Chapter – I

INTRODUCTION
Great sages of India founded Yoga several thousand years ago. They interpreted their experiences and transferred them into a practical method. Eventhough yoga was founded by sages, it is not restricted to sages alone. The practical method of yoga can be adapted to various groups of human beings. Therefore it has got the acceptance of all human beings irrespective of race, caste, creed, colour and sex. In fact it renders services to the modern life and its social needs.

Maharsi Pantaṅjali, the founder of yoga, says "yogāṇuśāsanam"\(^{1}\) This indicates that Yoga has to be experienced by the practices taught by the teacher, not merely by discussions. Maharsi Pantaṅjali, who is “The Father of Yoga”, synthesized and systematically compiled various aspects of yoga in his “Yoga Sūtra”.

The word yoga is derived from the Sanskrit language. According to Panmi, the great Sanskrit grammarian, the word yoga has two roots, \(yuj\) and \(yujir\). \(Yuj\) means Samādhi, \(yujir\) means union. The word yoga has got the root \(yuj\) from the point of view of Patanjali\(^{2}\). Yoga is restraining the citta from taking various cittavṛttis\(^{3}\). The manas, the ahankāra and the buddhi emerge from citta\(^{4}\). They may be called mind, egoism and the determinative faculty, mind stuff respectively. Citta has got five states, kṣipta, mūdha, vikṣipta, ekāgra and the niruddha. In niruddha all thoughts are restrained and only samskāras remain. This leads to asamprajñāta samādhi\(^{5}\). Samādhi is the aim of yoga\(^{6}\). Samādhi is a state of mind in which one realizes Truth\(^{7}\).

Yoga may be used to maintain a healthy mind and body to attain the spiritual goal. It has been used as a tool of psychological and spiritual evolution and health for hundreds of years\(^{8}\). Patanjali says, "Heyam duhkham anāgatam"\(^{9}\), which means that the misery yet to come can be avoided. Yoga emphasizes, the practise of different limbs of yoga purifies and leads to the maximum limit of the effulgent knowledge. Yogāṇuṣṭhānādaśuddhiksaye.
jñānādiptīrāvivekākhyāṭeh⁠¹⁰ Yoga works on the inner senses and mind, and can cure many ailments which the other medicines cannot⁠¹¹ Therefore one can purify one’s body, mind and senses and can have a healthy long life by the practice of yoga⁠¹²

_Citta_ has got very much importance in _yogaśāstra_, the method of restraining the mental modifications. Most of the diseases have their origin in the mind and they are manifested in the body⁠¹³ Disease, mental laziness, doubt, lack of enthusiasm, lethargy, clinging to sense enjoyments, false perception, non-attaining concentration and falling away from the state of development when attained, are the obstructing distractions according to yoga. Yoga _śūtra_ tells _Vyādhistyānasamśayapramādālayāvivatibhrāntidarśanālabdhahāmbhūmikatvānav asthitatvāni cattavitikṣepāste,antarāyāḥ⁠¹⁴_ This type of _citta vikṣepa_ produces grief, mental distress, tremor of the body and irregular breathing. Patanjali tells _duḥkha duarmaṇasyāṅgamejayatvā śvāṣa praśvāṣā vikṣepa sahaḥbhuvah⁠¹⁵_ Remedy for these distractions is _abhyāsa_ and _vairāgya_. To overcome distractions, different methods of concentration are explained. These various concentrations and such other practices of yoga are very much helpful to overcome the diseases which are manifested by these distractions. These systematic approaches to overcome the diseases may be divided as preventive, promotive and curative aspects of yoga. These types of application of yoga for various symptoms and diseases of the body and mind may be called yoga therapy.

One can see yoga therapy concepts in classical texts like Patanjala _Yogasūtra_, Hathapradipika, Gheranda Samhita, Hatharatnavali etc. These texts describe various therapeutical benefits one can have by practicing different yogic practices. Patanjali opines that, one attains efficient body and senses by the practice of _tapas⁠¹⁶_ “Paschimatānāsana is good to improve and regulate the digestion, most of health problems vanish and proper hunger appears”⁠¹⁷, says Hathapradipika⁠¹⁸ The practise of _bhastrikā_ cures the diseases of _vāta, putta_ and
kapha and increases gastric fire\textsuperscript{19} One can get rid of old age and other complications by practicing \textit{Vipar\textashape{ti}kara\textashape{m}} regularly\textsuperscript{20} \textit{Nauli} intensifies gastric fire, restores good digestion, brings a feeling of well being and completely destroys all disorders\textsuperscript{21} The practice of \textit{Jalabasti} can get rid of urinary diseases, diseases of bowels and flatulence and one can keep one's body under control and very handsome\textsuperscript{22} \textit{Neti} cleanses the frontal sinuses and gives good eyesight\textsuperscript{23} Like this various practices and their benefits are explained in different classical texts of yoga One has to use carefully the appropriate yogic practices to treat the patient

