# Comparative Analysis of Mudras in Hatha Pradipika and Gheranda Samhita: A Systematic Review

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Abstract: This systematic review critically compares and analyzes the practice of mudras in two ancient yogic texts, the Hatha Yoga Pradipika and the Gheranda Samhita, in order to compare their respective techniques, assess their purported physiological effects, and determine their therapeutic potential in modern paradigms of wellness and clinical practice. Utilizing the technique of classical textual analysis and recent research in yoga physiology and integrative health, the study emphasizes 35 mudras—namely, 10 from Hatha Pradipika and 25 from Gheranda Samhita. The analysis explores the techniques, physiological effects, therapeutic benefits, and scriptural contexts of each mudra, thus portraying a convergence between traditional yogic claims and recent scientific findings regarding respiratory function, hormonal balance, and nervous system regulation. Whereas the Hatha Pradipika focuses on the need for spiritual awakening through the mastery of prana, the Gheranda Samhita takes a broader approach involving physical, mental, and spiritual cleansing. The findings suggest that mudras are highly promising as non-invasive therapies in modern wellness practices, pointing to the necessity of blending traditional yogic knowledge with empirical approaches. Moreover, the review invites further empirical confirmation through clinical trials and neurophysiological research, indicating that mudras are promising, cost-effective interventions in preventive and therapeutic medicine.

Keywords: Mudras, Hatha Pradipika, Gheranda Samhita, Yogic Gestures, Yoga Therapy, Pranic Energy, Integrative Medicine, Systematic Review

## 1. Introduction

Mudras, often called symbolic hand postures or pranic seals, are a central part of classical yogic practice. In classical Hatha Yoga, mudras go beyond the movement of the physical body; they are considered to be intense psychophysiological tools that are thought to concentrate pranic energy, stimulate specific cerebral centers, and induce higher levels of consciousness (Feuerstein, 2003). Among the many source books of Hatha Yoga, Hatha Pradipika and Gheranda Samhita stand out due to the detailed description of the philosophy and practice of mudras. The present study commences a comparative study of the mudras described in both books with the aim of systematically evaluating their descriptions, functions, and therapeutic uses.

The Hatha Pradipika, written by Swami Svatmarama in the 15th century CE, describes 10 major mudras and attributes them to the awakening of Kundalini energy, purification within, and the rise of prana or life force (Svatmarama, trans. 1992). The Gheranda Samhita, written in the late 17th century CE by Sage Gheranda, outlines 25 mudras in the sevenfold yoga path, and highlights their physical, mental, and spiritual merits (Mallinson, 2004). These texts of origin not only present descriptive methods but also the philosophical contexts under which mudras are to be performed and interpreted.

A comparative examination of the two works captures both convergence and divergence in the comprehension and classification of mudras. The Hatha Pradipika is inclined to emphasize the mystical and energetic nature of mudras like Khechari, Viparita Karani, and Maha Mudra, while the Gheranda Samhita extends to include mudras used in the pursuit of health maintenance and cleansing, like Ashwini Mudra and Yoni Mudra (Saraswati, 1999; Gharote et al., 2008).

In contemporary society, the therapeutic benefits of mudras have drawn increased attention from the scientific and yogic communities alike. Studies have proven that practicing mudras daily could have positive effects on various ailments, ranging from stress to high blood pressure, digestion, and mental concentration (Kumar & Telles, 2009; Dhanraj, 2017). However, no systematical comparison of ancient text descriptions with the modern understanding of therapy is made. The aim of the current study is to fill in the gap by performing a comparative study of the Hatha Pradipika and Gheranda Samhita, with additions from academic explanations and scientific research on the medical benefits of the yogic movements.

By close analysis of the historical, philosophical, and therapeutic dimensions of mudras as described in these texts, this study contributes to a deeper understanding of their role in the environments of classical yoga sadhana and modern wellness practice. It also proposes a framework for placing mudras as spiritual tools and as effective interventions for the enhancement of holistic health.

# 2. Literature Review

Yogic practices have gained world-wide reputation for their integrated effect on body, mind, and spirit. Among these practices, mudras—usually symbolic body postures or hand gestures—are of foremost importance. Ancient yogic texts like the Hatha Yoga Pradipika (Swatmarama, 15th century) and the Gheranda Samhita (Gheranda, 17th century) provide

detailed descriptions of the practices, presenting them as essential tools for spiritual development and body transformation. Mudras have also gained the attention of biomedical and psychological researchers in modern times, who study their possible advantages in stress management, neurophysiological equilibrium, and somatic healing (Yoshikawa, 2017; Conroy et al., 2019). The present literature review attempts to integrate traditional and modern perceptions of mudras, contrast variations in textual interpretations, and critically analyze the physiological and symbolic connotations of their practice.

