



Neuropsychological and Physiological Effects of Brahma Kumaris Rajyoga Meditation: An Integrative Review of Brain Plasticity, Happiness, and Heart Rate Variability

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Abstract: *Brahma Kumaris Rajyoga Meditation (BKRM) is a distinctive form of open-eyed meditation that emphasizes self-awareness, soul-consciousness, positive cognition, emotional regulation, and a perceived connection with the Supreme Soul. In recent years, scientific research has increasingly examined the relationship between meditation practices and neuropsychological as well as physiological functioning. However, relatively fewer studies have specifically investigated the Brahma Kumaris form of Rajyoga meditation.*

The present integrative review examines available evidence concerning the potential effects of BKRM on brain plasticity, psychological happiness, emotional regulation, and autonomic cardiovascular function, with particular emphasis on heart rate variability (HRV). Existing Rajyoga-specific research has reported differences in grey-matter volume within brain regions associated with reward processing and happiness among practitioners, together with higher subjective happiness. Electrophysiological studies have additionally identified alterations in EEG activity and functional organization during open-eyed Rajyoga meditation. Psychological studies have reported associations between Rajyoga practice, positive thinking, self-satisfaction, meaning in life, and subjective happiness. Physiological investigations suggest that Rajyoga meditation can influence cardiovascular and autonomic parameters, with recent HRV studies providing evidence of state-dependent changes in cardiac autonomic regulation and cardiorespiratory coupling. The present review therefore argues for cautious interpretation and emphasizes the need for larger longitudinal and randomized controlled studies integrating neuroimaging, electrophysiology, HRV, and validated psychological measures.

Keywords: *Brahma Kumaris Rajyoga Meditation, Rajyoga, brain plasticity, neuropsychology, happiness, positive thinking, heart rate variability, autonomic regulation, EEG, soul-consciousness, meditation.*

Introduction

Meditation has become an important area of interdisciplinary scientific investigation because of its possible influence on cognition, emotional regulation, psychological well-being, brain function, and physiological homeostasis. Contemporary neuroscience has increasingly moved beyond considering meditation solely as a spiritual or philosophical practice and has begun examining measurable changes associated with different forms of contemplative training.

Within this expanding field, **Brahma Kumaris Rajyoga Meditation (BKRM)** represents a distinctive meditation system. The Brahma Kumaris describe Rajyoga as a practice of self-awareness and spiritual connection that can be performed naturally with the eyes open and without

dependence on physical postures, rituals, or mantras. The practice emphasizes awareness of the self as a soul, cultivation of positive qualities such as peace, love, purity and happiness, and a conscious connection with the Supreme Soul.

From a scientific perspective, these features make BKRM particularly interesting. Unlike many commonly investigated meditation techniques that involve closed eyes, breath observation, or mantra repetition, Brahma Kumaris Rajyoga is generally practiced with open eyes while maintaining an internally focused state of awareness. Research specifically examining Rajyoga practitioners has consequently provided an opportunity to investigate whether sustained contemplative practice can influence neural activity and psychological functioning while the practitioner

remains visually engaged with the surrounding environment.

Research conducted among Brahma Kumaris Rajyoga practitioners has investigated several domains, including positive thinking, happiness, grey-matter volume, EEG activity, default-mode-network organization, cardiovascular function, and autonomic regulation. These studies collectively suggest that Rajyoga may have measurable neuropsychological and physiological correlates, although the existing evidence does not yet establish definitive causal mechanisms.

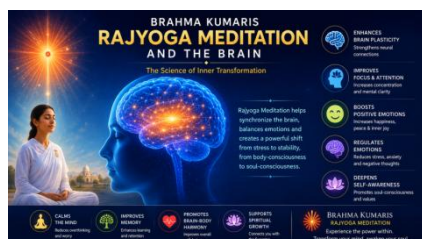
The purpose of the present integrative review is therefore to examine the available scientific literature concerning the potential effects of BKRM on three interconnected domains: brain plasticity, happiness and psychological well-being, and autonomic cardiovascular regulation as reflected by HRV.

Brahma Kumaris Rajyoga Meditation: Conceptual Framework

Brahma Kumaris Rajyoga is founded on the principle of developing awareness of the self as a spiritual being or soul. The practitioner is encouraged to shift attention from identification with the physical body toward a state commonly described within the tradition as **soul-consciousness**.

