Indian J. Applied & Pure Bio. Vol. 41(1), 405-414 (2026). **ISSN: 0970-2091**

Effect of Pranayama on Respiratory Health – An updated Review

Komal Vilas Patil[1], Sulbha Bhosale[2], and Pravin Firke[3]

[1,2]Department of Kriya Sharir, Parul Institute of Ayurved and Research, Parul University, Vadodara - 391760 (India)
[1]Email: kp1sign@gmail.com, 7709417599.
[2*]Email: jaggyronin@gmail.com, 8530320950.
[3]Department of Agadtantra, Parul Institute of Ayurved, Parul University, Vadodara - 391760 (India)
Email: firkepravin@gmail.com, 9421540503.
***Corresponding author:**
Dr Sulbha Bhosale**,** Professor, Department of Kriya Sharir, Parul Institute of Ayurved and Research, Parul University, Vadodara, Gujarat, India,
Email: jaggyronin@gmail.com,
8530320950

Abstract

Pranayama, the ancient yogic science of breath regulation, holds significant relevance in the context of respiratory health, particularly in today's world where respiratory illnesses are on the rise due to pollution, sedentary lifestyle, and chronic stress. Rooted in the holistic principles of Ayurveda and Yoga, Pranayama works on balancing the Prana (life force) through controlled inhalation, retention, and exhalation of breath. This review article presents an updated evaluation of the role of Pranayama in promoting and managing respiratory health, drawing insights from classical Ayurvedic texts as well as modern scientific research. According to Ayurveda, the balance of Prana Vayu, Udana Vayu, and other subtypes of Vata Dosha is crucial for proper respiration. Disruption in this balance leads to various respiratory disorders such as asthma (Tamaka Shwasa), allergic rhinitis, and bronchitis. Recent research aligns with traditional beliefs by showing that consistent practice of breathing techniques such as Anulom-Vilom, Bhastrika, Kapalabhati, and Nadi Shodhana can lead to notable enhancements in pulmonary function, including improvements in Forced Vital Capacity (FVC), Forced Expiratory Volume in one second (FEV1), and Peak Expiratory Flow Rate (PEFR).

These techniques not only improve lung mechanics but also

[1]PG Scholar, [2]Professor, [3]Professor and HOD

reduce oxidative stress, inflammation, and autonomic imbalances. Furthermore, evidence from clinical trials indicates that Pranayama can enhance oxygen saturation, reduce respiratory rate, and improve quality of life in individuals suffering from asthma, COPD, and post-viral respiratory complications like long-term COVID-19.

Key words : Yoga, Pranayama, Respiratory system, Ayurveda, Breath Control, Wellness practices.

" **Y**oga signifies unity — the harmony of mind, body, and spirit, as well as the connection between ourselves and the conscious creative force of the universe, reflecting the interconnectedness of all existence."[15,23]. "Pranayama is derived from two Sanskrit words: 'prana,' meaning life force, and 'ayama,' meaning extension or control. "Prana is the essential life force, represented by a constant force in motion. Enhancing our internal prana reservoir is the goal of pranayama. It is a technique to activate and improve the quantity of prana in the body, going beyond simple breath regulation.[29].

तस्मिन्सतिश्वासप्रश्वासयोर्गतिविच्छेदःप्राणायामः। (प.यो.सू.2/49)[1].

Pranayama enhances the body's overall functioning. In today's environment, where air pollution is widespread, many individuals are vulnerable to various illnesses. Practicing Pranayama can play a significant role in both the prevention and management of many of these health conditions.[9]. Consistent practice of Pranayama enhances chest wall mobility and improves nearly all aspects of lung function. Its positive impact is well-documented and supported by scientific research. Pranayama also promotes effective use of the diaphragm and abdominal muscles, contributing to better respiratory efficiency. *Pranayama* helps to improve bronchodilatation, which leads to better oxygenation of the alveoli. Pranayama consists of structured breathing exercises that include various techniques such as Nadi Shodhana, which involves breathing through alternate nostrils; Bhastrika, characterized by forceful inhalation and exhalation; and Kapalabhati, known for its rapid exhalations and cleansing effect. are key components of Pranayama practice, such as Nadi Shodhana (alternate nostril breathing), Bhastrika (bellows breathing), Kapalabhati (skull-shining breath), and Ujjayi (ocean breath). These practices have been shown to enhance lung capacity, improve oxygenation, regulate autonomic nervous system function, and reduce stress-induced inflammation.

