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The Impact of Yoga and Meditation on Mental and Physical Well-being

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ABSTRACT

Background: Meditation that has been a practice for millennia in the present era has gained immense popularity as a stress-coping tool and overall health management and improvement method. Research significantly supports meditation efficacy, revealing beneficial brain and biological changes, leading to improved mental and physical well-being.^[1] **Methods:** Based on an extensive review of scholarly literature about Stress, anxiety, depression mental and physical wellbeing, the present paper has been composed to through light on the impact of meditation on Physical and mental wellbeing. **Result:** This paper aims to offer a comprehensive overview of the current research on the relationship between meditation and health. **Conclusion:** The discussion in this article revolves around the impact of meditation on various aspects of the human physiology, specifically heart rate, blood pressure, metabolic rate, cortical activity, and skin resistance. The effects of meditation on human mental health, including relaxation, systematic desensitization, retrieval of repressed memories, perception, memory, stress, depression, anxiety, sleep disturbances, and relaxation, are also examined. The text addresses the major conceptual issues that require serious attention from researchers in this area for future research.

Key words: Meditation, psychological well-being, physical well-being, stress management.

INTRODUCTION

Meditation is a mental practice that involves developing focus, improving attention, and enhancing self-awareness. The goals of meditation are to attain a state of consciousness marked by mental clarity and emotional calmness. Meditation practices mainly affect functions through the autonomic nervous system, acting as the link between the brain and body.^[2]

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Meditation and mindfulness are currently popular and extensively studied topics in the fields of psychology, psychiatry, medicine, and neuroscience. One unresolved challenge is the creation of a thorough theory of meditation. This is worsened by the fact that "meditation" is a broad term that includes a wide variety of different practices. Moreover, meditation is often used to describe both the mental training technique practiced by meditators and the altered state of consciousness it produces. This paper will focus on analysing the concept of Meditation, investigating its various techniques, different types, and the effects it has on mental and physical well-being.^[3-7]

OBJECTIVE OF THE STUDY

The current study aimed to better characterise the benefits of meditation on physical and mental wellbeing, addressing the diversity of meditation practices and the vulnerability of the evidence between different types of meditation and stress in healthy populations.

MATERIALS AND METHODS

Using academic articles from credible books and magazines, this study investigates how meditation can alleviate stress, anxiety, and depression. The search strategy relied heavily on the PubMed database as well as other internationally renowned medical and meditation-related content resources. Keywords used included "Stress," "Anxiety," "Depressive Symptoms," "Emotional Depression," and "Role of Meditation in Mental and Physical wellbeing." This study offers a conceptual investigation into the role of meditation in reducing stress and improving life quality and overall wellbeing. It draws upon references from seminal literature, academic journals, books, and renowned publications on the subject.

Meaning and definitions of Meditation

The term "meditation" comes from the Latin word "meditari," meaning "to actively engage in contemplation or reflection." The term "meditation" comes from the common Greek and Latin root of the term "medicine." Meditation is a well-defined and unique experience marked by a state of "thoughtless awareness" or mental silence. In this state, mental activity is reduced while maintaining a high level of alertness. Meditation is a collection of self-regulation techniques designed to consciously manage mental processes by focusing attention and enhancing awareness. Meditation involves relaxation, focus, altered consciousness, suspension of logical thinking, and developing a self-observant attitude. As a result, meditation has been defined in different ways, and there is no consensus on a precise definition. Summarising its essence in one definition is difficult.^[8-10] Any practice was classified as meditation if it met the following criteria^[11]:

1. employs a precise and well-defined method,
2. incorporates muscle relaxation at some point,
3. entails the absence of logical analysis or judgement of potential psychophysical effects or outcomes, and avoids creating any expectations,
4. is a state that is induced by oneself,

5. involves the utilization of a self-focus skill or "anchor" to direct attention.