#### 2.1 Defining Mudra: Beyond Gestures

The word mudra in Sanskrit is 'seal,' 'mark,' or 'gesture.' In yogic practice, it is not a physical posture, but a psychosomatic tool to influence the flow of prana (life force) and to awaken the potential energy centers of the body. In Gheranda Samhita, the mudras come under the sapta sadhana or sevenfold practice to perfection in yoga, while in Hatha Yoga Pradipika, mudras are depicted as assists to kaya siddhi—body perfection, immunizing one from decay and illness (Mallinson, 2007).

The classical accounts emphasize esoteric and spiritual desires—like achieving immortality or arousing kundalini while modern framings offer symbolic, psychosomatic, and psychoneuroimmunological justifications for such claims. The tension between figurative and literal understanding of these texts has to be carefully analyzed.

#### 2.2 Mudras in Hatha Yoga Pradipika (HYP)

The Hatha Yoga Pradipika (HYP), composed by Swatmarama, outlines ten mudras described to produce spiritual as well as physical perfection. They are: Maha Mudra, Maha Bandha, and Maha Vedha: Usually practiced in combination, they are claimed to maintain bindu (semen/essence), channel energy upwards, and stop aging. Khechari Mudra: Described to involve putting the tongue into the nasal cavity-mystical practice-claimed to end hunger, thirst, and even death (Swatmarama, HYP 3.32-3.48). Viparita Karani Mudra: It is said that this reversed stance retards aging by changing the flow of nectar from head to navel. Uddiyana, Mula, and Jalandhara Bandhas: Traditionally defined as locks instead of gestures, but regarded as mudras because they affect the pranic energy. Although these mudras are said to "bestow the powers of a siddha," death-defying or time-reversing claims are probably metaphorical. Yogic scholar Mallinson (2007) contends that such exaggerated language was used for pedagogical and motivational purposes and not to describe what actually happens.

#### 2.3 Mudras of Gheranda Samhita (GS)

The Gheranda Samhita greatly enlarges the yogic repertoire by describing 25 mudras, which are under the general practice of mudra sadhana: Several of the HYP mudras repeat (e.g., Maha Mudra, Khechari), which indicates textual consistency. There are special mudras, such as Yoni Mudra, Manduki Mudra, and Aswini Mudra, each of which is intended to regulate energy, stimulate internal organs, or boost mental concentration. Yoni Mudra, for instance, is believed to isolate the mind from external distractions and focus it inward. Aswini Mudra consists of rhythmic contraction of the anal muscles and is believed to tighten the pelvic area and activate the root chakra. GS has a more anatomical and formalistic system than mystical understanding of HYP. Physical and spiritual benefits of mudras in GS are explained in more concrete and down-toearth language. However, even here, the texts fail to provide empirical data or physiological processes, which indicates the interpretive gap between the classical and modern understanding.

#### 2.4 Therapeutic Relevance and Scientific Corroboration

Contemporary research has begun to explore the neurophysiological underpinnings of mudras. For instance:

- **Yoshikawa** (2017) analyzed the impact of *Viparita Karani* on the autonomic nervous system and found that the posture modulates blood flow and promotes parasympathetic activation—supporting its calming effect.
- **Conroy et al. (2019)** showed that regular practice of mudras, especially when combined with breathwork, can lower cortisol levels and improve focus and emotional regulation.
- **Neuroimaging studies** suggest that hand gestures like Chin and Gyan mudras may influence sensory-motor integration and brain connectivity (Jella et al., 2020).

These observations confirm the psychosomatic effectiveness of mudras but also warn against overstressing metaphysical assertions. For instance, assertions like achieving immortality through Khechari Mudra cannot be verified and need to be understood symbolically or metaphorically.

Mudras are highly symbolic, frequently expressing universal principles through body gestures. The closed circle formed when fingers are pressed together in Chin Mudra symbolizes the union of self (atman) and highest consciousness (brahman). Likewise, Hridaya Mudra, a heart gesture, is associated with emotional liberation and opening of the heart chakra.

