

Health Benefits of the *Isha Samyama Sadhana* Meditation Programme: A Scoping Review

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ABSTRACT

Background: Samyama, an advanced eight-day residential meditation programme delivered by the Isha Foundation, integrates the classical yogic processes of dhāraṇā, dhyāna, and samādhi, preceded by rigorous preparation encompassing a vegan diet and foundational yoga practices. Despite growing interest in intensive contemplative interventions, empirical evidence regarding Samyama's health effects remains limited. This scoping review maps the extent and nature of research on the Isha Samyama programme, synthesising findings across psychological, physiological, neurophysiological, genomic, lipidomic, and microbiome domains to evaluate preliminary implications for mental and physical health.

Methods: Following PRISMA-ScR guidelines, PubMed, Scopus, Web of Science, and the Cochrane Library were searched from January 2015 to October 2025. Following duplicate removal and screening, six observational studies were included.

Results: Consistent beneficial effects emerged. Psychological outcomes included reduced depression, anxiety, and stress, with enhanced mindfulness, vitality, resilience, and non-attachment. Physiological benefits comprised persistently lower systemic inflammation, improved glycaemic and lipid profiles, and acute endocannabinoid-like lipid shifts. Neurophysiological changes involved increased salience-default mode network connectivity and trait/state relaxed alertness. Genomic analysis revealed transient robust antiviral immune activation without proinflammatory excess. Microbiome shifts demonstrated sustained enrichment in beneficial genera three months post-programme.

Conclusion: Emerging evidence suggests that Samyama is associated with multidimensional health benefits, potentially offering a promising non-pharmacological intervention for stress-related and inflammatory conditions. However, observational designs and the shared cohort limit causal inference. Randomised controlled trials are needed to confirm efficacy and disentangle underlying mechanisms.

Keywords: *Samyama, Isha Yoga, meditation, contemplative neuroscience, mental health, inflammation, microbiome, lipidomics*

INTRODUCTION

Meditation and yoga-based practices have received growing attention within health research over the past three decades, driven

by the increasing global burden of non-communicable diseases, mental health disorders, and stress-related conditions. A substantial body of evidence suggests that

contemplative practices may influence psychological wellbeing, stress regulation, autonomic balance, inflammatory pathways, and metabolic health. Meta-analyses and systematic reviews have reported small to moderate benefits of meditation and yoga for depression, anxiety, stress, and quality of life, although heterogeneity in intervention types, intensity, and methodological quality remains a persistent limitation.^[1,2]

Evidence highlights meditation's potential to influence cognition, emotions, perception, and attention, giving rise to the field of contemplative neuroscience, which explores associated changes in brain structure and function.^[3-5] Emerging research also examines underlying mechanisms, such as impacts on inflammatory markers, immune function, and ageing processes.^[6]

Against this backdrop, there is growing interest in intensive, multi-component meditation programmes that extend beyond brief mindfulness-based interventions and are grounded in traditional yogic frameworks.^[7-9]

Within classical yoga philosophy, meditation is not conceptualised as a single technique but as a progressive continuum of attentional training. According to the *Yoga Sūtras* of Patañjali, the final three limbs of yoga—*dhāraṇā* (focused attention), *dhyāna* (sustained meditative absorption), and *samādhi* (non-dual awareness)—are collectively referred to as *samyama*.^[10]

Traditionally, these practices were reserved for advanced practitioners following prolonged ethical, physical, and preparatory disciplines. In contemporary contexts, however, certain institutions have adapted these classical frameworks into structured programmes accessible to lay practitioners under carefully controlled conditions.

The Isha Samyama meditation programme is one such adaptation. Offered periodically by the Isha Foundation under the guidance of Sadhguru, Samyama is an intensive eight-day residential retreat preceded by approximately two months of structured preparation. Eligibility requires completion

of multiple foundational yoga and meditation programmes and sustained daily practice of specific techniques, including *hatha yoga*, *kriyā yoga*, and *Shoonya* meditation, alongside adherence to a prescribed vegan diet and lifestyle restrictions. During the retreat itself, participants observe prolonged silence, engage in extended meditation sessions often exceeding 10–15 hours per day, and remain largely isolated from external sensory stimuli.^[11] This degree of intensity, duration, and behavioural standardisation distinguishes Samyama from most meditation interventions evaluated in clinical research.