Other important understanding of the term Meditation

Meditation is the act of attaining a state of calm and focus in the present moment, without constantly trying to change oneself. Meditation involves a specific methodology that includes deliberate relaxation, inducing a self-induced state, achieving psycho-physical relaxation, focusing on oneself, suspending logical thought, incorporating a religious or spiritual context, and attaining mental silence. Meditation is an advanced neural method that alters the neurophysiology and neurochemistry of the brain, resulting in changes in the practitioner's neurocognition and behaviour. Meditation is the act of concentrating one's attention on a particular object, concept, sound, image, or experience. This practice aims to achieve profound spiritual or experiential comprehension and insight, or to improve psychological well-being.^[12-15]

Contemplative practices, like meditation, are multi-generational, deeply ingrained in a community, and include specific elements that can bring about changes in both the body and mind. Moreover, it is motivated by a specific purpose or objective. A recipe is a set of instructions that can be followed to achieve this goal. There are particular criteria for evaluating progress towards this goal, and community evaluators are in charge of conducting these assessments.^[16]

Meditation Techniques

Abbreviated description	Full description
Syllabic repetition	The act of repeatedly repeating words, syllables, or phrases, either mentally or loudly.
Breath Manipulation	Deliberate control of respiration, such as decreasing the intensity of breathing or practicing "pranayama" which involves breath retention.
Pondering the inquiry	Reflecting upon a question of great spiritual significance, such as "What is my true identity?"

Observing senses	Engaging in mindful walking by attentively observing sensory stimuli such as the movement of the feet, legs, clothing, air, and hair, and synchronising it with the breath if desired.
Meditation (Lying)	Engaging in a supine position and entering a state of profound relaxation while maintaining complete awareness
Focusing on energy centres or directing energy flow	Focusing on specific areas of the body known as "energy centres" such as the abdomen or Chakra, Dan Tien, and directing the flow of energy through specific pathways like the spine.
Body Observation	Engaging in the observation of bodily sensations without becoming attached to them.
Mantras and Sutras Chanting	Chanting sutras, mantras, or invocations, either individually or in a group
Inconsistency or logical contradiction	Focusing the mind on a contradictory or complex concept without engaging in discursive thinking about the contradiction, such as in the case of Koans or Mahavakyas.
Full-body examination	Performing a comprehensive examination of the entire body, such as a body scan, which involves the detection and subsequent release of emotions and tensions that are present.
Concentrating	Sustained concentration on an object or a visualized object (e.g., Kasina, geometrical pattern, picture of the master)
Dynamic meditation	Carrying out predetermined, meditative sequences of movements
Silence sitting	Engaging in a state of quietude (e.g., Shikantaza)
Mind or emotion observation	Engaging in the act of observing the emergence of thoughts or emotions without becoming attached to them.

Focus on deep diaphragmatic breathing	Practicing awareness of the expansion and contraction of the abdomen during respiration
Embracing and welcoming blessings	Embracing opportunities for blessings and inspiration
Sound-enhanced meditation	Sound-assisted meditation, such as using humming or singing bowls
Nurturing empathy	*Practicing the development of compassion, sympathetic joy, equanimity, and loving kindness towards oneself, friends, neutral individuals, enemies, and the entire world, which may involve the use of Tonglen meditation technique.
Concise Breathing	Practicing awareness of the sensations occurring in the nasal passages while breathing in and out
Imagining	Visualisation techniques, such as envisioning the heart as a blooming rose or imagining the body expanding in all directions, can be combined with the act of breathing to incorporate visualisations of energy, light, smoke, and other elements

* The Buddhist teachings called "brahmaviharas" inspired these features. Four "divine abidings" or "sublime states" can be achieved through meditation. Practicing loving kindness, compassion, empathetic joy, and equanimity can help counter "unwholesome states" like greed, ignorance, and hatred and lead to a more balanced life.^[17,18]

Types of Meditation

Meditation is one of many methods used to achieve inner peace. Here are some methods:

Meditation (Guided): Referred to as guided imagery or visualisation, it entails forming mental images of peaceful locations or scenarios. It is important to involve various senses such as smell, sight, hearing, and touch. One can receive guidance in this process from a mentor or instructor.

Meditation (Mantra): The practice entails silently repeating a calming word, thought, or phrase to avoid being disrupted by distracting thoughts.

Meditation (Mindfulness): It is a practice that aims to develop a state of heightened awareness and acceptance of the present moment. Mindfulness meditation entails broadening your conscious awareness. Individuals concentrate on their sensory perceptions, specifically the rhythmic flow of their breath during meditation.

Meditation (Qi gong): This practice combines meditation, relaxation, physical movement, and breathing exercises to support and maintain balance. Qi gong, pronounced as CHEE-gung, is a crucial part of traditional Chinese medicine.

Meditation (Tai chi): A form of Chinese martial arts, tai chi is known for its slow, fluid motions. Tai chi, or TIE-CHEE as it is more commonly known, is a form of martial art that emphasises slow, deliberate, and graceful movement through a series of postures and breathing exercises.

