction in drug dosage and avoidance of unnecessary surgeries in many cases can also help reduce the spiralling cost of medicare.

Ageing is a progressive, generalised impairment of function, resulting in a loss of adaptive response to stress and in a growing risk of age-related disease. It is a natural process characterised by declining physical performance, slower speed of reaction, inadequate working of various systems with poor motor and sensory conduction. Ageing can be defined as the passage of time from birth in year (**Jones & Rose, 2005**).

It is associated with decreases in muscle strength, balance, and reaction time, muscle mass and daily physical activity. The process of ageing is characterised by progressive and generalised impairment of homeostasis resulting in declining ability to respond to external or internal stresses and increased risk of diseases. Yoga is a conventional long-established and time-tested art and therapeutic science that has positive contribution to make in maintenance of general wellbeing and happiness. Ageing is inevitable and Yoga can help us to age gracefully. Modern medicine tries to help retard ageing and help people look better by costly surgical methods that are only an external covering over the underlying ageing process. Healthy diet, regular exercise, avoidance of negative habits and cultivation of the positive habits and a healthy lifestyle can help us to age with dignity. Yoga can also help our 'silver citizens' retain their mental ability and prevent degenerative disorders such as Parkinson's disease, Alzheimer's and various other dementias. Physical accidents such as falls can be minimized and many an artificial hip, knee or shoulder

replacement surgery can be avoided. Swami Gitananda Giri, Yogashri T Krishnamacharya, Sri Kannaiah Yogi, Swami Suddananda Bharathi, Sri Yogeshwarji, Sri Yogendraji, Sri pattabi Jois and Padma Bhushan BKS Iyengar are but a few of the Yogis who have shown us that it is possible to grow old without losing any of the physical or mental faculties of youth. A number of studies have shown that physical inactivity is the key risk factor contributing to coronary heart disease, hyper tension, obesity, diabetes and other psychosomatic disorders, resulting in increased mortality and morbidity as well as increased functional disability in old age. Regular physical activity is essential for quality of life and wellbeing in old age and reduces the need for assistance. **(Patel et al. 2011)**

Geriatry is study pertaining to **geriatrics**, old age or aged persons, relating to geriatric medicine or to older people. The age that is considered geriatric is between 65 and 85 years old. Geriatrics is defined as the medicine branch that is concerned with the promotion of health and the treatment and prevention of disability and disease in old age. While this definition is somewhat arbitrary, it is many times associated with the age at which one can begin to receive pension benefits. At the moment, there is no United Nations standard numerical criterion, but the UN agreed cut off is 60+ years to refer to the older population. As far back as 1875, in Britain, the Friendly Societies Act, enacted the definition of old age as, "any age after 50", yet pension schemes mostly used age 60 or 65 years for eligibility. **(Roebuck, 1979)**.

The UN has not adopted a standard criterion, but generally uses 55+ years to refer to the older population.

Women's Health: Women are the chosen ones blessed with the responsibility of the future of our human race. Healthy mothers give birth to healthy babies and a

healthy start has a great future ahead. Yoga has a lot to contribute in combination with modern medicine to the health status of womankind. Puberty and menopause become easier transitions with the help of Yoga and many eminent Yoginis have said that they were not even aware of a single menopausal symptom as they went through this difficult period in a woman's life. Women are the asset and the backbone to the family. They have an important role to play when we talk about continuation of the human species or progeny. It is very important women are healthy and happy despite the social taboos. On the contrary, women are unhappy, sick, cognitively impaired and isolated especially as they grow older. Health declines in old age, but the health problems tend to cluster together more in older women than among older men, who experience cognitive impairment and psychological disorders. Healthy habits established in earlier life plays a major role in determining the functioning in old age. Hence lifestyle interventions and modifications are essential to maximize the wellbeing among elderly women. There is significant scope for improving the health of ageing women thus ensuring that they remain the resource for the family and the community.

Yogasanas

The definition of Asana as given by Maharishi Patanjali:

II.46 *sthira-sukham âsanam*

The postures of meditation should embody steadiness and ease.

