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Systematic Analysis of the Practices of *Prāṇāyāma* for Its Effective Adaption and Adoption

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Abstract:

This paper delves into the breathing practices (*prāṇāyāma*) that are used to control the pranic energy of the body which, in turn, controls the physical and psychological activities resulting in improvement in health and overall well-being. In the last century, many of the breathing techniques mentioned in ancient Indic texts have been adopted, adapted, renamed and promoted. These adaptations and alterations of *prāṇāyāma* can, at times, degrade the effectiveness for the practitioner. This study is an attempt to understand and appreciate the fundamental principles of *prāṇāyāma* and to present a comprehensive framework and roadmap which can be used as a guide by readers to take informed decisions while selecting and practising a particular technique for *prāṇāyāma*.

Keywords: *prāṇāyāma, pūraka, kumbhaka, rechaka, bandha*

INTRODUCTION

There are various techniques and exercises that are used to control the pranic energy of the body. The pranic energy is the vital life force or subtle energy that flows within and around us and is responsible for all physical and psychological activities. Thus, by controlling *prāṇa*, one can successfully control the physical and psychological activities resulting in improvement in health and overall well-being.

One may argue that each practice/approach that helps to regulate the flow of *prāṇa*/subtle energy should be termed as *prāṇāyāma*. For example, noble silence (*mouna*), attitude of nonreactivity, peacefulness, pleasure, avoiding conflicts, adopting any stable posture, modifying the breathing, mantra chanting, meditation etc. help in improving the health and overall well-being. But not all of them qualify to be called *prāṇāyāma*. In Yoga, the term *prāṇāyāma* is specifically used for breathing practices that help in regulating the flow of *prāṇa*.

Prāṇāyāma is a broad term and refers to a variety of breathing techniques and exercises. These techniques find a mention in texts which are believed to be at least five thousand years old like *Vedas*, *Smritis*, *Darshanas*, *Puranas*, *Tantras* and *Hathayogic* texts. *Haṭhapradīpikā*, one of the standard books of Hathayoga, mentions that by the practice of *prāṇāyāma*, one can clean the *nāḍīs* (pranic pathways inside the body) and ensure removal of obstacles in the flow of energy and eventually succeed in cleaning the *Sushumna Nāḍī* (central pranic pathway in the body). Once the pranic energy starts flowing freely through *Sushumna*, the practitioner can even reach a state of super consciousness and gain the capability for higher experiences.

In the last century, many of these breathing techniques have been adopted, adapted, renamed and promoted. These adaptations and alterations of *prāṇāyāma* can, at times, degrade the effectiveness for the practitioner. This reduction in effectiveness is essentially due to lack of understanding of the underlying Indic philosophical concepts related to the nature of human existence and its interrelation with the universe.

In this paper I have presented an overview of some of the popular traditional practices of *prāṇāyāma*, analysed them systematically, and then proposed a generic framework and roadmap for adapting and adopting these techniques so that the practitioner can reap the maximum benefits.

SCOPE & METHODOLOGY

While discussing the various techniques and practises of *prāṇāyāma*, I have purposefully avoided discussed the benefits derived from practising *prāṇāyāma*. I am not going into the instructional details of how to practise any technique. This study does not include any comparative analysis. I am assuming that the readers are familiar with the basic Indic philosophical and ontological concepts and the concept of *panchkosh* and therefore, I am not including the same in this study.

The scope of this study is limited to understanding and appreciating the fundamental principles of *prāṇāyāma* so that I can present a comprehensive framework and roadmap which can be used as a guide by readers to take informed decisions while selecting and practising a particular technique for *prāṇāyāma*.

For this research work I have studied various ancient Indic texts and systematically analysed the information related to *prāṇāyāma* contained in them with the objective of understanding the basic principles.

I have consciously adopted the above methodology to ensure that I remain focussed in my attempt to systematically analyse the practices of *prāṇāyāma* for creating a roadmap for its effective adaption and adoption.

REFERENCES OF *PRĀṆĀYĀMA* TECHNIQUES IN ANCIENT INDIC TEXTS

1. In Hathayogic texts for the beginners

Texts like *Haṭhapradīpikā* and *Gheranda Samhitā* contain a variety of inhalation and exhalation techniques which can be used for *prāṇāyāma*. They include techniques and practises like *Ujjayi*, *Bhramari*, *Bhastrika* etc., each prescribing a particular art of inhalation and exhalation. Thus, the practitioners get the freedom of choosing the breathing technique as per their comfort. Hathayogic texts also mention the specific therapeutic benefits that can be obtained from each variety of *prāṇāyāma*.