The practice generally involves sitting comfortably, maintaining an upright posture, and directing attention toward the centre of the forehead while cultivating positive and peaceful thoughts. An external point-of-light symbol may be used as an object of attention, representing the Supreme Soul within the spiritual framework of the practice.

The Brahma Kumaris describe Rajyoga as an open-eyed meditation technique that does not require elaborate postures, rituals, or mantras. This characteristic potentially makes it suitable for integration into everyday activities.



From a psychological perspective, the practice can be conceptualized as involving several components:

1. **Attention regulation**
2. **Self-awareness**
3. **Positive cognitive orientation**
4. **Emotional regulation**
5. **Self-reflection**
6. **Cultivation of peaceful and compassionate mental states**
7. **Spiritual meaning and connection**

These components overlap with mechanisms investigated in contemporary contemplative neuroscience while retaining distinctive features derived from the Brahma Kumaris spiritual framework.

It is important, however, to distinguish between the **spiritual interpretation of the practice** and the **scientific interpretation of measurable outcomes**. Concepts such as soul-consciousness and Supreme Soul belong to the philosophical and spiritual framework of BKRM. Neuroscience can investigate associated cognitive, neural, psychological, and physiological processes, but it cannot scientifically validate or invalidate metaphysical claims concerning the nature of the soul or Supreme Soul.

Rajyoga Meditation and Neuroplasticity- Understanding brain plasticity

Brain plasticity refers to the capacity of the nervous system to modify its structure and functional organization in response to experience, learning, behavior, and environmental influences.

Meditation is increasingly investigated as a form of mental training capable of influencing neural systems involved in attention, emotion, self-referential processing, and reward. However, the term “neuroplasticity” should be used cautiously. A cross-sectional difference in brain structure between meditators and non-meditators does not by itself demonstrate that meditation caused the difference.

This distinction is particularly relevant to Rajyoga research because some of the most important

findings have come from comparisons between experienced practitioners and non-meditators.

Grey-matter findings among Rajyoga practitioners

One of the most important Rajyoga-specific neuroscience studies investigated grey-matter volume and happiness among Brahma Kumaris Rajyoga practitioners.

The study included 40 Rajyoga practitioners and 40 non-meditators matched for age, sex, and handedness. Structural MRI was used to investigate grey-matter volume, while subjective happiness was assessed using the Oxford Happiness Questionnaire. Rajyoga practitioners showed higher happiness scores and greater grey-matter volume in several regions associated with reward processing, including the right superior frontal gyrus, left orbitofrontal cortex, and bilateral precuneus. Associations were also reported between happiness scores and regions including the right insula and anterior cingulate cortex.

The researchers additionally observed associations between greater meditation experience and grey-matter characteristics in the ventral pallidum, a region associated with reward processing.

These findings are particularly relevant because they provide a possible neurobiological link between Rajyoga practice and subjective happiness.

Nevertheless, the findings should not be interpreted as proof that meditation directly increases grey-matter volume. The cross-sectional design means that pre-existing differences cannot be completely excluded. Individuals who choose to practice meditation for many years may already differ from non-meditators in personality, motivation, coping style, lifestyle, or psychological characteristics.

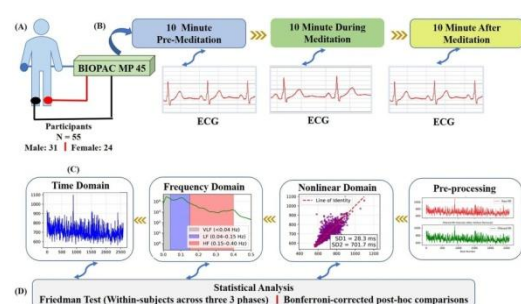
Thus, the MRI evidence should be regarded as **evidence of association and a basis for further investigation**, rather than definitive proof of meditation-induced structural plasticity.

EEG and Functional Brain Organization

Neuroimaging provides information about brain structure, while electroencephalography (EEG) offers a complementary method for examining dynamic electrical activity.