This symbolic aspect places mudras as a somatic language of spirituality, being at the same time internal cues and outward expressions. Feuerstein (1998) suggests that mudras can act as "psychophysical triggers" capable of altering consciousness through ritualized concentration.

Mudras are a blend of spiritual, symbolic, and bodily consciousness in yogic philosophy. The classical texts like Hatha Yoga Pradipika and Gheranda Samhita outline a sophisticated system of these practices, typically in mystical or poetic language. As more and more modern scientific research confirms their psychophysiological benefits, a critical approach must be employed to distinguish between the metaphorical and mechanistic understanding. Mudras are effectively portals—uniting breath, body, and awareness and their actual meaning might be this potential of integration.

# **3.** Gaps in Literature

There is a long tradition of yogic mudras in traditional texts, and they are now supported by research validating their physiological effects. There are, however, significant gaps: There remains a scarcity of empirical studies, particularly concerning lesser-known mudras. Modern research mostly focuses on meditation techniques and hand mudras, usually overlooking complex body movements like Maha Vedha or Manduki. The link between symbolic application of scripture and biomedical language is underdeveloped, with piecemeal interpretations. The necessity for interdisciplinary research exists, which honors conventional epistemologies while simultaneously employing empirical rigor. Collaborative efforts among scholars of yoga, neuroscientists, and practitioners have the potential to reconcile these distinctions.

# 4. Research Objectives and Questions

The following table systematically explains the clear objectives and research questions for this research paper

Research Objective		Research Question			
	1. To compare and contrast the methods of major	RQ.1 What are the primary differences in the posture of execution, breathing			
	mudras in Hatha Pradipika and Gheranda Samhita.	regulation, and bandhas of comparable mudras as given in the two texts?			
	2. To study the established physiological action of	RQ.2 How do the purported physiological effects pranic flow, nervous			
	mudras in both texts and how they relate to modern-day	system control in these accounts diverge from current biomedical studies of			
	scientific observations.	yoga therapy?			
	3. To critically assess the therapeutic relevance of	RQ.3 Which mudras mentioned in these books show the most evidence-			
	mudras in the two books and to discuss their	based therapeutic benefits for respiratory illness, metabolic disease, or			
	significance in modern clinical and wellness therapy	mental health based on modern literature?			

Table 1

**Source** – Prepared by authors

# 5. Methodology

This study employs the systematic literature review (SLR) approach to compare the methods, physiological effects, and the therapeutic application of mudras as described in the Hatha Pradipika and Gheranda Samhita. The review has been conducted according to the PRISMA guidelines to maintain methodological rigor, transparency, and replicability. The process involves six basic steps: (1) the development of the research question, (2) the development of the search strategy, (3) study selection, (4) data extraction and synthesis, (5) the evaluation of quality, and (6) ethics and limitations consideration.

First, the research questions were developed using the PICOS framework, with focus on Population (classical yogic literature), Intervention (mudras), Comparison (comparison of the two texts), Outcomes (therapeutic and physiological effects), and Study design (qualitative and quantitative study). For primary sources, reliable translations of the Hatha Pradipika and Gheranda Samhita were investigated, with information gathered regarding mudra techniques, alleged physiological effects, and therapeutic effects. For secondary sources, a comprehensive search was conducted on databases such as PubMed, Scopus, Google Scholar, and Cochrane Library, using keywords such as "Hatha Pradipika mudras," "Gheranda Samhita therapeutic mudras," and "evidence-based yoga gestures."

Study selection conformed to PRISMA's systematic flow diagram, and initial record identification, screening for relevance, assessment of eligibility, and final inclusion. Data extraction consisted of classification of mudra methods, translating physiological claims into existing biomedical literature, and assessing therapeutic uses. Bias was avoided through the use of two independent reviewers for study selection and data extraction, disagreement resolved by discussion or consultation with a third expert.

#### 5.1 Inclusion Criteria

- 1) Ancient & Classical Texts (Original Composition) 15th century CE, 17th century CE are covered as base of this research
- 2) Learned translations by notable scholars (e.g., Swami Muktibodhananda, Srisa Chandra Vasu).
- 3) Peer-reviewed articles were available between 1966 and 2023.
- 4) Experiments testing mudras' physiological impact (e.g., EEG alterations, hormonal modification).
- 5) Meta-analyses or clinical trials of therapeutic uses (e.g., respiratory, metabolic, or mental health indications).
- 6) English-language articles or articles with readily available English translations from high-impact sources on websites.