Meditation (Transcendental): Transcendental Meditation is simple and natural. Transcendental Meditation involves silently repeating a word, sound, or phrase in a specific way. This meditation technique helps the body and mind relax and find inner peace without effort.

Focused Attention: Focus is a key part of meditation. Focusing helps you avoid stress and anxiety-causing distractions. One can focus on an object, image, mantra, or even their breathing.

Breathing (Relaxed): Using the diaphragm muscle to expand the lungs, this method involves deep, steady breathing. Optimal breathing efficiency is achieved by controlling respiration, increasing oxygen intake, and minimizing the use of the muscles in the upper chest, neck, and shoulders.

Effect of Meditation on physical health

Despite being a mental activity, meditation has garnered significant attention for its impact on human physiology. Only a limited number of studies have

endeavored to investigate and establish the neurological connections of yogic practices, such as meditation.^[19-22]

Here, we have summarized some of the physiological effects.

Meditation enhances mental clarity and boosts energy levels

Meditation stimulates the vagus nerve, causing relaxation and positivity. A study found that meditation reduces workplace stress and fatigue in entrepreneurs, boosting energy and calm. Higher energy and mental clarity boost efficiency.

Effecting Heart Rate functionality

Meditation activates the body's parasympathetic nervous system, which counteracts the sympathetic nervous system. Integrating this practice into your daily routine has been linked to lowering heart rate, which may reduce the risk of heart disease. Practices like Transcendental Meditation (TM), Zen, relaxation response, and other calming techniques usually lead to a decrease in heart rate. Individuals who have been practicing for a long time experience a notable decrease in heart rate.^{[23],[24]}

Mitigate the process of aging

Meditation can slow down the ageing process. Meditation primarily slows the ageing process by reducing stress. Studies suggest that practicing meditation may have the ability to decelerate the ageing process and improve longevity.

Regulation of Blood pressure

Meditation techniques have been found to result in slight but meaningful reductions in blood pressure, either on their own or in combination with traditional medication. Transcendental meditation and mindfulness-based practice can significantly reduce both systolic and diastolic blood pressure, which may have clinical importance. Various studies have shown strong evidence that meditation significantly lowers blood pressure in individuals with normal or moderate hypertension. However, most studies indicate that the benefit disappears once practice is discontinued.^[25-27]

Reduction in Neural activity

Meditation reduces pain-related neural activity in specific regions of the brain such as the anterior cortex, insula, secondary somatosensory cortex, and thalamus. Various studies have shown that alpha activity notably rises during meditation. Delmonte's study revealed that meditation initially boosts left-hemisphere activity, which then transitions to the right hemisphere. During advanced meditation, activity in both the left and right hemispheres of the brain is largely suppressed or stopped. Litscher, Wenzel, Niederwieser, and Schwarz utilized Transcranial Doppler Sonography (TCD) and near-infrared spectroscopy to measure the oxygenation levels in the cerebral tissues of two individuals skilled in QiGong, a type of Chinese meditation practice. An increase in average blood flow was noted in the right posterior cerebral artery during meditation, while a decrease in blood flow was observed in the left middle cerebral artery. Oxyhemoglobin and total haemoglobin levels increased simultaneously. QiGong was found to generate primary EEG activity in the frontal area of the brain, while it was quiet in the back region. Efforts are being made to understand the relationship between neurotransmitters and meditation. The dopaminergic system seems to play a crucial role in suppressing the executive system during relaxation meditation.^[28-30]

Metabolism and respiration

Various studies have shown that meditation can result in a significant decrease in oxygen consumption (up to 50%), a decrease in carbon dioxide elimination (up to 50%), and a reduction in respiration rate.^{[31],[32]}

Cutaneous resistance

Galvanic skin response, which measures low skin resistance, serves as a reliable indicator of stress. Numerous researchers, particularly those studying TM practitioners, have consistently observed elevated skin resistance.^[33]

Effects of Meditation on Mental Health

Meditation practices are linked to numerous perceptual and cognitive abilities. These abilities can vary from ordinary to supernatural. Numerous scientific inquiries have been undertaken to quantify

diverse psychological and behavioural impacts of meditation.