More recent research has examined **functional reorganization across frequency bands** during open-eyed meditation among long-term Brahma Kumaris Rajyoga practitioners. The study investigated changes in functional connectivity between EEG electrodes during meditation and reported alterations in information exchange across brain regions.

This line of research is important because meditation may not simply increase or decrease the activity of one particular brain region. Instead, meditation may involve changes in the coordination and communication of distributed neural networks.



Recent research involving experienced Brahma Kumaris Rajyoga practitioners has also examined gamma-band activity during open-eye meditation. Such work provides an opportunity to investigate how sustained contemplative practice interacts with neural processes involved in attention and sensory processing.

Taken together, the available EEG evidence suggests that BKRM may be associated with measurable alterations in neural oscillations and functional organization. However, further replication and longitudinal research are needed to determine whether these patterns represent stable trait-level adaptations, temporary meditation states, or both.

Rajyoga Meditation and Happiness

Happiness is a multidimensional psychological construct involving positive affect, life satisfaction, subjective well-being, meaning, contentment, and emotional balance.

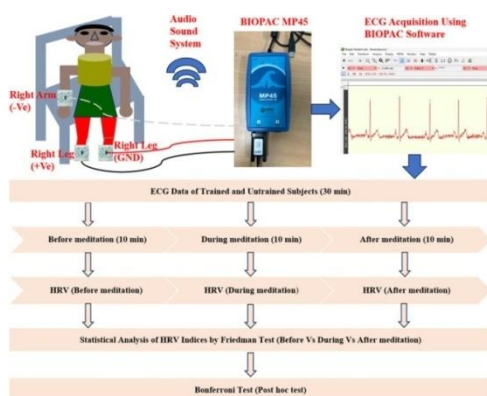
One of the earliest studies specifically investigating **Brahma Kumaris Rajyoga Meditation and happiness** examined Rajyoga practitioners and non-meditators using the Oxford Happiness

Questionnaire. The study reported higher happiness and self-satisfaction among the Rajyoga practitioners.

The findings are significant because they provide empirical evidence specifically concerning the Brahma Kumaris form of Rajyoga rather than meditation in general.

A subsequent neuroimaging investigation strengthened this relationship by reporting higher happiness scores among Rajyoga practitioners alongside differences in grey-matter volume in reward-related brain regions.

Research involving older adults has also examined a customized Brahma Kumaris Raja Yoga program in a multi-city setting. The study included 698 older adult followers across ten European and African cities and reported improvements in meaning in life and subjective happiness, with regular self-practice emerging as an important predictor of post-intervention outcomes.



These findings suggest that Rajyoga may contribute to happiness through several potentially interacting pathways:

Positive cognition → emotional regulation → self-satisfaction → meaning in life → subjective happiness

The practice may also encourage individuals to reinterpret stressful circumstances through a framework of self-awareness, responsibility, acceptance, and positive qualities.

However, happiness is influenced by numerous social and psychological factors. Consequently,

Rajyoga should not be considered the sole determinant of subjective well-being.

Rajyoga Meditation and Heart Rate Variability

Importance of HRV

Heart rate variability represents variation in the time intervals between successive heartbeats. It is widely used as a non-invasive indicator of dynamic autonomic cardiovascular regulation.

HRV is influenced by both sympathetic and parasympathetic components of the autonomic nervous system and is also affected by respiration, posture, physical fitness, sleep, age, medication, and psychological state.

For meditation research, HRV is particularly useful because it can provide an objective physiological measure that complements subjective reports of relaxation and well-being.

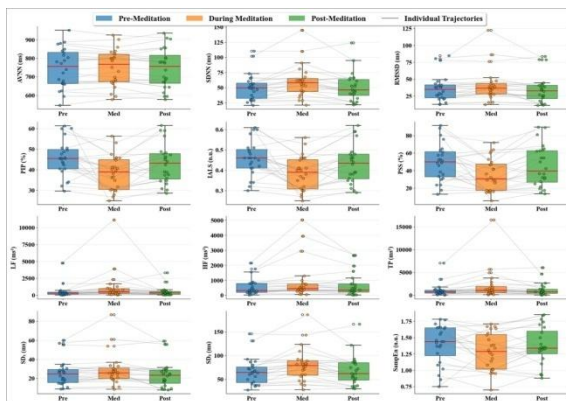
Contemporary HRV Evidence

Recent research has provided more detailed evidence regarding the cardiovascular effects of Rajyoga.

