

PRĀṆĀYĀMA

The Art and Science

Dr H R Nagendra



SWAMI VIVEKANANDA YOGA PRAKASHANA

Bangalore

SHORT TERM COURSES

1. Division of Yoga and Spirituality

- YP YIC Yoga Instructors Course
(1 month Rs 3500/ \$ 350 starts 1st of Feb, May, Aug, Nov)
YP SPR Spiritual Retreat (1 week Rs 750/ \$ 100)
YP YIN Yoga Intensive (Variable duration- tailor made course)
Rs 4000/ \$350 pm

2. Division of Yoga and Life Sciences

- YLS YTIN Yoga Therapy Intensive (1 month Rs 4000/ \$350 pm starts
Mar 5, June 5, Sep 11, Dec 5)
YLS YTTP Yoga Therapy Treatment Program
(2 weeks -See Arogyadhama Brochure-starts Fridays)
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- YPS YSCS Yoga , Science and Consciousness (1 week Rs 750/ \$ 100*)
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YPS -YN LP Yoga Purva Mimansa and agriculture (1 week Rs 750/ \$ 100*)

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(2 Days Rs 1000/ \$100 starts every second Saturday)
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(4 days Rs 1000/ \$100 starts every third Saturday)
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(10 Days Rs 800/ \$100 starts April 1.11 and 21 every year)
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(40 days Rs 5000 / \$400 starts 1st of Feb, May, Aug, Nov)

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YHU BCM Basic Course in Music
(1 week Rs 750/ \$ 100 starts every first Sunday)
YHU YIS Yoga Intensive for Sportsmen
(1 week Rs 750/ \$ 100 starts every first Sunday)
YHU HVA The Vedic age from Manu to Krishna (1 Week Rs 750/ \$ 100 *)
YHU IPH The Itihasa—Purana tradition in Indian History - 1 Week
Rs 750/ \$ 100 *)

***will be announced later in Yoga Sudha monthly**

All applications for these short-term courses should be received in the city office 1 month before the start of the courses and the students will be informed of their selection or otherwise within 2 weeks of the submission of their application to the courses by email. Late admissions may be made depending on availability of seats. A fine of Rs 100 will be charged for late submission of applications. Right of admission to the courses are reserved by the VYOMA.

PRĀṆĀYĀMA

The Art and Science

Dr. H. R. Nagendra



**SWAMI VIVEKANANDA YOGA PRAKASHANA
BANGALORE**

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FOREWORD

Indian philosophy considers the entire universe to be made up of two materials - Ākāśa and Prāṇa. Ākāśa is the omnipresent all-pervading existence. Anything gross, which has form and is the result of combination comes out of Ākāśa. But, by itself, it is so subtle that it cannot be perceived. It exists by itself at the beginning of the cycle of creation, and at its end everything dissolves back into Ākāśa.

The power which motivates and activates Ākāśa into creating and dissolving the Universe is called Prāṇa. It is the infinite, omnipresent manifesting power from which emerges all energy at the beginning of creation. Everything in the physical universe which has energy, force, motion etc manifests Prāṇa. "The knowledge and control of this Prāṇa is really what is meant by Prāṇāyāma", says Swami Vivekananda.

Patañjali's Rāja Yoga offers a set of graded practices, which help one to tap this enormous reservoir of energy. Details of these practices are the subject of Haṭha Yoga. From time immemorial, countless Sādhakas have practised and benefited by this science of Prāṇāyāma.

Even though there are lots of books available on this subject, most of them follow traditional methods of presentation, which may not appeal to a mind brought up in a modern western-oriented environment. In this book, Dr. Nagendra has admirably filled up this lacuna. His presentation is based upon tradition, but expressed in a modern idiom; based upon examples taken from everyday experience, as well as, the latest development of Science. There is a wealth of information here for Sādhakas, guides them in their path.

I am sure this edition of the book will be as warmly received by its users.

Prof. N. V. C. Swamy
Ex Director, IIT Madras

ABOUT THE BOOK

Prāṇāyāma, the Art & Science is an essential part of yoga practice. Prāṇāyāma is the Science of cleansing, balancing and gaining control over the Universal life force - “Prāṇa” in the human system.

This book brings out the tradition, Science, Research and safe practice methods of Prāṇāyāma based on the twenty years of practical & applied research.

A unique and useful book for all readers and yoga practitioners, to have scientific understanding of ancient tradition of Prāṇāyāma in the light of modern research.

PREFACE

Modern life beset with tensions and anxieties continues to crush the affected individuals with increasing number of deaths and deteriorating quality of life. In spite of man's understanding of the structure and dynamics of the physical universe, **the inner world is yet to be discovered**. Despite technological growth and enhanced material standards of living, the real standard of living in terms of love, happiness and peace has yet to find its roots. Yoga and Spirituality contain secrets of the structure and laws of the entire universe. Based on the wisdom, Yoga offers a unique new way of life to the modern man.

The mind-matter relationship has been the most intriguing challenge for the man from ages. This challenge has become most relevant to the scientist of today who has understood enough about the physical world around him and is now heading towards subtler dimensions of the universe. From the matter-based approach, the scientist is proceeding ahead to find something anew. In their quest of the unknown, seeking a major breakthrough in this worldly vision, many renowned scientists have started looking at the findings in the East for new insights.

The Vedas form the basis of this fresh thought for which India is known. Upaniṣads, the quintessence of the Vedas, talk about this basic mind-matter problem in depth, unravelled through experimentation called Tapas. It is found that the entity called Prāṇa is the basic life principle which acts as a bridge between mind and matter. In Praśnopaniṣad, Prāṇa is defined as that basic entity from which the whole universe is made. Matter is its grossest manifestation, whereas, mind is the subtle one and higher states of consciousness are the subtler manifestations of Prāṇa.

In Praśnopaniṣad we find a detailed description or study of Variṣṭha Prāṇa and Pañca Prāṇas. It is the Variṣṭha Prāṇa the eldest and the first born of Ātman, that divides itself into five facets : Prāṇa, Apāna, Samāna, Vyāna and Udāna and governs the different functions of the human body.

Prāṇāyāma as defined in the Yoga Sūtras of Patañjali is the science of cleansing, balancing and gaining control over the Prāṇa in the human system.

Gaining control over any one of the five facets of Prāṇa or more or all of them is Prāṇāyāma. Prāṇāyāma is the science of harnessing the breath for gaining control over the Prāṇa and thereby, on the mind. Prāṇāyāma forms the fourth limb of Patañjali's eight-limbed 'Aṣṭāṅga Yoga'. This definition of Prāṇāyāma is a part of the comprehensive definition from Upaniṣads.

Presented in the booklet are those principles that throw more light on the concept of Prāṇa as described in the Upaniṣads and texts on Yoga. The techniques of Prāṇāyāma described here are in no way exhaustive, but certainly give insights into the secrets of gaining control over Prāṇa by harnessing one's breath.

Some of the main techniques are presented in different chapters of this book for cleansing the respiratory tract, normalising the functions of the respiratory system, purifying the subtle channels of Prāṇa bringing balance in the Prāṇamaya Kośa and gaining deeper and subtler insights for the control of Prāṇa. The vital role of these techniques in harnessing our existence is aptly brought out. The benefits and limitations of these techniques are described

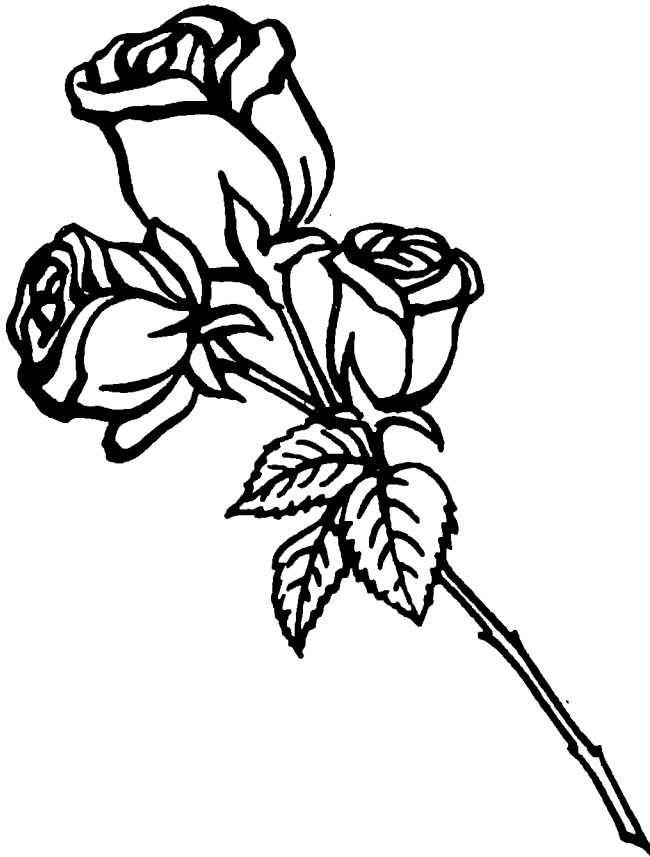
with suitable precautions to be taken in their practices.

These practices have been tested for their safety and benefits over the past decade in the Yoga camps and non-residential programmes conducted throughout the country by trained teachers of the **SVYASA**. This book is meant essentially for those beginners who want to learn the techniques by carefully following the instructions and precautions suggested in the book.

The author thanks all those who have been helpful at various stages in the preparation and bringing out this new edition.

Suggestions of the enquiring readers are welcome.

- Author



PUBLISHERS' NOTE

The richness of the heritage of Yoga and Spirituality is gaining sharper focus through modern scientific research. The wisdom of the East is being restated in a terminology that is familiar to the West.

Dissemination of research finding through research papers has played a vital role in establishing the efficacy of "The Integrated Approach of Yoga Therapy" (IAYT) in the treatment and rehabilitation of patients suffering from modern ailments. However, these research findings have to be brought to the level of common public. A separate TRUST is initiated to augment the efforts of SVYASA to disseminate these research findings.

Swami Vivekananda Yoga Prakashana dreams of using the pen and the media to augment the global shift in consciousness, drawing the most literates and intelligent population to expand their matter-based mechanistic mindset to consciousness-based world view encompassing holistic vision.

OBJECTIVES

- ☞ To enhance the reach of reading materials to the common man.
- ☞ To build a wide sales network.
- ☞ To build a production team for disseminating the message of Swami Vivekananda and ancient yogic and cultural heritage.

The TRUST seeks to publish books, report, research compilations, journals, charts, audios, videos, CDs and other items for propagation of yoga and its research.

This book is authored by Dr. H. R. Nagendra, having in-depth knowledge of Yoga discipline. We are sincerely thankful to the author, printer and artist for their co-operation in bringing out this book early.

Finally we thank all readers for their kind patronage within two years of the second edition is in their hands. We seek their co-operation for this edition also.

Publishers

CONTENTS

Preface

V

Instructions and Precautions

XIV

Chapter 1

Quest for Reality

1-8

Structure

3

Newton's Laws of Motion

3

Uncertainty Principle

5

All Pervasive Reality

6

Chapter 2

The Basic Fabric of Creation

9-20

Prāṇa, the Basis

12

Energy Spectrum

13

Spectrum of Prāṇa

15

Levels of Consciousness

17

Prāṇa and the Manifests

18

Chapter 3

The Seen and the Unseen

21-36

Dimensions of Human Beings

Discovery of Kirlian photography

23

Corona Field Interactions

24

Prāṇamaya Kośa

26

Variṣṭha and Pañca Prāṇas

28

Upa-Prāṇas

32

Prāṇāyāma

33

Concept of Prāṇāyāma

34

Chapter 4

Bridging the Body and Mind 37-58

Link between the Subtle and the Gross 39

Bridging the Voluntary with the Involuntary	40
From Voluntary to Involuntary	42
The Respiratory System	43
<i><u>Anatomical Features</u></i>	43-48
1. Nose - Functioning of Nose	43
2. Pharynx	45
3. Larynx	46
4. Trachea	46
5. Bronchi	46
6. Lungs	47
7. Alveoli or Air Sacs	47
8. Pleura	48
<i><u>Physiological Aspects</u></i>	48-58
Mechanics of Breathing	48
1. Diaphragm	48
2. Inter-costal Muscles	48
3. Muscles of the Neck	48
Control of Breathing	49
1. Nervous Control	49
2. Chemical Control	49
Kriyās for purification	50
Ṣaṭ Kriyās - a glimpse	50
Kapālabhāti	51
Other Forms of Kapālabhāti	57
1. Kapālabhāti - both nostrils	57

2. Single Nostril Kapālabhāti	57
a. Candrānuloma-Viloma Kapālabhāti	57
b. Sūryānuloma-Viloma Kapālabhāti	58
3. Sūrya and Candra Bhedana Kapālabhāti	58
a. Candra Bhedana Kapālabhāti	58
b. Sūrya Bhedana Kapālabhāti	58

Chapter 5

Balancing the Breath **59-72**

Abdominal Breathing	61
Thoracic Breathing	62
Clavicular Breathing	63
Full Yogic Breathing	64
Bhastrikā Prāṇāyāma	67
Bhastrikā and Kapālabhāti	70
Physiological Aspects	70
Precautions	71
Table of published research	72

Chapter 6

Avoiding Dangers - The Safe Path **73-84**

Three Components of Breathing	75
Haṭha Yoga School	77
Dangers in Haṭha Yoga School	78
Jālandhara Bandha (the Glottis-lock)	79
Mūla Bandha (the Anus-lock)	80
Uḍḍiyāna Bandha (the Abdominal-lock)	81
Tribandha Prāṇāyāma (the Tri-foldlock)	81
Vāsiṣṭha School	82
Plāvini-Floating Prāṇāyāma	84

Chapter 7

Prāṇāyāma Body : Structure and Balance 85-100

The Anatomy of the Physical and Prāṇic Body	87
Catabolic and Anabolic Processes	88
Anuloma-Viloma Prāṇāyāma	90
1. Both Nostrils	90
Dīrgha Śavāsana or Sukha Prāṇāyāma	90
2. Single Nostril	91
a. Candrānuloma-Viloma	91
b. Sūryānuloma-Viloma	92
3. Alternate Nostrils	93
a. Candra Bhedana	94
b. Sūrya Bhedana	95
c. Nāḍī Śuddhi	96

Chapter 8

Expansion of Awareness 101-112

Attention and Pointed Awareness	103
Linear Awareness	103
Surface Awareness	103
Three-Dimensional Awareness	103
Ujjāyī Prāṇāyāma	104
Cooling Prāṇāyāmas	106
1. Śītalī	106
2. Sītkārī	107
3. Sadanta	108
Principle of Differential Evaporation	108
Flow of Air in the three Prāṇāyāmas	109
Other Varieties of Colling Prāṇāyāmas	112

Chapter 9

Laya - the Merger

113-122

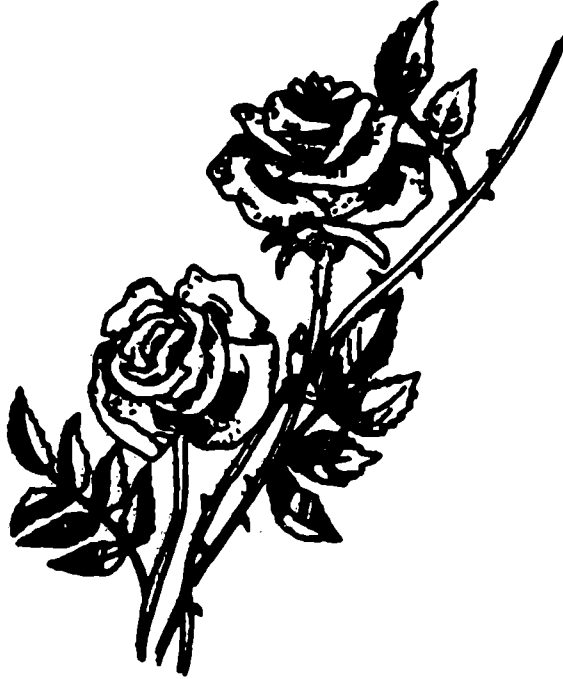
Bhrāmarī	115
Resonance - The Key in Bharāmarī	116
The Female and the Male Bee Sounds	118
Stages in Bhrāmarī	119
Mūrccā or Swooning Prāṇāyāma	121

Chapter 10

Prāṇānusandhāna

123-128

Practice of Awareness	125
Marks of Progress	127



INSTRUCTIONS AND PRECAUTIONS

While Prāṇāyāma is a powerful tool for gaining benefits, it is also beset with risks. Hence readers who want to learn the techniques through this book **should follow the Dos and Don'ts meticulously**. Otherwise, they may endanger themselves more than gaining benefits. As mentioned in Haṭhayoga Pradīpikā:

प्राणायामेन युक्तेन सर्वरोगक्षयो भवेत् ।

अयुक्ताभ्यासयोगेन सर्वरोगसमुद्भवः ॥ (ह.यो.प्र. : २.१६)

Prāṇāyāmena yuktena sarvarogakṣayo bhavet,
Ayuktābhyāsayogena sarvarogasamudbhavaḥ. (HYP : 2.16)

Prāṇāyāma can eradicate all diseases, if done properly, but if done wrongly, it may aggravate all diseases.