## 5.2 Exclusion Criteria

- 1) Non-authoritative or paraphrased translations without Sanskrit references.
- 2) Commentaries without direct quotations of original sources.
- 3) Non-peer-reviewed publications, conference abstracts, or opinion editorials.
- 4) Empirical evidence-free research (e.g., theoretical articles without clinical evidence).
- 5) Research on non-yogic hand mudras (e.g., Buddhist or Jain mudras not covered in the texts).
- 6) High-risk of-bias studies (e.g., small numbers of participants, lack of control groups).

## 5.3 Limitations

- 1) Translational variation within Sanskrit words leads to variations in meaning.
- 2) Few RCTs of uncommon mudras (e.g., Tadagi Mudra, Manduki Mudra).
- 3) Potential publication bias, as negative or non-significant findings can be underpublished.

This systematic approach ensures a comprehensive, evidence-based assessment of mudras in both ancient and contemporary literature, thus bridging traditional yogic knowledge with available scientific data.



**Source** – Prepared by authors using guidelines of PRISMA

## 6. Results

The 15<sup>th</sup> Century CE Hatha Yoga Pradipika of Swatmarama is regarded as a classic text in the discipline of classical Hatha Yoga. Among its contributions to yoga literature is a detailed description of ten mudras—subtle physical and energetic movements designed to guide pranic energy and aid meditative states. More than symbolic, these mudras are powerful psycho-physiological devices that establish an interface between body, breath, and mind. Derived from ancient Tantric and yogic philosophies, these ten mudras have a range of purposes from the stimulation of kundalini energy to the induction of mental calm and overall wellbeing. This study examines each of the ten mudras in detail, taking into account their respective techniques, physiological impact, therapeutic benefit, and textual references while placing them within the broader context of yogic practice.

Table 2						
S. No	Mudra Name	Technique	Physiological Effects	Therapeutic Applications	Reference	
1	Maha Mudra	Sit with left heel pressing the perineum; extend the right leg. Hold right foot with both hands. Inhale, apply Jalandhara Bandha, focus internally.	Stimulates pranic flow, tones spinal nerves, balances autonomic functions	Improves digestion, sexual vitality, and energy balance	Hatha Pradipika, Ch.3, Verses 10–17	
2	Maha Bandha	Apply Mula Bandha (root lock), Uddiyana Bandha (abdominal lock), and Jalandhara Bandha (throat lock) after exhalation while seated.	Balances Ida, Pingala, and Sushumna nadis; regulates endocrine and nervous systems	Hormonal balance, stress relief, anti-aging effects	Hatha Pradipika, Ch.3, Verses 73–79	
3	Maha Vedha	From Maha Bandha position, lift the body slightly using the hands. Gently drop hips to stimulate the perineum. Retain breath and focus inwardly.	Awakens Kundalini, stimulates cerebrospinal energy flow	Enhances vitality, spinal health, and psychic energy	Hatha Pradipika, Ch.3, Verses 80–82	
4	Khechari Mudra	Roll the tongue back into the nasal cavity over months of practice. Advanced stage may involve minor tongue cutting.	Stimulates pineal/pituitary glands, reduces thirst and hunger	Enhances meditation, promotes longevity, and higher consciousness	Hatha Pradipika, Ch.3, Verses 32–55	
5	Uddiyana Bandha	After full exhalation, draw the abdomen inward and upward. Hold breath externally (Bahya Kumbhaka) and release after few seconds.	Activates solar plexus, strengthens digestive fire, massages abdominal organs	Cures constipation, boosts digestion, and balances adrenal functions	Hatha Pradipika, Ch.3, Verses 57–59	

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6	Mula Bandha	Contract the perineum or pelvic floor muscles and hold while breathing normally.	Redirects prana upward, stimulates root chakra, tones pelvic organs	Treats urinary disorders, sexual weakness, and boosts vitality	Hatha Pradipika, Ch.3, Verses 60–62
7	Jalandhara Bandha	While seated, inhale deeply and tuck the chin into the chest, locking the throat area. Retain the breath.	Stimulates thyroid, parathyroid; activates Vishuddhi Chakra	Regulates metabolism, vocal clarity, and reduces anxiety	Hatha Pradipika, Ch.3, Verses 70–72
8	Viparitakarani Mudra	Lie on the back, lift both legs upward, and support the waist with the hands to keep legs vertical. Maintain as long as comfortable.	Reverses blood flow, activates Sahasrara chakra, and calms the mind	Anti-aging, relieves varicose veins, insomnia, and improves circulation	Hatha Pradipika, Ch.3, Verses 78–81
9	Vajroli Mudra	Practice voluntary contraction of urinary muscles. Advanced form involves drawing fluids up through the urethra.	Conserves sexual energy, activates Kundalini, stimulates reproductive system	Controls ejaculation, boosts vitality, and spiritual ascension	Hatha Pradipika, Ch.3, Verses 82–92
10	Shakti Chalana Mudra	Sit in Siddhasana. Practice gentle upward movement of prana with contraction of perineum and breath control while meditating on Kundalini energy.	Stimulates Sushumna Nadi, awakens Kundalini, and clears energetic blockages	Spiritual growth, removes energy blockages, and supports deep meditation	Hatha Pradipika, Ch.3, Verses 93–103