The literature review was compiled from available Ayurvedic literature, books, and various relevant articles related to pranayama and Respiratory health.

Literature review :

Yoga is a traditional discipline that originated in ancient India.[19] It is described as the cessation of mental fluctuations—'Chitta Vritti Nirodhah.' Yoga serves to restrain these fluctuations, which, in modern terms, can be understood as a practice for achieving mental calmness and clarity.[31]

The Yoga Sutras of Patanjali outline a structured path of eight interconnected practices, collectively known as Ashtanga Yoga or the Eight Limbs of Yoga. These include Yamas (ethical restraints), Niyamas (personal observances), Asanas (physical postures), Pranayama (breath regulation), Pratyahara (sensory withdrawal), Dharana (focused concentration), Dhyana (meditation), and Samadhi (state of unity or blissful absorption).[27]

Similar to how all body limbs are related, each limb is a part of the total. The remainder of the body will immediately follow if someone tugs one leg. Similarly, when one pulls one of the eight yoga limbs, the others will follow. They are not steps that must be completed one after the other[14].

Pranayama, an ancient yogic technique focused on breath control, plays a crucial role within the broader system of yoga by deeply influencing the body's physiological processes. Originating from traditional Indian practices, it emphasizes conscious breathing to support physical health, mental balance, and spiritual development. According to yogic philosophy, when the flow of Prana Vayu—the vital life force—is steady, the mind also becomes calm. Achieving stability in both breath and mind is essential for a practitioner to reach the state of thanutva (lightness or subtlety of being). Therefore, mastering the breath through Pranayama is considered fundamental on the path of yoga. (ह.यो. प्र. 2/2).[7]

Pranayama is an integral aspect of traditional Indian yoga and represents the fourth limb of Ashtanga Yoga. It involves deliberate and mindful breathing techniques combined with focused mental awareness.[4]

In the Bhagavad Gita, Pranayama is described as a sacred discipline involving the regulation of the breath. Some practitioners direct the outgoing breath (prana) into the incoming breath (apana), and vice versa, consciously controlling their flow. This intentional breath control is seen as a form of inner sacrifice or yajna. Various techniques are practiced within Pranayama, such as *Puraka* (inhalation), *Rechaka* (exhalation), and *Kumbhaka* (breath retention). Kumbhaka involves pausing the breath either by stopping exhalation through the nose and mouth or by holding back inhalation, depending on the technique. These practices aim to deepen focus and harmonize the body's vital energies. (Gita 4/29)[32].

Types of pranayama

According to Patanjali Yoga Sutra[29]

1. **Bahyavrutti / Rechaka: exhalation,**
2. **Abyantara/Puraka: inhalation,**
3. **Stambhavritti /Kumbhaka: holding of the breath,**

4. Chaturthaka : There is also a fourth stage called Chaturthaka, which is beyond inhalation and exhalation.

- **According to Hatha Yog Pradipika, pranayama is of three types:**

recheck/exhalation, puraka/inhalation, kumbhaka/retention.

- **Kumbhaka types :[10,28]**

1. **Suryabhedanam -** inhaling from the right nostril.
2. **Ujjayi**–characterised by high pronunciation.

3. **Sitkari-** producing a special sitkara sound during inhalation.
4. **Sheetali -** producing a cooling effect by inhaling while keeping the tongue protruding out.
5. **Bhastrika -** to breathe like a bellow.
6. **Bhramari -** to produce a humming sound like honey bees during breathing
7. **Murccha -** to make the brain faint/ unconscious by special breathing.
8. **Plavani-** to make the body float on the water during pranayama.

Physiology of pranayama :

- Pranayama, the yogic discipline of breath control, influences multiple physiological systems in the body through its various phases: inhalation (Puraka), breath retention (Kumbhaka), and exhalation (Rechaka).