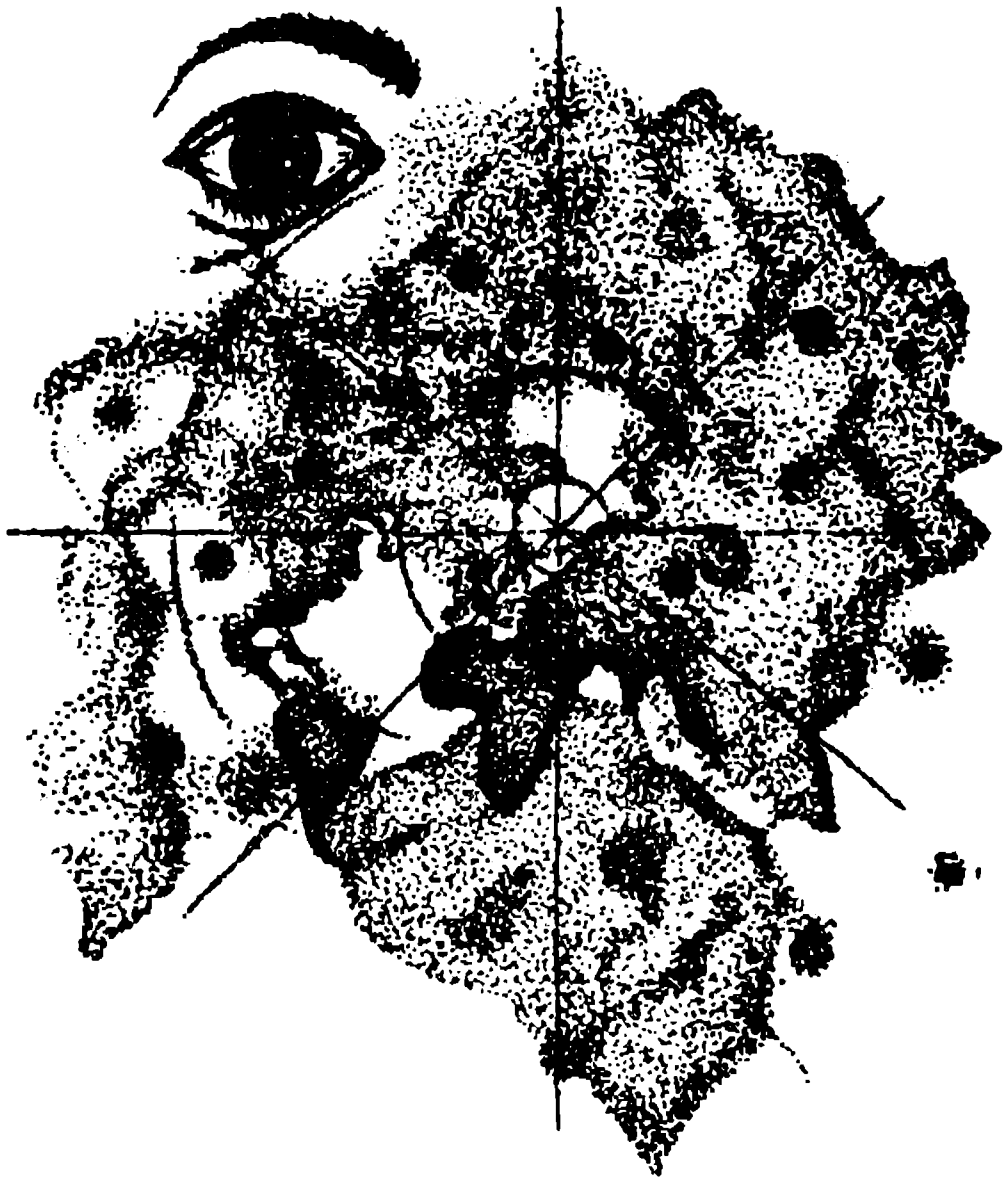
Before starting the practice of Prāṇāyāma, one should observe certain preliminary instructions which account for quick progress and success in one's practice. The following are the most important ones:

- Complete your ablutions before Prāṇāyāma. It can be practised before or after taking bath depending upon your convenience.
- Prāṇāyāma practitioners should take predominantly Sāttvika food, avoid smoking and drinking. Wait for at least four hours after meals to start Prāṇāyāma. Have a light stomach when you practise Prāṇāyāma.
- Cover the body with comfortable, loose garments or a sheet so that there are no external disturbances (from insects) during practices.
- While doing Prāṇāyāmā, the body should be as relaxed as possible. **The spine, neck and head should be kept erect and centered. Any meditative posture, mainly, Padmāsana or Vajrāsana will be best suited for Prāṇāyāma. Keep eyes gently closed.**

- During Prāṇāyāma, there should be no strain. Breath should not be retained longer than as comfortable. Perform Prāṇāyāma with natural breathing.
- If you have loose motions, stop Prāṇāyāma for a few days. Those with heart complaints of any kind or high blood pressure should avoid Kapālabhāti and Bhastrikā. **Never be in a hurry. Never go beyond your capacity.**
- **Too much is bad.** Just because half an hour Prāṇāyāma gives you great benefits, do not increase the time of practice indiscriminately. The hurry to achieve greater benefits by increasing the duration of Prāṇāyāma could be dangerous. **Slow and steady wins the race - is very true in this case.**
- Always practise Prāṇāyāma with a relaxed mind. Do not be in a hurry; this will bring better control over breath and will automatically lengthen the breathing. Be regular and systematic in your practice. Do not miss your practice except when you are seriously ill. Use common sense and discretion throughout the practice. There should be a feeling of freshness, joy and exhilaration after Prāṇāyāma.
- Always have a mental attitude congenial to the development of divine qualities as love, mercy, forgiveness, peace and joy. While inhaling you can feel the whole body getting energized and becoming light; during exhalation all negative qualities like lust, anger, greed etc. are removed. **It is the Prāṇa that you breath and not the mere atmospheric air!**
- Realize the inner life power that underline the breath. Become a Yogī to radiate joy, light and power around you.



QUEST FOR REALITY



Quest for Reality

QUEST FOR REALITY

The quest for reality has been the endeavour of man at all times. But the seventeenth century initiated a new surge, a new line, a new approach in search of Reality. The forefathers of the present era of science and technology: Newton (1642-1727) and Descartes (1596-1650), decided to systematically unravel the mystery underlying the physical aspects of the universe - only physical, down-to-earth concrete things of the world. A tradition of experimentation, observation, objective verification was set up by many persons in different places at different times before coming to a conclusion and presentation of the results as possible. This systematic approach was accepted and adopted by all those scientists who carried on the task of search, maintaining continuity. After four centuries of challenges, upheavals and breakthroughs, we have now understood the physical universe, its structure and the dynamics, as well.

Structure

That energy and matter are not separate building bricks and matter is essentially 'bottled up' energy, have been established. Energy is understood to be the basic fabric of this entire physical world. The famous Einstein equation :

$$E = mc^2$$

(E, the energy obtained by converting a mass 'm' of this world, C is the velocity of light) condensed this wisdom into the crispest of presentations, And, thus, the structure of the physical universe was understood.

Newton's Laws of Motion

The Newtonian mechanics described the laws of Motion.

The three laws of motion :

1. Every object continues in its state of rest or uniform motion unless disturbed by an external force.

2. The force is directly proportional to the acceleration produced in the object $F \propto ma$.
3. Action and reaction are equal and opposite.

These laws of motion govern the physical universe around us. To find a cause to a phenomenon became the core of scientific investigations. In the early fifties of 20th century came the new breakthrough enlarging the spectrum of the classical mechanics with deterministic approach in to Quantum Mechanics as we entered into the subtler world of this physical universe. Both in dealing with extremely small dimensions like atoms and molecules and astronomical dimensions related to galaxies, milky ways, etc., the Newton's laws failed and more flexible probabilistic laws - the core of Quantum Mechanics had to be used. While Newton's laws of motion sufficed to calculate the force, speed and acceleration with normal speeds, they failed when used for extremely high speeds nearing the velocity of the light - the speeds encountered with extremely small particles like electrons, neutrons etc. Einstein's Theory of Relativity generalised the laws of Newton which adequately described the laws governing very high velocities and of extremely small dimensions. These generalised laws of Einstein, as well as, the probabilistic mechanics reduce themselves to Newtonian or Newton's laws of motion and Deterministic Mechanics at normal speeds and usual dimensions.

Space-time continuum and the Uncertainty principle (see box on page 5) enlarged the vision of science into realms of greater freedom and flexibility.

As the probe into subtler world of fundamental particles intensified and the scientists started looking into the mechanism of creation, physicists found something totally new-'black holes', tachyons travelling at velocities greater than light, to name a few. Besides, Quantum Physics became the talk among physicists. Further, the very process of observation or measurement changes the behaviour of these fundamental particles. **The observer can not observe without disturbing the observed** - the facts which have shaken the entire scientific objective experimentation as the basis which

formed the core of science for the last four centuries. “Now we are at a turning point. Subjectivity is to be somehow fitted into the scientific experimentation”, say many Nobe Laureates. And that is the challenge before the scientific researchers.

Knowledge regarding DNA and RNA molecules and their behaviour, brain cells and their functioning have started bringing deeper insights. The researchers in life-sciences and neuro-sciences have started considering life and consciousness as probably separate from functioning of DNA, RNA molecules and brain cells.

Uncertainty Principle

It is impossible to determine with accuracy both the position and the momentum of a particle (electron) simultaneously. Higher the accuracy of the position known, lower will be the accuracy of the momentum. determined Range of position Δp and the range of momentum Δm have the following relations :

$$\Delta p \cdot \Delta m = h \text{ Where 'h' is Plank's constant}$$

Hence, there is an ‘uncertainty’ associated with the determination of either the position or momentum of a particle exactly. As stated by Heisenberg, this arises due to the dual nature of matter: a moving particle, whatever nature it has, wave properties are associated with it. The wavelength of such waves are called deBroglie wavelength λ which can be calculated by the formula $\lambda = h/mv$

Where ‘ m ’ is the mass of the particle and ‘ v ’ its velocity. It also implies that any energy wave with a wavelength λ has also the mass ‘ m ’ associated with it.

Thus, after nearly four centuries, growth of science has led us to enter into subtler dimensions of the universe. Our future research will be to unravel the mysteries related to ‘the subtler than the physical world’ : life (Prāṇa), mind, emotions, intellect, ego, spirit, soul, consciousness and so on.

It is into this realm of creation that ancient seers of India had made headway, in not only understanding the structure of the inner world, but also dynamics which govern different layers of consciousness. That wisdom is contained in the Science of Yoga or Spirituality.

While body-mind problem has long intrigued scientists, Indian sages could unravel the mystery by understanding Prāṇa as the basic fabric which bridges mind and matter, as well. The dynamics and laws of Prāṇa were understood through systematic practice of Prāṇāyāma to gain mastery over Prāṇa.

Prof. Josephson, the Nobel Laureate from Cambridge University, believes **that Upaniṣads can give modern physicists new directions while probing into subtler dimensions of this creation. Prāṇa should be studied and its mysteries unravelled to progress in search for Reality.**

All Pervasive Reality

There is a total continuity in the entire creation, though, there appears to be a leap in the degree of freedom from one level to another. Creation builds up this freedom systematically and gradually as can be seen through the transitional manifestations of Prāṇa through radioactive molecules, drosera plant, monkeys, human geniuses or mystics, to name a few.

Through the study of such transitional manifestation, we will be able to unravel the mysteries of the laws of Prāṇa at different levels. Hence the transitional manifests are the bridges between one level to another level of manifestation of Prāṇa exhibiting apparently new facets of freedom. Like locomotion and instinctive actions differentiate the animals from the unmoving plants rooted firmly in the earth and the actions powered by human intelligence are so different from instinctive actions of the animals.

Utilisation of freedom in Prāṇa in the right direction helps everyone to grow and reach higher and higher levels of existence.

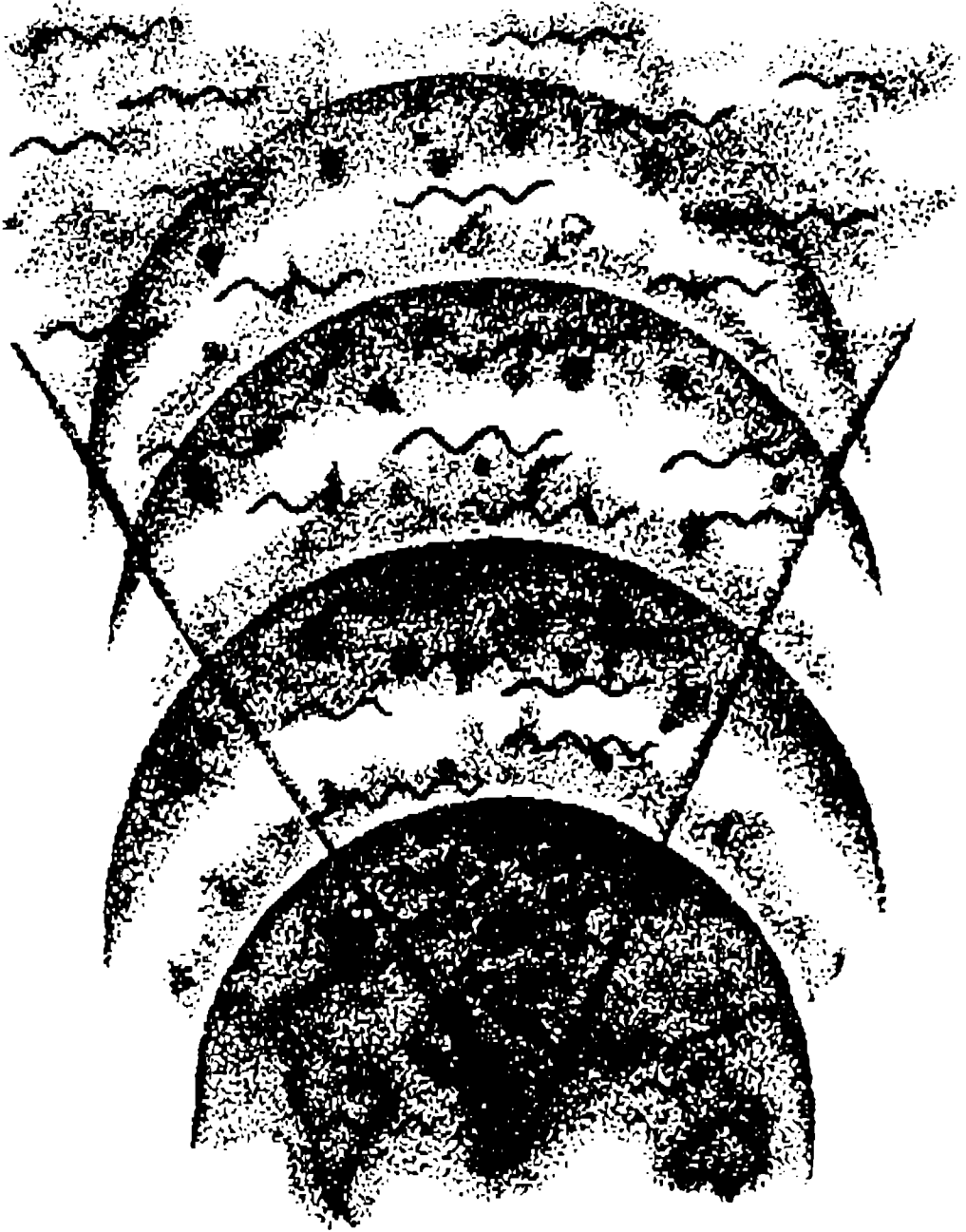
“The goal of human life”, Swami Vivekananda say “is to manifest this divinity”. The elements of freedom in Prāṇa is divinity, greater the manifestation, greater will be the growth; greater the freedom and bliss, greater will be the unravelling of the higher laws of Prāṇa or the universe and thus, greater and greater power.

The highest growth, for all practical purposes, is the Ānandamaya Kośa or Brahma Loka, the manifested Absolute, as Śrī Aurobindo puts it. But ultimate is the Mokṣa.





THE BASIC FABRIC OF CREATION



Prāṇa Spectrum

THE BASIC FABRIC OF CREATION

Once I happened to visit a botanical exhibition. I was fascinated by a 'Drosera' plant. When an insect sits on the flower of the plant, it secretes a sticky fluid, traps the insect and eats it up.

All of us have witnessed the "Touch-me-not" (mimosa podica) plant whose leaves fold up instinctively when you touch them or blow on them.

The sense of touch is evident in these higher forms of plants as an instinctive action either for food or for self-protection. Such plants are in transition towards the animal species where life manifests at a higher degree.

Radio active elements like Uranium, Radium etc. release rays of energy like electrons and gradually decay into lighter metals. But this decay may take decades or centuries depending on the 'half life-span' of these elements. Manifestation of activity in these partly inert mineral world is again a transitional one towards greater manifestation of life from the inert world towards the plant kingdom.

A group of people walking across gardens and groves to a neighbouring town found that monkeys were a menace destroying the finest of mango groves in spite of nearly five watchmen protecting it. But, the neighbouring orchard with colourful oranges guarded by a single watchman who was most of the time sleeping, remained untouched. Out of curiosity, when one among the group, tried to find the reason, he was told that when monkeys tried to eat the oranges, the bitter juice of the peel would irritate their eyes. And this was how the orange orchard was saved. "But", the watchman continued, "I saw yesterday a monkey pull out an orange, peel it behind its back and eat it up. I had to drive it out. Now we are also in for trouble.

Intelligence is obvious in such 'grown-up' monkeys or ape man, a transition from animal species to human spectrum.

Shakuntala Devi is born with a computer brain. For her, multiplication of two twenty-digit numbers takes hardly any time. Division of long numbers is spontaneous. Even the most sceptical, critical, hard-core scientists are bewildered at her computer-like capacity.

Super intelligence, intuition and miracles are called so, as they are not normal. Ordinary human beings possess no such capacities. The evolved geniuses are in transition to the realm of Superhuman beings.

Prāṇa, the basis

Nature is bountiful, Amidst the diversities, if we look deeply, there flashes the unifying truth. Transitions are explicit openings for such insights into Reality. Underlying the manifest diversities is a continuity of 'life', threading the beads of all creation. And that life entity, the Basic Fabric of the whole creation is called Prāṇa in Vedic and Upaniṣadic lores.

Atharva Veda explains Prāṇa in a wider sense :

प्राणः प्रजा अनु वस्ते पिता पुत्रमिव प्रियम् ।

प्राणो ह सर्वस्येश्वरो यच्च प्राणति यच्च न ॥ (११.२.४.१०)

Prāṇaḥ Prajā anu vaste pitā putramiva priyam.

Prāṇo ha sarvasyēśvaro yacca Prāṇati yacca na. (11.2.4.10)

Prāṇa is to all persons as father is to his dear children. Prāṇa is the hard-core of all creation which breathes and breathes not. This characteristic of Prāṇa indicates its all pervasiveness.

अपानति प्राणति पुरुषो गर्भे अन्तरा ।

यदा त्वं प्राण जिव्स्वस्यथ स जायते पुनः ॥ (११.२.४.१४)

Apānati prāṇati puruṣo garbhe antarā,

Yadā tvam prāṇa jinvasyatha sa jāyate punaḥ. (11.2.4.4)

The child in the mother's womb breathes. O Prāṇa, when you move in him, he takes birth.

Likewise in Praśnopaniṣad it is said :

प्राणस्येदं वशे सर्वं त्रिदिवे यत् प्रतिष्ठितम् ।

मातेव पुत्रान् रक्षस्व श्रीञ्च प्रजां च विधेहि न इति ॥ (प्रश्न. उ. : २.१३)

Prāṇasyedam vaśe sarvam tridive yat pratiṣṭhitam,
Māteva putrān rakṣasva śrīśca prajān ca vidhehi na iti.

All that exists in all the three worlds is under the governance of Prāṇa. O Prāṇa, (please) protect us, your children as mother and grant us the (real) wealth and wisdom.

This is the most comprehensive definition of Prāṇa found in Upaniṣads and Yoga lore. Definitions found in other Upaniṣads describe only limited aspects of Prāṇa. For example that which gives us the basic stuff of Prāṇamaya Kośa is also called Prāṇa. Prāṇa is also used in the limited sense of breath or just inhalation.

प्राणं देवा अनु प्राणन्ति । मनुष्याः पशवश्च ये ।

प्राणो हि भूतानामायुः । तस्मात्सर्वायुषमुच्यते ॥ (तैत्ति.उ.२.३.१)

Prāṇam devā anu prāṇanti, Manuṣyāḥ paśavaśca ye.

Prāṇo hi bhūtānāmāyuh, Tasmātsarvāyūṣamucyate.

Taittirīya Upaniṣad (Brahmānanda Valli) says : gods breathe Prāṇa; men and animal also do that.

Prāṇa in other words is called life (आयु). This is in all beings.

Modern Science has found that the basic fabric of this entire physical world is nothing but Energy. Matter is also 'bottled up' energy, as described.

Energy Spectrum

Energy is featured by frequency and the associated amplitude. The relation is described below :

$$\lambda = c/\delta$$

Where λ is the wavelength and δ is the frequency, the relation between energy E and the frequency λ is given by :

$$E = h\delta$$

Where h is Plank's constant and c is the velocity of light.

The electro-magnetic spectrum of energy is shown below, which clearly delineates various realms starting with matter at one end of the spectrum and field at the other end.

