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## **The Role and Mechanism of Meditation on Physical Health and Well-Being – a literature review**

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## **Abstract**

### **Introduction:**

The latest researches concerning the effect of the meditation on the well-being show the increased number of meditation proponents due to its benefits to the mental resilience, stress management and also general health. Meditation is increasingly recognized globally for promoting overall well-being.

### **Purpose:**

This study investigates impact of meditation on mental and physical well-being. It aims at understanding the mechanisms behind the improvements of health, giving special emphasis on its use as a treatment tool and a prevention measure.

### **State of Knowledge:**

Meditation is validated in terms of the amount of data proving its positive effects on psychological and physical health. Ranging from stress reduction to immune system modulation, cognitive enhancements, and cardiovascular benefits, meditation turns out to be a wide applicability tool. Mediation perception factors such as cultural and social aspects are contrasted, stressing the important of research on its original Buddhist context. Meditation, due to cultural differences, still is a controversial in many areas, especially in social work.

### **Summary:**

Meditation is a diverse tool for the promotion of the whole person well-being including stress reduction, immunity modulation, enhancement in cognition and cardiovascular health. It is crucial for building resilience, an important part of preventive and clinical psychology, and the medically oriented stress management. Noticing the role of culture, meditation is a significant aid to the improvement of personal, educator, and healthcare provider well-being. Meditation is a versatile tool that can be integrated into various practices, enhancing the overall well-being and life-coping skills of individuals and professionals alike.

**Key words: meditation; anxiety; depression; dementia; ADHD; immune modulation;**

## **1. Introduction**

In recent years, the surge in research investigating the impact of meditation on physical and mental well-being reflects a growing recognition of its potential benefits. As this body of research expands, the evidence consistently underscores the positive effects of meditation. Particularly notable are its contributions to enhancing mental resilience, reducing stress levels, and promoting overall health. The increasing depth of exploration in this field signifies a broader acknowledgment of meditation's role as a valuable practice for fostering well-being across various dimensions of human health.

The relationship between physical and mental health is complex and reciprocal, where each aspect can impact the other (1; 2). People with mental health conditions are at a higher risk of developing physical health problems, and the converse is also true (2). Research consistently shows that individuals with mental health issues are at a higher risk of developing physical illnesses, often due to modifiable lifestyle factors, inadequate access to physical healthcare, and disparities in health care provision (3). Studies have shown that the high prevalence of physical illnesses in individuals with schizophrenia, including infectious diseases, highlights the need for comprehensive care that addresses both mental and physical health (4). The potential of integrating mental health into primary care is emphasized by the high prevalence of mental health issues in the community (5). However, challenges such as funding and professional biases must be addressed to realize the benefits of integrated care, which include improved patient well-being and lower costs (6). The implementation of collaborative care models in primary care and hospital settings is crucial for addressing the complex interconnectedness of physical and mental health (7; 8). Knowles (2013)(7) discusses the challenges of integrating mental health practitioners into primary care, while Geist (2020)(8) highlights the importance of training and support for care team members in new roles.

## **2. Purpose**

The objective of this investigation is to examine the consequences of meditation on both mental and physical health and to determine whether there is a connection between meditation and enhancements in well-being. Additionally, the study aims to elucidate the mechanisms by which meditation promotes health improvements. Ultimately, the goal is to illustrate the benefits of incorporating meditation into well-being practices and utilizing it deliberately as a therapeutic tool and preventative measure.

### **3. State of knowledge**

4. The current state of knowledge on the effects of meditation on mental and physical well-being is characterized by an expanding body of evidence supporting its positive impact. Research suggests that meditation enhances mental resilience and reduces stress, anxiety, and depression levels. Furthermore, it has been demonstrated to prevent dementia and decrease cardiovascular risks. The literature emphasizes the influence of cultural and social factors on the perception of meditation, underscoring the importance of understanding its original Buddhist context. Despite cultural differences, meditation has gained acceptance in Western culture, particularly in fields such as social work. The current knowledge underscores the versatility of meditation as a tool improving both mental and physical health, offering benefits in various life domains and supporting its integration into well-being practices.

#### **3.1. Understanding Meditation**

Mindfulness meditation, a method of focusing one's attention on the present moment, has gained widespread acceptance in various fields. In the realm of education, it has been utilized to improve learning and alleviate stress (9). In clinical psychology, it has been implemented as a stress-reduction technique, yielding positive results (10). This practice is characterized by nonjudgmental attention and compassion (11).

Transcendental meditation, as defined by (12). has been shown to elicit transcendental experiences, which involve the absence of time, space, and body sense, and to foster higher levels of consciousness. Loving-kindness meditation, as described by Kabat-Zinn (2017)(13), and O'Donoghue (2011)(14) involves cultivating a compassionate heart and extending loving-kindness towards oneself and others. This can be achieved by using phrases of loving-kindness and visualizing oneself as a young child. O'Donoghue (2011)(14) emphasizes the secular adaptation of this practice, highlighting its role in countering negative thoughts and fostering kinder relationships.

