

## Chapter 6

# Can Yoga Bring Molecular Changes in Brain and Body: Gaps and Trends

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### ABSTRACT

*Mind body therapy which includes Yoga, Tai chi, Qigong, etc., are re-emerging as beneficial tools for providing solutions to the post-modern health care challenges. These therapies are believed to address the mind body interaction by either inducing parasympathetic systems or molecular mechanisms hitherto undeciphered. Among these mind body therapies, Yoga is considered as a fast growing and popular system of asana and breathing practices which allow seamless integration of physical exercises with meditative postures. The precise molecular mechanism underlying yoga, therefore, remains unclear. The proposed book chapter will provide a historical review of studies arguing in support of the hypothesis that these mind body interventions must have measurable regenerative and molecular effects that need the same rigour of scientific investigation and analysis reserved for orthodox pharmacological discovery.*

### INTRODUCTION

Yoga, derived from the root word ‘yuj’ meaning ‘to join’ or ‘to unite’, is an ancient Indian way of life which focuses on generating a harmony between one’s body and mind, the final goal being to attain ‘Moksha’ or liberation. While the spiritual aspect of yoga, according to traditional literature, has been thoroughly explored, its actual impact on the body, whether it be physiological, biochemical, cognitive or molecular, still requires further exploration. With modern advancements in the field of medical re-

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search, it is becoming more and more plausible to find answers to many questions that may have eluded us earlier. Some examples of this are: understanding the role of yoga in the reduction of inflammation and the precise mechanism by which this happens; this can be very helpful as a supplementary modality of treatment for various autoimmune conditions. It is also imperative to understand the importance of the molecular basis of yoga as a form of intervention on various physiological as well as pathological conditions. An example of such an area is research into the effect of yoga on stem cells and the alteration of the various factors initiating mobilization as well as differentiation of these stem cells; this can help us better understand the process of stem cell differentiation as well as help us find treatment modalities for neurodegenerative disorders like Parkinson's disease.

## **YOGA: A BRIEF HISTORY**

Little consensus has been achieved on the origins of yoga, apart from its genesis in ancient India. The various arguments for the origins of yoga range from the times of the Indus Valley civilisation (3300-1900 B.C.) to pre-Vedic Eastern India to Vedic India (1700-500 B.C.). The earliest trace of yoga in any historical text can be found in the *Rig-Veda*. During Alexander's time in India one of his companions, Onesicritus (Circa 390 B.C.), mentioned in Book 15 by Strabo (1932), described yogis in India as practicing aloofness and different postures- standing or sitting.

By 200 B.C. yoga began to find mention in various Indian texts such as the *Upanishads* and the *Bhagvad Gita*. Further along this timeline, from 200 B.C. to 500 B.C., according to Larson (p. 36), during the reign of the Maurya and the Gupta empires, many authors tried to describe the philosophy of yoga. One text of note in this area is the '*Yoga Sutras of Patanjali*' which is widely regarded as one of the first texts to explain the philosophy of yoga. These *sutras* would later form the basis of what is known as '*Ashtanga Yoga*' (Eight-Limbed Yoga). The Eight Limbs of *Ashtanga yoga* are *Yama*, *Niyama* (together forming a moral code), *Asana* (Posture), *Pranayama* (Regulated breathing), *Pratyahara* (Withdrawal of the senses), *Dharana* (Focusing), *Dhyana* (Meditation), *Samadhi* (Self-realization).

## **TYPES OF YOGA**

There are various schools of yoga spread across a wide spectrum of religions. Hinduism, Buddhism, Sikhism and Jainism have one or the other element of yoga mentioned either in their scriptures or their practices. Although many aspects of yoga are found in various religions, Hinduism has by far developed yoga the most. Over the ages, yoga has been divided into various types. Traditional branches of yoga constitute the following:-

- *Hatha Yoga*
- *Raja Yoga*
- *Karma Yoga*
- *Jnana Yoga*
- *Bhakti Yoga*
- *Mantra Yoga*
- *Tantra Yoga*

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