Decreasing wavelength λ

Fields	Radio Waves	Infra Red	Light	Ultra Violet	X rays	Cosmic Rays	Matter Particles
		Increasing frequency					δ
		1. Long waves					
		2. Medium waves					
		3. Short waves					

Electro-magnetic Spectrum Manifestation of Energy

The region of light is almost at the centre of the entire electro-magnetic spectrum. The behaviour of light as waves and as corpuscles is revealed by interference experiments and photo-electric effects. Thus, the dual nature of light (wave or matter) is well-established. As the frequency increases, we move through the regions of ultra-violet, X-rays, Cosmic rays etc. and the matter itself. **Energy is directly proportional to frequency and hence, energy is packed up into lesser and lesser space until it gains 'matter-ness'.**

On the other sides of light (lower frequency regions), are the regions of Infra-red (heat) and Radio waves leading to fields with extremely low frequencies and very high amplitudes. The magnetic and electrostatic fields are some examples.

Energy, we have thus seen, is the very basis of this physical universe. Prāṇa on the other hand, is the basic fabric

of the entire creation. Thus, 'Energy' is the grossest manifestation of Prāṇa and is at one end of the spectrum of creation. Grossest because, it is having the least freedom, indicated by Uncertainty Principle, there is total inertia. We even venture to say that there is no life, no Prāṇa. Drawing similarity, from the energy spectrum, we present a spectrum of Prāṇa.

In the vegetable kingdom, the manifestation of life is in the form of reproduction as a self-actualisation process, is quite explicit. This increasing freedom to move, to act and to change by itself, is the difference between Energy (the basic 'stuff' of the physical universes) and Prāṇa in subtler manifestations (at other levels of existence: vegetable, animal, human etc.). **Greater the subtlety, higher will be the freedom.**

Mineral World	Vegetable Kingdom	Animal Species	Human Beings	Superhuman Regions
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Spectrum of Prāṇa

New dimensions of freedom emerge in Prāṇic manifestations while we move from mineral world to vegetable kingdom and to animal species. (where sleep, walking and running, apart from eating and procreation as instinctive actions have emerged as special facets). The common features between the animal species and human beings are brought out effectively in the following verse :

आहारनिद्राभयमैथुनं च सामान्यमेतत् पशुभिर्नराणाम् ।

बुद्धिर्हि तेषां अधिको विशेषो बुद्धिर्विहीनाः पशुभिः समानाः ॥ (भृवृहरि नीति शतकम्)

Āhāranidrābhayamaithunam ca
sāmānyametāt paśubhirnarāṇām,
Budhirhi teṣām adhiko viśeṣo
buddhirvihīnāḥ paśubhiḥ samānāḥ.

Hunger, sleep, fear and procreation are instincts which are common to both animals and human beings. The power of analysis and discrimination or the faculty of intelligence

are the speciality in man. And without that, he is equivalent to an animal.

This new facet of Prāṇa called citta चित्त or mind is a very subtle manifestation of Prāṇa. Just as classical mechanics is featured by single cause-effect relationship and by determinism, instinctive actions in the animal species are deterministic. Probability theory has to be used. The degree of freedom is more. Similarly, in the region of mind, there is tremendous freedom. It can move in one direction (single solution), in many directions (creative solution) and on the other extreme it can just be “quiet” of the non-thinkers. We, as human beings, all possess these three degrees of freedom at the action level.

In the words of commentator Śaṅkara this is :

कर्तुमकर्तुमन्यथा वा कर्तुं शक्यम् । (ब्रह्मसूत्र भाष्य : १.२.२)

Kartum akartum anyathā vā kartum śakyam.

To do, not to do, or to do differently, is the freedom we all possess.

By using this freedom, a human being can start evolving and growing faster than ever before. A normal human being will then become a great man and a superman. At these superhuman levels of manifestation of the Prāṇa, bondage of the body in the form of limitations of food and thirst is first overcome. The bondage of gravitation is next released. As the mind and emotions get purified on further growth, the bondage of desires and unsteadiness of mind is broken. Clear vision dawns and dominates. All actions go on in tune with the cosmic laws which govern the entire creation. Associated with this increased freedom are the higher capacities, power and bliss. In the subtlest form Prāṇa is featured by maximum bliss and almost with no apparent, explicit activities. At the source of this is a state of मौन (mauna) 'Silence' also called

Levels of Consciousness (Taitt. Up : 2.8.1-4)

Levels of Consciousness LOKĀḤ	UNIT OF ĀNANDA
1. Manuṣya Lokaḥ (Human level)	1
2. Manuṣya-Gandharva lokaḥ	10 ²
3. Deva-Gandharva lokaḥ (Godly Super Beings)	10 ⁴
4. Pitṛṇām-ciralokaḥ (Abode of the fore-fathers)	10 ⁶
5. Ājānājāna deva lokaḥ	10 ⁸
6. Karma deva lokaḥ (Work-based gods)	10 ¹⁰
7. Deva lokaḥ (gods)	10 ¹²
8. Indra lokaḥ (Abode of the King of gods)	10 ¹⁴
9. Bṛhaspati lokaḥ (Preceptor of Indra)	10 ¹⁶
10. Prajāpati lokaḥ (The Lord of creatures)	10 ¹⁸
11. Brahma lokaḥ (Abode of the Creator)	10 ²⁰

pure consciousness with least inertia. This is the causal state of Prāṇa, the original, subtle end of the Prāṇic Spectrum. The grossest end of the spectrum is matter with least consciousness.

The different superhuman levels are designated by different names possessing higher powers and increasing quantum of bliss आनन्द (Ānanda). These different states are called लोकाः (Lokāḥ). The entities who live in these stratas of creation as higher manifestation of Prāṇa possess newer and higher degrees of freedom and levels of bliss as described in Taittirīya Upaniṣad II (2.8.1-4).

This table shows the capacities or degrees of freedom which Prāṇa acquire in the ladder of growth through these lokas.

Summarised below are the different dimensions of manifestation of Prāṇa :

Prāṇa and the Manifests

Mineral world :	Least Prāṇa (consciousness) Maximum inertia - 'matter-ness'.
Vegetable kingdom :	Reproduction, inner activity; no locomotion.
Animal species :	Locomotion, instinctive actions triggered by thirst, hunger, fear and procreation.
Human beings :	Action governed by discrimination bound by laws of physical body (consciousness and inertia in a balance).
Gandharva & Pitṛ lokāḥ :	Freedom from hunger, thirst and Pitṛ lokāḥ gravitation; vital (ethereal) body but bound by contoural limitations.
Deva Lokāḥ :	Free to choose shape and grossness of body at will. Can move through entire strata from vegetable level to Deva loka—eternal youth. Bound by desires, emotional upsurges, selfishness and fear.

Bṛhaspati & Prajāpati lokah : Sheath of wisdom, free from all individual desires and selfishness; total knowledge working in tune with the cosmic laws.

Brahma lokah : The causal state of the whole creation. Prāṇa possessing the highest degree of subtlety, flexibility, capable of traversing the entire strata of creation. No individualization.

(Consciousness–highest - Inertia least)
The level of almost total Silence manifested Absolute, maximum Bliss, Knowledge and Freedom, Perfection, Reality for all practical purposes.

Para Brahman Paramātman or Mokṣa Sṭhiti : All pervasive Reality beyond space, time and causation - the source of Prāṇa.

Thus, we have seen the following aspects of Prāṇa :

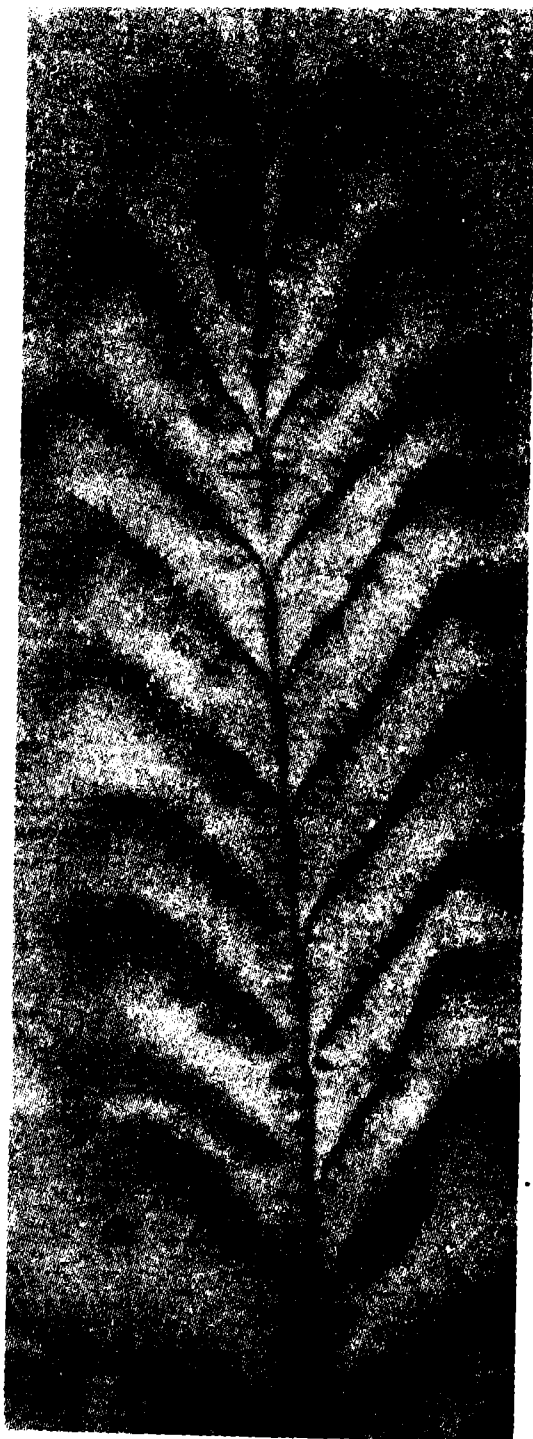
1. Prāṇa a self-manifesting life entity, capable of changing itself, is the basic fabric of this entire creation.
2. Energy is at the base of all material world and that is the grossest end of Prāṇic spectrum (manifestation).
3. Prāṇa manifests better in the plant kingdom and a new dimension of freedom emerges in each of its higher subtle levels: animal species, human spectrum, Gandharva and Pitṛ Lokah, Deva Lokah, Bṛhaspati and Prajāpati Lokah and Brahma Lokah.
4. There is a continuity between different stratas of prāṇic manifestations and study of the transitional manifests helps to understand the laws of Prāṇa at different levels.
5. The speeding up and grossification of Prāṇa is called creation; the slowing down and expansion of Prāṇa are the essential features of growth towards its source. Reality.

6. The process of grossification and growth is completely reversible and goes on eternally in a cyclic way.
7. The role of human beings would be to unravel the laws of Prāṇa and move on the ladder of growth for a life of fulfillment through manifestation of Prāṇa to greater and greater degrees.
8. The highest manifestation is the state of total freedom, bliss, knowledge and Śakti at the level of Brahmā and is in tune with the cosmic laws.
9. The source of Prāṇa is verily the all pervading, unmanifested, ever existing Brahman, also called Ātman. It is the Mokṣa s̥hiti from where **Prāṇa, which essentially is a movement**, takes birth. From it emerges all creation.



*Kirlian photograph
of the
Palm of a Normal Man*

**THE SEEN AND THE UNSEEN
DIMENSIONS OF HUMAN BEINGS**



Kirlian Photo of a Leaf

THE SEEN AND THE UNSEEN DIMENSIONS OF HUMAN BEINGS

Subsequent to the discovery by Kirlian in 1961 in Russia, the **Kirlian photography** drew many researchers from all over the world to examine its validity and usefulness. As per Kirlian, the new type of photography, hinted at an extra-material existence of 'life' or 'mind' or 'consciousness' as revealed through his photographs of leaves, plants, stems, roots, coins, stones, fingers, palms, etc. to name a few. A sort of light or glow, bigger than the object would appear around the object that was photographed. This was termed as 'aura'. Thousands of his photographs had revealed this new phenomenon of nature.

A professor brought to Kirlian two leaves which looked exactly same to the naked eye and asked him to photograph them. Kirlian soon went in; for the first leaf he got the aura, bigger than the leaf, as usual. However, he could not get any photo of the second. The photographic films was completely blank in spite of his repeated trials. He could not solve the mystery. Exasperated, he came to the professor who, on hearing the facts was excited. He told Kirlian that one leaf was healthy and the other was about to die from a tree. The professor congratulated Kirlian on his discovery.

Many research institutes built Kirlian units. In the late sixties and early seventies, there was a big boom in Kirlian research. A few universities in the USA started departments for pursuing the research with scientifically acceptable rigours. This could happen only after the demonstration of the phantom leaf effect at the Stanford University in the 1960's.

Kirlian photo was taken of a leaf and was repeated after cutting off $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and more than a half. The photos remained almost unchanged in all the cases from 1 to 4 but vanished completely in the fifth case.

This interesting phenomenon was tested by many other investigators. To accept something 'non-material' was not the lot of the hard-core scientists. Rigorous controlled

experimentation, therefore, started in full swing in the UK, as well as, in the USA. The published material in the early seventies shows a maze of controversies where the main contention was that Kirlian photographs could as well be just artifacts and cannot stand the test of repeatability. The factors which influence the photos are too many and humidity can be one of the major factors which produce such artifacts. One of the researchers, in fact, showed that he could not get any Kirlian photos if the sweat was removed by a good wash of the palms.

Standardisation of techniques which would stand the rigours of repeated testing to produce essential data for scientific research could not be established. Consequently, by late seventies, the boom subsided and Kirlian research was almost stopped.

It was on March 1, 1987 that Dr. Douglas Dean, a pioneer in Kirlian research in USA, presented his continuing findings with Kirlian Photography as applied to stress effects, phantom effects, Gellar effects, changes during last hours of life, natural childbirth etc. at the International Conference on Energy Medicine. He claimed that all the photographs were taken from surfaces which were moisture-free.

The 1987 International Conference of Energy Medicine held at Madras, organized by the Institute of Magneto-biology, brought to light that the so-called Kirlian photos were none other than the result of the well-known age-old CORONA discharges from these surfaces.

It appears that the interest has again been revived to understand the phenomenon and many other researchers have started working in this field again since 1985.

Corona Field Interactions

Dr Ramesh S. Chauhan and his team have been the pioneers in this field to bring out the fact that the corona discharges vary from substance to substance, person to person

and in the same person depending on his mental and physical state. Many of the variables associated with Kirlian experiments - thumb pressure, moisture, temperature, etc, which cause variations in the photographs, (leading to doubts that these photos may merely be artifacts), have all been taken into account and some degree of standardisation has been achieved. Large number of photos taken of cancer patients (with and without hand wash and the rate of recovery) have clearly shown that these photographs can be used for early diagnosis of cancer. The work was the core of a Ph. D. dissertation.

The researchers have now found ways to collect these emanations through sensors and probes directly and feed those signals into computers for analysis and presentation of results. Many of these computer-generated results have started making a new breakthrough in this field, opened by Kirlian nearly two and a half decades ago.

At this time when science itself is in transition and the best of the Nobel Laureates have started entering into new areas of subtlety and sophistication, bio-electrography is becoming more relevant probably more than ever before.

Do these photographs represent 'aura' seen by our yoga masters and ancient seers around the face and head of great people and shown artistically by artists and painters all over the world? Do they have any connection with Prāṇa or mind or Consciousness?

Is it a proof that something beyond exists apart from matter - atoms and molecules in living systems? To what extent can such photographs or computer-generated curves be used for medical diagnosis for understanding Gellar effect or the phenomenon of life or death?

We have to go a long way yet to answer these questions. Science has to start unraveling the mysteries of nature related to life, mind, emotions, intellect, ego, consciousness, etc.

It is interesting to note that the Upaniṣads have something to say about such phenomenon and their relationship with Prāṇa. The Taittirīya and the Chāndogya Upaniṣads present detailed investigations undertaken by studies.

In Taittirīya Upaniṣad the teacher who was guiding the students was Varuṇa - a sage of great renown. Bhṛgu his son was also his student. Bhṛgu was asked to search for Reality thus :

यतो वा इमानि भूतानि जायन्ते । येन जातानि जीवन्ति ।
यत् प्रयन्त्यभिसंविशन्ति । तद् विजिज्ञासस्व । तद् ब्रह्मेति । । तैत्ति. उ. : ३.१.१।

Yato vā imāni bhūtāni jāyante,
Yena jātāni jīvanti,
Yat prayantyaabhisamviśanti,
Tad vijijñāśasva, Tad Brahmeti. (Taitt. U. 3.1.1.)

Find that from where all beings are born, that supports all life and that into which all go back; that is Brahman.

The first answer he got is in tune with what scientists have found today:

अन्नं ब्रह्मेति व्यजानात् । । तैत्ति. उ. : ३.२.१।

Annam Brahmeti vyajānāt. (Taitt. U. 3.2.1.)

Matter (Anna) is verily the Reality (Brahman).

The student is asked to go deeper and unravel the mysteries further thus:

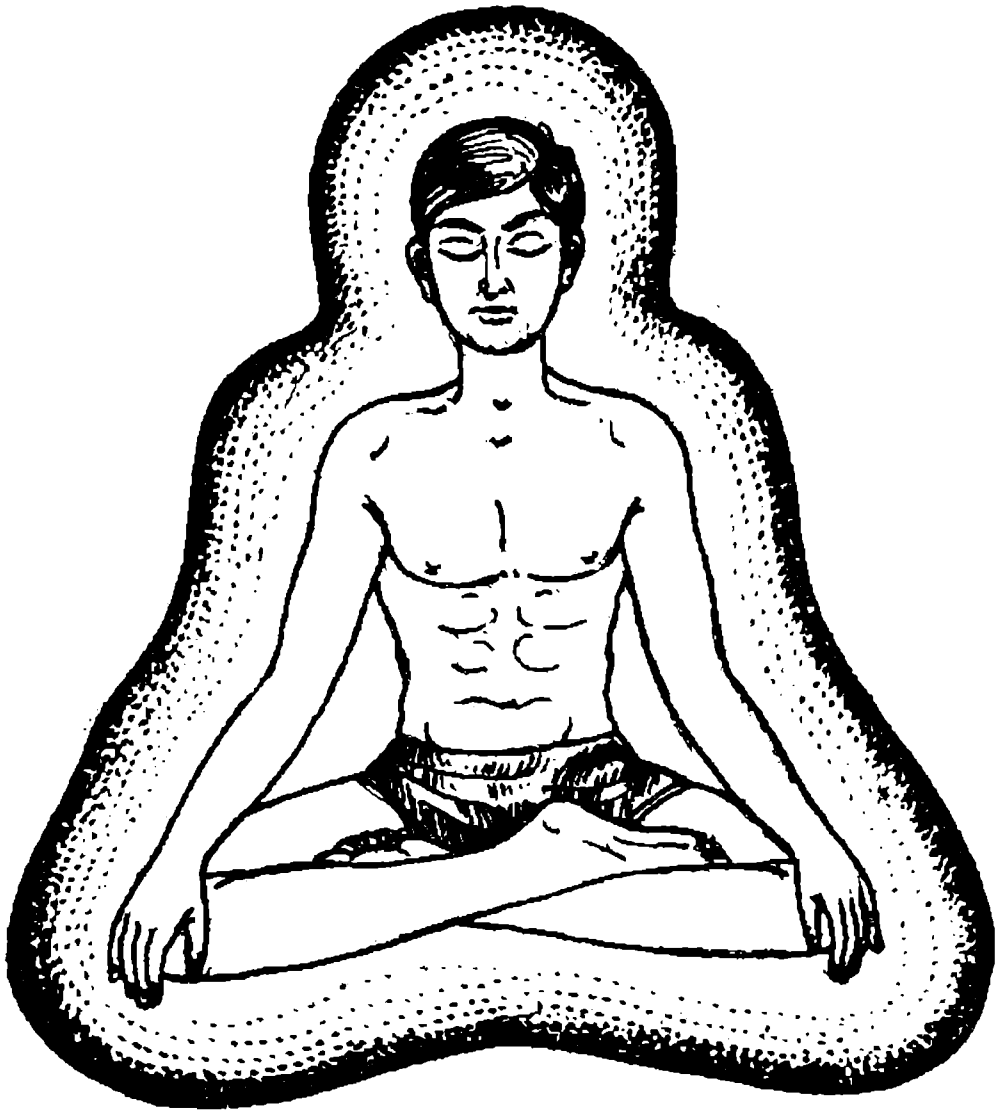
तपसा ब्रह्म विजिज्ञासस्व । तपो ब्रह्मेति । । तैत्ति. उ. ३.२.१।

Tapasā Brahma vijijñāśasva, Tapo Brahmeti. (Taitt. U. 3.2.1.)