Prior to 2021, no scientific studies had rigorously examined Samyama's physiological and psychological effects. Emerging research since then, primarily from a single 2018 cohort, has begun to address this gap. Related shorter or prerequisite Isha programmes have previously shown benefits including elevated endocannabinoids, BDNF, autonomic balance, and well-being improvements.^[12-17]

These studies vary substantially in aims, populations, outcome measures, and methodological rigour. Some focus primarily on mental health and wellbeing, whilst others examine neurophysiological, autonomic, inflammatory, or metabolic correlates of intensive meditation practice. Collectively, these findings suggest potential multidimensional effects of Samyama-related practices but do not yet constitute a coherent or mature evidence base suitable for quantitative synthesis.

A scoping review methodology is particularly well-suited to this investigation. Scoping reviews aim to examine the extent, range, and nature of research activity on a topic, identify key concepts, map the evidence, highlight gaps, and inform future research directions, without synthesising data for pooled effect estimates or rigorous quality appraisal of individual studies.^[18] This approach is especially valuable for emerging, heterogeneous, or limited bodies

of evidence—characteristics evident in the nascent empirical literature on Samyama meditation. In contrast to systematic reviews, which typically address focused questions on intervention efficacy, scoping reviews accommodate diverse methodologies and broader exploratory objectives.^[19,20] The present review maps the available evidence on Samyama, contextualises its distinctive synthesis of classical yogic practices within modern contemplative science, and evaluates preliminary implications for psychological and physiological health outcomes.

MATERIALS & METHODS

This scoping review was conducted to map the available evidence on the health benefits of the Isha Samyama Sadhana programme, an intensive eight-day residential meditation retreat preceded by preparatory yoga practices and a vegan diet. The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines.^[20] The aim was to identify key themes, study designs, outcomes, and gaps in the literature, rather than to critically appraise study quality or synthesise data quantitatively, given the nascent and homogeneous nature of the evidence base.

Eligibility Criteria: Studies were included if they met the following criteria: (1) peer-reviewed primary research articles published in English from January 2015 to June 2025; (2) focused on the Isha Samyama Sadhana programme; (3) reported empirical data on health benefits, including physical (e.g., metabolic, immunological), psychological (e.g., anxiety, mindfulness), or neurological (e.g., brain connectivity, oscillations) outcomes; (4) utilised observational designs (e.g., prospective cohort, cross-sectional) with human participants aged 18 years or older. Exclusions included non-empirical articles, studies on general yoga or meditation without specific reference to Isha Samyama, or those solely examining feasibility without

outcome data. No restrictions were placed on sample size or geographical location.

Information Sources and Search Strategy: Electronic databases searched included PubMed, Web of Science, Scopus, and Cochrane, with searches conducted from 2015 to October 2025. The search strategy combined terms related to the intervention and outcomes: ("Isha Samyama" OR "Samyama Sadhana" OR "Isha Yoga meditation retreat" OR "Inner Engineering retreat") AND ("benefits" OR "health effects" OR "outcomes" OR "study" OR "trial" OR "impact"). Boolean operators, truncation (e.g., benefit*), and filters for publication date and article type (original research) were applied. Reference lists of included studies were hand-searched for additional citations. No language restrictions were applied during the initial search, but only English-language full texts were retained.

Study Selection: Titles and abstracts were screened independently by two reviewers using a standardised form. Full texts were retrieved for potentially eligible studies, with discrepancies resolved through discussion. A PRISMA-ScR flow diagram was used to document the selection process, including reasons for exclusion.

Data Charting and Synthesis: Data were extracted using a piloted charting form capturing: study details (author, year, design, sample size, setting), participant characteristics (age, sex, meditation experience), intervention components (e.g., retreat duration, preparatory practices), outcomes measured (e.g., biomarkers, psychometric scales, neuroimaging), key findings, and limitations. Data were synthesised narratively and thematically, grouped by outcome domains (physical, mental, neurological, immunological). Gaps, such as the need for randomised controlled trials (RCTs) or diverse populations, were highlighted. No formal risk-of-bias assessment was performed, consistent with scoping review objectives.

RESULT

Our systematic search of PubMed, Scopus, Web of Science, and the Cochrane Library from January 2015 to October 2025 identified 245 records. After removal of 96 duplicates, 149 unique records were screened by title and abstract, excluding the

majority. Full-text assessment was conducted on 42 articles, of which 36 were excluded. Ultimately, six studies were included. The study selection process is summarised in the PRISMA flow diagram [Figure 1].