II.47 *prayatna-shaithilyânanta-samâpattibhyâm*

It results in relaxation of effort and the merging / meditating on the infinite.

II.48 *tato dvandvânabhighâtai*

Then, one is no longer disturbed by the play of opposites.

Yogasanas are performed slowly with relaxation and concentration. In this way, both the external and internal systems are influenced, so that the nervous systems, endocrine glands and internal organs as well as the muscles are encouraged to function properly. Thus asanas have a physical and psychosomatic effect, which is helpful in curing infirmities. Asanas can be done for both healthy and unhealthy people, young and old. They are most useful for both concentration and meditation. Other systems of physical culture increase the toxins in the body, whereas asanas reduce the toxins level.

The benefits of various yoga techniques have been professed to improve body flexibility, performance, stress reduction, attainment of inner peace and self-realization. The system has been advocated as complementary and treatment to aid healing of several ailments such as coronary heart disease, depression, anxiety disorders, asthma and external rehabilitation for disorders including musculoskeletal problems and traumatic brain injury. The system has also been suggested as a behavioural therapy for smoking cessation and substance alcohol abuse. (K.S. Joshi, 1976)

- Benefits by the practice of asanas:
- Improve flexibility
- Improve strength
- Improve balance
- Reduce stress and anxiety
- Reduce symptoms of lower back pain

- Beneficial for asthma and chronic obstructive pulmonary disease (COPD)
- Increase energy and decrease fatigue
- Reduce sleep disturbances
- Reduce hypertension
- Improve blood circulation
- Controls the complications of diabetes

The emphasis on the physical benefits of yoga, attributed to practice of the asanas, has emphasized the other traditional purposes of yoga which are to facilitate the flow of prana (vital energy) and to aid in balancing the koshas (sheaths) of the physical and metaphysical body. The yoga postures (known as asanas), help to stretch and relax the muscles and skeletal system. The physical release through these soothing movement can help to create a sense of calmness and well-being. Physical exercise of any kind will help people with high levels of anxiety and yoga postures have the added bonus of specifically generating deep muscle relaxation while toning at the same time. (Nan Little, 2006)

Pranayama

II 49 *tasmin satiśvāsa praśvāsayoḥ gativicchedaḥ prāṇāyāmaḥ*

Going beyond the processes of inhalation and exhalation is pranayama.

II 50 *bāhya ābhyantara stambha vṛttiḥ deśa kāla saṁkhyābhiḥ paridṛṣṭaḥ dīrgha sūkṣmaḥ*

It has internal, external and restrictive operations, which are regulated according to the place, time and accounting, being prolonged or hardly noticed.

II 51 *bāhya ābhyantara viṣaya ākṣepī caturthaḥ*

That which transcends the objective external and internal breath regulation is the fourth type of prāṇāyāma

II 52 *tataḥ kṣīyate prakāśa āvaraṇam*

Thereby the shroud that hides the inner effulgence is destroyed

II 53 *dhāraṇāsu ca yogyatā manasaḥ*

The mind gets prepared for the higher internalising practices of yoga.

A combined practice of physical postures, breathing exercises and meditation in a sequence is the best compromise to meet the present day needs of the society. The results of these practices can be enhanced much more if one follows all the recommended restraints and observations in everyday life. The restraints and observances he refers to are the *yama* and *niyama* of classical yoga. The ethics and morality of the traditional texts help to lay groundwork for moderate, compassionate living, but behaviour change is complex and one's personality is rooted in layers of unconscious conditioning.