Meditation is a practice with deep roots in ancient India, where it was commonly practiced in both Buddhist and non-Buddhist traditions (15). These practices aimed to bring the practitioner closer to self-actualization and enlightenment by fostering distinct attentional engagement (16). In the Buddhist tradition, meditation was intimately connected to mindfulness and psychological well-being, and was used in the treatment of mental illness and addiction (17).

The global adoption and adaptation of meditation practices has been a growing trend, with Eastern thought influencing Western social practices (18). This trend has led to the development of programs like Sustainable Compassion Training, which integrates meditation theory with psychological science (19). Meditation and relaxation exercises are becoming increasingly popular in general practice, particularly for stress and related disorders (20). The positive physical and psychological consequences of meditation and mindfulness are becoming better understood, leading to their increased integration in medical and scientific investigations (21).

#### **3.2. Physiological Effects of Meditation**

Pascoe (2017)(22) discovered that meditation, including focused attention and open monitoring, led to decreased levels of cortisol, blood pressure, and heart rate. Long-term and short-term meditators exhibited reduced morning cortisol levels, indicating diminished stress levels (23). Furthermore, Mohan (2011)(24) revealed that meditation diminished physiological stress responses and enhanced memory scores. Kasala (2014)(25) emphasized the potential of meditation to reverse physiological abnormalities related to stress-induced depression. Leung (2014)(26) also suggested that long-term meditation practice could lead to neuroplastic changes in the brain, fostering affective regulation and

serving as a cost-effective intervention in mood disorders. Lastly, Gamaiunova (2019)(27) identified the psychological mechanisms underlying these effects, with long-term meditation practitioners exhibiting faster cortisol recovery and employing adaptive emotion regulation strategies.

Research also suggests that meditation, especially mindfulness meditation, can positively impact immune function and inflammatory markers. Thibodeaux (2018)(28) found that meditation can enhance immune function and delay disease progression. Black (2016)(29) further supported this, noting potential effects of mindfulness meditation on specific markers of inflammation, cell-mediated immunity, and biological aging. Morgan (2014)(30) discovered that mind-body therapies, including meditation, can reduce markers of inflammation and influence virus-specific immune responses to vaccination. Rees (2011)(31) identified Transcendental Meditation, mindfulness, and progressive muscle relaxation as the most effective techniques for improving soldier resilience. Bonadonna (2003)(32) highlighted the positive impact of meditation on chronic illness, including reduced anxiety, pain, and depression, and enhanced mood and self-esteem. Ngô (2013)(33) also noted that mindfulness meditation can enhance immune functions, reduce inflammation, and improve the quality of life for patients with various chronic conditions. Thibodeaux (2018)(28) specifically discussed the effects of meditation on immune function, including increased Natural Killer cell activity and telomerase activity.

### **3.3. Cognitive Benefits**

Meditation has been found to have a positive impact on attentional control and focus. Studies by Chan (2007)(34) and Tsai (2016)(35) have demonstrated that meditation can improve the efficiency of the executive attentional network. Tsai (2016)(35) further noted that different types of meditation can enhance attentional orienting and executive control abilities. He (2020)(36) supports these findings and suggests that meditation can improve sustained attention, executive attention, and selective attentional allocation. Ainsworth (2013)(37) adds that mindfulness meditation can specifically target deficits in executive attention.

In addition, meditation has been shown to enhance cognitive abilities, such as attention and working memory, and introspective accuracy in memory (38; 39). It may also have a neuroprotective effect, potentially preserving cognition and preventing dementia (40). Furthermore, meditation-based training has been suggested as a possible intervention for attention deficit hyperactivity disorder (ADHD), with potential for enhancing cognitive abilities in these patients (41).

According to Vestergaard-Poulsen (2009)(42) and Lazar (2005)(43) experienced meditators exhibit increased gray matter density in the brain stem and thicker cortical regions in the prefrontal cortex and right anterior insula, respectively. These structural changes have been linked to the cognitive, emotional, and immunoreactive effects of meditation. Afonso (2020)(44) also found support for these findings by demonstrating that meditation affects neuronal plasticity and large-scale brain networks. Fox (2014)(45) subsequently conducted a meta-analysis of these studies, identifying specific brain regions that are consistently altered in meditators, such as those involved in meta-awareness, body awareness, memory, self-regulation, and communication.

Research has repeatedly demonstrated that the practice of meditation, particularly mindfulness meditation, has been linked to improvements in attentional functions and cognitive flexibility (46; 47). While some studies suggest that mindfulness meditation can enhance cognitive performance, other research has found no significant changes in cognitive flexibility (48). Additionally, long-term meditation practice has been associated with improvements in attentional functions, working memory,

and cognitive flexibility (47). Moreover, research indicates that concentrative meditation can increase cognitive flexibility, potentially leading to enhanced creative performance (49).

