



Review Article

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PHYSIOLOGICAL EFFECT OF MEDITATION: A DESCRIPTIVE STUDY

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ABSTRACT

Meditation is deep breathing, deep relaxation, and deep concentration. During meditation a wakeful state accompanied by decreased metabolism. Decreased breathing pattern, decreased heart rate, and decreased blood pressure. Decrease in the level of oxygen utilization and carbon dioxide elimination by muscles. During meditation the metabolic changes arise from a natural reduction in metabolic activity at the cellular level, not from a forced reduction of breathing. In the state of meditation, there was a 33% reduction in the amount of lactic acid in the blood in which the person feels physically and mentally light. Lactic acid increases in the blood as a result of chemical reactions taking place in the muscles of the body. Having more lactic acid in the blood increases the chances of blood acidosis.

Key-words: meditation, blood acidosis, hypo metabolism, galvanic skin resistance

INTRODUCTION

Meditation is not only a concentration. It is common belief that meditation is the mental concentration or contemplation on any content (theme) but, meditation is not limited to mental concentration only. Yes, concentration is definitely a step in this. In fact, meditation is to concentrate the conscious mind, to descend from the concentrated conscious mind into the depths of the unconscious, and while conscious of the unconscious, enter the superconscious. But these are all spiritual dimensions of meditation. Meditation also has an effect on our physical functions - such as reduced metabolic rate, decreased systolic blood pressure (systolic blood pressure) and decreased amount of lactate in the blood, increased alpha wave in the brain, increased skin resistance. , decrease in the speed of respiration and changes in endocrine glands etc.

Effect on metabolism- Metabolism slows down in the state of meditation. There are two processes inside the metabolism -

- 1- Anabolism
- 2- Catabolism

The process of cell formation is called anabolism and cell breakdown is called catabolism. In the state of meditation, due to deep relaxation, all the cells of the body rest. In transcendental meditation, oxygen consumption was found to be 40 percent lower and respiratory rate decreased by 50 percent. This is called a low metabolic state. In a state of low metabolism, breathing, pulse and heart rate slow down, leading to a state of relaxation in the body and the cells and tissues of the body. This gives them the energy to regenerate; as a result, a person can work for a long time without getting tired.

Effect on urinary system-Decreased sodium ion movement in the meditative state results in reduced urine volume because at that time the leakage of Antidiuretic hormone (ADH) through neurohypophysis increases. In the state of meditation, there is less blood

circulation to the kidney and liver (because in the state of meditation there is a rest) and the circulation of blood to the brain increases.

Effect on Cardiovascular System – A decrease in heart rate is found in those who practice meditation. At this time the systolic blood pressure decreases, due to which there is less contraction in the myocardium, consequently there is less pressure on both the atriums of the heart. In the state of meditation, the demand for energy in the body decreases, due to which the heart can circulate blood comfortably. Therefore, those who meditate have a lower risk of increased blood pressure and heart disease. In this stage, the decrease in heart rate is a sign of an increase in its capacity due to the activation of the cardiovascular system. Lowering of the heart rate leads to an increase in the QT interval and an increase in the perfusion- ventilation ratio leads to an increase in energy. The QT interval increases the time between electrical depolarization and repolarization of the heart's ventricles. During meditation, there is a difference in the heartbeat and its excretion and production process. Scientists have estimated an average 25 percent reduction in the emission process. Even in the state of sleep, there is only a 20% reduction in the output of the heart, but it decreases by 25% during the time of meditation.

“It was found in his experiment that by meditating for nine months, the systolic blood pressure was reduced to 106 mmHg. and the heart rate decreased by 3 per minute”[17]

Effect on blood pressure - In the state of meditation, there was a 33 percent reduction in the amount of lactic acid in the blood, due to which the person feels physically and mentally light. Lactic acid increases in the blood as a result of chemical reactions taking place in the muscles of the body. An increase in lactic acid in the blood increases the risk of anemia, which causes symptoms like muscle weakness, excessive sweating, vomiting, coma.

As a result of meditation, the development of blood cells is good, because the body remains in a state of rest at that time.

Effect on the endocrine system-During meditation, there is a decrease in the secretion of Adrenocorticotrophic hormone (ACTH) and increased secretion of Dehydroepiandrosterone (DHEA-S) and Gamma-amino butyric acid (GABA), which reduces the problem of stress and depression.

In the state of meditation, there is also a decrease in the secretion of thyroid stimulating hormone (TSH), Growth hormone (GH) hormones and there is an increase in the secretion of serotonin hormone, which reduces stress.

According to researches, there is an increase of endorphins, catastrophic producing hormones. Beta endorphins are good chemicals for the brain and cortophin releasing hormone is secreted by the hypothalamus which regulates melatonin which regulates the biological clock

Effect on the brain - In the state of meditation, the activity of alpha waves in the brain increases, which is a state of deep relaxation. Meditation has a positive effect on the hippocampus, which is responsible for emotion and empathy. And there is a positive effect on the fore brain which is responsible for positive behaviour.

During meditation, the production of energy in both hemispheres of the brain is almost equal, which is a sign of balance and synchronicity of the brain. In normal condition or at the time of conversation, one part of the brain (right and left) is more active and maintains its dominance over the other part. There is a balance of both in the state of meditation, because at that time the activity of the brain increases.

Effect on respiratory system - In the meditative state, the respiratory rate decreases. There is a 20 percent reduction in the rate of oxygen consumption in those who practice meditation continuously, while in the state of sleep, the rate of oxygen consumption is found to decrease by 12 percent. metabolism increases

Impact on women's problem -After childbirth, due to hormonal imbalance in the female body, depression, nightmares, feelings of insecurity arise in them, in these situations meditation is beneficial.[18]

Effect on galvanic skin resistance - GSR increases by 250–500 percent in the meditative state, while it increases by 100–200 percent in the sleep state.

CONCLUSION – Based on this study, regular meditation practitioners can regulate the functions of their autonomic nervous system. During meditation body feels deeper level relaxation and only because of deep relaxation metabolism slow down in the case of hypo metabolism every cells of body get ready for rejuvenate and meditation is natural tranquilizer.

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