It is through our faulty habits, faulty lifestyle, faulty breathing, wrong emotions and negative thought patterns that we cause the disassociation of the body-emotions- mind, disassociation of the Koshas, (Nara), leading to various somatic and

psychosomatic disorders. All these are worsened by stress. The dedicated practice of Yoga alleviates the problems related to psychosomatic stress related disorders helping regain health and happiness. (**Ananda Balayogi Bhavanani, 2007**)

Psychomotor activity is the relationship between cognitive functions and physical movement. Psychomotor learning is demonstrated by physical skills such as movement, coordination, manipulation, dexterity, grace, strength, speed; actions which demonstrate the fine motor skills such as use of precision instruments or tools, or actions which evidence gross motor skills such as the use of the body in dance, musical or athletic performance. It is the psychology relating to, or characterizing movements of the body associated with mental activity. Reaction time is an important index in this category of psychomotor activities, indicating the level of neuronal response in an individual.

Psychology is the scientific study of the human mind or of mental states and its functions, especially those affecting behaviour in a given context, synonymous to study of the mind, science of the mind, science of the personality and study of the mental processes It may also be given as the mental characteristics or attitude of a person or group. Psychology is also the science of human and animal behaviour.

Anxiety is a psychological and physiological state characterized by cognitive, somatic, emotional, and behavioural components associated with uneasiness, fear, or worry. Anxiety is a generalized mood condition that occurs without an identifiable triggering stimulus. It is a term generally used to refer to disorders that cause fear, apprehension, worrying and fear. These disorders affect how one behaves and feels.

Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behaviour, feelings and sense of well-being. Depressed people can feel sad, anxious, empty, hopeless, worried, helpless, worthless, guilty, irritable, hurt, or restless. They may lose interest in activities that once were pleasurable, experience loss of appetite or overeating, have problems concentrating, remembering details, or making decisions, and may contemplate, attempt, or commit suicide. Insomnia, excessive sleeping, fatigue, loss of energy, or aches, pains, or digestive problems may also be present. Depressed mood is not always a psychiatric disorder. It may also be a normal reaction to certain life events, a symptom of some medical conditions, or a side effect of some drugs or medical treatments. Depression can lead to emotional and physical problems. Typically, people with depression find it hard to go about their day-to-day activities, and may also feel that life is not worth living. The Diagnostic and Statistical Manual of Mental Disorders defines a depressed person as experiencing feelings of sadness, helplessness and hopelessness. Feeling sad, or what we may call "depressed", happens to all of us. The sensation usually passes after a while. However, people with a depressive disorder - clinical depression - find that their state interferes with daily life. For people with clinical depression, their normal functioning is undermined to such an extent that both they and those who care about them are affected by it.

Self-esteem is a term in psychology to reflect a person's overall evaluation or appraisal of his or her own worth. It is a feeling of pride in yourself.

OBJECTIVES OF THE STUDY

- To evaluate the effects of yogic techniques in alleviating the age related health problems in geriatric women.
- To impart existing medical treatment and also to execute the training program on yogasanas and pranayama to geriatric women.
- To compare how the selected yogic techniques and existing medical treatment can contribute to improve health and wellbeing in geriatric women.

REASON FOR THE SELECTION OF THE TOPIC AND VARIABLES

Yoga is an important tool that integrates a person at all levels of existence. Women are the backbone of a family .They need it for their own welfare as well as their family and thereby the society on the whole.

STATEMENT OF THE PROBLEM

It is notable that health problems tend to cluster together to a great extent in old age especially in the older women than in the older men. The art and science of Yoga has answers to most health problems troubling human beings. The dedicated practice of Yoga alleviates the problems related to psychosomatic stress related disorders helping regain health and happiness.

The purpose of the study is to analyze the effect of selected yogasanas and pranayama practices on selected cardio-respiratory, psychological and psycho-motor variables among low and highly depressed geriatric women.

In the title of the study, the subjects were mentioned as '**low**' and '**highly**' depressed geriatric women. The Hamilton Rating Scale for Depression was used in this study where it has been mentioned as '**moderately**' and '**severely**' depressed. Henceforth in this thesis, the term '**low**' has been replaced by '**moderately**' and the term '**highly**' replaced by the '**severely**'.