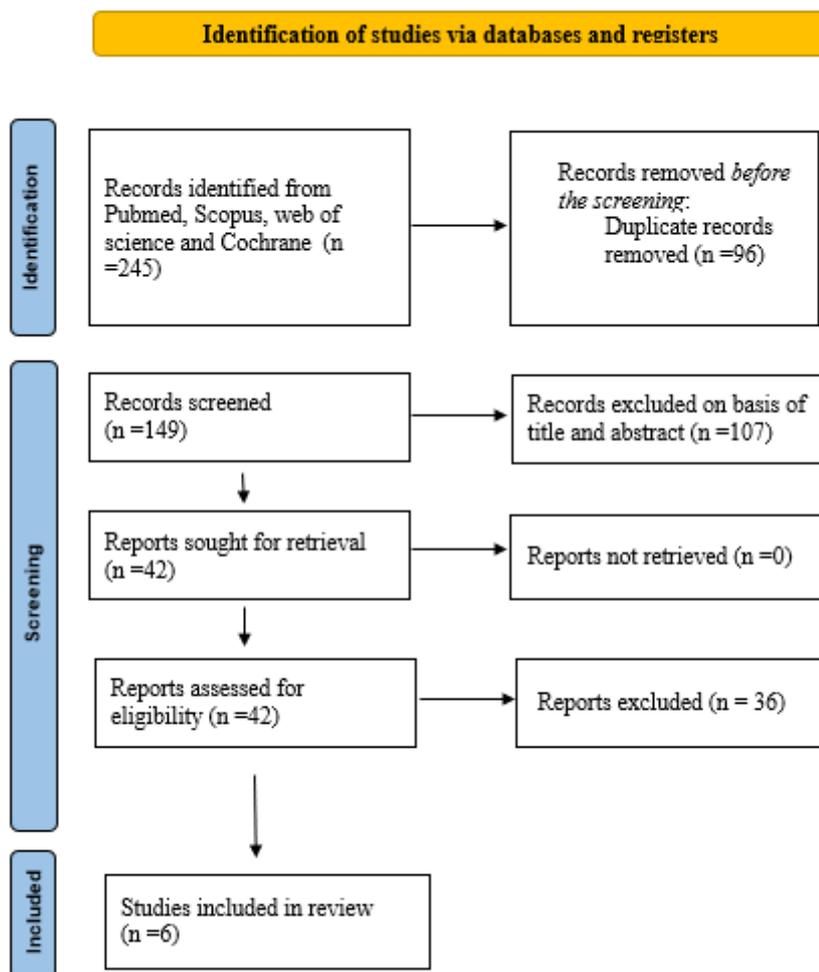


Figure 1: Summarized search strategy (Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram)

Six studies, all observational in design, investigated the effects of the Isha Samyama programme—an eight-day intensive residential meditation retreat requiring extensive prerequisites.^[21-26] These studies encompassed psychological, physiological, neurophysiological, genomic, lipidomic, microbiome, and sleep-based brain age outcomes, primarily from the same 2018 United States Samyama cohort (ranging

from 13 to 106 meditators) with longitudinal follow-up up to three months post-retreat. All studies reported beneficial effects across domains, with acute changes often observed immediately post-retreat and some sustained at follow-up. Visual summaries of the key findings are presented in Table 1 (characteristics of included studies) and Table 2 (summary of effect directions across domains).

Table 1: Characteristics of Included Studies

Study	Domain	Sample Size (Meditators)	Key Outcomes	Timepoints/Follow-up
Sadhasivam et al. [21]	Psychological & Physiological	195	Reduced depression/anxiety; lower CRP/HbA1c/triglycerides	Pre, pre-retreat, post, 3 months
Malipeddi et al. [22]	Neurophysiological & Psychological	42	Relaxed alertness (EEG); lower stress, higher well-being	Cross-sectional (lifetime practice)
Vishnubhotla et al. [23]	Lipidomic & Metabolic	64	Increased acylglycines; decreased pro-atherogenic lipids	Immediate pre- and post-retreat
Vishnubhotla et al. [24]	Neurophysiological	13	Increased SN-DMN connectivity; correlated with mindfulness	Pre- and post-retreat
Chandran et al. [25]	Genomic & Immune	106	Up-regulated IFN signaling genes; down-regulated oxidative stress/cell cycle	Pre, post-retreat, 3 months
Raman et al. [26]	Microbiome & Metabolome	265	Sustained increase in beneficial bacteria (e.g., Bifidobacterium)	Pre-prep, pre-retreat, 3 months post

Abbreviations: CRP: C-reactive protein, DMN: Default mode network, EEG: Electroencephalography, HbA1c: Glycated hemoglobin, IFN: Interferon, SN: Salience network

Table 2: Summary of effect directions across domains.

