

# SCIENCE OF MEDITATION IN PLAIN LANGUAGE

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Just as we would pop the pill when something goes wrong with our body, meditation was originally invented to remedy ills of the mind. Because it was subtle and mostly practiced in deeper and often inaccessible parts of East, it remained an enigma for much of West for a long time. Even if some scientists decided to comment upon it, they usually took a derogatory tone to dismiss it as another charlatanism of East which has lost touch with reality and objectivity of scientific rigor. There were times when Zen meditators were labeled as psychotics and such a 'research' was published in respected journals.

But no more. In the last few decades, meditation has withstood the test of science and has pervaded our popular culture with respected universities like Harvard and Wisconsin running meditation related programs backed by concrete research. Now, popular magazines like Time run frontline stories to tell us that "it works", regardless of what skeptics still say.

## What is meditation?

It is a powerful psycho-spiritual tool to correct the imbalances of our mind, thinking and emotional patterns and the way we look at world. The root word for medicine and meditation comes from the same Latin word 'med' that means intervention. It cures the maladies of mind and soul, so to speak.

## How it works?

In the last section, we have seen the ravages of stress on both heart and brain. Persistent practice of meditation tends to halt or even in some cases, reverse those damages. Recall from previous sections that our physical body is not as much solid as we have tended to believe it to be.

In fact, it is a highly organized information system. In August 2003 issue of Scientific American, scientists have once again expressed confidence that our universe is a giant hologram in which information is primary property of our existence while energy and matter could be incidentals. If that is correct, it also makes each of us a hologram. Hologram is special property of an image in which each segment of the image contains the whole image.

If we cut a holographic image of an apple into a million pieces, each cut piece will contain the full image of apple. It might be that scientists are getting closer to find scientific evidence to the poetic claim of William Blake when he said: "To see a world in a grain of sand, And heaven in a wild flower. Hold infinity in the palm of your hand, And eternity in an hour".

Let us take the following examples to understand what it means to be an organized information system. Think about a car lying in a garage which is completely rusted or a cup which you just broke when you were drinking your black coffee? What are the chances that the rusted car will restore itself to its younger days or the cup will leap to its unbrokenness? Practically none, you would mutter. Why? They cannot do so because they are bound by the laws of physics and have no inbuilt mechanism to 'repair' themselves.

What makes us different from a chair or car? They are made of similar elements like oxygen, carbon, hydrogen etc. as our body is made of. So what makes a chair a dead element and our body a living entity? Where is the dividing line? That dividing line lies in our unique quality of awareness which we can exercise at will. Our awareness and ability to engage in conscious renewal and healing process, is what makes us stand apart from a cup or car, even though we are also made of the same or similar elements. A broken cup or a rusted car cannot restore themselves on their own accord but our sick bodies are capable of healing themselves.

Meditation, in its simplest form, can be described as—cultivating a renewed awareness by replacing the rusty patterns of our life with new and better ones. Ever since our birth, we start getting conditioned in one form or other. We get on autopilot of life and lose the ability of being aware and conscious. Meditation helps us to retrain our thinking, emotions, feelings and awareness. It can also be called a psychological detoxification of our inner self thereby shedding unnecessary emotional baggage we mindlessly burden ourselves with.



## Effects of Meditation on Brain and Heart

We have seen that chronic stress can damage functions of heart and brain and can set a stage for serious illnesses. It should be noted here that stress per se does not cause illness; however, it lays the groundwork for diseases to follow by decreasing the vitality of immune system. The health cost of stress is staggering. More than 60% of visits to a family physician are generated by stress alone.

The health promoting effects of meditation are now established by rigorous research. Even simple manipulation of breathing patterns generates visible effects on brain, and it's EEG patterns. During meditation, the function of brain which takes care of daily hustle and bustle of life tends to slow down. During deeper meditation stages, brain also works as a multiple parallel processing system as opposed to serial processor in waking life. This multilevel processing is what gives the meditator an insight. Neuron firing in the amygdala, the fear center, also slows down with prolonging the out breath. Similarly, various parts of the brain also register altered activity under meditation (see Figure).

The EEG patterns snapped under meditation, also exhibit distinct patterns. Relaxation reached through meditation starts showing in changing EEG patterns. Once the brain is relaxed, physical body also follows the same suite and tends to fall toward allostasis (a dynamic equilibrium) which is essential for healthy living. It is only when the whole physiological apparatus is running in optimum manner, that physical body starts the process of detoxification, renewal and healing.

Recall that reproduction, digestion, repair and healing all tend to go offline when we are under severe stress response. That is why meditation has been found to be beneficial for women suffering from infertility. It also helps people suffering from post-menopausal hot flushes, depression, anxiety, and irritable bowl syndrome and so on and so forth.

Similar effects are noticed on the cardiovascular system. Once meditation has neutralized the stress reaction, high blood pressure falls down, hence relieving the heart from the excessive labor of pumping blood through narrowed arteries. Deepened relaxation also allows for rapid elimination of lactate acid from blood. Excessive blood lactate indicates fatigue and proneness to anxiety. In the nut shell, meditation fine tunes the bio-chemical system thereby maintaining vital homeostasis which is essential for a healthy body.

### THE EFFECTS OF MEDITATION ON BRAIN

#### FRONTAL LOBE

This part is responsible for planning, reasoning and awareness. During meditation it shuts down.

#### PARIETAL LOBE

This part helps us orient in time & space and processes information about outside world. During meditation this part slows down.

#### THALAMUS

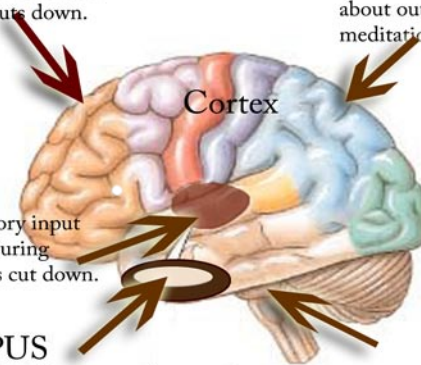
This act as a filter to sensory input fed by sensory organs. During meditation, this inflow is cut down.

#### HIPPOCAMPUS

Chronic stress kills cells in hippocampal area, thereby compromising memory process. Meditation significantly reduces stress response.

#### RETICULAR FORMATION

This is a gatekeeper of arousal patterns by allowing incoming stimuli and putting the brain on alert. During meditation, arousal signals are dampened.



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