A 2026 study involving trained Rajyoga practitioners examined HRV before, during, and after meditation. The investigators recorded ECG and analyzed multiple time-domain, frequency-domain, and nonlinear HRV measures. Meditation was associated with state-dependent changes in HRV measures, reduced respiration frequency, and stronger HRV-respiration coupling. The findings were interpreted as being consistent with increased parasympathetic engagement during the meditative state.

Another recent study investigated acute HRV responses among trained Rajyoga practitioners and younger novices. The study specifically recruited practitioners from a Brahma Kumaris Meditation Centre and examined ECG during pre-meditation, meditation, and post-meditation periods. Clinical research has also begun examining Rajyoga in specific populations. A randomized controlled trial involving patients with panic disorder reported increases in several HRV parameters following eight weeks of Rajyoga meditation compared with a control condition, suggesting improved autonomic regulation.

These recent findings are encouraging because they move beyond subjective reports and provide measurable physiological evidence. Nevertheless, HRV findings require careful interpretation. Respiratory changes can strongly influence HRV, and therefore studies should ideally measure respiration simultaneously. The most recent Rajyoga research has begun addressing this issue by examining HRV-respiration coupling.



Possible Neuro physiological Mechanisms

The psychological and physiological effects of BKRM can potentially be understood through a multi-level model.

Level 1: Attention

Rajyoga requires sustained attention and conscious awareness. Repeated attentional practice may strengthen the ability to observe thoughts without immediately reacting to them.

Level 2: Self-related processing

The shift from body-consciousness toward soul-consciousness represents a central feature of the Brahma Kumaris practice. From a neuroscience perspective, this may involve changes in self-referential and attentional processing, although the spiritual interpretation itself cannot be directly measured using neuroscience.

Level 3: Emotional regulation

Positive thoughts and conscious observation may reduce habitual emotional reactivity and encourage more adaptive responses to stressful events.

Level 4: Reward and positive affect

The MRI findings involving the orbitofrontal cortex, superior frontal regions, insula, anterior cingulate cortex, precuneus, and ventral pallidum suggest a possible relationship between long-term Rajyoga practice and neural systems associated with reward and happiness.

Level 5: Autonomic regulation

Changes in psychological arousal, emotional processing, and respiration may influence cardiovascular autonomic regulation. HRV may therefore represent one physiological pathway through which mental training becomes measurable at the bodily level.

A conceptual model can therefore be expressed as:

BKRM practice → sustained attention and self-awareness → positive cognitive regulation → emotional balance → altered neural processing → autonomic regulation → enhanced psychological well-being

This model is conceptual and should be tested through longitudinal experimental research.

Open-Eyed Meditation as a Distinctive Feature

One of the most scientifically interesting characteristics of Brahma Kumaris Rajyoga is its **open-eyed format**.

Many meditation techniques are practiced with the eyes closed to minimize external sensory stimulation. In contrast, Brahma Kumaris Rajyoga is traditionally practiced with the eyes open while the practitioner maintains internal awareness.

This characteristic may have practical significance.

Because practitioners can maintain open eyes, Rajyoga can potentially be integrated into ordinary daily environments without requiring complete withdrawal from visual surroundings.

From a neuroscience perspective, open-eyed meditation also raises interesting research questions concerning the interaction between sensory processing and internally directed attention.

Recent EEG research specifically examining long-term Brahma Kumaris Rajyoga practitioners during open-eyed meditation demonstrates that this aspect of the practice can be investigated experimentally

through functional connectivity and neural oscillation measures.

Future research comparing open-eyed Rajyoga with closed-eye meditation could therefore provide useful information about how sensory input influences meditative states.

Brain–Mind–Heart Integration

An important direction for future research is to move beyond examining the brain, psychological outcomes, and cardiovascular physiology independently.

The brain, autonomic nervous system, and psychological processes operate as an interconnected system.

A possible integrated framework is:

Rajyoga meditation

↓

Attention and self-awareness

↓

Reduced cognitive-emotional reactivity

↓

Positive affect and psychological well-being

↓

Altered neural network organization

↓

Autonomic flexibility

↓

Changes in HRV and cardio respiratory coupling

This framework suggests that happiness and HRV may not be unrelated outcomes. They could represent different manifestations of a broader process involving emotional regulation and physiological adaptation.

