



**School of Spiritual &
Cultural Studies**

The Science behind Meditation

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MA OM- Mastery Over Mind

Learning Objectives

Definition of meditation

How does meditation work?

How does meditation help in improving physical and mental health?

How does meditation help in the development of personality?

The definition of meditation

Meditation can be defined as a set of techniques that are intended to encourage a heightened state of awareness and focused attention.

Many techniques of meditation are prevalent in the world today.

For example, concentrative meditation and mindfulness meditation are types of meditation. Mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT) are additional examples.

Yoga Darshana deals with meditation in a systematic manner.

Meditation in Yoga Darshana

What is understood as meditation today is related to the steps of Pratyahara, Dharana, Dhyana, and Samadhi of Ashtanga Yoga.

In fact, we can classify and understand different techniques of meditation practiced today if we examine them through the lens of Yoga Darshana and the practice of Ashtanga Yoga.

Pratyahara is the withdrawal of the mind from sense organs, Dharana is the focussed attention on an object, Dhyana is complete absorption on the chosen object and Samadhi is transcendence to a higher state of consciousness.

How does Meditation work?

Meditation has been studied scientifically from the 1970s.

Robert Keith Wallace (1970) demonstrated that meditation led to reduction in oxygen consumption and cardiac frequency, and an increase in galvanic resistance of the skin. It also increased alpha waves, reducing sympathetic activity and inducing a state of relaxation.

In 1971, Wallace and colleagues confirmed above findings and further established that meditation led to reduction in respiratory frequency and elimination of CO₂, as well as a reduction in pH and arterial lactate.

Meditation changes the brain

Magnetic resonance imaging showed increase in the concentration of grey matter of the left hippocampus, posterior cingulate cortex, temporoparietal junction and cerebellum in those who practiced meditation, in comparison with those who did not meditate. These regions of the brain are associated with processes of learning, memory, regulation of emotions and empathic capacity (Holzell et al.)

Lazar et al. found significant difference in the thickness of the cerebral cortex of the meditators, which was larger in the insula and prefrontal cortex, brain regions in which attention and the emotions are concentrated.

Meditation improves health

- ▶ Meditation helps to improve both physical and mental health. Meditation may help to strengthen the immune system, improve cardiovascular health, reduce emotional stress and support recovery in cancer, premenstrual syndrome, menopause and many other diseases.
- ▶ Meditation brings about hormonal variations, modifications in the concentrations of innumerable neurotransmitter substances, reduction in body temperature, alteration in the senses and perceptions, among others, indicating an increase in parasympathetic activity (Danucalov and Simoes)

Meditation and Immunity

Davidson demonstrated significant increases in the markers of antibodies for the influenza vaccine among meditators when compared with non-meditators indicating that meditation enhances the functions of the immune system.

It was found that in HIV positive individuals, meditators preserved T CD4 + lymphocyte count better than non-meditators indicating that meditation has the ability to preserve functions of immune system.

Meditation and Heart

Meditation has been found to help in regulating arterial pressure and to increase cardiovascular efficiency. Schneider and Grim reported that meditation could be clinically useful in the secondary prevention of cardiovascular disease by reducing risk of heart attack, stroke and spikes in blood pressure.

Chung et al. found that meditation treatment was associated with significant improvements in the quality of life, reduction of anxiety and control of arterial pressure.

Meditation, Sleep and Cancer

Sun et al reported a significant improvement in sleep quality and cognitive functions of those who meditated when compared with those who did not meditate.

Breast cancer patients who participated in a meditation program had reduced the cortisol levels, improved quality of life and increased efficacy of coping with the disease in comparison with the control group (Witek-Janusek et al.) It has also been found that sleep can produce chemicals that help in prevention of cancer. Anne von Ruesten found that people who sleep less than six hours have higher risk for cancer.

Body Mind balance

The various studies suggest the practice of meditation, in addition to promoting self-knowledge and spiritual growth.

Studies have confirmed the link between mental processes and autonomic aspects relative to the functioning of the nervous system, which causes the creation of an entirely new discipline, known as psychoneuroimmunology.

According to this science, a chronically altered mind may produce negative effects on the homeostatic mechanisms of the body, facilitating the appearance of somatic diseases

Meditation and personality

Different studies have demonstrated that meditation is an active mental training, capable of modifying the functioning of the brain and mind, favoring the attentional skills, cognitive capacity and emotional regulation.

This enables the person to respond better to day-to-day stressor stimuli. Meditation becomes a practice that is self-regulatory of the body and mind, with the potential of helping a person develop the capacity to obtain some degree of control over the psychophysiological autonomic processes.

Meditation at school and work



Meditation enables the individual to be centred and be responsive to external situations rather than react impulsively.

Meditation can thus become a tool for success in life, both at school in studies and for optimal performance at the workplace.

Meditation enables the individual to function to his or her full potential. It helps one to achieve efficiency, more outcomes with less effort.

What we learned about Meditation

We learnt that meditation as understood today is a collection of various techniques.

It deals with focused attention and mindfulness.

Meditation can be better understood through the lens of Yoga Darshana.

The science of meditation

We learnt that regular practice of meditation can change the structure and function of the brain.

Meditation helps to preserve cognitive function in old age.

Meditation for health

We learned that meditation helps to improve both mental and physical health.

It can be useful for the treatment of many diseases.

Meditation can be integrated with treatments for cancer, heart disease, and other chronic illnesses.

Meditation for personality

Finally, we also learned that meditation helps us to develop our personalities in a balanced manner.

The physical, emotional, mental, and spiritual aspects of the individual can be nurtured with the help of meditation.

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