Aid in alleviating depression and anxiety

Research has demonstrated that meditation is equally efficacious in alleviating symptoms of anxiety and depression when compared to antidepressant medications. It enhances the level of prana (life force) within the body. As per Ayurveda, an increase in prana level leads to a natural reduction in anxiety. The Sahaj Samadhi Dhyana, a meditation technique offered by The Art of Living, has demonstrated efficacy in mitigating symptoms associated with late-life depression.

Sensory perception

Brown, Forte, and Dysart performed experiments on visual acuity in Buddhist meditation practitioners using a pre-test and post-test design with a control group. After three months of intensive meditation practice, a post-test was given. Visual sensitivity was measured by determining the detection threshold and discrimination threshold using simple light flashes. The meditation retreat led to a significant improvement in visual sensitivity, as documented. Further studies have shown a similar decrease in visual threshold and improved auditory sensitivity after engaging in meditation. Further research has shown increased visual imagery skills, enhanced attention span, reduced perceptual distractions, faster reaction times, and improved perceptual-motor speed.^[34-40]

Enhances Focus, Attention, and Memory

Meditation improves cognitive focus and promotes a state of mindfulness. The mind alternates between reflecting on the past and pondering the future. We either feel anger about the past or anxiety about the future. Meditation helps achieve awareness of the present moment. Therefore, one's capacity to focus and maintain attention is improved. Meditation improves grey matter in the brain, which in turn improves memory.

Facilitates the process of healing and effectively controls pain

Research studies have shown that meditation helps in healing and effectively managing chronic pain. Individuals experiencing chronic pain who engage in

regular meditation can effectively manage and regulate their pain. Meditation has been shown through empirical evidence to aid in the recovery process from chronic illnesses.

Meditation for Memory, Intelligence and Creativity

Studies revealed a positive correlation between the length of time spent practicing Transcendental Meditation (TM) and enhanced performance on a nonverbal intelligence test. Another study also reported similar findings regarding improvements in cognitive abilities. Studies on individuals who engage in Transcendental Meditation (TM) consistently show positive impacts on intelligence, academic performance, cognitive abilities, and both short- and long-term memory. The research results regarding the correlation between creativity and meditation have been diverse. Researchers who focused on Transcendental Meditation (TM) observed a clear enhancement in creativity in individuals who engaged in TM practice. However, later studies did not find any connection between meditation and creativity. Self-actualization is commonly seen as the main goal of a dedicated meditation practitioner. Several studies have examined different aspects of self-actualization and the experiences that occur during meditation. A meta-analysis reviewed 42 studies that explored the effects of Transcendental Meditation (TM) and other relaxation methods on self-actualization. They evaluated self-actualization based on three factors: emotional maturity, a deep understanding of oneself and the world, and a strong and flexible self-concept. The researchers found that the impact of Transcendental Meditation (TM) on self-actualization is approximately three times larger than that of other meditation and relaxation methods. Further studies have shown an increase in various aspects of self-actualization as a result of practicing meditation.^[40-48]

Enhances interpersonal connections

As you meditate and deepen your mindfulness, you are less likely to blame others and experience negative emotions like anger. You become detached from events and easily let go of minor disagreements. Sudarshan Kriya can boost the production of oxytocin,

a hormone that promotes feelings of love and social bonding, thus amplifying the feeling of love in your relationships.

Exploring the mechanisms underlying the therapeutic effects of Meditation

Helminiak (1981) identified six possible mechanisms through which meditation functions. These six mechanisms cover most of the explanations in the current literature. The items are as follows:

- a. **Relaxation:** Benson created the "relaxation response" meditation technique to reduce stress and high blood pressure. This deep state of relaxation leads to decreased metabolism, lowered heart rate, muscle relaxation, slowed breathing, and reduced blood pressure. Benson's research demonstrated that these effects help restore physiological abnormalities and promote healing.^[49]
- b. **Systematic desensitisation:** Wolpe's behavioural therapy is efficacious in diminishing anxiety. The process consists of three stages: muscle relaxation, preparation of anxiety-inducing stimuli, and deep relaxation. The therapy employs reciprocal inhibition to prevent stimuli from triggering anxiety. The therapy involves inducing relaxation and suppressing conscious thoughts, similar to meditation, to eliminate distressing memories, thoughts, and emotions. This method relies on the concept of reciprocal inhibition.^[50]
- c. **The liberation of suppressed psychological content:** This is related to the systematic process of decreasing sensitivity. Regular meditation leads most practitioners to release repressed unconscious thoughts, emotions, and images, resulting in a sense of liberation. This closely resembles the unconscious phenomena that arise during free association in psychoanalysis. At first, this might be uncomfortable, but with regular practice, the unconscious mind can be cleared of these memories, leading to a healthy mental state. During meditation, the person deliberately sustains a state of decreased stimulation and

sensory input for a prolonged duration. This condition may result in the manifestation of suppressed emotions and thoughts.^[51]

