

**EFFECTS OF MEDITATION**  
**BASED ON SCIENTIFIC RESEARCH**



**Indian Council of Medical Research**  
**Center for Advanced Research in Yoga and Neurophysiology**  
**[ICMR-CAR in Y&N]**  
**At**  
**Swami Vivekananda Yoga Research Foundation**  
**[SVYASA- a Yoga University], Bengaluru, India**

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*Meditation is the most ancient and perhaps the most effective medication for stress*  
(Piparaiya, 2004)

Meditation is becoming widely popular as an adjunct to conventional medical therapies. This article reviews scientific experiments in meditation. The technological advances of the past century tended to change the focus of medicine from a caring, service oriented model to a technological, cure-oriented model. Technology has led to phenomenal advances in medicine and has given us the ability to prolong life. However, in previous decades physicians had attempted to balance their care by reclaiming medicine's more spiritual roots, recognizing that until modern times spirituality was often linked with health care. Spiritual or compassionate care involves serving the whole person — the physical, emotional, social, and spiritual.

The word *meditation* is used to describe practices that self-regulate the body and mind, thereby affecting mental events by engaging a specific attentional set. These practices are a subset of those used to induce relaxation or altered states such as hypnosis, progressive relaxation, and trance-induction techniques (Vaitl et al., 2005). The English word meditation comes from the Latin root word *meditari*, which derives from the same root as the word meaning 'to heal'. The practice of meditation sets in motion a process that leads to the restoration of a person's - physical, mental, and spiritual well-being. The English connotation of the word 'meditation' is therefore more associated with healing and relaxation (Adiswarananda, 2004). Meditation is also defined as concentration (continuous thinking) and sometimes as contemplation (repetitive thinking).

However, in yogic understanding meditation is not mere concentration but it is more than concentration. According to Swami Vivekananda “The power of attention of mind, when properly guided, and directed towards the internal world, will analyze the mind, and illumine facts for us. The powers of mind are like rays of light being dissipated; when they are concentrated they illumine everything”. The goal of meditation is complete absorption in the object of meditation (*Samādhi*), finally leading to communion or union with the Ultimate Reality. The goal of meditation is the cessation of all miseries through the realization of the indwelling Self, or *Purusā*, which is Pure Consciousness. The benefits of meditation are threefold: physical, psychological and spiritual.

Research on yoga and meditation started in India in 1918 at the Yoga Institute at Versova near Mumbai, the precursor of the Yoga Institute at Santa Cruz (Khalsa, 2004; Yogendra, 1970). This was soon followed by the clinical work at the Kaivalyadhama Yoga Institute in Lonavala under Swami Kuvalyananda in the 1920’s (Khalsa, 2004; Gharote, 1991). Subsequently, yoga therapy has proliferated in India with the establishment of yoga hospitals and clinics, notably the Swami Vivekananda Yoga Research Institute near Bangalore (sVYASA). Maharishi Mahesh Yogi introduced the Transcendental Meditation (TM) program to the United States and Canada seventeen years ago. TM is a natural mental technique that requires no elaborate yoga postures, paraphernalia or particular environment. It is not a religion or philosophy and no change in lifestyle, dress or diet is required in order to practice TM.

The research findings by SVYASA University have an important role validating benefits of meditation. At Swami Vivekananda Yoga Research Foundation (SVYASA) in Bangalore, a study with eighteen male volunteer from *Brahmakumaries* Raja Yoga Meditation centre showed

an increased heart rate which is an indication of cardiosympathetic activation, a possible sign of psychophysiological arousal (Telles & Desiraju, 1993). Same year a matched control trial study had been done to examine how neural processing at various levels could change differently during a meditation practice in which thoughts are focused on a word or phrase without conscious effort to do so (i.e., meditation on the syllable ‘OM, In Sanskrit; the meaning of OM being *avati*, or *rakùati*, which means ‘One who protects, sustains’). The findings showed that meditation on “OM” (a meaningful symbol), leads to changes at the thalamic/primary cortical areas which is beneficial for attention (Telles & Desiraju, 1993). In 1995, seven experienced meditators (with experience ranging from five to twenty years) showed a sign of increased mental alertness, even while being physiologically relaxed while chanting “Om” (Telles, Nagarathna & Nagendra, 1995).

Stress is a major factor in modern illness (Nagendra & Nagarathna, 2000). Meditation on OM has been effective to reduce stress level after twenty days of practising meditation twice a day, 15 minutes at a time (Telles, Nagarathna & Nagendra, 1998).