Source – Prepared by authors

The Gheranda Samhita, one of the oldest and foundation texts of Hatha Yoga, dating from as early as the 17th century CE, is one of the most elaborate systems of yogic practice, outlining a seven-fold path of purification and liberation. Of its diverse doctrines, the Gheranda Samhita gives us a systematic treatise of twenty-five mudras—gestures and seals that are considered basic to the realization of pranic control, the awakening of latent energies, and the realization of higher states of consciousness. These mudras far transcend symbolic hand gestures to include a wide range of psycho-physiological practices involving the entire body. Drawn from esoteric lore and ancient yogic traditions, each of the mudras presented in the Gheranda Samhita is given for a definite purpose—ranging from stabilization of breath and mental concentration to the induction of kundalini awakening. This work aims to present an in-depth inquiry into these twenty-five mudras, noting their methodologies, physiological effects, therapeutic applications, and classical sources, and noting their relevance to current yogic practices.

Table 3

Sr No	Mudra Name	Technique	Physiological Effects	Therapeutic Applications	Reference
1	Maha Mudra	Press left heel against perineum, extend right leg, grasp right foot, inhale, hold breath with throat lock.	Stimulates spinal nerves, balances prana	Enhances digestion, improves energy and sexual health	Gheranda Samhita, 3.1–3
2	Maha Bandha	Apply Jalandhara, Uddiyana, and Mula Bandha after exhalation while seated in Padmasana.	Harmonizes pranic currents, stabilizes nervous and glandular systems	Boosts hormonal balance, regulates mood, and improves vitality	Gheranda Samhita, 3.4–5
3	Maha Vedha	From Maha Bandha, raise body slightly and gently strike buttocks to ground to stimulate perineum.	Awakens dormant energies, circulates prana through chakras	Promotes spinal and nervous system health	Gheranda Samhita, 3.6–7
4	Khechari Mudra	Gradual tongue elongation to roll it into nasal cavity; advanced practice involves minor cutting.	Activates higher brain centers, suppresses hunger and thirst	Prolongs life, enhances meditation	Gheranda Samhita, 3.8–10
5	Uddiyana Bandha	Exhale fully, draw the abdomen inward and upward, hold external breath.	Stimulates solar plexus, boosts digestion, massages organs	Treats constipation, gastric disorders, strengthens core	Gheranda Samhita, 3.11–12
6	Mula Bandha	Contract perineum or pelvic floor muscles; engage during breath retention.	Redirects apana upward, activates root chakra	Helps urinary/reproductive disorders, and stimulates Kundalini	Gheranda Samhita, 3.13–14
7	Jalandhara Bandha	Lower chin to chest after full inhalation while seated, forming throat lock.	Stimulates thyroid, improves vocal functions	Treats anxiety, improves voice and breath control	Gheranda Samhita, 3.15–16
8	Viparitakarani Mudra	Lie on back, lift legs vertically, support hips with hands.	Reverses blood flow, activates Sahasrara chakra	Anti-aging, reduces fatigue, aids blood circulation	Gheranda Samhita, 3.17–19
9	Vajroli Mudra	Contract urinary muscles to draw energy inward and upward.	Controls semen, strengthens pelvic organs	Treats sexual weakness, promotes energy conservation	Gheranda Samhita, 3.20–21
10	Sahajoli Mudra	Similar to Vajroli but practiced by both genders; involves voluntary control over genital muscles.	Stabilizes sexual energy, tones reproductive system	Used for transmutation of sexual energy	Gheranda Samhita, 3.22–23
11	Amaroli Mudra	Retention and recycling of bodily	Believed to enhance	Said to delay aging and	Gheranda