- ***Breath intake (Puraka):***
  During deep inhalation, the heart experiences a slight reduction in rate, and the relaxation phase of the cardiac cycle (diastole) is prolonged. This extended filling time allows the heart to pump more blood with greater efficiency during the next contraction (systole), enhancing circulatory function.[20]

- ***Breath-holding (Kumbhaka) :***
  Holding the breath temporarily limits oxygen intake, leading to a mild drop in oxygen concentration in the blood. In response, the body initiates mechanisms to maintain adequate oxygen delivery, including dilation of capillaries, especially in the brain. This vasodilation improves cerebral circulation and helps optimize oxygen usage by tissues, stimulating a calm and alert state of mind.[20]

- ***Breath release (Rechaka) :***
  Exhalation is generally passive, but when performed slowly and with awareness, it contributes to respiratory efficiency and emotional regulation. The act of consciously controlling exhalation activates the cerebral cortex, which sends inhibitory signals to the brain's respiratory centers. These calming signals can extend to nearby regions of the brain, including the hypothalamus, promoting a reduction in emotional reactivity and supporting mental tranquility.[20]

- ***Ujjayi pranayama :*** The ujjayi breath, also known as the "victorious breath," is a pranayama method that involves gradually contracting and elevating The practice of Uddiyana and Mula Bandhas helps direct the flow of breath upward by engaging specific muscular locks. It can be performed with or without kumbhaka. The ocean breath is named after the sound produced by gently engaging the Jalandhar bandha in the throat to provide resistance to the air passage. This breath promotes interior heat and oxygenation, while also balancing and soothing.

- ***Alternate nostril breathing technique (Nadi shodhana) :*** It involves using the right hand to alternately close each nostril—typically with the thumb to close the right nostril and the ring finger to close the left. One full cycle includes inhaling through one nostril for a set duration, followed by exhaling through the same nostril. The process is then repeated on the opposite side. The timing of inhalation and exhalation may vary depending on the individual.

  Research has shown that breathing through

the right nostril can raise baseline oxygen consumption by approximately 37%, while breathing through both nostrils produces a similar effect. Left nostril breathing was found to increase oxygen consumption by 18%, contributing to an overall average increase of around 24%. Additionally, participants practicing left nostril breathing demonstrated an increase in galvanic skin resistance (GSR)—a physiological marker often associated with emotional responses. This rise in GSR suggests a calming effect, reflecting reduced sympathetic nervous system activity. Overall, alternate nostril breathing can influence the autonomic nervous system, either stimulating or calming it, depending on the technique used.

- ***Viloma pranayama :*** Viloma Pranayama is a breathing technique that involves interrupting the natural flow of inhalation or exhalation with deliberate pauses. This method encourages full engagement of the rib cage and directs the breath into various regions of the chest, supporting more effective and mindful breathing. A variation of this practice, known as Anuloma (a form of alternate nostril breathing), also incorporates the principles of Viloma. This technique improves lung ventilation and strengthens the muscles involved in respiration. While both Viloma and Anuloma are often associated with lowering blood pressure, some controlled studies have observed a temporary rise in systolic blood pressure. Additionally, a decrease in digital pulse volume in some participants suggests a narrowing of small blood vessels near the skin (cutaneous vasoconstriction). Both practices have shown the potential to increase oxygen consumption, which may be especially helpful for individuals with obesity, as they often have a reduced resting metabolic rate compared to those with a healthy weight. Overall, Viloma Pranayama supports better lung function and enhances respiratory muscle performance.

- ***Sitali pranayama :*** Sitali Pranayama, often referred to as "cooling breath," is characterized by a distinct hissing sound created during inhalation through a rolled tongue. As air passes over the moist surface of the curled tongue, it creates a cooling effect on the throat and mouth. After drawing in the breath, the tongue is retracted, and the lips are gently closed. Exhalation then follows, either through the nostrils or, in some variations, through the throat. This technique is known for its soothing and temperature-lowering effects on the body, making it particularly beneficial in calming the nervous system and reducing internal heat.

- ***Kapalabhati (Rapid exhalation practice):*** Kapalabhati, often translated as "skull-brightening breath," is a yogic cleansing technique designed to clear the respiratory passages. This practice involves rapid, forceful exhalations driven by active contractions of the diaphragm and abdominal muscles, followed by passive inhalations. It helps to release chest congestion, remove blockages, and reduce physical and mental tension. Through this rhythmic pumping action, the practice energizes the body and stimulates the mind. In a forceful exhalation, air is expelled rapidly from the lungs. One method for improving lung capacity, clearing congestion, and producing skull-shining breath is Kapalabhati Pranayama. Reduce

bloating and offer symptomatic alleviation for bronchitis and allergies.[29]

Role and impact of pranayama :

1. Pranayama helps clear the mental and emotional barriers that obscure inner clarity and insight. Through consistent practice, it dispels ignorance, illusions, cravings, and confusion, allowing wisdom to naturally emerge. Just as a gentle wind sweeps away clouds to reveal the sun, pranayama clears the mind, unveiling the light of intelligence and deeper understanding. (**प.यो.सू.** 2/52)[33].