HYPOTHESIS

It is hypothesized that

1. There would be significant difference in the cardio-respiratory variables such as resting heart rate, systolic pressure, diastolic pressure, respiratory rate and forced vital capacity in geriatric women
2. There would be a well marked difference in the psychological variables such as anxiety, depression and self esteem in geriatric women.
3. There would be a well marked difference in the psycho-motor variables such as auditory reaction time and the visual reaction time in geriatric women.

DELIMITATIONS

1. The study is to be delimited to the following aspects:
2. The study was confined to the low and highly depressed geriatric women of the Hospice Convent, Home for the aged, Congregation of St. Joseph of Cluny, Pondicherry.

3. The study was conducted on 58 women selected randomly from the inmates of the Hospice Convent Home for the Aged, Congregation of Saint – Joseph of Cluny, Pondicherry.
4. The age of the subjects ranged from 55 to 75 years.
5. The study was restricted to the following dependent variables only: cardio-respiratory parameters such as resting heart rate, systolic pressure and diastolic pressure, respiratory rate and forced vital capacity and psychological variables such as anxiety, depression and self esteem and the psycho-motor variable such as auditory reaction time and visual reaction time in geriatric women
6. Specifically selected yogasanas and pranayama practices scheduled for the geriatric women were the independent variables.
7. The subjects were asked to follow a special yogic diet which was recommended.
8. All participants in the experimental group received training in the same yogasanas and pranayama.

LIMITATIONS

1. Apart from the training program, the cultural factors and environment of the subjects was not taken into consideration.
2. The living conditions, lifestyle, personal habits, family and heredity were not taken into consideration for this study.
3. The routine work of the subjects was not controlled and their possible influence on the result of the study was noted as a limitation.

OPERATIONAL DEFINITIONS AND EXPLANATION OF TERMS

YOGA

Yoga is a spiritual science for the integrated and holistic development of physical, mental and spiritual aspects of our being. Yoga is “Moksha Shastra” meant to facilitate the individual to attain the liberation or emancipation. Helps unearthing the hidden talents and potentials and enhances the sense of joy, happiness, contentment and a jubilant sense of wellbeing in the minds of the practitioner.

Yoga is the original mind-body medicine that has enabled individuals to attain and maintain *sukha sthanam*, a dynamic sense of physical, mental and spiritual well being.

Asana: Asana is the third limb of ashtanga yoga. It is the posture held with steadiness and utmost comfort. Helps gain healthy state body and lightness of limbs
(B.K.S.Iyengar 1995)

Pranayama: ‘Prana’ means breath, respiration by vital energy or strength, ‘Ayama’ means stretch, extension, expansion, regulation of breath and its restraint.
(B.K.S.Iyengar 1999)

CARDIO-RESPIRATORY FACTORS

Resting heart rate is the number of heartbeats per unit of time - typically expressed as beats per minute (BPM), recorded in a supine resting state. The beat of the heart felt through the walls of the arteries is known as pulse. It is felt when the fingers are laid upon the radial artery at the wrist (Miller, 1965)

Blood pressure (BP) is the lateral force exerted by circulating blood on the walls of blood vessels, and is one of the principal vital signs. During each heartbeat, BP varies between a maximum (systolic) and a minimum (diastolic) pressure

Systolic Blood pressure: Systolic Blood pressure is the maximum pressure that occurs during the systole or the compression of the heart. (**Wilmore and Costill, 1994**)

Diastolic Blood pressure: Diastolic Blood pressure is the minimum pressure that occurs during the diastole or relaxation of the heart (**Wilmore and Costill, 1994**)

Respiratory Rate is the normal rate of breathing at rest, about 12 to 20 inspirations per minute.