Domain	Key Markers/Outcomes	Effect Direction	Primary Contributing Studies
Psychological	Depression, anxiety, perceived stress	↓ (medium to large effects)	Sadhasivam et al.; Malipeddi et al. [21,22]
	Mindfulness, vitality, resilience, well-being, non-attachment	↑ (medium to large effects)	Sadhasivam et al.; Malipeddi et al. [21,22]
Physiological/ Metabolic	Systemic inflammation (CRP)	↓ (persistent, 2-3x lower)	Sadhasivam et al. [21]
	Glycemic control (HbA1c), triglycerides	↓	Sadhasivam et al.; Vishnubhotla et al. [21,23]
	Pro-atherogenic lipids (e.g., TGs, DGs)	↓	Vishnubhotla et al. [23]
	Acylglycines (endocannabinoid-like)	↑	Vishnubhotla et al. [23]
	Body weight	↓ (modest, partial rebound)	Sadhasivam et al. [21]
Neurophysiological	Salience-default mode network connectivity	↑ (correlated with mindfulness)	Vishnubhotla et al. [24]
	Frontal midline theta/alpha/beta power (relaxed alertness)	↑ (trait/state effects)	Malipeddi et al. [22]
	Sustained power during non-dual meditation	↔ (stable vs. decrease in novices/controls)	Malipeddi et al. [22]
Genomic/Immune	Interferon signaling/antiviral genes	↑ (robust, transient)	Chandran et al. [25]
	Oxidative stress detoxification, cell cycle genes	↓	Chandran et al. [25]
	Proinflammatory genes	↔ (no activation)	Chandran et al. [25]
Microbiome	Beneficial genera (e.g., Bifidobacterium, Lactobacillus)	↑ (sustained at 3 months)	Raman et al. [26]
	Bacteroides/Lachnospira	↓	Raman et al. [26]
	Branched SCFAs (iso-butyrate/valerate)	↑ (preparation phase)	Raman et al. [26]

Abbreviations: CRP, C-reactive protein; DG, diacylglycerol; HbA1c, glycated hemoglobin; SN, salience network; DMN, default mode network; EEG, electroencephalography; IFN, interferon; SCFA, short-chain fatty acid; TG, triglyceride. Notes: Effects are reported relative to baseline measurements, household controls, or novice meditators where applicable. ** Arrows indicate direction: ↑ = increase/improvement/enrichment; ↓ = decrease/reduction; ↔ = no significant change or stable pattern.

Mental Health and Wellbeing Outcomes:

Two studies directly assessed psychological outcomes. Sadhasivam et al. conducted a prospective observational study of 195 Samyama participants (with household controls) using validated scales at baseline (T1), pre-retreat (T2), post-retreat (T3), and three months post-retreat (T4).^[21] Significant improvements were observed in depression (CES-D-10; medium effect size, Cohen's $d = 0.48$ from T1–T3, sustained at T4), anxiety (PROMIS; $d = 0.54$ T2–T3), mindfulness (MAAS; partial $\eta^2 = 0.09$), subjective vitality ($\eta^2 = 0.12$), and resilience ($\eta^2 = 0.09$), with smaller gains in joy ($\eta^2 = 0.02$). Effects were most pronounced in participants with elevated baseline depression or anxiety, dropping below clinical cut-offs and remaining sustained. No changes occurred in controls.