Find Brahman through Tapas—experiential and experimental investigations, Tapas itself is Brahman, Reality, can be reached by Tapas and the experience itself is Brahman.

Prāṇamaya Kośa

Now Bhṛgu opens himself up to understand and unravel the mysteries of the life principle Prāṇa enlivening all creations



Prāṇamaya Kośa

as more fundamental than matter.

प्राणो ब्रह्मेति व्यजानात् । । तैत्ति. उ. : ३.३.१.।

Prāṇo Brahmeti vyajānāt. (Taitt. U. 3.3.1.)

He discovered Prāṇa as Reality.

He also unveils the secret of a subtle body which we all possess called प्राणमय कोश Prāṇamaya Kośa which pervades the entire अन्नमय कोश Annamaya Kośa, our material body :

अन्योऽन्तर आत्मा प्राणमयः । तेनैष पूर्णः । । तैत्ति. उ. : २.२.१.।

Anyo'ntara Ātmā Prāṇamayah, Tenaiṣa Pūrṇah.

(Taitt. U. 2.2.1.)

We can find details of the Prāṇic body in Vedic, Yogic and Tāntric literature. A schematic structure of the contour of Prāṇamaya is bigger than the contour of the physical body, the Annamaya Kośa. Traditionally, the effulgent 'aura' depicted round the face and head of great masters, Yogīs and Seers represent a highly developed प्राणमय कोश Prāṇamaya Kośa. While the normal eye cannot see this Prāṇic body, an insight developed by systematic Yogic training can clearly see the Prāṇic body. Many advanced Sādhakas in the field of Yoga do get this capacity which enables them to recognize the aura and this capacity is termed as 'Auric Vision'. Considering several facets of Bio-electrography and Kirlian photography, it looks as if we are heading towards unraveling the mysteries of this Prāṇic Body and its structure. More anatomical details of the Prāṇic body, available in our literature, will be presented and made use of, in the later chapters.

The dynamics or physiology of Prāṇa describes various functions in the Prāṇamaya Kośa. Their relation to the functions in the gross physical body (Annamaya Kośa) about which Upaniṣads talk in great depth and detail will now be presented.

Varīṣṭha and Pañca Prāṇas पञ्च प्राणाः

Prāṇa, the basic life fabric of the entire creation manifests itself in Prāṇamaya Kośa in five major forms :

प्राणोऽपानः समानश्चोदानो व्यानश्च पञ्चमः ॥ शिव सं. ३.४.॥

Prāṇa, Apāna, Samāna, Udāna and the fifth Vyāna.

(Śiva S.3.4)

हृदि प्राणो गुदेऽपानः समानो नाभिमण्डले ।

उदानः कण्ठदेशस्थो व्यानः सर्वशरीरगः ॥ शिव सं, ३.७॥

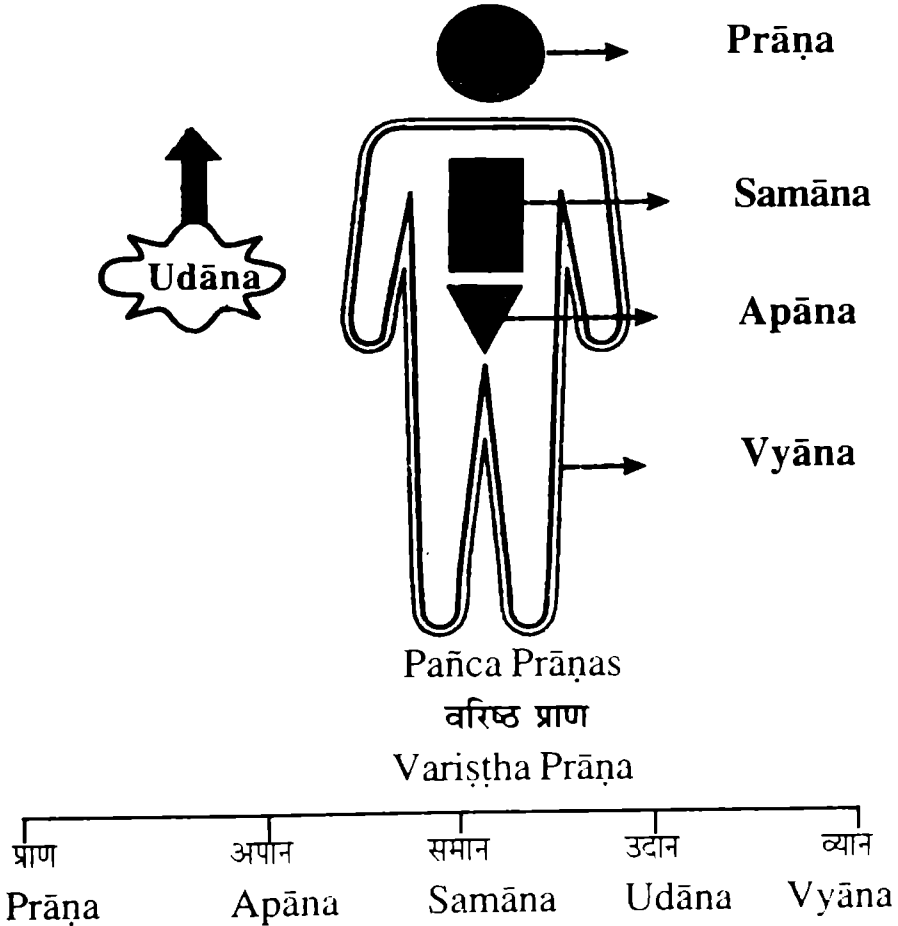
Hṛdi prāṇo gude'pānaḥ samāno nābhimaṇḍale,

Udānaḥ kaṅṭhadeśastho vyānaḥ sarvaśarīragaḥ.

(Śiva S.3.7)

The seat of the Prāṇa is the chest; of Apāna - the anus; of Samāna - the region above the navel; of the Udāna - the throat; while the Vyāna moves throughout the body.

Since the same term Prāṇa is used at two levels of manifestation, we use the term वरिष्ठ प्राण Variṣṭha Prāṇa (the main Prāṇa) for the basic life fabric.



The term प्राण Prāṇa in Samskr̥ta means a continuous movement which characterises all these five Prāṇas.

We use the definitions of these terms directly from Praśnopaniṣad प्रश्नोपनिषद्

Prāṇa, Apāna and Samāna

पायूपस्थेऽपानं चक्षुःश्रोत्रे मुखनासिकाभ्यां

प्राणः स्वयं प्रातिष्ठते मध्ये तु समानः ।

एष ह्येतद्दधुतमन्नं समं नयति तस्मादेताः सप्तार्चिषो भवन्ति ॥प्रश्न.उ.: ३.५.।

Pāyūpasthe'pānam cakṣuḥśrotre mukhanāsikābhyām
prāṇaḥ svayam prātiṣṭhate madhye tu Samānaḥ,
Eṣa hyetaddhutamannam sammam nayati
tasmādetāḥ saptārciṣo bhavanti. (Praśna. U. : 3.5.)

Apāna works downwards and is responsible for excretion, urination and seminal discharges.

Prāṇa has for its operation, the region of the eyes, the ears face and the nose governing the senses of seeing, hearing, tasting, smelling and most important, breathing.

Samāna functioning in the abdominal regions is that which maintains balance between Prāṇa and Apāna. The digestion is controlled by Samāna.

Thus, the sevenfold activities of the body physiology is carried out by these three aspects of Variṣṭha Prāṇa - Prāṇa, Apāna and Samāna.

Vyāna

अत्रैतदेकशतं नाडीनां तासां शतं शतमेकैकस्यां

द्वासप्ततिर्द्वासप्ततिः प्रतिशाखानाडीसहस्राणि

भवन्त्यासु व्यानश्चरति । । प्रश्न. उ. : ३.६.।

Atraitadekaśatam nādīnām tāsām śatam
śatamekaikasyām dvāsaptatirdvāsaptatiḥ pratiśākhā-
nādīsahastrāṇi bhavantiāsu Vyānaścarati. (Praśna. . U. : 3.6.)

There are a hundred and one main Nāḍīs (channels or tubes for Prāṇa) in the Prāṇamaya Kośa. In each one of these there are 100 branches which have 72,000 nāḍīs each. And through all these flows the Vyāna. Vyāna governs the sense of touch and the flow of impulses in the nerves.

Udāna

अथैकयोर्ध्व उदानः पुण्येन पुण्यं लोकं नयति
पापेन पापमुभाभ्यामेव मनुष्यलोकम् । ।प्रश्न. उ. : ३.७।

Athaikayordhva udānaḥ puṇyena puṇyam lokam nayati
pāpena pāpamubhābhyāmeva manuṣyalokam.
(Prašna.U. : 3.7.)

And that which flows upwards is Udāna - which carries the virtuous to the virtuous world and the sinful to the sinful world and those having both, to the world of human beings.

Udāna is that part of Variṣṭha prāṇa which is responsible for all physiological functions in the upward direction like antiperistalsis, belching and vomiting. In the Prāṇamaya Kośa, Udāna flows through the central main Nāḍī Suṣumanā (which is popularly known as Kuṇḍalinī Śakti). Normally Suṣumnā is closed in most human beings. In all, Udāna carries at the time of physical death, the subtle bodies जीवात्मा (Jīvātmā or the individual soul) into either the स्वर्ग Svarga (heaven) or Naraka, नरक (hell) depending upon whether virtuous deeds or sinful acts dominated the life of such individual. When these 'imbalances' are overcome and a balance between the good and the bad is struck, the individual takes birth in this world of human beings. Udāna is the carrier.

तेजो ह वा उदानः । । प्र. उ. : ३.९।

Tejo ha vā udānaḥ. (Prašna. Up. : 3.9.)

Udāna is featured by brightness and lightness.)

These reduce at the time of death and return at the time of birth again. In Praśnopaniṣad it is said:

उदानस्तस्मादुपशान्ततेजाः । पुनर्भवमिन्द्रियैर्मनसि सम्पद्यमानैः ॥ प्र. उ. : ३.९।

Udānastasmādupaśāntatejāḥ,

Punarbhavamindriyairmanasi sampadyamānaiḥ.

(Prašna. U. : 3.9.)

Prāṇa, Apāna, Samāna, Udāna and Vyāna are thus the five functional manifestation of Variṣṭha Prāṇa.

यथा सम्राडेवाधिकृतान् विनियुङ्क्ते ।

एतान् ग्रामानेतान् ग्रामानधितिष्ठस्वेत्येवमेवैष

प्राण इतरान् प्राणान् पृथक् पृथगेव संनिधत्ते । ।प्रश्न.उ.३.४.।

Yathā samrāḍevādhikṛtān viniyuṅkte,

Etān grāmānetān grāmānadhitiṣṭha -

. svetyevamevaiṣa prāṇa itartān prāṇān

prṭhak prṭhageva sannidhatte. (Prašna.Up.3.4.)

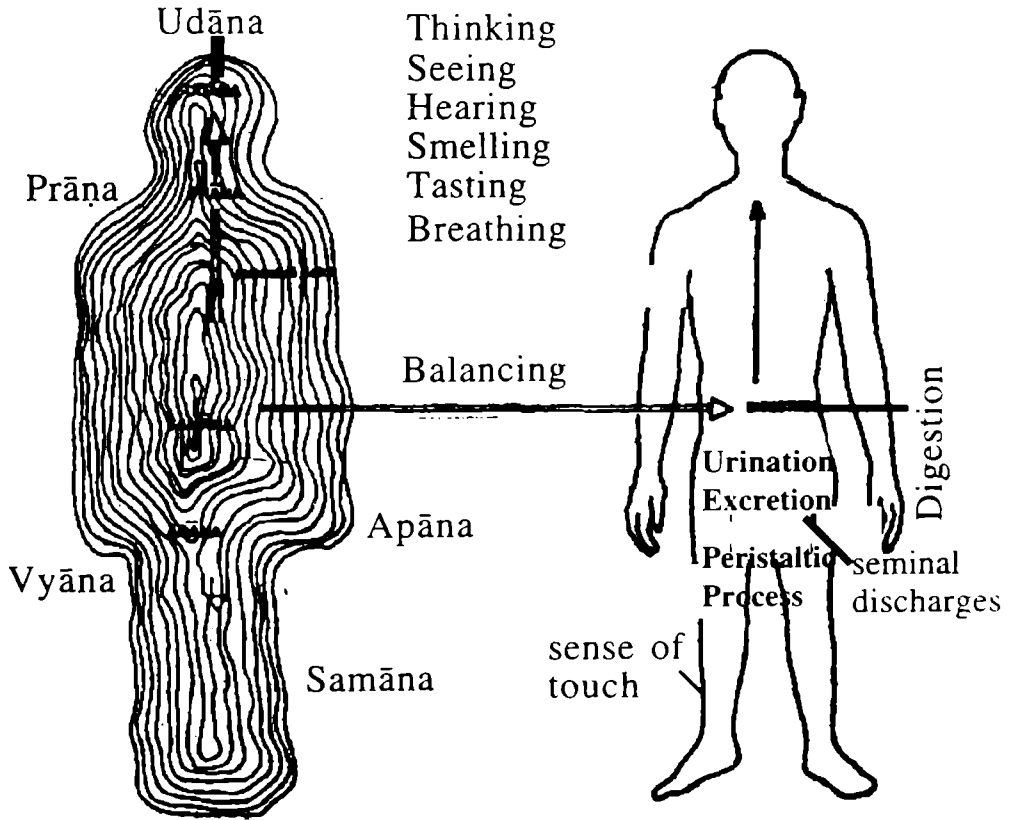
Like an emperor allots and empowers a chief to look after different villages, the Prāṇa allots different regions and functions to its five main subordinates (Prāṇa, Apāna, Samāna, Udāna and Vyāna).

These five functional manifestations of Variṣṭha Prāṇa are not structurally different from one another but operate in differently regions differently like the lighting, heating and magnetic effects of the same electrical energy in the physical universe. They are called पञ्च प्राणाः Pañca Prāṇas - the five main branches of Prāṇa. Just as electricity is the unseen basis for light and heat, prāṇas are at the base of all physiological and psychological functions in our gross body called अन्नमय कोश Annamaya Kośa.

उपप्राणाः Upa-Prāṇāḥ

Pañca Prāṇas exist in the Prāṇic body and manifest themselves as many physiological functions in our physical body. Upa-Prāṇas are supporting subsidiaries of Prāṇas. The five up-prāṇas are given below :

नाग	Nāga	: Relieves pressure on the abdomen by belching.
कूर्म	Kūrma	: Controls eyelids and size of Iris.
कृकल	Kṛkala	: Controls sneezing and cough reflexes.
देवदत्त	Devadatta	Controls yawning.
धनञ्जय	Dhanañjaya:	Produces phlegm and nourishes; last to leave the body.



Physiology of Prāṇic and physical bodies

Prāṇāyāma प्राणायाम

प्राणस्य आयामः प्राणायामः ॥

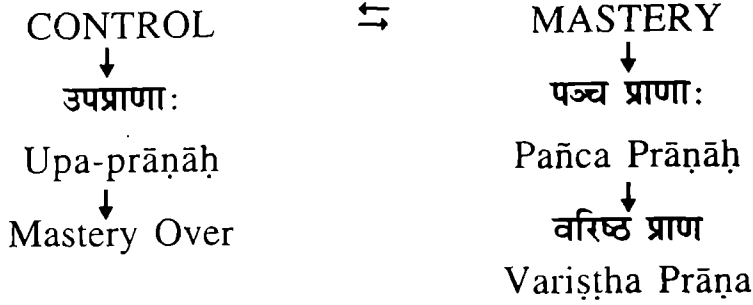
Prāṇasya āyamaḥ prāṇāyāmaḥ.

Mastery over Prāṇa is Prāṇāyāma.

A systematic process by which we gain control and mastery over Prāṇa is what is referred to as Prāṇāyāma. The

mastery over the Variṣṭha Prāṇa can be achieved by gaining mastery on any one or more all of the Pañca Prāṇas or 'Upa-Prāṇas.

Concept of prāṇāyāma



This mastery over Variṣṭha Prāṇa would involve a capacity to move along the spectrum of Prāṇa by increasing or decreasing the frequency of Prāṇa Spanda प्राण स्पंद. Freedom increases as mastery emerges - a capacity, a freedom to grossify to lower levels than the human level, or to move to great superhuman heights.

Included in this broad definition of Prāṇāyāma is a wide spectrum of Yoga techniques and practices which are given different names. They are summarised as under in the table :

Prāṇāyāma

Pañca Prāṇas	Upa-prāṇas	Name of Yoga Practice
प्राण Prāṇa	देवदत्त Devadatta	Conventional Prāṇāyāma
	धनञ्जय Dhanañjaya	
	कूर्म Kūrma	Trāṭaka
समान Samāna	कृकल Kṛkala	Kriyās, Bandhas
	नाग Nāga	
अपान Apāna	Kriyā Yoga, Bandhas
व्यान Vyāna	Śavāsana, Yoganidrā & Mudrā
उदान Udāna	Kuṇḍalinī Yoga

Control over Prāṇas including two Upa-Prāṇas - Devadatta and Dhanañjaya - comes under the usual realm of Prāṇāyāma in which we control breathing. The set of practices in which we gain mastery over Samāna comes under the heading Kriyās (including Ṣaṭ Kriyās of Haṭha Yoga) and Bandhas. Uḍḍīyāna Bandha controls the digestive forces. Gaining mastery over Apāna and thereby on Variṣṭha Prāṇa is accomplished in Kriyā Yoga by learning to pull up Apāna and to offer it as oblation to Prāṇa. Mūla Bandha is one of the bandhas used for this purpose.

