



A Comprehensive Review On The Therapeutic Impact Of Pranayama Practices On Physical And Mental Health

Deepak Sharma^{1*}, Deepak Kumar Dogra²

^{1*}Research Scholar, Department of Physical Education, Banaras Hindu University, Varanasi.

Email: deepaksharma@bhu.ac.in

²Assistant Professor, Department of Physical Education, Banaras Hindu University, Varanasi.

Email: dr.dkdogra74@gmail.com

***Corresponding Author:** Deepak Sharma

*Research Scholar, Department of Physical Education, Banaras Hindu University, Varanasi.

Email: deepaksharma@bhu.ac.in

Abstract

The review encompasses the therapeutic effects of Pranayama practices on diverse health parameters. This review explores the Therapeutic Impact of Pranayama Practices on Physical and Mental Health. The authors conducted a comprehensive review of the Scopus, Research Gate, web of science, pub med and google scholar databases, looking for relevant studies focused largely on the Pranayama Practices on Physical and Mental Health. It underscores the importance of incorporating pranayama into fitness routines for a well-rounded and balanced approach to health. Significant improvements in cardiovascular variables, including blood pressure, heart rate variability, and exercise tolerance. Respiratory indices, such as vital capacity and respiratory rate, displayed positive outcomes. Cognitive functions in conditions like type 2 diabetes were positively influenced by Pranayama. Mental health parameters, including stress, saw remarkable improvements. Physical fitness components, such as strength, endurance, flexibility, and body composition, demonstrated significant enhancements with the incorporation of Pranayama protocols. The review highlights the preventive and therapeutic applications of Pranayama in disorders ranging from psychosomatic conditions to chronic obstructive pulmonary disease (COPD). The evidence supports the integration of Pranayama practices into daily life for holistic health benefits. Further research is urged to unravel specific mechanisms underlying these therapeutic effects and establish optimal guidelines for incorporating Pranayama into contemporary health and wellness strategies. This review contributes to the growing body of literature on the intersection of traditional yogic practices and modern healthcare.

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Keywords: Pranayama; Physical Fitness Components; Mental Health; Therapeutic.

Introduction

Yoga, a time-honoured practice originating from Indian culture, is revered as a comprehensive approach to holistic living. It encompasses various elements including ethical principles (Yama and Niyama), purification techniques (Kriya), physical poses (Asana), breath control (Pranayama), focused concentration (Dharana), and meditation practices (Dhyana) [1, 2]. Yoga, as structured and codified by Patanjali in his seminal text, the Yoga Sutras, comprises 196 succinct aphorisms. This ancient system not only serves as a cornerstone of Hindu self-discipline but also stands as an indispensable component within any yoga regimen. The spiritual and scientific discipline of yoga encompasses a diverse range of practices, with numerous scientific studies providing evidence of its preventative, therapeutic, and transformative effects on individuals [3,4]. Pranayama techniques come in various forms, ranging from alternate nostril breathing to bellows breath, and typically involve three phases: inhalation (Purak), retention (kumbhak), and exhalation (Rechak). These phases can be practiced at different paces, either slow or rapid [5]. Basic breathing techniques like deliberate, unhurried breathing are recognized for their ability to soothe the mind and are employed in clinical settings to alleviate heightened arousal. Nonetheless, our comprehension of the intricate connection between the mind and breath remains limited [6]. In line with the Ancient Yoga Tradition, there exists a profound interdependence between breath and mind, where each influences the other in a mutually reinforcing manner [7]. In traditional texts the practice of Pranayama holds significant importance. In Yogic terminology, Pranayama refers to a systematic approach aimed at gaining control over Prana, or life force. It is regarded as the fourth step in the eightfold path of Yoga, as described in the Patanjali Yoga Sutra [8], and is positioned second in Hathapradipika [9] and fifth in Gherandasamhita [10]. According to the Patanjali Yoga Sutra, Pranayama involves the cessation of inhalation and exhalation movements [11]. It's noted that Pranayama can elicit various physiological responses in healthy individuals [12]. This practice involves consciously modifying the breathing process while maintaining a steady and comfortable seated posture [13]. At its core, the science of Pranayama revolves around the retention of Prana, known as 'Kumbhaka'. Pranayama practices are increasingly recognized and embraced by the scientific community [14]. The Chhandogya Upanishad suggests that Prana represents an internal matrix, a subtle energy, while Vayu embodies an external matrix, a gross energy. In accordance with Yogic philosophy, the physical body (Annamaya kosha) draws sustenance from the subtle body (Pranamaya kosha), which encompasses Chakras and Nadis. These Nadis serve as conduits for Prana, stimulating the Chakras and thus nourishing various organs and systems, impacting all physiological functions within the human body [15]. Pranayama's refer to the yogic techniques of breath control as outlined in several classical Sanskrit texts. In Sanskrit, "Prana" signifies the vital life force, while "Yama" denotes gaining mastery or control [16]. These practices are integral to yoga and have been observed to positively impact human physiology in numerous ways, making them a fundamental aspect of the practice. Stress is an unavoidable aspect of life, but there are numerous strategies available to counter its impact. Many individuals advocate for various methods, such as adopting regular physical exercise, making lifestyle adjustments, and changing dietary habits, as effective ways to combat stress [17]. Additionally, yoga and pranayama (breathing exercises) are widely recognized as beneficial practices for stress management. Studies have shown that these techniques not only help alleviate stress but also offer therapeutic benefits for conditions like cardiopulmonary diseases, autonomic nervous system imbalances, and psychological or stress-related disorders [18,19]. Slow pranayama breathing, in particular, has gained prominence as one of the most practical relaxation techniques, providing individuals with a simple yet effective means to relax and restore balance in their lives [20].