Researchers have found that a distinct relationship exists between the frequency, voltage and amplitude of the brain waves and the state of the individual. To prove this phenomena researchers at SVYASA did study on CM (CM is a technique that combines “stimulation” and “calming” practices) with forty-two volunteers (Sarang & Telles, 2006). They found that Cyclic Meditation could enhance attention, which in turn enhances cognitive processing.

Most medical doctors understand that it is important to relax in order to get better health and better mental state. Meditation implies relaxation, both physical and mental levels, which few of us experience even during sleep (Satyananda, 1992). For this reason, meditation brings

excellent health and can alleviate and cure many types of disease. Meditation acts as a holistic, or whole, treatment for disease. Meditation is a most powerful way of controlling physiological processes and of controlling physiological reaction to psychological events. One of the most profound changes that take place in the body during meditation is the slowing down of the metabolism that includes decrease in oxygen consumption and carbon dioxide output (Sarang & Telles, 2006).

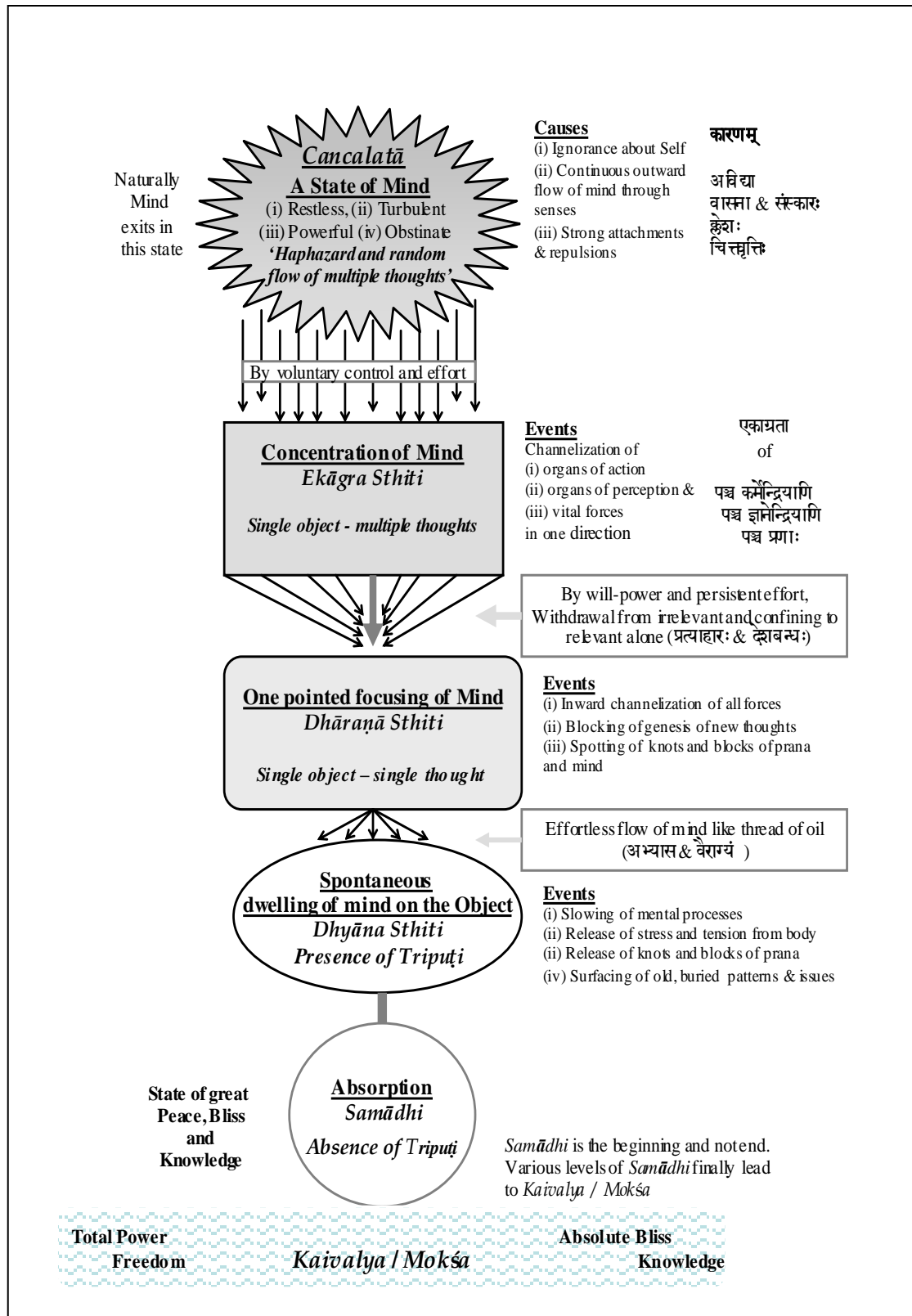
Meditation has a noticeable influence on blood pressure, which drops much lower than normal after meditation. A study done by Sarang and Telles showed an increase in sympathetic activation in the yoga posture phases of CM while parasympathetic dominance increased after CM (Sarang & Telles, 2006). Also in another study there was a reduction in heart rate and skin conduction which can be particularly recommended for those suffering from heart disease and anxiety (Vemapati & Telles, 2002).