		fluids including urine (advanced tantric practice).	vitality and immunity	purify subtle body	Samhita, 3.24–25
12	Ashwini Mudra	Rhythmic contraction and relaxation of anal sphincter muscles.	Activates root chakra, improves blood circulation	Useful in piles, constipation, and boosts energy	Gheranda Samhita, 3.26
13	Shakti Chalana Mudra	Contract perineum, apply Uddiyana Bandha, and concentrate on Sushumna.	Awakens Kundalini energy, clears energy blockages	For spiritual awakening and Nadi purification	Gheranda Samhita, 3.27–28
14	Tadagi Mudra	Draw abdomen inwards while lying prone, forming a basin shape with the belly.	Stimulates abdominal organs, enhances digestion	Good for weight loss, diabetes, and core strengthening	Gheranda Samhita, 3.29–30
15	Manduki Mudra	Focus on the nectar dripping from the top palate during meditation; symbolic swallowing.	Promotes Amrita secretion, enhances meditative state	For deep meditation, balancing hormones	Gheranda Samhita, 3.31–32
16	Samputa Mudra	Cup the palms and hold them over the heart center while meditating.	Focuses energy inward, aids emotional balance	Treats anxiety, enhances inner calm	Gheranda Samhita, 3.33
17	Bhujangini Mudra	Inhale through mouth while forming snake-like sound, retain and exhale through nostrils.	Improves breath control, tones respiratory system	Used in asthma, lung weakness	Gheranda Samhita, 3.34
18	Manduki Mudra (alt)	Swirl tongue within the mouth to stimulate inner nectar, perform while meditating.	Promotes Amrita, enhances internal awareness	Nourishes brain, supports meditation	Gheranda Samhita, 3.35
19	Yoni Mudra	Plug ears, close eyes, nostrils, and mouth with fingers while meditating.	Sensory withdrawal (Pratyahara), internalization	Enhances inner focus, useful in stress and hypertension	Gheranda Samhita, 3.36–37
20	Matangini Mudra	Draw water in through the nostrils and expel through the mouth.	Cleanses sinuses, stimulates facial nerves	For sinusitis, headaches, and facial purification	Gheranda Samhita, 3.38–39
21	Bhoochari Mudra	Gaze at the tip of the nose or center of the brow (with mind).	Activates Ajna chakra, enhances concentration	Improves focus and mental clarity	Gheranda Samhita, 3.40
22	Agnisara Mudra	Contract and expand the abdominal muscles rapidly after exhalation while holding breath.	Activates digestive fire (Agni), boosts metabolism	Helps digestion, relieves sluggishness	Gheranda Samhita, 3.41–42
23	Sakti Mudra	Specific hand gesture involving interlocking fingers and placing hands near the lower abdomen.	Calms nervous system, balances energy in pelvis	Helpful in menstrual discomfort and reproductive health	Gheranda Samhita, 3.43
24	Kaki Mudra	Form beak-like lips and inhale slowly through the mouth, exhale through nose.	Soothes nerves, regulates breathing	Cools the body, relieves hypertension	Gheranda Samhita, 3.44
25	Nasikagra Drishti Mudra	Fix gaze on tip of nose while keeping head and eyes still.	Concentrates energy at Ajna Chakra, harmonizes mind	Treats anxiety, improves concentration	Gheranda Samhita, 3.45–46

**Source** – Prepared by authors

# 7. Future Research Direction

While this compilation bridges classical yogic wisdom with modern physiological and therapeutic understandings, future research must move towards systematic clinical validation of mudras to establish their efficacy within evidence-based healthcare frameworks. There is a compelling need for interdisciplinary studies involving neuroscience, physiology, psychology, and Ayurveda to decode the exact mechanisms by which mudras influence somatic and autonomic functions. Additionally, longitudinal trials evaluating the impact of individual mudras on specific psychosomatic disorderssuch as anxiety, hypertension, chronic pain, or respiratory ailments-could enhance their therapeutic credibility. Future inquiries could also explore EEG, fMRI, and HRV analysis to quantify neurophysiological shifts during sustained mudra practice. It is recommended that standardized protocols for mudra execution, duration, and sequencing be developed, enabling replication and scalability in both clinical and wellness settings. Lastly, comparative analyses of mudras across traditional texts like Shiva Samhita, Hatha Ratnavali, and Upanishadic sources would deepen the contextual

understanding of their evolution, purpose, and adaptation in contemporary yoga therapy.

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