However, this proposed relationship remains hypothetical and requires direct empirical testing.

Implications for Psychology and Health Sciences

Neuropsychological and Physiological Effects of Brahma Kumaris Rajyoga Meditation: An Integrative Review of Brain Plasticity, Happiness, and Heart Rate Variability

The scientific investigation of Brahma Kumaris Rajyoga has potential relevance for psychology, neuroscience, physiology, behavioral medicine, and health education.



From a psychological perspective, Rajyoga may provide a structured approach for cultivating positive cognition, emotional regulation, self-awareness, and subjective well-being.

From a neuropsychological perspective, the practice provides an interesting model for investigating sustained attention, self-related cognition, reward processing, and neural plasticity.

From a physiological perspective, HRV offers an accessible method for investigating autonomic responses associated with meditation.

The practice may also have relevance for stress-management programs. A study of examination stress investigated whether one month of supervised Raj Yoga meditation could influence cardiovascular, autonomic, and psychological stress-related parameters in medical students. The researchers specifically examined blood pressure, HRV, baroreflex sensitivity, and perceived stress.

Clinical studies are also beginning to examine Rajyoga as a complementary intervention in specific populations. However, such findings should not be interpreted as evidence that meditation replaces established medical or psychological treatment.

Future Research Directions

Future BCRM research should adopt more rigorous experimental methodologies.

Large-scale randomized controlled trials could compare newly trained participants with active control groups over six months or longer.

Longitudinal neuroimaging could investigate whether structural and functional brain differences develop following Rajyoga training.

Simultaneous EEG and HRV recordings could clarify whether changes in neural oscillations are associated with autonomic changes during meditation.

Future studies should also examine whether improvements in happiness are statistically associated with changes in HRV, emotional regulation, and neural connectivity.

Another important direction would be research on the **dose-response relationship** of Rajyoga. Researchers should determine whether 10, 20, 30, or 60 minutes of daily practice produce different outcomes and whether benefits depend more strongly on duration, frequency, or quality of practice.

Finally, open-eyed Rajyoga provides a unique opportunity to study meditation under conditions that more closely resemble everyday functioning. Research comparing open-eyed and closed-eyed meditation could provide important insights into the relationship between sensory processing, attention, and contemplative awareness.

Conclusion

Brahma Kumaris Rajyoga Meditation represents a distinctive form of contemplative practice characterized by open-eyed meditation, self-awareness, soul-consciousness, positive cognition, and spiritual reflection.

The emerging scientific literature provides preliminary evidence that BKRM may be associated with changes across multiple levels of functioning. Neuroimaging research has reported differences in grey-matter volume within regions involved in reward processing and happiness among Rajyoga practitioners. EEG investigations have reported alterations in neural oscillations and functional organization during open-eyed Rajyoga meditation.

Psychological studies have reported associations between Rajyoga practice, positive thinking, self-

satisfaction, meaning in life, and subjective happiness.

Physiological research provides additional evidence that Rajyoga may influence autonomic cardiovascular regulation. Recent HRV research has demonstrated state-dependent changes in cardiac variability and cardiorespiratory coupling during Rajyoga meditation, providing an important physiological pathway for future investigation.

Taken together, these findings suggest a potentially important relationship between **mental training, neural organization, psychological well-being, and autonomic regulation**.

However, the current literature does not yet justify definitive claims that Brahma Kumaris Rajyoga directly causes brain plasticity or universally increases happiness and HRV. The evidence is promising but remains constrained by sample size, study design, methodological heterogeneity, and the limited number of longitudinal investigations.

Future research using randomized longitudinal designs and simultaneous assessment of EEG, MRI, HRV, respiration, and psychological variables could substantially strengthen the scientific understanding of BKRM.

Overall, Brahma Kumaris Rajyoga provides a valuable and distinctive model for investigating the interaction between **consciousness, positive cognition, brain plasticity, subjective happiness, and physiological regulation**. Continued interdisciplinary research may help clarify the mechanisms through which sustained contemplative practice influences the human mind and body.

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