Malipeddi et al., in a cross-sectional comparison of advanced Isha meditators ($n = 42$, including Samyama participants; mean lifetime practice $\sim 5,500$ hours), novices ($n = 33$; $\sim 1,600$ hours), and meditation-naïve controls ($n = 28$), reported large effect sizes for better mental health in meditators.^[22] Advanced meditators showed lower perceived stress (PSS; $\varepsilon^2 = 0.12$), anxiety and depression (PHQ-4; $\varepsilon^2 = 0.18$), higher wellbeing (WHO-5; $\varepsilon^2 = 0.20$), and non-attachment (NAS-7; $\varepsilon^2 = 0.18$) compared to novices and controls. Lifetime practice hours correlated inversely with stress and distress ($r \approx -0.35$) and positively with wellbeing and non-attachment ($r \approx 0.35$). During Shoonya meditation, advanced meditators reported deeper states (MEDEQ; $\omega^2 = 0.55$), including reduced hindrances and higher non-duality.

Physiological and Metabolic Outcomes:

Sadhasivam et al., also evaluated biomarkers in subsets of participants.^[21] Meditators exhibited persistent low systemic inflammation (C-reactive protein [CRP] 2–3 \times lower than controls across all timepoints, including baseline and T4; adjusted $P < 0.02$), improved glycaemic control (lower HbA1c at T2 vs. controls; $P = 0.002$), favourable lipids (higher high-density

lipoprotein [HDL] at T2; $P = 0.02$; lower triglycerides at T3), and modest weight reduction (3% T1–T3, partial rebound T4). Temporary haemoglobin drop at T2 recovered by T3/T4.

Vishnubhotla et al. (2022) performed acute lipidomic profiling (pre- vs. immediate post-retreat) in 64 participants, revealing significant increases in acylglycines (acetyl-, propionyl-, butyryl-, valeryl-; $p < 0.001$) and decreases in glycerophosphocholines, glycerophosphoethanolamines, di-unsaturated ethanolamine plasmalogens, cholesterol esters, acylcarnitines, triacylglycerols, and diacylglycerols.^[23] Glycerophosphoserines and glycerophosphoinositols remained unchanged. These shifts aligned with reduced pro-atherogenic lipids and prior observations of lowered triglycerides and inflammation.

Neurophysiological Outcomes: Two studies examined brain function. Vishnubhotla et al. (2021), using resting-state functional magnetic resonance imaging (fMRI) in 13 meditators (vs. 4 controls), found significantly increased functional connectivity between the salience network (SN) and default mode network (DMN) post-retreat ($p < 0.01$, false discovery rate [FDR]-corrected).^[24] Enhanced intra-SN connectivity correlated positively with mindfulness improvements (MAAS; $p < 0.01$). During focused breathing, meditators showed reduced intra-network synchronisation in DMN and related networks post-retreat.

Malipeddi et al., via high-density electroencephalography (EEG) in the same cross-sectional cohorts, identified trait effects in advanced meditators: heightened frontal midline theta, alpha, and beta power at rest (indicating relaxed alertness).^[22] State effects during practices (pranayama, breath-watching, Shoonya) showed global power increases across bands in meditators (vs. low-frequency only in controls), with advanced meditators sustaining power during Shoonya (stable non-dual awareness) whilst novices and controls exhibited

decreases (drowsiness). Post-practice alertness was highest in advanced meditators.

Genomic and Immune Responses: Chandran et al. conducted RNA sequencing on 388 blood samples from 106 participants across four timepoints.^[25] Immediately post-retreat (T3), 719 differentially expressed genes emerged (44% of 1,649 total differentially expressed genes), predominantly upregulated antiviral and immune genes (top: IFIT1, MX1, ISG15). Coexpression analysis revealed a meditation-specific turquoise module (220 immune genes, including 68 interferon [IFN] signalling genes) strongly upregulated at T3, with downregulated brown module (oxidative stress detoxification, cell cycle). Regulatory drivers (24 IFN-related) and transcription factors (e.g., STAT1/2, IRF7) were activated, forming a robust IFN response network without inflammatory gene upregulation. Effects largely reversed by T4 (transient). This signature was dysregulated in severe COVID-19 (downregulated IFN) and multiple sclerosis (reversed by IFN therapy), but distinct from exercise. Confounders (diet, circadian) were minimal.