Vital capacity is the maximum amount of air that a person can expel from the lungs after first filling the lungs to their maximum extent; it is equivalent to the inspiratory reserve volume (IRV) plus the tidal volume (TV) plus the expiratory reserve volume (ERV). ($VC = IRV + TV + ERV$). Vital Capacity of air that can be forced out of lungs after a maximum inspiration, emphasising on completeness of expiration. The maximum volume of air that can be voluntarily moved in and out of the respiratory system

One of the most useful measurements of lung volume is Vital Capacity; the maximal volume of air that can be forcefully exhaled after taking the deepest breath. However, among individuals of the same size and sex, the vital capacity tends to be greater in those who exercise regularly. Usually, the relatively fit and healthy individuals can exhale at least 83 per cent of their vital capacity in the first, second of exhalation. At rest, only about half a liter of air is drawn into the lungs with each

breath; this is known as the tidal volume. It increases with exercise until it reaches the vital capacity. The total amount of air inhaled each minute (ventilation rate) depends on both the depth and frequency of breathing. At rest, about 12 breaths per minute are taken so that the total volume of air inhaled is about 6 litres. During very strenuous exercise, this can increase to more than 100 litres a minute (www.answers.com)

Forced vital capacity (FVC): is the determination of the vital capacity from a maximally forced expiratory effort.

PSYCHOLOGICAL FACTORS

Anxiety is a psychological and physiological state characterized by cognitive, somatic, emotional, and behavioural components associated with uneasiness, fear, or worry. Anxiety is a generalized mood condition that occurs without an identifiable triggering stimulus. Anxiety is a feeling of apprehension, fear, nervousness, or dread accompanied by restlessness or tension. State anxiety: An unpleasant emotional arousal in response to perceived danger demands.

Anxiety is tested in many different ways. Sometimes individual experiences it, as merely in sense of harmless dread without being able to identify or of what he is fearful. Psychiatrists call this free floating anxiety to indicate that it is not attached to any specific object. When all individual main symptoms are that of free floating anxiety, Psychiatrists diagnose the condition as an anxiety state. Over anxiety leads to tension and it adversely affects the functions like digestion, circulation, excretion and sleep. Yogic exercises (asanas and pranayama) help to develop the control of the

senses and bring balance and harmony leading to coordination of body and mind
(E.B.Neil, 1981)

Depression is a state of low mood and aversion to activity. The diagnostic and statistical manual of mental disorder defines a depressed person as experiencing feelings of sadness, helplessness and hopelessness.

The Hamilton Rating Scale for Depression is used to assess the indication of depression and its level. There are 21 items (questions) in the questionnaire, and are graded accordingly. If the subject gets a score of 14 to 18, then they are classified as “moderately depressed” person. If they have a score of 19 to 22, they are categorised as “severely depressed” person. Hereafter the scholar would be using the term “**moderately depressed**” instead of the term “**low depressed**” and “**severely depressed**” instead of “**highly depressed**” in the ensuing chapters of the thesis for the sake of convenience and easy understanding.

Self-esteem is a term in psychology to reflect a person's overall evaluation or appraisal of his or her own worth.

PSYCHO-MOTOR FACTORS

Reaction time is defined as an interval of time between the application of stimulus and the initiation of appropriate voluntary response under the condition that the subject has been instructed to respond as rapidly as possible (1) It indicates the time taken by an individual to react to external stimulus (2) One measure of information processing is reaction time and is used to judge the ability of the person to concentrate and coordinate. It provides an indirect index of the integrity and

processing ability of the central nervous system (3) and a simple, non invasive means of determining sensorimotor co-ordination and performance of an individual

Auditory Reaction time is the response given by the individual to an auditory impulse (beep sound)

Visual Reaction time is the response given by the individual to a visual impulse (red light).

SIGNIFICANCE OF THE STUDY

1. The study may help to find out the health related physiological status of geriatric women.
2. The study evaluates the efficacy of yoga on selected common disorders of women through a controlled experiment.
3. The study highlights the importance of yoga on healthy living.
4. Based on the results of the study, suitable schedules can be designed in yoga and implemented on the geriatric women in a fruitful and scientific manner.
5. The study may help in the prevention and rehabilitation of certain disorders prone to women after their menopausal stage.
6. The yogic techniques to be scheduled for the women will be easily accessible to all of them and is also affordable.
7. The follow up study for evaluating the stabilized effects of yogic techniques in preventing and postponing age related health hazards will be undertaken.
8. This study will have significance and importance to the field of yoga education and medical education.