### **3.4. Mental Health and Emotional Well-being**

Numerous studies have demonstrated the efficacy of meditation, particularly mindfulness-based stress reduction (MBSR), in alleviating symptoms of anxiety and panic disorders (50; 51). However, the evidence regarding its impact on depression is less conclusive, with some studies reporting significant improvements (51). Martin, 2018)(52) and others yielding inconclusive results (53). Rubia (2009)(54) and Gippo(2002)(55) both emphasize the reduction of stress-related autonomic and endocrine measures, as well as the reversal of physiological abnormalities in stress-mediated depression. Krisanaprakornkit (2006)(56) and Zeidan (2014)(57) further support these findings, with the former suggesting that meditation can reduce arousal and ameliorate anxiety symptoms, and the latter identifying specific brain regions activated during meditation that are associated with anxiety relief.

A comparison of meditation with conventional therapeutic methods reveals both similarities and dissimilarities. Walsh (1983)(58) and Craven (1989)(59) both emphasize the potential of meditation to contribute to therapeutic change, with Walsh focusing on its role in self-exploration and transformation, and Craven discussing its integration with contemporary psychotherapeutic interventions. However, Shapiro (1982)(60) cautions that the therapeutic efficacy of meditation should be critically examined, particularly in comparison to other self-regulation strategies. Bogart (1991)(61) further highlights the importance of considering specific therapeutic goals when deciding whether to use meditation, as it may be effective in promoting cognitive and behavioral change, but less so in addressing intricate relational dynamics.

It has been demonstrated that meditation, especially loving-kindness meditation (LKM), can significantly improve psychological resilience and reduce stress, anxiety, and depression (62). This is particularly relevant in the context of education, where mindfulness practices can assist teachers in building resilience and reducing burnout (63). Additionally, a study found that a four-day intensive mindfulness meditation training resulted in significant increases in resilience (64).

Research has shown that mindfulness-based interventions (MBIs) can have a beneficial impact on mental health and well-being (65; 66). These interventions have been found to be effective in treating a range of psychological disorders and physical illnesses (66). The practice of mindfulness meditation, a key component of MBIs, has been integrated into clinical psychology and is being used in stress-reduction applications in medical settings (10).

### **3.5. Incorporating Meditation into Physical Health**

Studies by Benson (1974)(67), Marchiori (2015)(68), Goldstein (2012)(69), and Márquez (2018)(70) all found that regular meditation practice led to a decrease in blood pressure, particularly in individuals with high-normal or borderline hypertension. Park (2014)(71) found that mindfulness meditation reduces muscle sympathetic nerve activity, leading to a decrease in blood pressure. Similarly, Pascoe (2017)(22) reported that different types of meditation, including focused attention and open monitoring, can reduce systolic blood pressure, cortisol, and heart rate. This reduction in cortisol is thought to be a result of the release of repressed emotions and psychological inhibitions and traumas during meditation (Bansal, 2016)(72).

Research suggests that meditation can be an effective tool in reducing cardiovascular risk. Patel (1977)(73) found that biofeedback-aided relaxation and meditation led to significant reductions in blood pressure, smoking habits, and certain lipids. Levine (2017)(74) further supported these findings, noting that meditation can have long-term effects on the brain and may reduce cardiovascular risk factors such as stress, blood pressure, and insulin resistance. Walton (2004)(75) highlighted the potential of specific meditation techniques, such as Transcendental Meditation, in reducing hypertension, CVD risk factors, and rates of CVD morbidity and mortality.

The potential of meditation as a complementary approach to pain management has been highlighted by Teixeira (2008)(76) and Marchand (2012)(77). The latter specifically recommends mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT) as effective interventions. However, Rajguru (2015)(78) cautions that the evidence for the direct impact of mindfulness on chronic pain is inconclusive. Nonetheless, Adler-Neal (2017)(79) supports the use of mindfulness meditation, particularly in the context of fibromyalgia, and emphasizes the need to understand the specific mechanisms underlying its pain-relieving effects.

Mindfulness-based interventions, such as MBSR, have shown promise in helping patients with chronic pain cope more effectively (80). These interventions can lower pain perception, increase mobility, and improve functioning and well-being (81). Acceptance-based interventions, including mindfulness-based stress reduction and acceptance and commitment therapy, have been found to have small to medium effects on physical and mental health in chronic pain patients, comparable to those of cognitive behavioral therapy (82).