Gut Microbiome and Metabolome Outcomes: Raman et al., analysed stool from 265 meditators (vs. 23 controls) at three timepoints via 16S rRNA and metabolomics.^[26] Alpha diversity unchanged; beta diversity significantly shifted post-programme ($p_{adj} = 0.001$). Preparation phase increased branched short-chain fatty acids (SCFAs) (iso-butyrate and iso-valerate at T2; $p_{adj} < 0.02$). At three months post-retreat (T3), sustained enrichment in beneficial genera (e.g., *Bifidobacterium*, *Lactobacillus*, *Ruminococcaceae*; log-fold changes up to 4.9) and decreased *Bacteroides* and *Lachnospira* were observed. Primary SCFAs unchanged; valerate lower vs. controls at T3. Metabolomics identified 46 significant changes (mostly preparation-driven, rebounding post-retreat).

DISCUSSION

The six identified studies provide convergent evidence for multifaceted benefits of the Isha Samyama programme on mental health, physiological markers, neural function, immune regulation, lipid metabolism, and gut microbiome composition. These observational findings demonstrate acute effects amplified during the retreat and partial sustainability post-programme, aligning with broader contemplative science whilst revealing unique signatures potentially attributable to Samyama's advanced integrative design.

Psychological improvements, including reduced anxiety, depression, and stress alongside enhanced mindfulness, vitality, resilience, and non-attachment, were consistent and often sustained. These mirror effects observed in shorter mindfulness-based interventions (e.g., eight-week Mindfulness-Based Stress Reduction [MBSR] programmes reducing anxiety and depression with medium effect sizes and intensive retreats such as 10-day Vipassana courses, where participants report decreased negative affect and increased wellbeing). However, Samyama's pronounced gains in advanced practitioners (e.g., deeper non-duality experiences and dose-response relationships with lifetime hours) suggest greater depth arising from prerequisites and expertise, akin to trait changes in long-term meditators (e.g., heightened frontal midline theta indicating relaxed alertness).^[1,27]

Physiologically, persistent low systemic inflammation (CRP), improved glycaemic and lipid profiles, and favourable acute lipid shifts (e.g., reduced pro-atherogenic lipids and acylglycine elevations suggesting endocannabinoid modulation) extend prior meta-analytic evidence that meditation modestly lowers inflammatory markers and cardiovascular risk.^[6] The endocannabinoid-like profile offers a novel mechanistic link to stress reduction, building on related Isha retreats.

Neuroimaging and EEG findings—enhanced salience-default mode network coupling correlating with mindfulness, and

state and trait relaxed alertness—converge with expert meditation research showing flexible network integration and theta-alpha enhancements, paralleling long-term Vipassana or Zen practitioners. A recent study using sleep EEG in advanced Isha meditators reported a brain age approximately 5.9 years younger than chronological age, suggesting potential neuroprotective and anti-aging effects attributable to long-term practice.^[28]

The genomic profile—robust, transient type I interferon activation without proinflammatory upregulation—distinguishes Samyama from typical meditation studies (which more often downregulate inflammation) and positions it as a voluntary immunomodulator with potential relevance for immune-dysregulated conditions.

Microbiome enrichment in beneficial taxa persisting post-diet resumption echoes emerging evidence for meditation's gut-brain influences, implying meditation-specific durability beyond transient dietary effects.^[29]

Overall, Samyama's synthesis of classical yogic limbs appears to potentiate rapid, multi-system coherence. Strengths include multi-modal objectivity and longitudinal design; limitations encompass non-randomisation, shared cohort, healthy baselines, and combined interventions, restricting causality and generalisability. Selection bias and attrition may inflate effects.

These findings advance contemplative neuroscience by illustrating advanced yogic processes' modulation of immune, metabolic, and neural pathways—often robustly—whilst highlighting needs for randomised trials dissecting components, clinical applications, and longer-term outcomes in diverse populations.

CONCLUSION

This scoping review synthesises evidence from six observational studies indicating that the Isha Samyama programme is associated with multidimensional benefits

spanning psychological, physiological, neurological, immune, metabolic, and microbiome domains. Reported outcomes include reduced anxiety and depressive symptoms, enhanced mindfulness and resilience, lowered systemic inflammation and metabolic risk, favourable neural connectivity and oscillations, robust antiviral immune readiness without excess inflammation, endocannabinoid-like lipid shifts, and sustained gut microbiome enrichment towards beneficial taxa. Collectively, these findings suggest Samyama may represent a promising non-pharmacological mind-body intervention for stress-related and inflammatory conditions. However, the observational nature of the evidence limits causal inference, underscoring the need for well-designed randomised controlled trials to confirm efficacy, isolate mechanisms (e.g., meditation vs. diet), and evaluate clinical utility.

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