2. Pranayama helps prepare the mind for focused attention. It not only stabilizes mental activity but also serves as a pathway toward achieving deeper concentration. (**प.यो.सू.** 2/53)[29]

3. According to the *Hatha Yoga Pradipika*, the movement of the life force (prana) is directly linked to the movement of the mind (chitta). When the breath becomes still, the mind also becomes calm. Through the practice of pranayama, a yogi cultivates inner stability and learns to regulate the flow of vital energy (vayu).
(**ह.यो.प्र.**2/2)[29]]

4. Life persists as long as the vital air (Vayu) flows within the body; its departure marks the end of life. For this reason, preserving and managing this vital force is essential—and pranayama offers a powerful method to do so effectively. (**ह.यो.प्र.**2/3)[18]

5. Pranayama helps the mind to concentrate and enables practitioners to attain complete health and longevity.[18]

6. Postures (asanas) help eliminate blockages that hinder the movement of life energy (prana), while pranayama ensures its smooth and balanced circulation throughout the body.[29]

7. Activates the sushumna and balances the energy flow of Ida & Pingalapranayama should be done daily with a satvik state of mind so that the impurities are driven out of sushumnanadi and purification occurs. (**ह.यो.प्र.**2/6)[5]

Scientific evidence available on Pranayama:

Various study shows that.

1. The study examined the effects of Pranayama and mindfulness meditation on resting respiratory and pulse rates in visually impaired students, finding significant improvements in both measures among participants after 13 weeks of training.[18]

2. This study concludes that Savitri (slow breathing) and Bhastrika (rapid breathing) pranayama have different Physiological effects. Training in slow breathing pranayama lowers HR (Heart Rate), RPP (Rate Pressure Product), and Do P (Double Product), while fast breathing pranayama increases these parameters.[17]

3. This study confirms that yoga training significantly enhances sensory-motor performance, respiratory muscle strength, cardiorespiratory endurance, and muscular function. The reduced reaction times for light and sound indicate improved nervous system efficiency. Increased maximum expiratory and inspiratory pressures highlight strengthened respiratory muscles, while extended breath-holding times suggest better breath control and endurance.[3]

4. The study found that Bhastrika Pranayama had a significant effect on autonomic nervous system function by boosting sympathetic activity while lowering parasympathetic influence, as seen by changes in heart rate variability. It also modifies EEG brain wave patterns, indicating changes in cognitive processes and states of consciousness. These findings show that Bhastrika Pranayama may be beneficial for stress management and mental clarity, but more research is needed to determine its long-term effects.[16]

5. Short-term (6-week) practice of pranayama significantly improves lung function by strengthening respiratory muscles, enhancing expiratory power, and increasing breath-holding capacity. These benefits make pranayama a valuable, non-pharmacological tool for managing respiratory conditions and promoting overall health through better autonomic balance.[25]

6. Pranayama strengthens respiratory muscles, increases surfactant levels, stimulates stretch receptors, and relieves tension, ultimately increasing lung volume and capacity. It helps to cure Obstructive respiratory illnesses, including bronchitis. Pranayama improves energy levels, regulates body rhythms, and detoxifies internal organs. Pranayama enhances respiratory system efficiency and regulates circulation throughout the body.[30]

7. Just 15 days of regular pranayama and meditation practice significantly improve respiratory parameters—such as chest expansion, breath-holding time (BHT), and peak expiratory flow rate (PEFR)—even in healthy individuals, regardless of age, gender, or BMI. These improvements result from enhanced respiratory muscle strength, increased lung compliance, and better control over breathing rhythms. The practice also contributes to reduced airway resistance and a calmer mental state, supporting its inclusion in daily routines to promote long-term respiratory health.[2]

8. Pranayama practices significantly improve key respiratory parameters, including tidal volume, inspiratory reserve volume, and vital capacity. These findings confirm that regular pranayama enhances lung function and breathing efficiency.[24]