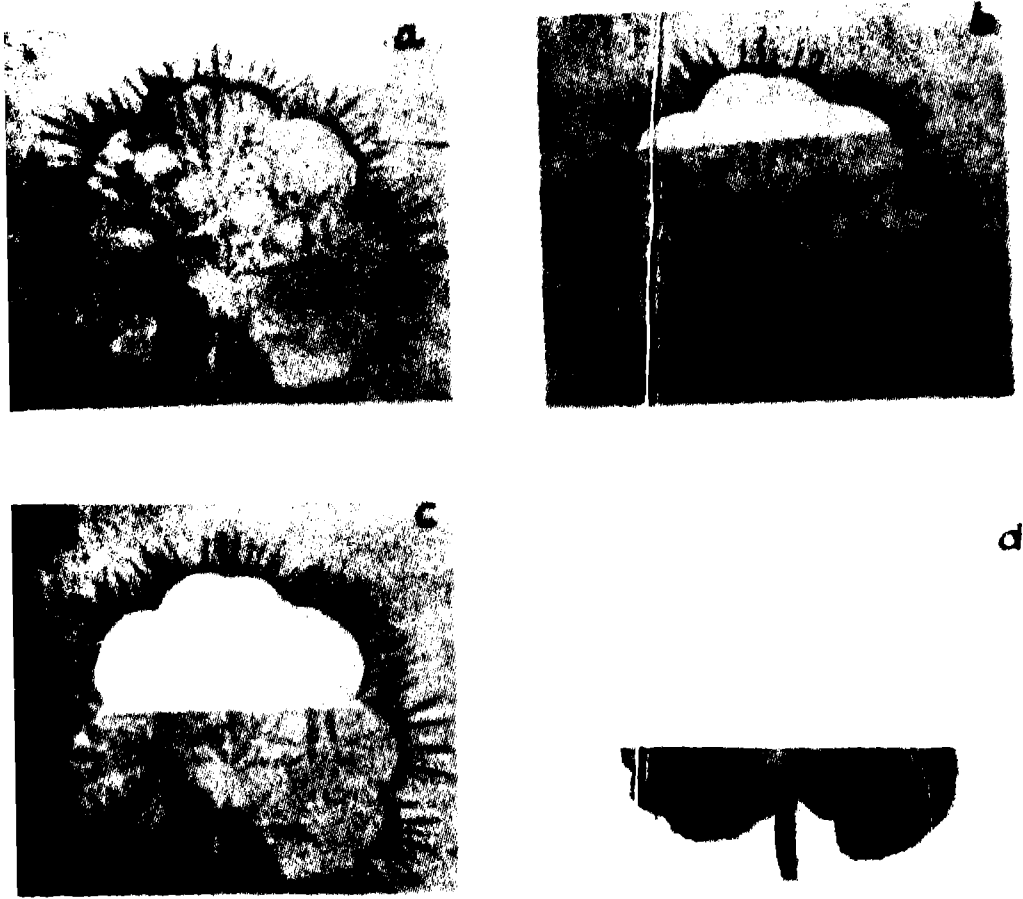
Kriyā Yoga is used extensively by Yuktेशvar Giri tradition in Vārāṇasi. This has been spread widely by Swami Yogananda who established the Self-Realisation Fellowship in Los Angeles, USA, and Yogoda Satsaṅg in Ranchi, Jharkhanda.

Gaining mastery over the sense of touch, Vyāna and thereby of Variṣṭha Prāṇa, is accomplished by the yoga techniques of deep relaxation, śavāsana and yoga nidrā. Mudrās also help in invoking the Vyāna and bringing control over its movements.

Udāna and its control are the subject matter of what is popularly known as Kuṇḍalinī Yoga.

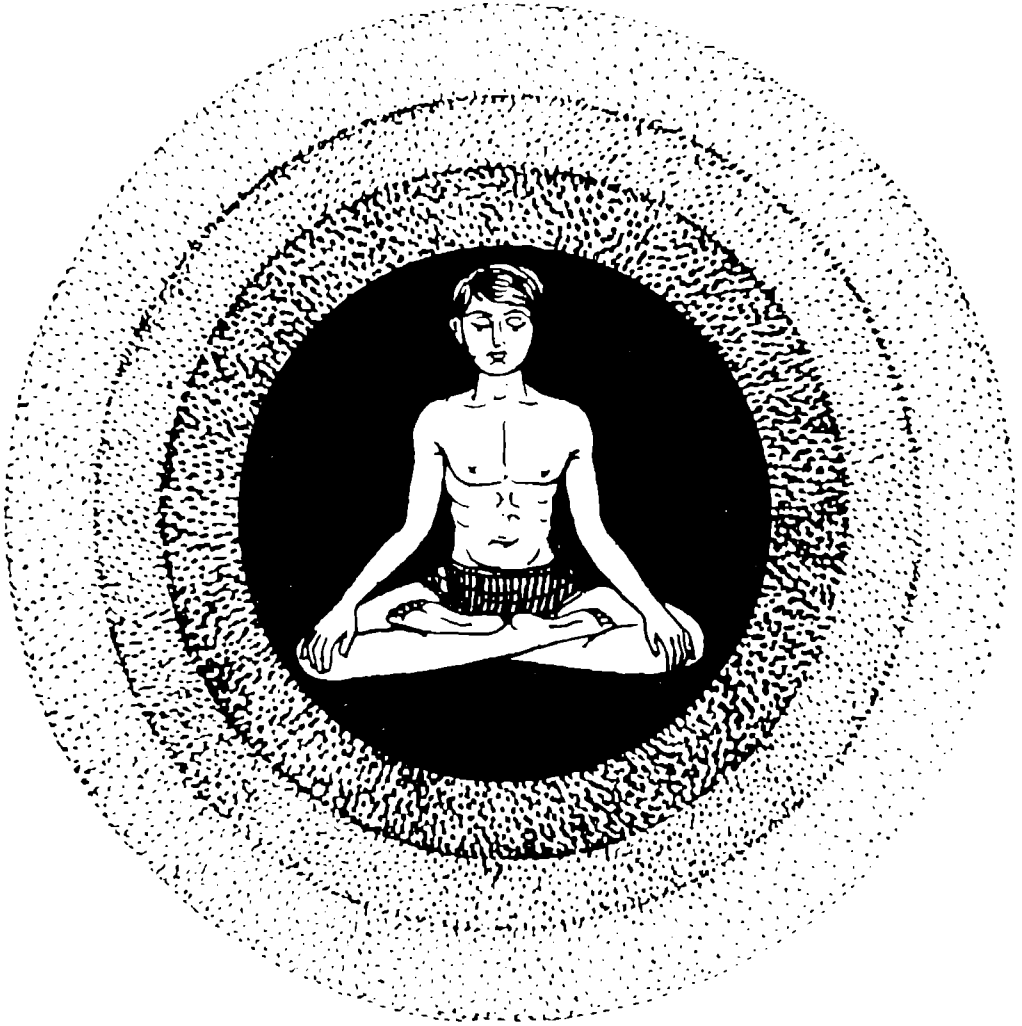
It is evident from the above description that Prāṇāyāma, in its most generalised understanding covers a wide spectrum of Yoga techniques. However, the conventional and popular definition of Prāṇāyāma **is to gain mastery over Variṣṭha Prāṇa through Prāṇa by controlling breath.** The main bulk of the rest of this book presents this aspect of Prāṇāyāma while brief mention and description of other aspects of Prāṇāyāma is also included for a better comprehension.





Schematic diagram to describe the phantom leaf effect

BRIDGING THE BODY AND MIND



Pañca Kośas - Fivefold existence of human beings

BRIDGING THE BODY AND MIND

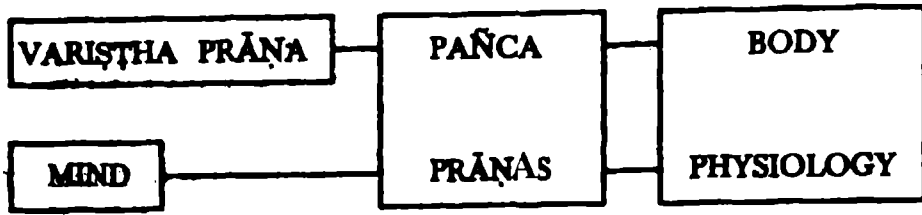
The body-mind problem has been the most intriguing one for centuries. How does the unseen subtle mind connect itself with the gross physical body?

Link between the Subtle and the Gross

For a modern man in this hi-tech era where wireless transmission is a common place event, movement of a Sputnik or Robot or a Space craft on the moon through remote control is no more intriguing as it was a few decades ago.

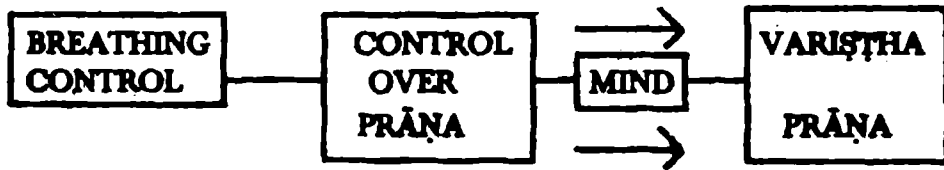
The Upaniṣadic seers and Yoga masters had the knowledge as to how the mind works through Prāṇa that controls and governs various functions in the physical body. Neuro-biologists have found certain areas in the brain, by the triggering of which (by electric signals through remote control) different emotions like laughing, anger, pace, etc., can be invoked. Stimulating hypothalamus can set up a series of reactions throughout the body to prepare the body for a 'fight or flight' reaction. Unseen magnetic forces can move physical objects. Similarly the mind changes the Prāṇic distribution and thereby affects various functions in the gross physical body. **Mind and Prāṇa, structurally or basically, are not different from each other.** As seen earlier, Prāṇa manifests itself as mind, intellect and ego as it gets subtler. Hence, there is an intimate connection between mind and Pañca Prāṇas. When mind is disturbed, the Prāṇa also gets disturbed which shows up as breathing haphazardness or imbalances.

The imbalance in breathing disturb the physiological functions and become pathological. Modern disease as asthma, hypertension, irritable bowel syndrome (IBS), migraine, hyperacidity etc., are the results of such imbalances. Such diseases disturb the Pañca Prāṇas, mind and Prāṇa in turn, and the feedbacks continue aggravating the disease status. This vicious circle can be cut by either pharamacological interventions or Yoga Techniques.



Body-Mind connections

Prāṇāyāma is the science of systematic harnessing of the Pañca Prāṇas, mind and thus the Variṣṭha Prāṇa. This science not only offers an answer to the intriguing body-mind problems, but also helps us to understand and gain mastery over these inner Prāṇic forces. As mentioned, Prāṇāyāma in its most comprehensive definition covers a wide spectrum of Yoga techniques including Kuṇḍalinī Yoga and Kriyā Yoga. However, the conventional Prāṇāyāma harnesses the breath to gain control over Prāṇa and thereby bring mastery over mind and Variṣṭha Prāṇa.



Conventional Prāṇāyāma

Patañjali in his Sūtra defines Prāṇāyāma thus :

तस्मिन्सति श्वासप्रश्वासयोर्गतिविच्छेदः प्राणायामः । (प.यो.सू. : २.४९)

Tasminsati Śvāsapraśvāsayorgativicchedaḥ Prāṇāyāmaḥ.

Prāṇāyāma is that by which the movement of breath during inhalation and exhalation is controlled.

Thus, to understand the traditional Prāṇāyāma, when we seek to gain mastery over breath, we should understand the structure and functioning of our breathing apparatus - the respiratory system.

Bridging the Voluntary with the Involuntary

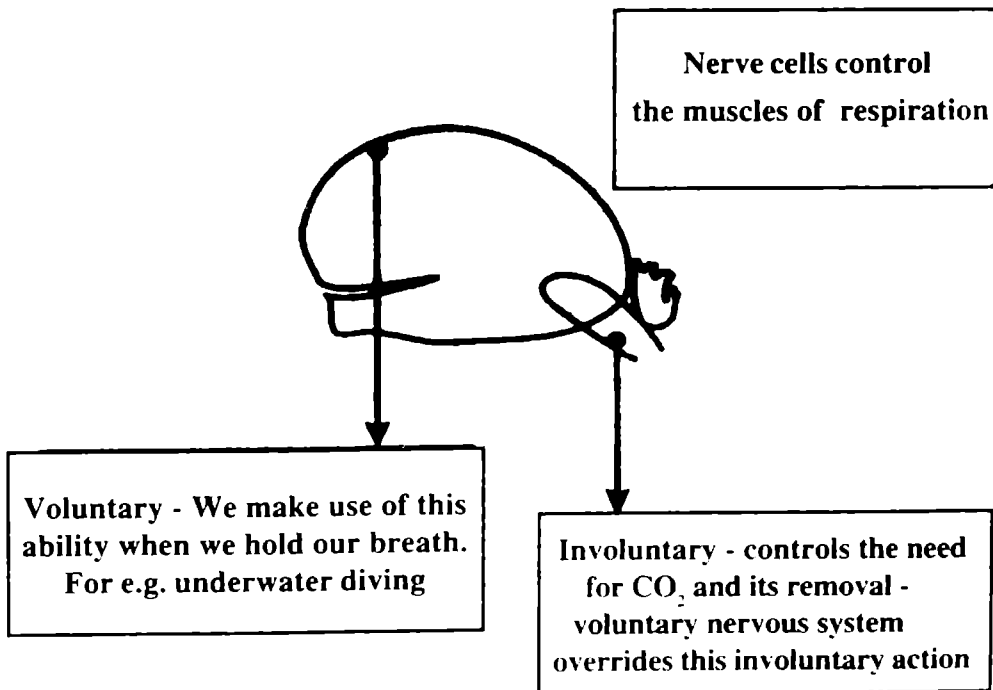
Our respiratory system has the special feature, that it is both voluntary and involuntary. This therefore, is the right

system by which we can move from the voluntary (visible, easy, conscious control of body physiology) to the involuntary system (unseen realms of bodily functions upon which we have very little control); from the known to the unknown. How does voluntary functions bring about changes in involuntary functions is well-understood today through brain researches.

The higher centres of brain are the instruments through which Variṣṭha Prāṇa, mind and prāṇa work. As far as the physical body is concerned, the area of the brain centres in which highest creativity and intelligence are seen governs the lower brain, as well as the total body physiology. Normally these higher centres work through the mid-brain but have the control even to change the functions of the lower brain.

The 'Hypothalamus' which is situated above the mid-brain is the master of the lower brain, governing and controlling all autonomic functions in the body. It works through two of its subordinates : the Autonomic Nervous System and the Endocrine System to change the entire body physiology. As

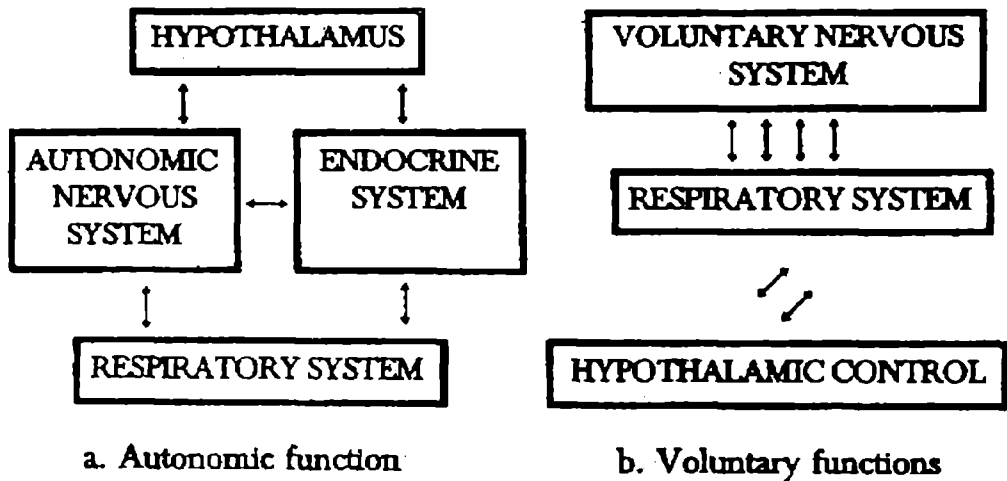
NEURAL CONTROL OF RESPIRATION



our body functions go on automatically because of this master in the brain, the 'Hypothalamus'. Normal inhalation and exhalation go on automatically, governed by this autonomic control. The lower brain houses this control.

If the involuntary functions go on like a clockwork set up through the master 'Hypothalamus', the higher centres of the brain govern the voluntary functions through the Voluntary Nervous System. The connection between this Voluntary Nervous System and 'Hypothalamus' is essentially through the higher centres of the brain and is very feeble in normal human beings. The respiratory system is innately connected by the nerves of this voluntary nervous system too. Hence, we can voluntarily change the breathing rate, pattern, rhythm, etc. by directing our will towards the same, essentially bringing the voluntary nervous system to override the 'Hypothalamic

Autonomic and Voluntary functions of the Respiratory System



Autonomic Control'.

From Voluntary to Involuntary

By systematically regulating the speed and rhythm of breathing through voluntary nervous system, the autonomic functions will also change. The dysfunctions of the respiratory system can thus be corrected. Prāṇāyāma is a process by which this correction is brought about effectively. More important

is to understand the capacities of the higher centres of the brain and harness them to gain mastery over them : the Prāṇa, mind and Variṣṭha Prāṇa which is the aim of Prāṇāyāma. But how does the nervous system control the respiration? This can be understood by reviewing our knowledge of anatomy and physiology of the respiratory system.

The Respiratory System

It is by means of breathing that every cell in the body receives its supply of oxygen and at the same time gets rid of the products of oxidation. Oxygen combined with the carbon and hydrogen of the tissues enables the metabolic process of each individual cell to proceed, with the result that work is executed and waste products in the form of carbon dioxide (CO_2) and water (H_2O) are eliminated. Respiration is a two-fold process whereby the interchange of gases takes place in the tissues called internal respiration and in the lungs known as external respiration. Air is drawn into the lungs during inspiration and expelled from the lungs during expiration. The air enters through the respiratory passages which are enumerated and their anatomical features briefly described here.

Anatomical Features

1. Nose

The nose is divided into two nostrils by a nasal septum. The division is normally unequal. Both the septum and the side walls of the nose are made up of cartilages (semi-bone) in their lower parts and by thin flat bones in their upper parts. Three strips of bones project from the bony side wall of the nose called turbinate bones to form the nasal conchae.

The external opening of the nose (anterior nose) opens into the vestibule of the nose. The inner lining of vestibule continues and it projects downwards. The nasal cavities are lined with highly vascular mucous membranes which continue with those of the pharynx and the para-nasal sinuses. This lining consists of a single layer of cells containing small delicate hair-like projections (cilia). There are a large number

of mucus secreting cells scattered along the nasal mucosa that secrete a thin transparent fluid to keep the surface moist and sticky.

The filaments of the olfactory nerves arise from small receptors scattered in the mucous membrane of the nasal cavity in its upper part. These nerve ends are the points that pick up the sense of smell. Apart from these special sensory nerve endings, there are touch–pain sensitive nerve endings distributed in the nasal lining that help the protective reflex of sneezing.

Functioning of Nose

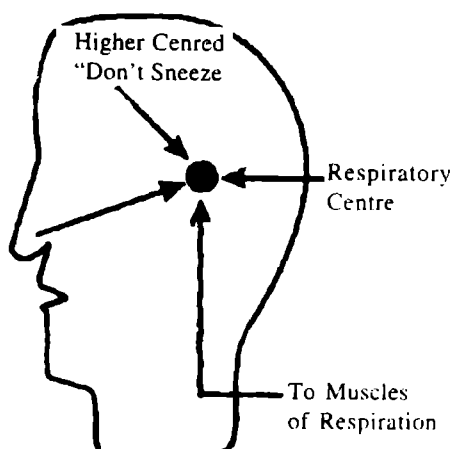
The nose acts like a room air conditioner with four major functions of cleansing, temperature control and humidity control. The extra is smell.