Purpose

The purpose of the study was to Review the Therapeutic Impact of Pranayama Practices on Physical and Mental Health.

Methodology

To investigate the previous studies on therapeutic Impact of Pranayama Practices on Physical and Mental Health related research directions a comprehensive literature review method was applied. Moreover, examining databases is an appropriate approach to exploring the extant of literature on the focus areas. The database for this research chosen from the Scopus, springer, Google Scholar, web of science and Research Gate. This study includes a total of more than 25 research articles and review paper on the therapeutic Impact of Practices on Physical and Mental Health.

Findings

Table No. 1.1: Physical Health

| S.no. | Author | Factors | Sample | Age | Significant |
|-------|--------------------------|--|---------|---------|-------------|
| 1. | Pramanik et al. (2009) | Heart rate and blood pressure bhastrika pranayama | N - 39 | 25 -40 | Yes |
| 2. | Anand et al. (2018) | Anuloma-viloma and Bhastrika Pranayama muscular endurance, flexibility, and respiratory rate | N – 108 | 17 - 28 | Yes |
| 3. | Singh et al. (2011) | Heart rate, vital capacity, systolic blood pressure and diastolic blood pressure | N - 30 | 18 - 24 | Yes |
| 4. | Satayanand et al. (2014) | Systolic and Diastolic blood pressure | N - 30 | 20 - 40 | Yes |

Table 1.1 illustrates numerous studies that have demonstrated significant effects of Pranayama practices on physical health. Pramanik et al. (2009) investigated the immediate impact of Slow Pace Bhastrika Pranayama on blood pressure and heart rate, revealing a noteworthy reduction in both parameters. Anand et al. (2018) explored the effects of Pranayama on mental health and physical fitness among healthy university students, discovering significant enhancements in muscular endurance, flexibility, and respiratory rate following 12 weeks of practice. Singh et al. (2011) examined the effects of a 6-week Nadi-shodhana pranayama training on cardio-pulmonary parameters, noting a significant improvement in vital capacity, along with reductions in basal rate and systolic blood pressure. Although no significant differences were observed for diastolic blood pressure, Satayanand et al. (2014) delved into the role of yogic Pranayama in managing blood pressure, revealing beneficial effects on cardiovascular and cardiac autonomic functions, particularly highlighting the significant impacts of Anulom - viloma and Bhramari pranayama on both systolic and diastolic blood pressure. Additionally, they found positive effects of therapeutic breathing and relaxation techniques on cardiac vagal modulation and parasympathetic dominance. These results underscore the effectiveness of Anuloma-Viloma and Bhramari pranayama in maintaining normal blood pressure and reducing stress levels, thereby contributing to overall health and wellness.