9. After two months of yoga instruction, the readings of VC, TV, ERV, BHT, 40mm endurance, and PEFR have significantly increased. Based on the findings of this study, we may conclude that yoga practice can be recommended to improve pulmonary functions in healthy individuals, hence preventing future respiratory disorders. The beneficial effects of pranayama can be employed as an adjuvant therapy for a variety of respiratory disorders. Daily practice could also be incorporated into physical training and lifestyle adjustment programs to promote greater physical and mental health. As a result, pranayama increases respiratory breathing capacity by expanding the chest wall and forcing the expiratory lung volumes.[15]

10. This pilot study successfully indicated that pranayama was linked to enhanced exercise tolerance in COPD patients. Lay staff were able to adequately teach patients pranayama. These results show that pranayama may have significant clinical advantages for symptomatic individuals with COPD. This hypothesis has to be verified in future, larger clinical trials.[13]

11. Breathing exercises in Indian Yogic practices

promote physical, mental, and social well-being. Breathing exercises are beneficial as add-on therapy for acute asthma, COPD, chronic hypertension, mental disorders, GERD, and post-operative head and neck, cardiovascular, and upper abdominal conditions. It is effective for both the prevention and treatment of COVID-19. Further research is needed to confirm Pranayama's effectiveness as a supplemental treatment for various diseases. Breathing exercises can prevent sickness and promote overall health.[6]

Pranayama, a central element of Yoga, has profound implications for respiratory health. The practice involves controlled breathing techniques, which focus on balancing the body's life force (Prana). From an Ayurvedic perspective, breathing practices play a crucial role in managing the flow of Prana through the body, particularly through the Vata Dosha, which governs respiration. The disruption of this balance can result in respiratory disorders like asthma, bronchitis, and allergies, conditions that are commonly exacerbated by modern lifestyle factors such as pollution, stress, and sedentary living.

Modern scientific studies corroborate the ancient wisdom of Ayurveda by demonstrating that pranayama techniques significantly improve pulmonary function. Techniques like Anulom-Vilom, Bhastrika, and Kapalabhati have been shown to enhance lung capacity, regulate autonomic nervous system function, and reduce stress-induced inflammation, thereby improving respiratory health. These benefits are not limited to the physically healthy but extend to those suffering from chronic conditions like asthma, chronic obstructive pulmonary disease (COPD), and long COVID. The practice of pranayama has been linked to improvements in various pulmonary parameters such as Forced Vital Capacity (FVC), Forced Expiratory Volume (FEV1), and Peak Expiratory Flow Rate (PEFR), as well as enhanced oxygen saturation and a reduction in the frequency of asthma attacks.

Lung inflation near TLC is a major stimulus for the release of lung surfactant into alveolar spaces, which increases the lung compliance[12]. During pranayama, there is slow & prolonged inspiration and expiration. It stretches elastin & collagen fibres interwoven among the lung parenchyma. Hence, these fibres elongate to a greater extent[8]. During pranayama training, regular inspiration and expiration for a longer duration would lead to acclimatization of central and peripheral chemoreceptors for both hypercapnoea and hypoxia[11]. Lungs and in reducing the mast cell degranulation could be based on the frictional stress from air flowing through narrowed airways, damaging the airway mucosa, and thereby perpetuating airway inflammation and airway obstruction. The slow and gentle breathing in some of the Pranayamas may reverse the process by reducing the frictional stress and thereby stabilizing the mast cell degranulation[26].

A growing body of literature has confirmed that endotoxin is the main mediator in byssinosis and obstructive lung diseases[21]. The deep inspiration, retention of air, and slow expiration increase the overall capacity. A regular practice is associated with reductions in cortisol levels, alleviation of anxiety, and improvement in overall mental health.

This updated review underscores the

importance of pranayama as a valuable tool in the management and prevention of respiratory diseases. While traditional Ayurvedic texts have long advocated for the therapeutic benefits of breath control, modern scientific research has further validated these claims, demonstrating the profound impact of pranayama on pulmonary function, stress reduction, and mental health.

Given its ability to improve lung capacity, oxygenation, and autonomic regulation, pranayama represents a holistic, non-invasive, and cost-effective method for respiratory health enhancement. Healthcare professionals and researchers should consider integrating pranayama into preventive and therapeutic strategies for managing respiratory conditions like asthma, COPD, and post-viral complications. By combining the ancient wisdom of Ayurveda with contemporary scientific findings, pranayama can be embraced as a powerful tool for improving respiratory health and overall wellness.