1. **Filtering the inhaled air** : The downward projecting hairs, the crevices of the conchae and the sticky mucus on the wide mucous membrane surface render the air free of big and small pollutants.
2. **Warming up of the air** : Air as it passes through the irregular nasal passage (enough time is provided for temperature control due to length of the passage) gets warmed up to body temperature by exchange of heat across the wide mucosal surface.
3. **Humidifying** : The evaporation of the moisture from the extensive surface of the nasal mucosa humidifies the inhaled air.
4. **Sense of smell** : This is perceived by the end organs in the nasal lining and the electrical activity is carried on through the olfactory nerve.

Sneezing Reflex

This is a protective reflex to expel irritating substances in the air reaching the lungs.

The reflex arc consists of an end organ that receives the message. The afferent nerve carries the information to the

SNEEZE REFLEX

centre. The efferent path carries the information from the centre to the effector organ which carries out the effect. Here, the end organ is the touch sensitive nerve endings (sense organ) distributed in the nasal lining that sends all array of electrical impulses along the sensory nerve (the afferent). Whenever, the inhaled air contains strong irritants, the information is carried to the sneezing centre, a group of nerve cells in the brain stem. From here the message is sent along the motor nerves (the efferent) to all the chest muscles (effector organ) to contract forcibly, to cause a big inhalation followed by forcible co-ordinated contraction of all respiratory muscles to blast out the irritants from the nose and mouth by a burst of exhalation.

Thus, we find that sneezing is an important and necessary protective reflex. Sneezing becomes a problem in persons with hypersensitivity of the nasal lining triggering off the loop even for small non-dangerous irritants.

2. Pharynx

This is a common muscular tube that lies behind the nose and the mouth. The pharynx is guarded by tonsils at the sides, and adenoids at the top. Tonsils and adenoids are collections of white blood cells (lymphatic tissue) which act as army guards, defend by fighting away any dangerous germs which

may contaminate the inhaled air. These white blood cells, in fact, surround the bacteria to digest them away and die themselves in the process, to be replenished soon. The muscles of the pharynx are chiefly useful in swallowing. The pharynx opens into the larynx (the voice box) in front and the oesophagus (the food tube) behind.

3. Larynx

Larynx is composed of pieces of cartilages to maintain its shape and the potency. Attached on top is a small piece of cartilage called epiglottis which closes the larynx like a lid during swallowing so that the food glides over it into the food canal (oesophagus) and not into the wind pipe (trachea).

The vocal chords are thin flaps projecting from the side walls of the larynx. The movement of these flaps are controlled by highly efficient groups of delicate laryngeal muscles. The vibration of these chords due to the air passing through the glottis, causes voice production.

4. Trachea

The trachea (wind pipe) about 10 cm long extends from the larynx to divide into right and left bronchi. There are incomplete rings of cartilages in the wall to maintain the potency under varying intra-thoracic pressure conditions occurring during breathing. The trachea divides into right and left bronchi which enter the corresponding lungs.

5. Bronchi

The right and left bronchi are formed by the bifurcation of the trachea. The right bronchus is shorter and divides into 3 branches to enter three lobes of the right lung and the left is longer and divides into 2 branches to enter two lobes of the left lung. These divide and redivide further into smaller bronchi and finally as bronchioles that enter the air sacs called alveoli.

The larger bronchi have incomplete rings of cartilage in their walls. These rings disappear in the smaller bronchi. The inner lining of the bronchus (mucous membrane) has ciliated (hairy) surface layer of cells, the movement of the cilia being upwards to remove the finer pollutants that might have escaped the nose. The inner lining contains mucous secreting

cells that secrete thin mucus to provide a lubricating layer of moisture, and helps to humidify the air. The most important of the bronchus is the thin circular layer of smooth muscle that runs all the way along the bronchial tree. The contraction of this thin circular bronchial muscle leads to its narrowing and relaxation to dilation of the air passages. The calibre of the bronchus varies with several factors and is controlled by a highly complex neuro-chemical mechanism.

6. Lungs

The lungs, two in number, are the principal organs of respiration. They fill the chest cavity, one on each side separated in the middle by the heart, its blood vessels and other structures. The lungs are cone-shaped with the apex above and the base resting on the floor of the chest cavity on the diaphragm. They are divided into lobes by fissures; the right has 3 and left has 2 lobes.

7. Alveoli or Air Sacs

Alveolus is lined by a single layer of flat cells. It is here that the blood comes into almost direct contact with the air, being separated only by exceedingly thin permeable membrane consisting of two layers of flat cells. Oxygen diffuses from the inhaled air into the air sac to the blood moving very slowly in the capillaries, and carbon dioxide moves from the blood to the air sac due to the differences in partial pressure of the two gases. Carbon dioxide moves more rapidly than oxygen. Pulmonary artery and veins carry de-oxygenated and oxygenated blood from and to the heart respectively. The compositions of inhaled and exhaled air are given below :

Bronchial arteries supply nourishment to the lungs

	Inhaled Air	Exhaled Air
Nitrogen	79%	79%
Oxygen	20%	16%
Carbon dioxide	0.04%	4.04%
Miscellaneous	0.96%	0.96%

8. Pleura

Each lung is surrounded by a double layer of membrane called the Pleura. The inner layer of pleura closely surrounds the lung and the outer layer covers the interior of the chest wall. Between the pleura, there is a layer of lubricating fluid to prevent friction.

Physiological Aspects (Mechanics of Breathing)

Respiration involves two processes. The inspiration (Pūraka) which is active and expiration (Recaka) which under normal conditions is a passive phenomenon.

The inspiration takes place by the expansion of the thoracic cage and the lungs passively expand to fill up this increased space while the air is drawn through the air passages. Three sets of muscles are involved in the inspiration:

1. **Diaphragm** : This is dome-shaped sheet of muscle in the floor of the chest. Contraction of the diaphragm enlarges the chest cavity vertically downwards.
2. **Intercostal muscles** : are two layers of oblique strips of muscles in between the ribs. Contraction of these muscles cause elevation of the ribs to expand the chest forward and in the outward direction.
3. **Muscles of the neck** : These are muscles attached to the clavicle below and the jaw bone above. Contraction of these muscles along with shoulder girdle muscles helps to pull up the sternum and clavicle to expand the chest in the upward direction. These muscles are used only in deep forced breathing.

Abdominal muscles also assist during forced respiration.

Expiration takes place when the chest wall falls back during relaxation of these muscles as the intra-thoracic volume decreases and the air is forced out of the lungs through the air passages.

Control of Breathing

Normal rate of respiration is slightly higher in women than in men. Normal rates per minute are given below :

i) In newborn babies	40/min
ii) One year old	30/min
iii) 2-5 years old	24/min
iv) In adults	10-20/min

The rate and depth of respiration varies with the oxygen demands of the body. This increases with exercise and emotions and decreases during rest.

The respiration is regulated and controlled by two principal factors :

a. Nervous Control : The respiratory centre is a group of nerve cells situated in the medulla oblongata (lower part of the brain stem). This maintains the basic reflex rhythm of respiration through nerves that pass up and down the spinal cord to the muscles of respiration.

b. Chemical Control : The centre can be influenced by certain chemical changes in the blood. Excess carbon dioxide (excess acidity) and reduced oxygen in the blood stimulates this centre to increase the rate and depth of breathing and *vice versa*.

The rhythmic discharges of this lower centre for respiration in the medulla is under the control of influences from higher centres. One such higher control is exerted by the Hypothalamus, the seat of autonomic nervous system. Nervous connections exist between these two centres. Excitatory impulses with any emotional upsurges pass down from the Hypothalamus to increase the rate and depth of breathing.

A second set of nerve connections exist between the frontal cortex and medullary centre because of which the respiration can be easily altered voluntarily. This is the highest level of nerve control.

The objectives of Kriyās are to -

1. Cleanse the inner tracts, namely, the optical path, respiratory tract and Gastric Intestinal Tract (GIT) and refresh the inner paths. Tadiness is removed thereby.
2. Develop an inner awareness.
3. Desensitize the possible hypersensitive reactions in the pathways (as in nasal allergy), and
4. Build the stamina and forbearance capacity.

The principles of Kriyās are to -

1. Stimulate the system either by an external medium or by volitional control, and
2. Relax deeply after the Kriyās and even during the Kriyā practice itself.

While different methods of Kapālabhāti are developed in Yoga, we have chosen alternate nostrils Kapālabhāti as the first practice to purify the respiratory system (mainly the lower tract).

Purification : Kapālabhāti

कपालं भाति इति कपालभाति ।

Kapālam bhāti iti Kapālabhāti.

Kapālabhāti is that which shines the Kapāla (brain).

The brain cells are stimulated by this Kriyā.

In Haṭhayoga Pradīpikā this particular technique of cleansing and purification is defined as :

भस्त्रावल्लोहकारस्य रेचपूरौ ससंभ्रमौ ।

कपालभातिर्विख्याता कफदोषविशोषणी । (ह.यो.प्र.२.३५)

Bhastrāvallohakārasya recapūrau sasambhramau.

Kapālabhātirvikhyātā Kaphadoṣaviśoṣaṇī. (HYP.2.35)

Perform exhalation and inhalation rapidly like the bellows and it destroys all mucus disorders.

In normal breathing, inhalation is active and exhalation is passive. **This practice reverses that process so that exhalation becomes active and inhalation passive.**

We now describe the alternate nostril Kapālabhāti.

Technique

Kapālabhāti consists of a series of fast successive **bursts of exhalations** followed by automatic passive inhalations.

Kapālabhāti

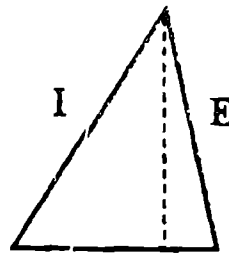
Normal Breath



Approximately 4.0 sec
15 per minute

<p>I = Inhalation E = Exhalation</p>
--

Kapālabhāti



Approximately 0.4 sec & 0.1 sec

Very rapid - 120 per minute

Exhalation is forceful
Inhalation is involuntary

Position

Sit in Padmāsana or Vajrāsana with spine erect, face relaxed.

Use Nāsikā mudrā by folding the fore and middle fingers of the right hand. Keep the thumb, the ring finger and the little finger open.

Press the right nostril slightly by the right thumb and just keep the ring and the little fingers touching the left nostril.

Apply neither too much, pressure nor twist your nostrils during the practice.



Position

Let the elbows be on the upper abdomen. Do not fold them up. That will cause unnecessary strain to the arm.

Keep the face relaxed and smiling, eyes closed; this helps in concentrating on the movement of abdominal muscles and also to develop inner awareness to feel the changes that occur in the whole body due to Kapalabhati.

Note : Stomach should be empty or very light.

Process

- Breathe in fully through the left nostril and allow the abdominal muscles to bulge out.
- Exhale with a burst as fast as possible by sucking the abdominal muscles inwards and the air rushing out of the right nostril.



Nāsikā Mudrā

- Do not contract the face nor twist the nostril. Maintain a smile on the face.
- Gently press the left nostril and open the right nostril by releasing the pressure of the thumb of the right hand.
- Allow the inhalation to take place, automatically the abdominal muscles expand. Complete the inhalation.
- Exhale with a burst, air rushing out from the left nostril, abdominal muscles pulled inwards fully. Complete the exhalation.
- This completes one cycle of alternate nostrils Kapālabhāti.
- Repeat the cycle 60 times.

Speed

- Initially, concentrate on full inhalations and exhalations. Also on the bursts of exhalations, activation by the abdominal muscles. The speed could be slow and as low as 10 to 15 cycles per minute.

- As you progress, you will be able to increase the speed gradually to 120 strokes per minute or 60 cycles in one minute.
- The time taken for exhalation will decrease as you continue.

The following precautions are necessarily to be adhered to in the performance of this Kriyā to avoid possible side effects.

Precautions

1. Do not bend the spine forward, backward or sideward while performing Kapālabhāti. Such a bending may cause a catch or muscle sprains in the neck or back or may even lead to a slip disc.
2. Contortions of the face during the practice can lead to muscle catch in the face.
3. Do not perform Kapālabhāti with your belly full or even half-full. Digestive disorders may crop up if this precaution is not followed.

Contra Indications

Persons with High Blood Pressure (BP), Ischaemic Heart Disease (IHD), Slip Disc, Spondylosis, etc., should avoid this practice especially in the beginning.

Women during menstrual periods and pregnancy should not do this practice.

Benefits

1. The Physiological Effects

Kapālabhāti is a fine Kriyā which stimulates all-round activity throughout the body. We present briefly the effects on different systems.

Muscular System

Mainly, the abdominal muscles are vigorously exercised to bring about flexibility and massaging of the abdominal organs.

Respiratory System

Due to the rate of breathing (120 breaths per minute compared to the normal breathing rate of about 15 per minute) there are two effects :

- a. Washing away of carbon dioxide from the lungs, and
- b. Increased oxygen concentration in the lungs.

The stale air at the end of exhalation is not emptied out during normal breathing. The residual volume of the lungs is about 5% to 10%. Kapālabhāti with its rapid succession of bursts of exhalation **gets rid of this residual air, helping in the total cleansing of the lungs.**

Circulatory System

Increased heart rate pumps the blood throughout the system. Blood is saturated with higher concentration of oxygen and stimulates all the cells to greater activity level. The lethargy of the cells is eliminated due to sedentary habits.

Glandular System

Both exocrine and endocrine glands get stimulated. Their functioning gets normalised in the process.

Digestive System

There is a marked improvement in the digestive process as the abdominal muscles are directly involved.

Nervous System and Brain

The sympathetic nervous system is stimulated during the process. By this practice, Sympathetic-Parasympathetic balance is well-kept up.

The brain cells are invigorated continuously during the performance of Kapālabhāti. Increased circulation of blood with higher oxygen concentration level cleanses and revitalises the functions of the brain cells. Memory cells and many other cells in the brain are brought into action. As per brain research

finding, best of the geniuses - Einstein and Newton used only 5% of the capacity of their brains.

2. Therapeutic Benefits

Patients with diabetes, obesity, respiratory disorders, digestive problems (constipation, gastritis, hyperacidity, etc.) find Kapālabhāti extremely beneficial.

3. Overall Effects

a. Cleansing, activising and revitalising of different systems.

b. Moving from Tamas to Rajas.

Other Forms of Kapālabhāti

Keeping the basic structure of a series of bursts of exhalation followed by automatic inhalation at the rate of 120 strokes per minute different types of Kapālabhāti can be identified :

1. Kapālabhāti

In this, both nostrils are used simultaneously for bursts of exhalation and effortless, automatic inhalation. This is fundamental and all other forms are permutations and combinations. The hand is not used.

Benefits : Cleanses both nostrils together.

2. Single Nostril Kapālabhāti

a. Candrānuloma-Viloma Kapālabhāti

- Close the right nostril with the thumb of the right hand in Nāsikā Mudrā.
- Inhale through the left.
- Exhale vigorously through the left.
- Automatic passive inhalation. Continue bursting and

passively inhaling only through the left nostril at a speed of 120 strokes/min.

Benefits : Cools the system and stimulates anabolic process in the body.

b. **Sūryānuloma-Viloma Kapālabhāti**

- Close the left nostril by the ring and the small fingers of the right hand in Nāsikā Mudrā,
- Inhale through the right.
- Exhale vigorously through the right.
- Automatic passive inhalation.
- Repeat only through right nostril. Gradually increase the speed to 120 strokes/min.

Benefits : Increases the heat in the system; promotes catabolic process.

3. **Sūrya and Candra Bhedana Kapālabhāti**

a. **Candra Bhedana Kapālabhāti**

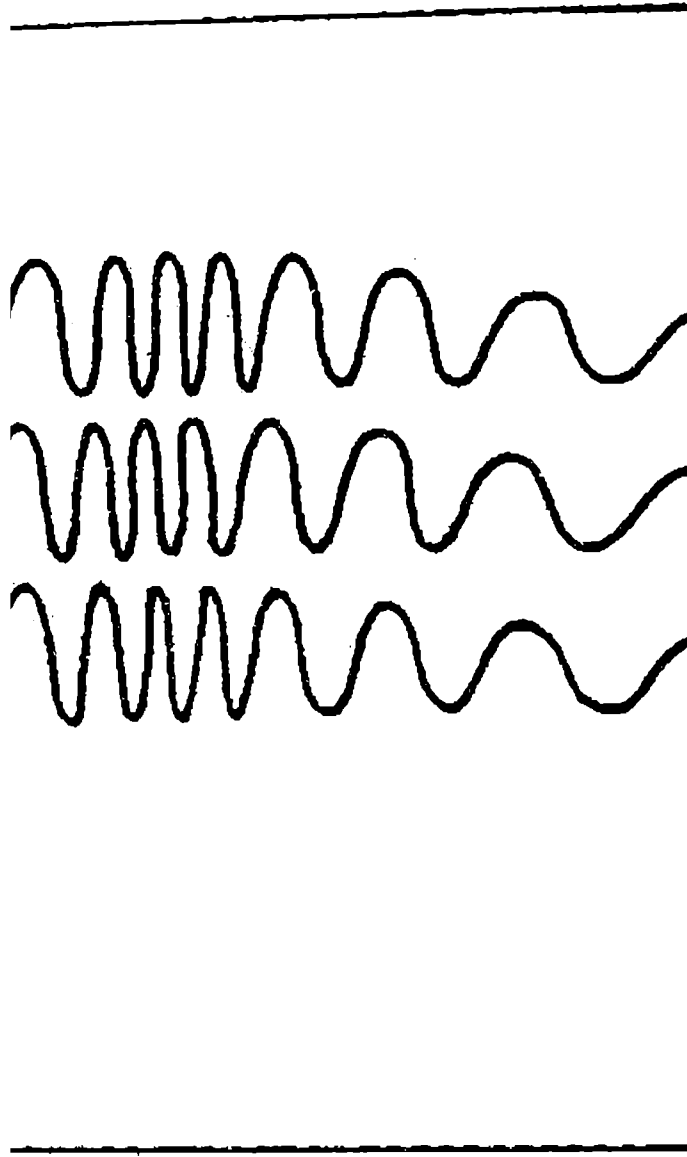
- Use Nāsikā Mudrā and close right nostril.
- Inhale fully through left nostril.
- Close the left and open the right nostril.
- Burst out through the right.
- Automatic inhalation through left by closing right and opening the left.
- Repeat speed upto 120 stroke/min. Clockwise circulation of the breath.

b. **Sūrya Bhedana Kapālabhāti**

The whole process of Candra Bhedana Kapālabhāti is reversed anti-clockwise circulation of breath.

Benefits : Candra and Sūrya Nāḍīs in Prāṇamaya Kośa are activated by these Kriyās apart from cleansing the nostrils effectively.

BALANCING THE BREATH



*Speed up, Normalising and
Slowing down of breath*

BALANCING THE BREATH

The imbalances of Prāṇa show up as excessive speed, haphazardness, unrhythmicity and shallowness in breathing. These wrong breathing habits may further manifest as jerks and bursts of breath and imbalanced breathing between the two nostrils. The first step is to cleanse the respiratory tract and lungs by Yogic Kriyās in general and Neti and Kapālabhāti in particular, described in the previous chapter. The second step is to normalise breathing by decreasing the manifests of imbalances and correcting the wrong breathing habits. The techniques employed come under the head, 'Sectional breathing'. This is a preparatory breathing practice and increases the vital capacity of the lungs. It has three sections :

a. Abdominal or Diaphragmatic Breathing
or (Adhama Śvāsa) अधम श्वास



Abdominal Breathing

Sit erect in Vajrāsana. Exhale and inhale completely, slowly and continuously. This is called Pūraka. The abdomen is made to bulge out continuously with the air entering, especially, into the lower sections of the lungs. Before exhaling stop the breath (Āntaryakumbhaka) for a few seconds without any force. While exhaling (Recaka) the abdomen is drawn inwards continuously and slowly. Before the breath is reversed, stop the breath (Bāhyakumbhaka) effortlessly for a few seconds and then inhale. Repeat the breathing cycle. There should be no jerks in the whole process. It should be smooth, continuous and relaxing.