“*Mandam mandam pibetvayum mandam mandam viyojayeta*
Nadhikam stambhayetdvayum na cha shighram vimochaeta” - *Gheranda Samhitā*

This reference is helpful for the beginners of the *prāṇāyāma*. *Gheranda Samhitā* explains that one should learn the art of slow inhalation and slow exhalation and also instructs the beginners not to hold the breath too long i.e. beyond their capacity.

In *Haṭhapradīpikā* the same instruction is explained as ‘*Yathashakti cha dharayet*’. It means - hold the breath as per your comfort. If one feels uneasiness, suffocation or fear then one should prefer to exhale the air. (Or if one is holding the breath after exhalation then one should prefer to inhale.)

“*Yuktam yuktam tyajet vayu yuktam yuktam cha purayet*
Yuktam yuktam cha badhniyat evam siddhimvapnuyat” - *Haṭhapradīpikā* - 2/18

Inhale skilfully, hold skillfully and exhale skillfully.

2. In Hathayogic texts for the advance practitioners

Gheranda Samhitā explains the discipline that needs to be followed in the practice of *pūraka*, *kumbhaka* and *rechaka* (the art of inhalation, holding the breath and exhalation) for advancement in *prāṇāyāma*. It recommends a particular rhythm of *pūraka*, *kumbhaka* and *rechaka* while doing *prāṇāyāma*. The ideal ratio to be achieved is 1:4:2. For example, if one inhale for 8 seconds then one should hold the breath up to 32 seconds and exhale slowly up to 16 seconds. *Yājñavalkya Samhitā* also mentions the same ratio. In case of *Anulom Vilom* type of *prāṇāyāma* the recommended ratio for beginners is 1:1:2 and for advanced practitioners it is 1:4:2. However, *Haṭhapradīpikā* does not mentioned anything about the ratio that should be followed.

Practicing *prāṇāyāma* with the discipline of ratio can be considered as the advanced practice of *prāṇāyāma*. Advancement in the practice of *prāṇāyāma* is also determined by the number

of *kumbhaka* ((breath holding) that the practitioner follows in a single sitting of *prāṇāyāma*. *Haṭhapradīpikā* mentions 80 breath/*kumbhaka* to be completed in one sitting and *Gheranda Samhitā* specifies 100 breath/*kumbhaka* to be completed in one sitting of *prāṇāyāma* practice.

Further, the advancement in the practice of *prāṇāyāma* is described in three progressive levels which are as follows.

Level 1 - *Kaniyasi prāṇāyāma*: One gets sweating while performing *kumbhaka*.

Level 2 - *Madhyam prāṇāyāma*: One experiences tremors while performing *kumbhaka*.

Level 3 - *Uttam prāṇāyāma*: One experiences total lightness and feels the body like a weightless cotton which is moving easily in the air.

3. In *Apastambh Dharmasutra* –

“*Aa tamitoho pranayamacchedityeke*”

In this technique one inhales and holds the breath till one starts sweating and gets giddiness. This is an advanced technique of *prāṇāyāma*. The significance of this technique is that it indicates the fitness of respiratory organs and associated muscles to hold the breath for a longer time. It also denotes the positive attitude of the mind. This state appears after the prolonged regular practice of *prāṇāyāma*. One can follow this advance *prāṇāyāma* only when one is physically and mentally fit.

In *Haṭhapradīpikā* it is said that if one follows some easy practices of *prāṇāyāma* regularly, then one is able to hold the breath for a longer time as per one's will. Calmness and stabilization of metabolic rate are the conditions which makes the person capable for longer practice of *kumbhaka* (breath holding).

This practice is too risky for beginners because beginners may panic when they feel suffocation during the practice of *kumbhaka*. They can show signs of activation of sympathetic system resulting in stress reaction e.g. increased heart rate, rapid breathing, sweating, fear etc. This is also not recommended for people of “panic-phobic personality”.