### **3.6. Practical Applications and Guidelines**

Mindfulness-based interventions, such as mindfulness meditation, are increasingly being integrated into clinical practice (10). These interventions, which involve intentionally focusing on present experiences, have demonstrated promise in treating various disorders (83). They also have the potential to enhance clinical skills, reduce occupational stress, and prepare students for using mindfulness-based interventions in practice (84). Furthermore, mindfulness training has been found to be effective in reducing stress and enhancing well-being, particularly in military settings (ZimmermannFred, 2015)(85).

A number of studies have explored the potential benefits of meditation training for healthcare professionals. Shapiro (2014)(86) and Chmielewski (2020)(87) both emphasize the positive impact of mindfulness on stress reduction, mood improvement, and empathy enhancement. Oman (2006)(88) further supports these findings, demonstrating the effectiveness of passage meditation in reducing perceived stress among health professionals. Rao (2017)(89) expands on these benefits, showing that online training in specific meditation practices can improve gratitude, well-being, self-compassion, and confidence in providing compassionate care.

### **3.7. Future Directions and Challenges**

Research has demonstrated that various factors, including personality traits, symptom severity, and perceived benefits, can impact the frequency of meditation practice (90). Short, daily meditation sessions have been found to be both feasible and effective in reducing stress and enhancing quality of life (91). In addition, novice meditators have been observed to adhere to their practice, with significant improvements in stress and quality of life recorded, irrespective of the specific meditation technique employed or the duration of the practice (92).

Cohen (2017)(93) found that a one-week Vipassana retreat led to improvements in mindfulness, anxiety, depression, and dysfunctional attitudes, with these gains maintained at a four-week follow-up. Lykins (2009)(94) reported that long-term mindfulness meditation practitioners exhibited increased mindfulness, decreased ruminative tendencies, decreased fear of emotions, and increased behavioral self-regulation. Smith (2019)(95) found that a two-year integrated mindfulness/meditation and Buddhism program predicted increases in subjective well-being and mindfulness. Gamaiunova (2019)(27) demonstrated that long-term meditation practitioners exhibited faster cortisol recovery from stress and employed adaptive emotion regulation strategies, such as acceptance and positive reappraisal.

The perception of meditation is greatly influenced by cultural and societal factors, as emphasized by (97). It is crucial to comprehend mindfulness meditation within its original Buddhist context, as its removal from this setting can alter its essence and effects. Pagis (2019)(98) further explores meditation as a social phenomenon, underlining its role in integrating secular and mystical aspects, and providing a space for both individual and collective experiences. Full (2013)(99) adds to this by highlighting the significant changes in perception that can be induced by mindfulness practices, although the extent to which these are culturally determined remains uncertain. Vohra-Gupta (2007)(18) discusses the migration of meditation from Eastern to Western cultures, noting its growing adoption in Western social practices, particularly in the field of social work.

#### **4. Conclusion**

Meditation has been found to offer numerous health benefits across various dimensions. It functions as an effective stress-reduction tool, lowering cortisol, blood pressure, and heart rate, which in turn helps to mitigate stress. Additionally, meditation has been shown to modulate the immune system, enhancing immune function by boosting Natural Killer cells and telomerase. Moreover, meditation has a positive impact on cognitive abilities, including attention, concentration, and working memory, resulting in improved cognitive functioning. Meditation has also been found to influence neuroplasticity and brain structure, with experienced meditators exhibiting structural brain changes that impact cognitive, emotional, and immunological aspects. The practice of meditation has been linked to increased psychological resilience and mental flexibility, contributing to greater adaptability. Furthermore, meditation has been shown to be effective in alleviating symptoms of anxiety, panic disorders, and depression through mindful breath-focused techniques. Additionally, meditation has been found to be a useful complement to chronic pain therapy, positively impacting pain perception and functioning. Meditation also has positive effects on cardiovascular health, aiding in the reduction of blood pressure and influencing cardiovascular risk factors. Overall, meditation can be considered a versatile and comprehensive tool for supporting both physical and mental well-being, delivering benefits across various dimensions of health.

In terms of its impact in educational settings, meditation can be particularly beneficial for teachers in building resilience and combating professional burnout. ~~Research has shown that a four-day intensive mindfulness meditation training can significantly increase resilience.~~ The integration of mindfulness practices into health interventions has also been found to have a positive impact on various psychological and physical disorders, making meditation an integral part of clinical psychology and stress reduction programs in medical settings.

Meditative therapies are not the only way to improve stress management, mood, and empathy. It is also beneficial to train healthcare workers in mindfulness practices. However, it is important to recognize that the perception of meditation is shaped by cultural and social factors, and its original



Buddhist context is crucial for understanding its essence and effects. Despite these differences, meditation is becoming more widely accepted in Western culture, particularly in the field of social work. This suggests that meditation is a valuable tool for improving mental and physical health not only for individuals, but also for education and healthcare workers. Meditation is a versatile tool that can be integrated into various practices, enhancing the overall well-being of individuals and professionals alike.

## **Disclosure:**

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