Because of physiological, psychological and neurophysiological changes, meditation can be a useful self-regulation technique for relaxation training. Meditation can be an effective tool in therapy as well as in rehabilitation. Meditation could be considered as a mind-body practice in complementary and alternative medicine (CAM) for health purposes. Mind-body medicine focuses on the interaction among the brain, mind, body & behavior and on the powerful ways in which emotional, mental, social, spiritual and behavioral factors can directly affect health. We can change our way of looking into our inner self or being through meditation, instead of confining our travel to the outside world. We can start making deeper and deeper journey into depth of inner peace through meditation.

*A meditation master who illuminates*

*the path of purification*

*through his words, thoughts, deeds, and silence*



**Mechanism of process of meditation**

## REFERENCES

- Adiswarananda, Swami. (2004) **Meditation and its Practices**. Adaita Asharama: Kolkata.
- Gharote, M. L. (1991) **Analytical survey of researches in Yoga**. Yoga Mimamsa, 29: 53–68.
- Khalsa, S. B. (2004) Yoga as a therapeutic intervention: a bibliometric analysis of published research studies. **Indian Journal of Physiology and Pharmacology** , 48 (3) : 269–285.
- Piparaiya, R. K. (2004) **Yoga of Work**. Mumbai: Indusvista Editions.
- Nagendra, H. R. and Nagarathna, R. (2000) **New perspective in stress management**. Bangalore: Swami Vivekananda Yoga Prakashna.
- Satyananda Saraswati, Swami. (1992) **Meditations**. Varanasi: Bhargava Bhushan Press.
- Patil, S.P and Telles, S. (2006) Cyclic meditation – a moving meditation –reduces energy expenditure more than supine rest. **Journal of Indian Psychology**, 24(2): 44-51.
- Patil, S.P and Telles, S. (2006) Immediate effect of two yoga-based relaxation techniques on performance in a letter cancellation task. **Perceptual and Motor Skills**, 105(2): 379-385.
- Patil, S.P and Telles, S. (2006) Changes in P300 following two yoga relaxation techniques. **International Journal of Neuroscience**, 16(12): 1419-30.
- Patil, S.P and Telles, S. (2006) Oxygen consumption and respiration during and after two yoga relaxation techniques. **Applied Psychophysiology and Biofeedback**, 31(2):143-53.
- Patil, S.P and Telles, S. (2006) Changes in heart rate variability during and after two yoga based relaxation techniques. **International Journal of Stress Management** (In Press).
- Telles, S. and Desiraju, T. (1993) Autonomic changes in Brahmakumaris Raja yoga meditation. **International Journal of Psychophysiology**, 15(2): 147-152.

Telles, S. and Desiraju, T. (1993) Recording of auditory middle latency evoked potentials during the practice of meditation with the syllable 'OM'. **Indian Journal of Medical Research**, 98(B): 237-239.

Telles, S., Nagarathna, R. and Nagendra, H.R. (1998) Autonomic changes while mentally repeating two syllables – one meaningful and the other neutral. **Indian Journal of Physiology and Pharmacology**, 42(1): 57-63.

Telles, S., Nagarathna, R. and Nagendra, H.R. (1995) Autonomic changes during 'OM' meditation. **Indian Journal of Physiology and Pharmacology**, 39(4): 418-420.

Telles, S., Nagarathna, R., Nagendra H.R. and Desiraju, T. (1994) Alterations in auditory middle latency evoked potentials during meditation on a meaningful symbol - 'OM'. **International Journal of Neuroscience**, 76(1-2): 87-93.

Yogendra J. (1970) **The study of clinical-cum-medical research and Yoga**. J Yoga Institute, 16: 3–10.

Vaitl, D., Birbaumer, N., Gruzelier, J., Jamieson, G. A., Kotchoubey, B., Kubler, A., et al. (2005) Psychobiology of altered states of consciousness. **Psychological Bulletin**, 131, 98–127.

Vempati, R. P. and Telles, S. (2002) Yoga based guided relaxation reduces sympathetic activity in subjects based on baseline levels. **Psychological Reports**, 90: 487-494.

Vivekananda, Swami. (1999) **Raja Yoga**. Himalayas: Advaita Ashrama.

Willoughby, D. (2000) **Yoga therapy**. Yoga International, 55: 39–46.