4. In *Pātanjala Yoga Sūtra* –

“*Tasmin sati shwas prashwasyoho gativicchedaha pranayama*” 2/49

“*Bahyabhyantar stambhavrutti deshkalasamkhyabhihi paridrushto dirghasukshmaha*” 2/50

“*Bahyabhyantar vishayakshepi chaturthaha*” 2/51

The above *sūtra* (i.e. verse) explains the practice of *prāṇāyāma* as holding the breath (*Gativiccheda*). In this technique one stops the movement of breathing for some time. If one stops it after inhalation, it was called *abhyantar stambhavrutti*. If one stops the movement after exhalation, it was called *bahya stambhavrutti*. If one stops the breath both times i.e. after

inhalation and exhalation also, it was called *bahyabhyantar stambhavrutti*. All the three variations of this technique are followed purposefully i.e. as per our will. Thus, it is the part of voluntary breath regulation.

A further *sūtra* explains the fourth variant of *kumbhaka* which occurs after the regular and prolonged practice of *prāṇāyāma*. In Hathayogic texts, this has been described as *keval kumbhaka* in which the breath is not purposefully stopped but get stopped automatically. In this condition the person do not feel the urge to inhale or exhale or hold. He just experiences that the breath is stopped automatically for some time. This is a temporary phenomenon. When the *yogi* attains this state, he experiences a state of stillness. The usual flow of thoughts becomes significantly weak and one enjoys the state of *Samatva* i.e. *Samadhi*. The activation of *Kundalini* i.e. attaining the state of super consciousness is possible in the state of *keval kumbhaka*.

5. In *Vijnana Bhairav Tantra*

“*Kumbhita rechita vapi purita va yada bhavet
Tadante shantanamasou shktya shantaha prakashate*” Verse -27

In the technique described in *Vijnana Bhairav Tantra* the emphasis is on the art of inhalation, exhalation and holding the breath i.e. *Pūraka*, *rechaka* and *kumbhaka* respectively. *Pūraka* means filling the lungs skillfully by air and *rechaka* means to draw out the air skillfully from the lungs. Thus, along with the art of holding the breath, the skillful inhalation and exhalation are also important parts of *prāṇāyāma*.

6. In *Adi Shankaracharya's Yogataravali*

“*Bandha-traya-abhyasa-vipaka-jatam vivarjitam rechaka-Pūrakabhyam.
Vishoshayantim vishaya-pravaham vidyam bhaje kevala-kumbha-rupam*” Verse-8

In this reference, the practice of *bandha* (i.e. to lock) is explained along with the other parts of *prāṇāyāma* i.e. *Pūraka*, *kumbhaka* and *rechaka*. The practice of *bandha* helps to lock/hold the state of *kumbhaka*. This is done with the help of contraction of muscles of the trunk. The contraction of perineal and pelvic muscles is called *mulabandha*. The contraction of abdominal and mid back muscles, particularly the diaphragm, is known as *uddiyana bandha*. The contraction of neck and upper trunk muscles (upper back and chest muscles) is *jalandhara bandha*. Shankaracharya explained the spiritual importance of *tribandha prāṇāyāma* (simultaneous application of the above three locks) for the development of super consciousness wherein the practitioner experiences a state of stillness and detachment from the world.

DISCUSSION: USEFULNESS OF ANCIENT TECHNIQUES AND NEED TO DESIGN IMPROVISED TECHNIQUES

All references about the *prāṇāyāma* techniques in the ancient Indic texts are in the form of *sūtra* or *shloka* (short verse). There are no detailed instructions for practicing *prāṇāyāma* and a lot has been left for interpretation. As a result, the beginners have to take help from experienced practitioners. They have no means to verify the recommendations received from these experienced practitioners. Many modern schools of yoga have created their own methods aligning with the frameworks given in the ancient text and claim that their recommendations are the best suited. The point to be noted here is that there are not many structured and evidence based scientific studies of these adaptations. Hence, there is no way to ascertain the benefits that can be derived from each variant of *prāṇāyāma* or to grade them based on their comparative usefulness.

There is a high likelihood that the thousands of yogis who practiced *prāṇāyāma* in the older days used to follow multiple variants of breathing practices. And there is an equally high likelihood that not all those practices found mention in the Hathayogic texts compiled by various rishis. Only the very popular ones survived. Hence, there is always a probability of discovering a better and a more effective technique or rediscover a variant that was followed in ancient times. This implies that we should not discourage the current trend of adopting and adapting the age-old methodologies existing in the ancient texts. We should remain open to the idea that the new and contemporary variants created after understanding the clues given in traditional texts may create something more efficient and useful.

FRAMEWORK FOR DESIGNING IMPROVISED TECHNIQUES OF *PRĀṆĀYĀMA*

Taking cognition of the guidelines given in *Haṭhapradīpikā* and other ancient texts, I am listing below some important points that need to be kept in mind while adopting and adapting any technique of *prāṇāyāma*.