People prefer nowadays, treatment through natural ways like yoga all over the world Therefore yoga has got importance in this era Most of the diseases originate in the mind Mind and body are closely associated according to yoga\textsuperscript{24} Any disturbance in the mind is expressed in the body Mind influences different body functions if mind is not taken care of They will result in the manifestation of various diseases in the body, if these disturbances continue to be there These disorders are called psychosomatic disorders because disturbance in the mind causes the somatic dysfunction\textsuperscript{25} Psychosomatic disorders are increasing every day Yoga, which considers the man \textquoteleft as a whole\textquoteright, can definitely play the vital role here The practise of yoga directly influences the mind as well as the body Therefore yoga can maintain healthy mind and body

The science of yoga has stood the test of time from thousands of years The great sages who studied, practised and synthesized, have developed this science Therefore one may say that the science of yoga is based on thousands of years of intellectual research\textsuperscript{26} The practices and their findings have been communicated orally and with a minimum writing from thousands of years Both, practices of yoga and results of yoga have been distorted due to various reasons over a period of time Therefore it is important to do research in yoga. Many research studies have been undertaken to understand various aspects of yoga But the parameters to show the improvement achieved by yoga therapy
are not able to fully reveal the improvement felt by the aspirant. Every person experiences a feeling of freshness and improvement after the practice of yoga. But at present, it is difficult to record the instantaneous benefits of yoga, as the mechanisms are at very subtle levels. Many instrumental methodologies, which are used in biological and medical sciences, are thought to evaluate the benefits of yoga. But the parameters used are not able to detect the instantaneous improvement generated by the yogic practices easily. Therefore, various latest methodologies have been studied. Similarly, Russians worked on Infrared Thermal Imaging System (IRTIS) and found out some quantitative analysis of state of health beneath the body, according to which the cellular level change in the metabolism can be detected by thermal changes. Therefore, it was thought to use Infrared Thermal Imaging System as the parameter in the present study on backache to record the instantaneous improvement.

Backache is a condition of pain due to sprain and strain of the muscles of the back, diseases of the inter-vertebral discs or the abnormalities in the vertebrae. Back pain is an extremely common phenomenon. Almost 80 percent of persons in modern society experience back pain at sometime during their life. Yoga therapy is used in the treatment of backache and one can see the patients of backache getting the benefit by yoga therapy. A prototype research work has shown, yoga therapy brings substantial benefit to low backache in a short span of time comparing to other conventional therapies. Earlier researches have shown the potentiality of yogic practices to heal the patients suffering from various joint problems like low backache. Eventhough yoga therapy relieves pain in patients of chronic backache, the commonly used medical parameters do not show the benefits of yoga, according to the finding of Dave et al. In this scenario, it was thought to use Infrared Thermal Imaging System (IRTIS) which can clearly indicate the minute changes also, based on variations in thermal temperatures.

Use of Thermal Imaging System is new technique in the research field of yoga therapy. There is no such instrument which can quantitatively assess...
the effect of yoga therapy with a non-invasive method. Therefore, the present effort on the research work entitled ‘Assessment of the Effect of Yoga therapy on Backache using Infra Red Thermal Imaging System’ is a unique scientific approach to assess and standardize the effect of yoga therapy. Readings of IRTIS is selected as a parameter for the present study. Similarly, Oswestry Disability Index is the other parameter considered for the comparison. The instrument IRTIS-200 is brought from Russia to the Department of Human Consciousness and Yogic Sciences, Mangalore University, under the project sanctioned by the Department of Science and Technology, Government of India, to Dr K Krishna Bhat, Dean-Faculty of Science and Technology, Professor and Chairman of the Department of Human Consciousness and Yogic Sciences. The study is conducted under the guidance of Dr K Krishna Bhat, Principal Investigator of the Project. The study aims to assess the effect of yoga therapy on Backache by using Infra Red Thermal Imaging System.

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