References :

1. Agraval, Beena. *Patanjal Yogasutram with Bhojvrutti*, Jagdish Sanskrit Pustakalaya, Reprint 2016, Ch.2/Verse 2–49, p.128.
2. Ankad, R.B., B.S. Ankad, A. Herur, S. Patil, S. Chinagudi, and G.V. Shashikala, (2011). *Int J Collaborative Research on Internal Medicine & Public Health, 3*(6): 430–437.
3. Bagade, A.H., M.S. Bhonde, and N.B. Dhokane, (2018). *Natl J Physiol Pharm Pharmacol, 8*(8): 1175–1178.
4. Bhaktivedanta Swami Prabhupad, A.C. *Bhagavad Gita.* The Bhaktivedanta Book Trust; Ch. 4, p.225.
5. Biswas, N., and D.K. Dureha, (2024). *Impact of Pranayama and Meditation on Resting Respiratory and Pulse Rates in Visually Impaired Students.* IJSR.
6. Dasari, V., M. Dhaniwala and N. Dhaniwala (2020). *J Evolution Med Dental Sciences, 9:*
7. Garg, S., and S. Chandla, (2017). *Comparative Effect of Fast and Slow Breathing Pranayama on Pulmonary Functions in Students. IJHSR.*
8. Iyengar, B.K.S. (1968). *Light on Yoga.* George Allen & Unwin.
9. Iyengar, B.K.S. (1976). *Light on Yoga.* 2nd Ed., Schocken Books.
10. Joshi, K., A. Thapliyal, and A. Tomar, (2021). *Physiology of Pranayama. IJMTST, 7:* 116–119.
11. Joshi, L.N., and V.D. Joshi, (1998). *Effect J Postgrad Med, 44*(3): 67–69.
12. Joshi, L.N., V.D. Joshi, and L.V. Gokhale, (1992). *Indian J Physiol Pharmacol, 36:* 105–108.
13. Kaminsky, D. A. *et al.* (2017). *J Altern Complement Med, 23*(9): 696–704.
14. Kelkar, C.D. *et al.* (2021). *IJ-RAP, 12*(1): 59–63.
15. Karthik, P.S., M. Chandrasekhar, K. Ambareesha, and C. Nikhil, (2014). *JCDR, 8*(12): BC04–6.
16. Malhotra, V., D. Javed, and T. Pathak, (2024). *Bioinformation, 20*(11): 1549–1554.
17. Madanmohan *et al.* (1992). *IJPP, 36*(4): 229–233.
18. Madanmohan *et al.* (2005). *IJPP, 49*(3): 313–318.
19. Novaes, M.M. *et al.* (2020). *Frontiers in Psychiatry.*
20. Pandit, K. Shastri and G. Chaturvedi, (1993).

Charak Samhita of Agnivesha, Chaukhamba Bharati Academy, 19th Ed., Ch.Vi. 5/7, p.710.

21. Rajsri *et al*. (2013). *Pulmonary function tests in weavers. Int J Med Res Health Sci, 2*(4): 857–860.
22. Reddy, P.S. and Beena. (2022). *Textbook of Swasthavritta,* Chaukhamba Orientalia, Ch. 4, p. 275.
23. Ruprai, R.K. *et al.* (2013). *Int J Recent Trends Sci Tech, 5*(3): 127–129.
24. S, C.R. (2012). *IJPEFS, 1*(3): 9–12.
25. Shankarappa, V. *et al*. (2012). *JCDR, 6:* 27–30.
26. Sharma, K. K. *et al*. (2014). *European Scientific Journal, 10*(6):
27. Singh, R.H. (2013). *Foundations of Contemporary Yoga & Yoga Therapy,* Chaukhamba Sanskrit Pratishthan, Ch 2, p. 29.
28. Singh, R.H. (2013). *Foundations of Contemporary Yoga & Yoga Therapy,* Ch 8.3, p. 171.
29. Swami Muktibodhanda (2012), Hathyog Pradipika, published by Yoga publication trust,4th edition, chapter 2.Shatkarma and Pranayam pages 149,150,153,164&268.
30. Tikle, Y.A. (2020). *General Health Benefits of Pranayama. JDDT, 10*(1–S): 215–217.
31. Verma, G.L. *Patanjali Yog Sutra.* Chaukhamba Prakashan, First Edition 2010, Ch.1 Samadhi Pada, p. 1.
32. Verma, G.L. *Patanjali Yog Sutra.* First Edition 2010, Ch.2 Sadhana Pada, p. 37,38.