- The practitioner should be advised to proceed as per his/her comfort level. There should be no fixed timelines or goals.
- The practitioner should be encouraged to move to more advance levels gradually, yet consistently. One can set the target of advancement as per the number of breaths in one sitting. For example, initially he/she may complete 20 breath. Then try for 30, slowing increase to 40 and so on. After some days he/she will be able to complete at least 80 breath.
- In the beginning there should not be compulsion to follow a predefined ratio of time for inhalation, holding and exhalation of breath. After regular practice he/she will become skilled to inhale slowly, hold for longer duration and exhale very slowly. Before encouraging the practitioner to follow the recommended ratios, he/she should

be given enough time to achieve the proper fitness of respiratory organs and associated muscles.

- Initially the practitioner should not be advised to include *bandha* in his/her *prāṇāyāma* routine. Later on, as he/she progresses in *kumbhaka*, he/she should be initiated to include *bandha* and proceed to the next level of advancement in *prāṇāyāma*. Many regular practitioners advise that *kumbhaka* up to 20 seconds does not require *bandha*. But when one needs to hold breath for longer time, one should take the help of *bandha* because it makes the state of *kumbhaka* easy. Contracted muscles of the trunk help to keep the contracted state of respiratory muscles which increases stability in *kumbhaka*.
- Another sound advice that should be kept in mind is that after the practice of long *kumbhaka* one needs to relax the respiratory muscles. Thus, after one round of pranayamic breath the practitioners can take a little rest in which they can follow usual breathing, maybe 3 to 5 times or as per their convenience. Then one can follow further pranayamic breath. In other words, there should be a little period of rest between two *kumbhaka*. This practical fact is not described in any Hathayogic text but explained by yogis who have been doing *prāṇāyāma* for years.

RECOMMENDED “PROGRESSION PLAN” FOR GETTING INITIATED INTO ANY TECHNIQUE OF *PRĀṆĀYĀMA*

In the beginning, the lungs, respiratory muscles and associated trunk muscles are not trained for the practice of *prāṇāyāma*. Therefore, it is required that the practitioner is initiated into *prāṇāyāma* using a structured & graduated plan which ensures skillful learning and also enables the practitioner to become fit for further advanced practices of *prāṇāyāma*.

Based on my extensive study of *prāṇāyāma*, which I have presented in this paper, I have designed a “Progression Plan” that can be followed.

***Pūraka - Rechaka* pattern (PR pattern)**

The lungs of the beginners cannot tolerate the state of stretching of elastic tissue that happens during *kumbhaka*. For such beginners, the PR pattern is very useful wherein the practitioner is only working of inhalation and exhalation and completely avoids holding of breath. The practitioner should start with a small time period for inhalation & exhalation (say 6 seconds each) for as many repetition cycles as he/she is comfortable with. Over the next few days, the attempt should be to increase the number of repetition cycles without changing the duration of inhalation and exhalation. Once the practitioner is able to comfortably complete 80 to 100 repetition cycles of 6 seconds in one sitting, his/her next attempt should be to increase the duration of inhalation and exhalation to, say, 8 seconds each; again, for a small number of repetition cycles, say, 20.

The practitioner should slowly and gradually work on increasing the period of inhalation & exhalation (*Pūraka – Rechaka*) and the number of repetition cycles as suggested in the table

below. After enough practice, the elasticity of lung tissues is improved and the respiratory muscles learn to relax slowly in a rhythmic fashion.

<i>Pūraka</i>	<i>Rechaka</i>	Repetitions
6 sec	6 sec	20-30-40....80
8 sec	8 sec	20-30-40....80
10 sec	10 sec	20-30-40....80
12 sec	12 sec	20-30-40....80

Pūraka – Kumbhaka - Rechaka pattern (PKR pattern)

In this pattern, one can inhale slowly as per capacity, hold the breath as per capacity and then exhale as per capacity. In this way, one should follow 20-30-40 repetition and gradually move up to 80. Thereafter, the practitioner should increase the duration of inhalation, hold and exhalation (*Pūraka – Kumbhaka – Rechaka*) as suggested in the table below. The practitioner should initially start with 1:1:1 ratio and gradually move on to 1:4:2 ratio. A suggested progression plan can be 1:1:1 -> 1:1:2 -> 1:2:2 -> 1:3:2 -> 1:4:2. The practitioner should also use *bandha* when the *kumbhaka* duration increases. The use of *bandha* is mandated if the duration of *kumbhaka* is beyond 20 seconds. Before that the use of *bandha* is optional.