- d. Unstressing:** Many practitioners have reported experiencing physical reactions during intense meditation, in addition to retrieving repressed memories. These manifestations may involve involuntary contractions of muscles and skeleton, such as repetitive twitches, spasms, gasps, tingling sensations, tics, jerking movements, swaying, pain, shaking, aches, internal pressures, headaches, crying, and laughter. The experience ranges from intense satisfaction to intense distress. The TM practitioner calls this process "unstressing." Goleman (1971) attributes this phenomenon to the psycho-physiological principle, indicating that psychological and emotional experiences are linked to physiological processes.^[52]
- e. Disruption of ingrained perceptual patterns:** Most people are mainly influenced by rigid and well-established patterns of thinking, feeling, and reacting. Many of these patterns are harmful to health and can result in neurotic and psychotic problems. Most unhealthy behaviours originate from our attachment to emotions that we find difficult to control and regulate. By maintaining an objective viewpoint, the practitioner can reduce the impact of emotions and thoughts, allowing them to identify and substitute detrimental behaviour patterns with more beneficial options.
- f. Cosmic consciousness:** Attaining cosmic consciousness is a mystical idea beyond scientific inquiry. Terms like samadhi, nirvana, satori, and moksha are used to refer to cosmic consciousness. Esoteric traditions consider the ultimate goal of meditation to be the transcendence of one's personal ego. In a state of cosmic consciousness, an individual realizes their unity with the entire cosmos and understands they are not separate from others. An overwhelming sense of love and understanding arises in him, symbolising the highest level of human achievement.

Limitations and future directions

Meditation techniques are often practiced sequentially or in combination with other practices like breath observation or mantra repetition. However, there's limited knowledge about the effects of combining techniques.

Currently, there is a limited amount of research on sequence or framework effects.^{[53],[54]} However, some studies indicate that participants perceive more effort when starting their practice with loving-kindness meditation rather than with breathing meditation or the body scan.^{[55],[56]} A specific traditional background or framework can greatly impact the effects of meditation.^{[57],[58]} The effects can be intricate, especially in relation to various meditation traditions.

Ultimately, these efforts may lead to the development of one or more theories of meditation. This project is crucial for advancing scientific research on meditation and holds great potential for enhancing our understanding of different types of meditation.^{[59],[60]}

DISCUSSION

There is currently no universally accepted and practical definition of meditation that can be used in different research studies. The study design is a major concern in this field. Most studies use a before-and-after design, which is unable to definitively establish a causal relationship. Using a control group is crucial for establishing causal inference. It is important to take into account the influence of various confounding variables (effect modifiers). Various confounding variables, such as the age and gender of the practitioner, as well as the duration of the meditation, can significantly impact the results. These effect modifiers are frequently overlooked in research. It is important to also consider including a large sample size. Most current studies have used small sample sizes, limiting their generalizability to a broader population. The researcher recorded various disturbing incidents experienced during meditation, such as anxiety, tension, and anger. Studies indicate that meditation may induce a psychotic episode in individuals with a history of schizophrenia. Researcher

bias may occur when researchers hold preexisting beliefs favouring the benefits of meditation.^[61-62]

Meditation is a practice that combines a technique with artistic elements. Some individuals have a genetic predisposition to it, while others do not. Some people can achieve deep meditation and reap its benefits, while others may feel more unsettled after practicing. Considering individual differences is crucial when making conclusions about the benefits of meditation. It is crucial to maintain a dynamic lifestyle as individuals age to promote optimal physical and mental health and encourage social cohesion. Meditation, an ancient Vedic practice, has been scientifically demonstrated to have positive effects on specific diseases. Meditation enhances mental and physical well-being by promoting tranquilly and improving stress management.

CONCLUSION

Meditation is a practice that has therapeutic potential, but its benefits may be most noticeable in individuals who have good psychological health, strong integration, and mild neurosis or psychosomatic disorders. The learning process is simple, economical, and non-intrusive, with minimal chances of negative effects or medication interactions. Researchers need to investigate these issues to ascertain the efficacy of meditation as an adjunctive therapy for mind-body treatment.

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