The diaphragm separating the thorax from the abdomen descends during inhalation with the bulging out of the abdomen. This increases the air-flow into the **lower sections** of the lungs. The rhythmic movement in the diaphragm massages the organs of the abdomen gently, and helps them to function normally. It promotes general circulation also.

b. Thoracic (Chest) or Intercostal Breathing
(Madhyama Śvāsa) मध्यम श्वास



Thoracic Breathing

This sectional breathing is performed while sitting erect in Vajrāsana; inhalation and exhalation are performed by expanding and contracting the chest only. Air flows through both the nostrils slowly and continuously. The abdomen is controlled to avoid bulging out. The **middle lobes** of lungs are opened up fully by this type of breathing.

C. Clavicular or Upper lobar breathing (Ādya Śvāsa) आद्य श्वास



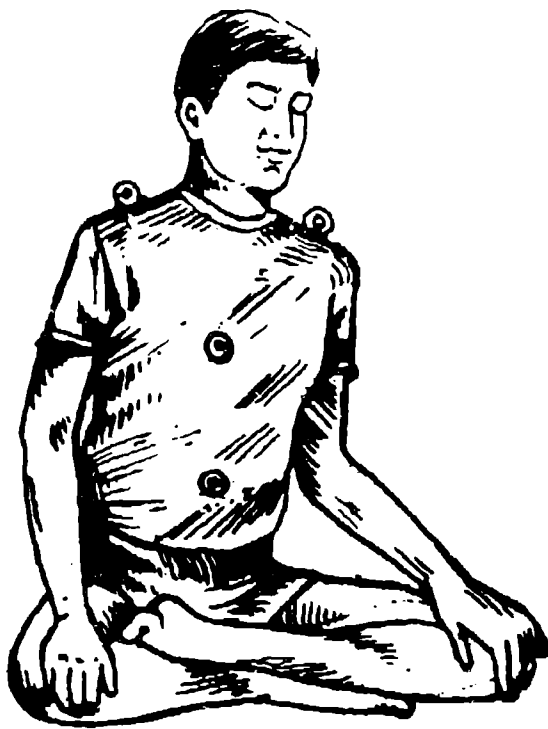
Clavicular Breathing

Sit erect in Vajrāsana. Raise the collar bones while inhaling and move the shoulder backwards slightly. Keep the abdominal muscles contracted. The air is forced into the **upper most regions of the lungs** thus ventilating the upper lobes while exhaling bringing down the collar bones and shoulders forward to normalcy.

The sparingly used upper lobes of the lungs will be properly aerated by this breathing.

d. Full Yogic Breathing पूर्ण श्वास Pūrṇa Śvāsa

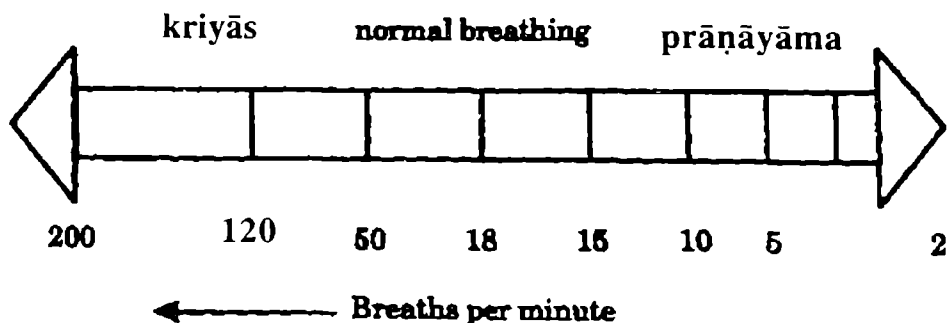
In full Yogic breathing technique, all the above three types will be combined. During inhalation, the Adhama,



Full Yogic Breathing

Madhyama and Ādya occur sequentially and during exhalation the same sequence namely abdominal (Adhama), chest (Madhyama) and clavicular (Ādya) breathings occur. The whole process should be relaxing and comfortable without any tension on the face.

Speed of Breathing Per Minute



Having learnt the process for cleansing and normalising the breath, we are all set to proceed for Prāṇāyāma proper. What are the main features of the Prāṇāyāma Breathing? The first and the most important aspect is **slowing down of breath**. A glance as indicated clearly delineates the three regions of breathing - Kriyā, sectional Breathing and Prāṇāyāma. Breathing rate (number of breaths per minute) goes on reducing as we move from the high speed region of Kriyās towards normal breathing and Prāṇāyāma.

There has been a gross misconception among many practitioners and theoreticians that the Prāṇāyāma increases the oxygen level in blood and invigorates the respiratory system by higher concentration of oxygen. Many argue that the aspect of deep breathing in Prāṇāyāma increases the oxygen content. They admit that as one progresses in Prāṇāyāma the oxygen content has to reduce.

It is well-known that removal of carbon dioxide (CO₂) from the surroundings of a cell reduces Tamas or lethargy and makes it function vigorously. Kriyās accomplish this act of invigoration or activation of cells, as we have seen in the last chapter. But Prāṇāyāma has totally opposite effect as far as the respiratory physiology is concerned. The concentration of CO₂ increases in the blood in Prāṇāyāma. Then, is it not dangerous? Will not the cells start getting lethargic and dull? What are the advantages of slowing down of the breath?

Since we systematically and gradually train the system for slow breathing through Prāṇāyāma, there will be no danger. 'Not with great will or force', Na Haṭhāt Na Balāt, is the injunction in Yoga which avoids all dangers, 'Slow and steady' - is the mandate.

The untrained cells certainly get dull with increased CO₂ content around them. However, when they are trained by consciously handling the respiratory impulses reaching the respiratory centre in the brain, the cells work effectively with lesser O₂ demands. This is what we term as 'increasing

efficiency of the cells,' The dormant potentiality of the cells will start manifesting.

The Basal Metabolic Rate (BMR) is the rate at which we spend energy for carrying out basic body functions. The breathing rate is almost directly proportional to BMR. (It is well-known that good sleep will reduce the BMR by about 9% in about 5 hours. Corresponding reduction of Breathing Rate (BR) is also noticed). The amount of reduction in BMR is a measure of the rest of the systems. Slowing down the breath, therefore, provides very deep rest to the body-mind complex.

The science of 'Working in relaxation', and 'Attention without tension' is imminent in Prāṇāyāma. We learn to work without getting tensed up, with no overtones, hypersensitivity and over-reactions. With lesser energy expenditure, we accomplish the job or, as they say, 'more mileage to a litre of petrol'. How does this happen in automobiles? By reduction in friction losses, more effective combustion of the fuel, etc.

The Royal Enfield (Bullet) motorcycle used to give about 16-20 km/litre of petrol. With the hike in prices of petrol and with newer, lighter, trouble-free 2 wheelers flooding the market in 1985-86, the sales of 'Bullet' came down drastically. Even the rich who used to buy 'Bullet' for its majestic ride said 'why not' 'Hero Honda' or 'Yamaha' which provided a royal finish. Soon the research wing of 'Royal Enfield' had a brain-storm session and improvised its carburator, jets, etc. to increase the mileage to 30-35 kms/litre! That is efficiency. For the same input—increase the output!

And that is what Prāṇāyāma does to us. It enhances the efficiency. Thus, we conserve the energies.

An average adult takes about 3000 calories of food. Nearly 1500-2000 calories are spent for the basic functions, if the adult is fast, sensitive and often over-reactive. By performing Prāṇāyāma, he needs only 500-1000 calories for the basic maintenance. He has a lot more energy to perform

his other actions. That is why normal person feels energised and enthusiastic throughout the day by performing Prāṇāyāma for about 30 mts in the mornings.

Thus, slowing of breath by systematic and gradual training of our respiratory system by various techniques of Prāṇāyāma possesses no danger. **It does not turn us Tāmasic, but by reducing the overtones of Rajas, makes us Sāttvic (dynamic in the true sense) and more efficient.**

We will now proceed to learn an important technique Bhastrikā which is particularly associated to the cleansing and purificatory process.

Cleansing - 'Bhastrikā' Prāṇāyāma

The term भास्त्रिका Bhastrikā means 'bellows'. We use chest as bellows to have forceful inhalations and exhalations.

Technique

- Sit in Vajrāsana or Padmāsana with spine erect.
- Relax the whole body and face with a smile.
- Inhale and exhale by expanding and compressing the chest **vigorously** like bellows. The speed of breathing should reach 120 strokes per minute when learnt fully. In the beginning it could be slower. But concentrate on full inhalations and exhalations.
- Stop after ten strokes. (The Gheraṇḍa Samhitā prescribes 20 strokes in the cleansing part instead of 10 strokes described here.)
- The breath stops automatically. Let it remain suspended as long as possible. Do not exert. Enjoy the cessation of breath and thereby let the breath stop longer and longer.
- Repeat 3 rounds.

In Gheraṇḍa Samhitā, Bhastrikā Prāṇāyāma is described

in a very simple and perceptible manner :

भस्त्रैव लोहकाराणां यथाक्रमेण संभ्रमेत् ।

तथा वायुं च नासाभ्यामुभाभ्यां - चालयेच्छनैः ॥ ५.७५ ॥

एवं विंशतिवारं च कृत्वा - कुर्याच्च-कुम्भकम् ।

तदन्ते चालयेद्वायुं पूर्वोक्तं च यथाविधि ॥ ५.७६ ॥

त्रिवारं साधयेदेनं भ्रात्रिका कुम्भकं सुधीः ।

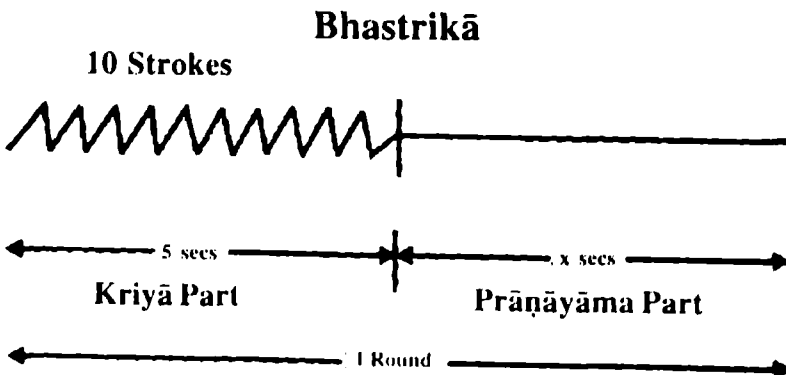
न च रोगो न च क्लेशमारोग्यं च दिने दिने ॥ (घेरण्ड सं.५.७७)

Bhastraiva lohakārāṇām yathākrameṇa sambhramet,
Tathā vāyum ca nāsābhyāmubhābhyām cālayecchanaiḥ.
Evam viṅśativāram ca kṛtvā kuryācca kumbhakam,
Tadante cālayedvāyum pūrvoktam ca yathāvidhi.
Trivāram sādhayedenam bhastrikā kumbhakam sudhīḥ,
Na ca rogam ca kleśamārogyam ca dine dine. (Ghe.S.:5.75-77)

As the bellows of the blacksmith constantly dilate and contract, similarly draw in the air by both the nostrils and then expel it out quickly, the air making a sound like bellows.

Having thus inspired and expired quickly, twenty times, perform kumbhaka, then expel it by the previous method. Let the wise ones perform this Bhastrikā (Bellow-like) Kumbhaka thrice: he will never suffer any disease and will be always healthy.

As we could see, there are two distinct parts in Bhastrikā. The first 'Kriyā' and second Prāṇāyāma, the cleansing and the slowing down parts. Hence, Bhastrikā is called a bridge between Kriyās and Prāṇāyāma. Depending on the duration of stoppage



of breath (kumbhaka), Bhastrikā acts as Kriyā or normalising of breath practice or Prāṇāyāma.

- (i) $x < 5$ secs, Kriyā
- (ii) $x = 35$ secs, Normal breathing
- (iii) $x > 55$ secs, Prāṇāyāma

The time taken for the kriyā part is 5 secs for 10 strokes. In 5 secs 10 and in one minute 120 strokes. Let us represent the duration of the Kumbhaka part as x secs. Now we consider three cases.

- A. If $x = 5$ sec, then total duration for one round of Bhastrikā (comprising of 10 breaths) will take $(5 + 5) = 10$ secs. Hence we finish 6 rounds in 1 minute or 60 breaths in 1 minute. And this speed naturally comes in the region of Kriyās. Hence Bhastrikā will act as a Kriyā.
- B. If $x = 35$ secs, then 40 secs for 1 round and average over 2 minutes the speed of breath will be 15 per minutes falling in the region of normal breathing. Thus, Bhastrikā is like sectional breathing.
- C. If $x = 55$ secs, then Breathing rate is 10/mt and falls in the region of Prāṇāyāma.

Thus, the duration of Kumbhaka (x secs) in Bhastrikā decides as to whether it is acting as a kriyā or sectional breathing or Prāṇāyāma. To make it a Prāṇāyāma, the length of Kumbhaka should be not less than 35 secs.

Just as there are many misconceptions about Prāṇāyāma, so too about Bhastrikā. A simple understanding and analysis provided in this chapter should clear all such misconceptions. It is clear that **Bhastrikā can be called a Prāṇāyāma if the Kumbhaka duration is sufficiently long**. If the number of strokes is increased in each round, longer will be the duration of Kumbhaka needed. Alternately, if the number of strokes is reduced from 10 to say 5 or 3, the cleansing part or Bhastrikā

will not be effective. Hence, an optimum of 10 has been chosen.

Bhastrikā and Kapālabhāti

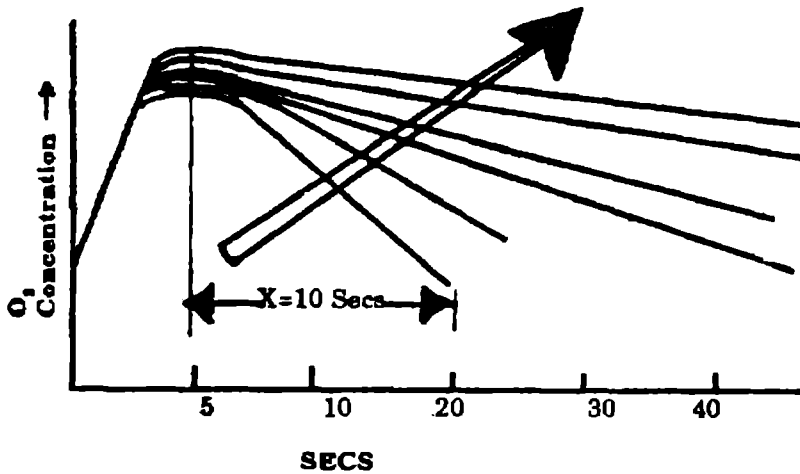
Features	Kapālabhāti	Bhastrikā
NAME	KRIYĀ	PRĀṆĀYĀMA
CONTENTS (for 1 minute)	Only cleansing part (for 5 secs)	Prāṇāyāma part (35 secs or more)
SPEED	120 strokes a minute	Cleansing speed 120 a minute but overall speed less than 10 strokes a minute
CLEANSING ASPECTS	Bursts of exhalations followed by automatic inhalations	Both inhalation & exhalation are vigorous & active
ACTION	Abdominal breathing resembling a pump	Thoracic breathing resembling bellows
EFFECT	Purification	Cleaning and Soothing

The main differences between Bhastrikā and Kapālabhāti can be seen in the following table:

Physiological Aspects

The physiological aspects of the cleansing part are the same as described in Kapālabhāti stimulating and shattering of Tamas as in general.

At the end of this cleansing part, there is an automatic cessation of breath due to CO₂ debt in the respiratory system. There is a gradual build up of CO₂ in the system and the breathing starts getting normal after a while. This duration of



*Build up of CO_2 or reduction of O_2 level
in blood with time*

‘Kumbhaka’ elongates if we relax and enjoy this phase consciously. With each round, the elongation increases and the level of relaxation also increases while the rate at which CO_2 builds up also decreases.

Benefits

1. Great freshness and agility are experienced in Bhastrikā. It is not only shattering of Tamas and stagnation but also reduction of overtone and hypersensitivities to increase the functional efficiency of the cells.
2. This is a fine practice to remedy some of the dangerous effects of Kumbhaka practice done wrongly.

Precautions

Bhastrikā should be practised with:

- a. Empty stomach
- b. Spine erect and body symmetrical, and by
- c. Normal healthy persons (hypertensives or patients of IHD should perform under expert guidance only).

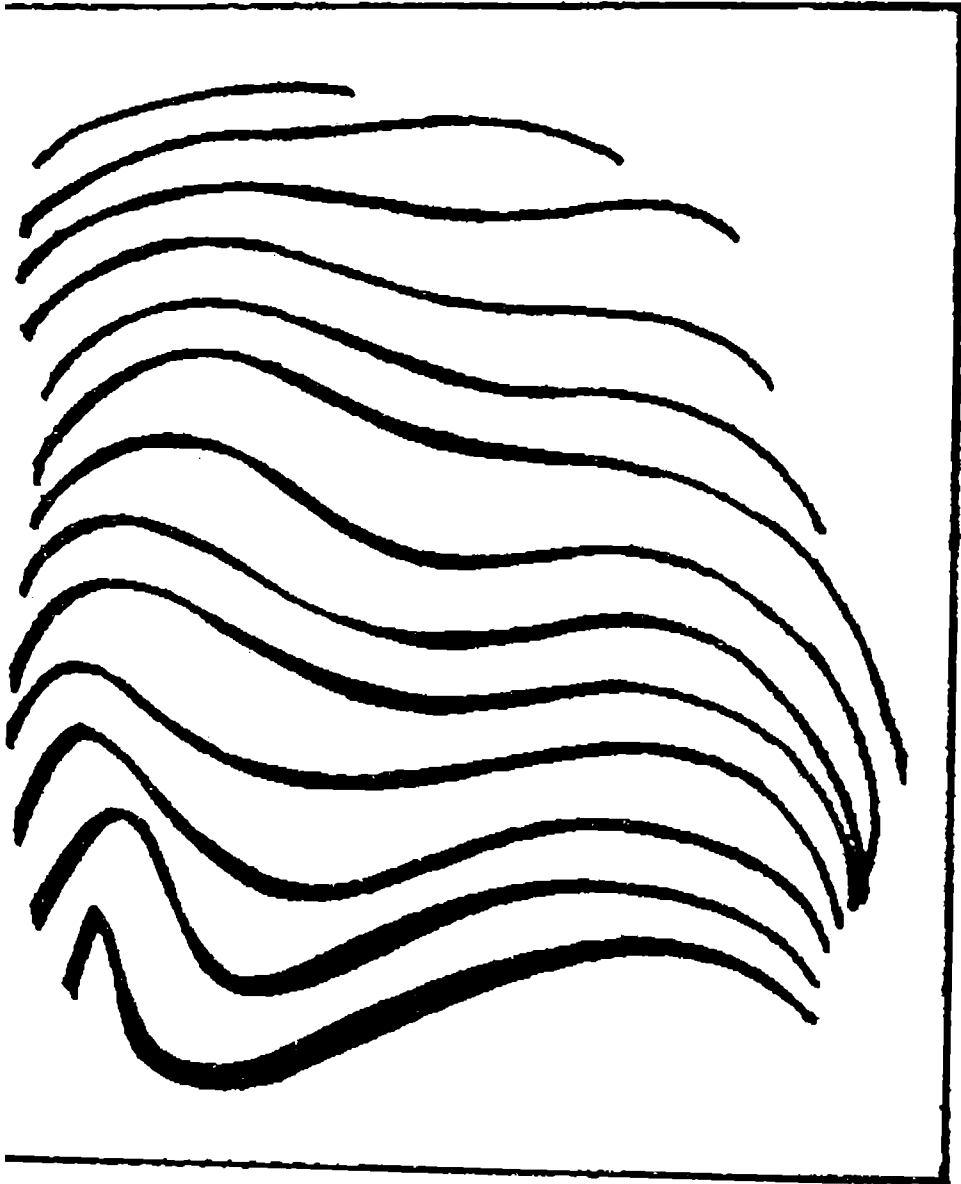
Varieties of Bhastrikā similar to different types of Kapālabhāti can be found. Single nostril Bhastrikā and alternate nostril Bhastrikā are the main variations. Maintaining the features of Bhastrikā, the readers may themselves work out these variations looking at these types in Kapālabhāti.