<i>Pūraka</i>	<i>Kumbhaka</i>	<i>Rechaka</i>	Repetitions
8 sec	8 sec	8 sec	20-30-40....80
10 sec	10 sec	10 sec	20-30-40....80
12 sec	12 sec	12 sec	20-30-40....80
8 sec	8 sec	16 sec	20-30-40....80
10 sec	10 sec	20 sec	20-30-40....80
12 sec	12 sec	24 sec	20-30-40....80
8 sec	16 sec	16 sec	20-30-40....80
10 sec	20 sec	20 sec	20-30-40....80
12 sec	24 sec	24 sec	20-30-40....80
8 sec	24 sec	16 sec	20-30-40....80
10 sec	30 sec	20 sec	20-30-40....80
12 sec	36 sec	24 sec	20-30-40....80
8 sec	32 sec	16 sec	20-30-40....80
10 sec	40 sec	20 sec	20-30-40....80
12 sec	48 sec	24 sec	20-30-40....80

Pūraka – Rechaka - Kumbhaka pattern (PRK pattern)

In this pattern the practitioner inhales slowly as per capacity then exhales slowly as per capacity and then holds the breath as per capacity. The practitioner should initially start with 1:1:1 ratio and gradually move on to 1:4:2 ratio. A suggested progression plan can be 1:1:1 -> 1:2:1 -> 1:2:2 -> 1:2:3 -> 1:2:4. The practitioner should also use *bandha* when the *kumbhaka* duration increases. The use of *bandha* is mandated if the duration of *kumbhaka* is beyond 20 seconds. Before that the use of *bandha* is optional.

<i>Pūraka</i>	<i>Rechaka</i>	<i>Kumbhaka</i>	Repetitions
8 sec	8 sec	8 sec	20-30-40....80
10 sec	10 sec	10 sec	20-30-40....80
12 sec	12 sec	12 sec	20-30-40....80
8 sec	16 sec	8 sec	20-30-40....80
10 sec	20 sec	10 sec	20-30-40....80
12 sec	24 sec	12 sec	20-30-40....80
8 sec	16 sec	16 sec	20-30-40....80
10 sec	20 sec	20 sec	20-30-40....80
12 sec	24 sec	24 sec	20-30-40....80
8 sec	16 sec	24 sec	20-30-40....80
10 sec	20 sec	30 sec	20-30-40....80
12 sec	24 sec	36 sec	20-30-40....80
8 sec	16 sec	32 sec	20-30-40....80
10 sec	20 sec	40 sec	20-30-40....80
12 sec	24 sec	48 sec	20-30-40....80

***Pūraka – Kumbhaka – Rechaka - Kumbhaka* pattern (PKRK pattern)**

This is for more advanced practitioners and can follow as per his/her capacity.

FUTURE DIRECTION

Many modern schools of yoga have created their own methods of *prāṇāyāma* aligning with the frameworks given in the ancient text and claim that their techniques are the best suited and yield maximum benefits to the practitioners. The point to be noted here is that there are not many structured and evidence based scientific studies of these adaptations. Hence, there is no way to ascertain the benefits that can be derived from each variant of *prāṇāyāma* or to grade them based on their comparative usefulness.

We therefore suggest further research in terms of a quantitative study of effectiveness of *prāṇāyāma*. These studies can measure changes in physical parameters like blood pressure, blood parameters like sugar levels, KFT, LFT etc, and also measuring mental well-being using specially designed questionnaires before and after the participants have started practicing *prāṇāyāma* and compare these values with those of a control group.

CONCLUSION

Prāṇāyāma is a progressive practice which starts with modifications in breath voluntarily and finally the practitioner reaches the automatic state wherein he/she experiences effortless stoppage of breath for some time. This is the final destination of the practice of *prāṇāyāma* which known as *keval kumbhaka* and in this condition the practitioner can even reach a state of super consciousness and gain the capability for higher experiences.

By practising *prāṇāyāma* technique which adhere to the framework outlined in the section “Framework For Designing Improvised Techniques Of *Prāṇāyāma*” the practitioner can improve his/her health and well-being. These benefits can be derived by both beginners as well as advanced practitioners, though the quantum of benefits derived will vary as per the level of competency achieved by the practitioner. The proposed quantitative studies outlined in the “Future Direction” section provides actionable pathways for quantifying the improvements in health and overall well-being that can be expected.

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