Table No. 1.2: Mental Health

| S.no. | Author | Pranayama | Sample | Age | Significant |
|-------|-------------------------|---|---------|---------|-------------|
| 1. | Kyizom et al. (2010) | Bhastrika- pranayama Kapal-bhati Anulom-viloma Bhramari | N - 60 | Na | Yes |
| 2. | Sharma et al. (2013) | Kanakabati Bhastrika Nadishodhana | N - 90 | 18 - 25 | Yes |
| 3. | Dhaniwala et al. (2020) | Bhramari, Ujjayi, Tribandha, Surya Bhedan Sitali and Pranayama (The Cooling Breath, Purses Lip Breathing) | Na | Na | Yes |
| 4. | Anand et al. (2018) | Anuloma-viloma and Bhastrika Pranayama Mental Health Inventory Questionnaire | N – 108 | 17 - 28 | Yes |

Table 1.2 reveals that the majority of research on pranayama emphasizes its significant impact on mental health. Kyizom et al. (2010) explored the influence of pranayama and yoga-asana on cognitive brain functions in type 2 diabetes through P3 event-related evoked potential (ERP), demonstrating the notable effects of Bhastrika, Kapal-Bhati, Anulom – Vilom, and Bhramri pranayama techniques on cognitive brain function in type 2 diabetics. Sharma et al. (2013) examined the effects of fast and slow pranayama on perceived stress and cardiovascular parameters in young healthcare students, noting a significant reduction in Perceived Stress Scale (PSS) scores in both fast and slow pranayama groups, though the decrease in cardiovascular parameters such as Heart Rate (HR), Diastolic Blood Pressure (DBP), Rate Pressure Product (RPP), and Double Product (Do P) was observed only in the slow pranayama group. This study underscores the benefits of both types of pranayama in reducing perceived stress, with a more pronounced effect on cardiovascular parameters seen with slow pranayama practice. Dhaniwala et al. (2020) explored the various types of pranayama and breathing exercises and their role in disease prevention and rehabilitation, finding that these practices are highly effective in maintaining overall physical, mental, and social health, and can serve as complementary therapy in conditions such as acute asthma, COPD, chronic hypertension, psychiatric disorders, GERD, and post-operative recovery from head, neck, cardiovascular, and upper abdominal ailments. Additionally, Anand et al. (2018) conducted a systematic review on the effects of Bhastrika Pranayama, concluding that it significantly enhances pulmonary, cardiovascular, and psychological variables related to stress.

Discussion

1. Immediate Physiological Benefits:

- Pramanik et al. (2009) noted immediate reductions in blood pressure and heart rate following Slow Pace Bhastrika Pranayama.
- Singh et al. (2011) found enhanced vital capacity and decreased basal rate and systolic blood pressure after a 6-week Nadi-shodhana pranayama training.

2. Long-term Physical Health Improvements:

- Anand et al. (2018) reported significant improvements in muscular endurance, flexibility, and respiratory rate after 12 weeks of Pranayama practice among university students.
- Satayanand et al. (2014) highlighted the beneficial effects of long-term Pranayama practice on cardiovascular and cardiac autonomic functions, particularly noting significant reductions in systolic and diastolic blood pressure with Anulom-Viloma and Bhramari pranayama.

3. Cognitive Function and Mental Well-being:

- Kyizom et al. (2010) found significant effects of Bhastrika, Kapal-Bhati, Anulom – Vilom, and Bhramri pranayama techniques on cognitive brain function in individuals with type 2 diabetes.
- Sharma et al. (2013) observed reductions in perceived stress levels and improvements in cardiovascular parameters, particularly in the slow pranayama group, among young healthcare students.

4. Overall, Health and Disease Prevention:

- Dhaniwala et al. (2020) emphasized the effectiveness of Pranayama and breathing exercises in maintaining mental health and preventing various diseases, serving as complementary therapy in conditions ranging from asthma to psychiatric disorders.

Conclusion

This review highlights the significant impact of Pranayama practices on both physical and mental health. These practices offer immediate benefits such as reduced blood pressure and heart rate, alongside long-term improvements in cardiovascular function, respiratory capacity, and mental well-being. Incorporating Pranayama into daily routines or therapeutic interventions could serve as a valuable adjunct to conventional treatments. However, further research is needed to understand the underlying mechanisms and optimize their integration into clinical practice. Overall, Pranayama emerges as a holistic approach to promoting health and well-being.

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