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**AVOIDING DANGERS -
THE SAFE PATH**



The Vāsiṣṭha School - The Safe Path

AVOIDING DANGERS - THE SAFE PATH

Slowing down of breath, as we have seen, is the first step in Prāṇāyāma. Control of breathing from the new-cortex, overriding the involuntary respiratory control centre in the lower section of the brain is to shift from autonomic to conscious control of breathing. In the process, we build awareness. This is the second step in Prāṇāyāma.

Three components of Breathing

1. Inhalation or breathing in is called पूरक Pūraka.
2. Exhalation or breathing out is called रेचक Recaka.
3. Stoppage of breath is called कुम्भक Kumbhaka.

Three types of Kumbhaka can further be differentiated:

- a. Stoppage after inhalation is called पूरक कुम्भक Pūraka Kumbhaka or आन्तर्य कुम्भक Āntarya Kumbhaka.
- b. Stoppage after exhalation is called रेचक कुम्भक Recaka Kumbhaka or बहिर्कुम्भक Bahirkumbhaka or शून्यक Śūnyaka (both of these are called Sahita Kumbhaka).
- c. Automatic effortless stoppage of breath at any stage of breathing is called केवल कुम्भक Kevala Kumbhaka.

The first two types of Kumbhakas involve forceful holding of breath. **While the third just occurs.** Haṭha Yoga texts use the former types of Kumbhakas as an integral part of all Prāṇāyāma Practices. It is for this reason that most authors and practitioners believe that forceful Kumbhaka is a mandatory part of all Prāṇāyāma techniques. However, Patañjali includes Prāṇāyāma techniques with or without kumbhaka by using the term विच्छेद Viccheda.

तस्मिन्सति श्वासप्रश्वासयोर्गतिविच्छेदः प्राणायामः । (प.यो.सू. : २.४९)

Tasminsati svāsapraśvāsayorgati-vicchedaḥ Prāṇāyāmaḥ

Prāṇāyāma is the cutting off of the course of breathing in and out.

Conscious control to break the involuntary breathing cycle which is going on automatically is the key feature of Prāṇāyāma, not only by holding the breath (Kumbhaka) but also by slowing down the inhalations and exhalations.

While Vyāsa Bhāṣya (commentary by Vyāsa) describes Viccheda as complete stoppage of breath, other commentators—Vācaspati Miśra and Bhoja have sided with the second view that the Viccheda could just be the reduction in speed. Stoppage (Kumbhaka) occurs at its extreme ends.

Vasiṣṭha in his famous योगवासिष्ठ Yoga Vāsiṣṭha leans on the second process of Prāṇāyāma accomplished through slowing down of Pūraka and Recaka. Thus, we can clearly differentiate the two distinct schools of Prāṇāyāma; the first in which forceful Kumbhaka is a mandatory part of all Prāṇāyāma techniques which will be called as Haṭha Yoga School and the second school in which forceful Kumbhaka is not at all used, but all emphasis is given to elongating the breathing process and promoting Kevala Kumbhaka called Vāsiṣṭha School. However, the goal of both these schools in particular and all Prāṇāyāmas, in general, is to achieve Kevala Kumbhaka for long durations.

Patañjali differentiates between with effort and effortless kumbhakas clearly in his Yoga Sūtras:

बाह्याभ्यन्तरस्तम्भवृत्तिर्देशकालसंख्याभिः परिदृष्टो दीर्घसूक्ष्मः ।

(प.यो.सू. : २.५०)

Bāhyābhyantarastambhavṛttirdeśakālasaṅkhyābhiḥ
paridṛṣṭo dīrghasūkṣmaḥ. (PYS : 2.50)

Recaka, Pūraka, and Kumbhaka become prolonged and

subtly measured in terms of the region, time and number of rounds with practice.

As interpreted by Vyāsa, the three types of Prāṇāyāma are : Recaka-Kumbhaka Prāṇāyāma, Pūraka-Kumbhaka Prāṇāyāma and Stambha-Vṛtti Prāṇāyāma.

But Vācaspati Miśra and Bhoja interpreted these as the three components of Prāṇāyāma - Pūraka, Recaka and Kumbhaka.

All the commentators, however, agree that the Stambha Vṛtti mentioned here is forceful. Hence, Patañjali is talking about the first type of Kumbhaka with effort at the extreme ends of Pūraka and/or Recaka. In the next Sūtra he talks about the fourth component of Prāṇāyāma - the Kevala Kumbhaka achieved through a long practice and deep relaxation called effortless kumbhaka.

बाह्याभ्यन्तरविषयाक्षेपी चतुर्थः । (प.यो.सू. २.५१)

Bāhyābhyantaraviṣayākṣepī caturthaḥ. (PYS : 2.51)

That which has no reference to the inhalation and exhalations is the fourth.

The terms आक्षेपी Ākṣepī means ‘with no reference to’ or ‘transcends’. All the commentators agree that this refers to the effortless केवल कुम्भक Kevalakumbhaka which is the objective of all the Prāṇāyāmas.

Thus, the two schools basically differ in the inclusion and exclusion of effortful Kumbhaka. We will now describe and show how practitioners of both schools will reach the same goal by reference to **schematic sketches in figures**.

Haṭha Yoga School

- Sit in Vajrāsana or Padmāsana with spine erect.
- Inhale for a second. Fully breathe in (Pūraka).
- Hold the breath for 2 seconds (Pūraka Kumbhaka).
- Exhale for 4 seconds (Recaka).

- Hold the breath for 8 seconds (Recaka Kumbhaka).

The ratio is 1:2:4:8, and this completes one round of Prāṇāyāma. Perform three to nine rounds of this Prāṇāyāma.

With practice, the duration of Kumbhaka should increase and the capacity for retention of breath enhances. The practitioner can use the same ratio (1:2:4:8) but can increase the duration - 2 secs of inhalation, 4 secs of retention, 8 secs of exhalation and 16 secs of retention. Alternately, he can keep the duration of Recaka and Pūraka same, but increase the length of Kumbhaka : 1 sec pūraka, 4 secs Pūraka Kumbhaka, 4 secs of Recaka and 8 secs of Recaka Kumbhaka. With continuous practice, the length of Kumbhaka increases further to 1:8:4:16, 1:16:4:32 etc. As the length with effort Kumbhaka increases, the middle portion of the Kumbhaka becomes effortless and becomes Kevala kumbhaka. And that is how the practitioner attains longer and longer duration of Kevala Kumbhaka.

Dangers in Haṭha Yoga School

In this, performance of Kumbhaka without the proper use of the bandhas is beset with dangers. Hence, care should be taken, to use 'Bandhas' correctly.

A person came to us with neurotic symptoms, lack of concentration, incoherence in speech and thinking. He was a brilliant student working for a doctoral dissertation. He had taken to Prāṇāyāma after reading a book. Fascinating were the initial results - increased power of concentration, enhanced memory, agility and freshness throughout the day, etc. After about 2 to 3 weeks, he found that the result were on the declining trend. He increased the number of rounds of Kumbhaka. He applied his strong will and further increased the duration of Kumbhaka and ended up as a neurotic, when he reached us.

A detailed enquiry revealed that he never used Jālandhara Bandha to arrest the breath at the throat level. Instead, he used to have full pressure of breath all through the upper nasal trachea. By holding the nose tightly he would control the breath. The

upward thrust had naturally hit his upper parts leading him to the above condition. Hence, application of **Jālandhara Bandha** is a must in kumbhaka Prāṇāyāma. He regained normalcy in just 10 days of his stay at Prashanti Kutiram.

जालन्धर बन्ध Jālandhara Bandha (the glottis-lock)



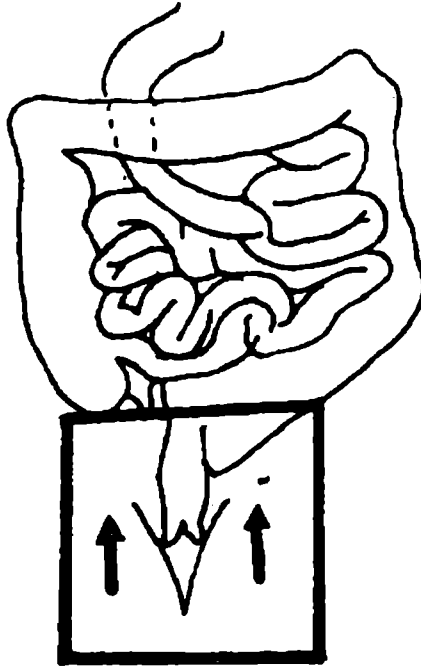
Jālandhara Bandha

This is used for restraining the breath below the level of the glottis after inhalation in Āntaryakumbhaka.

Contract the throat, press the chin firmly against the chest at the jugular notch after inhaling. The breath is stopped at the throat. With gradual practice the pressure of air on the glottis will be released and the whole system will be relaxed while the breath gets stopped near the throat.

A bank officer started suffering from alternate bouts of diarrhoea and constipation. Drugs helped him the least. He recognised that it all started about a month after he started Prāṇāyāma, the Kumbhaka way. He missed the use of Mūla Bandha, though he was practising Jālandhara bandha correctly. His bowel problem was sorted out in about a week and he could, then, progress considerably in Prāṇāyāma and Dhyāna.

मूलबन्ध Mūla Bandha (the anus-lock)



Mūla Bandha

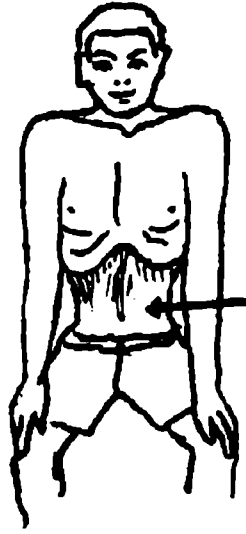
Press Yoni (perinium) with heel, contract and pull up the anus, thus, by drawing the Apāna; Mūla Bandha is caused.

I had observed a great Yogī with bulged out abdomen almost disfiguring him. I saw that he was frugal in his food intake, once a day only. He was not obese earlier. He later developed gastritis and acidity too. He cared not for this body and took the suffering as a part of his life until death.

We had quite a few persons coming to us with symptoms of gastritis, stomach pain and hyperacidity after the practice of Kumbhaka Prāṇāyāma for a short while.

We identified all these cases as those who had missed the use of third Bandha 'Uḍḍīyāna' in their Prāṇāyāma. The upper and the lower ends being blocked through Jālandhara and Mūla Bandhas, the pressure would force the abdominal muscles bulge out and stimulate the acid secretion centres in the stomach excessively. The remedy that worked was Uḍḍīyāna Bandha.

उड्डीयान बन्ध Uḍḍīyāna Bandha (the abdominal - lock)



Uḍḍīyāna Bandha

Uḍḍī in Samskr̥ta means to “fly up”. Hence it is said that for the Yogī who practises this regularly, his Prāṇa moves up through the subtle centres. The significance of Uḍḍīyāna is to restrain the breath and hence is called Bandha or lock.

Exhale completely through the mouth, expand the chest by mock inhalation movement sucking in the relaxed abdominal muscles so that they almost touch the back bone. This is practised at the end of Kumbhaka before the beginning of Recaka. Maintain it for some time and then inhale slowly.

Thus, the three Bandhas **are mandatory** while performing Kumbhaka Prāṇāyāma. Neglect of anyone of them or wrong application can lead to a variety of health hazards. A safe method for Kumbhaka is given below :

त्रिबन्ध प्राणायाम Tribandha Prāṇāyāma (the tri-fold-lock)

- Sit erect in Vajrāsana or Padmāsana. Be smiling.
- Inhale fully for 2 secs. Apply Mūla Bandha.

- Use Jālandhara Bandha and hold the breath at the throat, slightly pull in the abdomen as in Uḍḍīyāna.
- Continue the Kumbhaka for 4 secs.
- Release the Jālandhara Bandha and freely breathe out for eight secs.
- Again the Jālandhara and Uḍḍīyāna to continue the Kumbhaka for 6 secs.
- Release Jālandhara to inhale.

This is one round. Continue the prescribed number of rounds.

Forceful holding of breath is a part and parcel of this Kumbhaka Prāṇāyāma; but if the trick of relaxation in the Kumbhaka is used, faster progress can be achieved. In any case, the hazards of Prāṇāyāma can be reduced **if we go slow and work intelligently.**

Vāsiṣṭha School

As mentioned earlier, effortfull kumbhaka is not used in this school. Instead, effortless retention is encouraged and promoted, forceful retention may create disorders. Therefore, to slow down the Prāṇa, to calm down the mind, the gradual and systematic practice of yoga has always been advised in this school.

To slow down the speedy wavering mind to practise the slow, deep rhythmical breathing is very necessary. By practice one can cross all the obstacles of the ailments and miseries
अभ्यासेन निराबाधम्... अभ्यासादृढतां यातो... Yoga Vāsiṣṭha
5.78.40-41.

Abhyāsenā nirābādham..... Abhyāsātṛḍhatām yāto....

By practice, the wanton (inconstant) mind gets rest. Prāṇa becomes steady and tremorless and receives supreme peace.

अभ्यासेन परिस्पन्दे प्राणानां क्षयमागते ।

मनः प्रशममायाति निर्वाणमवशिष्यते । (योग वा.५.७८.४६)

Abhyāsenā parispandē prāṇānām kṣayamāgate,

Abhyāsenā parispaṇde prāṇānām kṣayamāgate,
Maṇaḥ praśamamāyāti nirvāṇamavaśiṣyate.

(Yo. Vā.:3.78.46.)

The experience of Kevala Kumbhaka takes us to the peace everlasting. So Vasiṣṭha instructs Rāma Abhyāsavānbhava अभ्यासवान्भव, contemplate on practice.

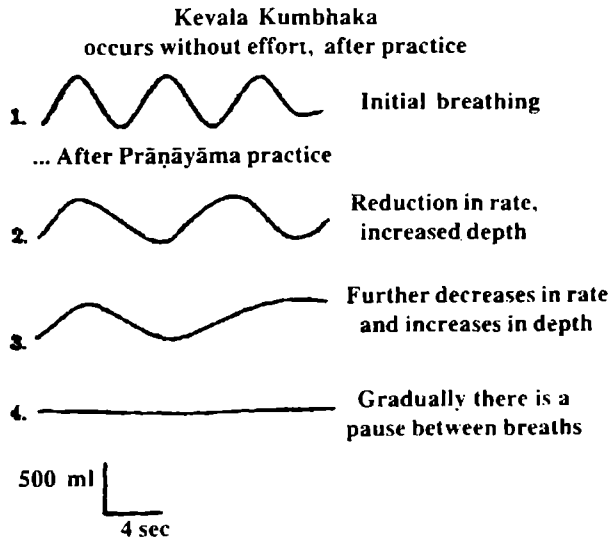
Rṣi Vasiṣṭha has accepted every system of yoga for the purpose of calming down the mind only; be it meditation or the experimentation of different techniques or be it Prāṇāyāma itself. The retention of Prāṇa in his view, is to attain the peaceful state of mind:

योगिनञ्चित्तशान्त्यर्थं कुर्वन्ति प्राणरोधनम् ।

प्राणायामैस्तथा ध्यानैः प्रयोगैर्युक्तिकल्पितैः । (योग वा. ५. ९१. २६)

Yoginaścittaśāntyartham kurvanti prāṇarodhanam,
Prāṇāyāmaistathā dhyānaiḥ prayogairyuktikalpitaiḥ.

Vāsiṣṭha School



Further he says :

चित्तोपशान्तिफलदं परमं साम्यकारणम् ।

सुभगं संविदः स्वास्थ्यं प्राणसंरोधनं विदुः ॥ (योग वा. ५. ९१. २७)

Cittopaśāntiphalaḍam paramam sām्यakāraṇam,

Subhagam samvidāḥ svāस्थ्यam prāṇasamrodhanam viduḥ.

The natural and effortless retention and control of all the Prāṇas (Prāṇa, Apāna etc.,) is the way of Yogī Vasiṣṭha. This is not a forceful retention or control of Prāṇas in different parts of the body. **but it is an automatic and spontaneous retention through the effortless and conscious practices.** It is bountiful, benign, healthy and benefactory.

In Yoga Vāsiṣṭha the great Yogī Kāka Bhūṣuṇḍa describes the process of Prāṇāyāma as tranquilising the Prāṇa, slowing of breathing, bringing of rhythm and happiness to the mind.

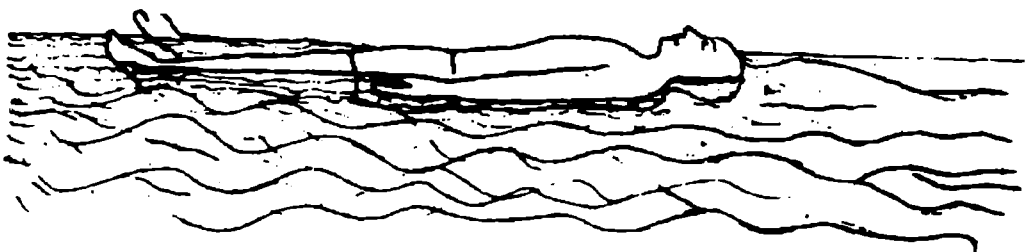
This school is totally safe, devoid of health hazards of the Haṭha Yoga school. At the same time, we have found that the system is equally effective and the progress is steady. Hence in our Yoga Research Foundation and Ārogyadhāma, we follow this school, **as safety is our first concern** while popularising Yoga techniques as a socially relevant science on a mass scale. We are happy to note that after nearly 20 years of practice and teaching in India and abroad to the young as well as old, **we have had not a single hazard.**

In the rest of the book, we have described various techniques of Prāṇāyāma performed by the Vāsiṣṭha way. By adding forceful Kumbhakas and the ratios, all these Prāṇāyāmas can be converted into Haṭha Yoga school.

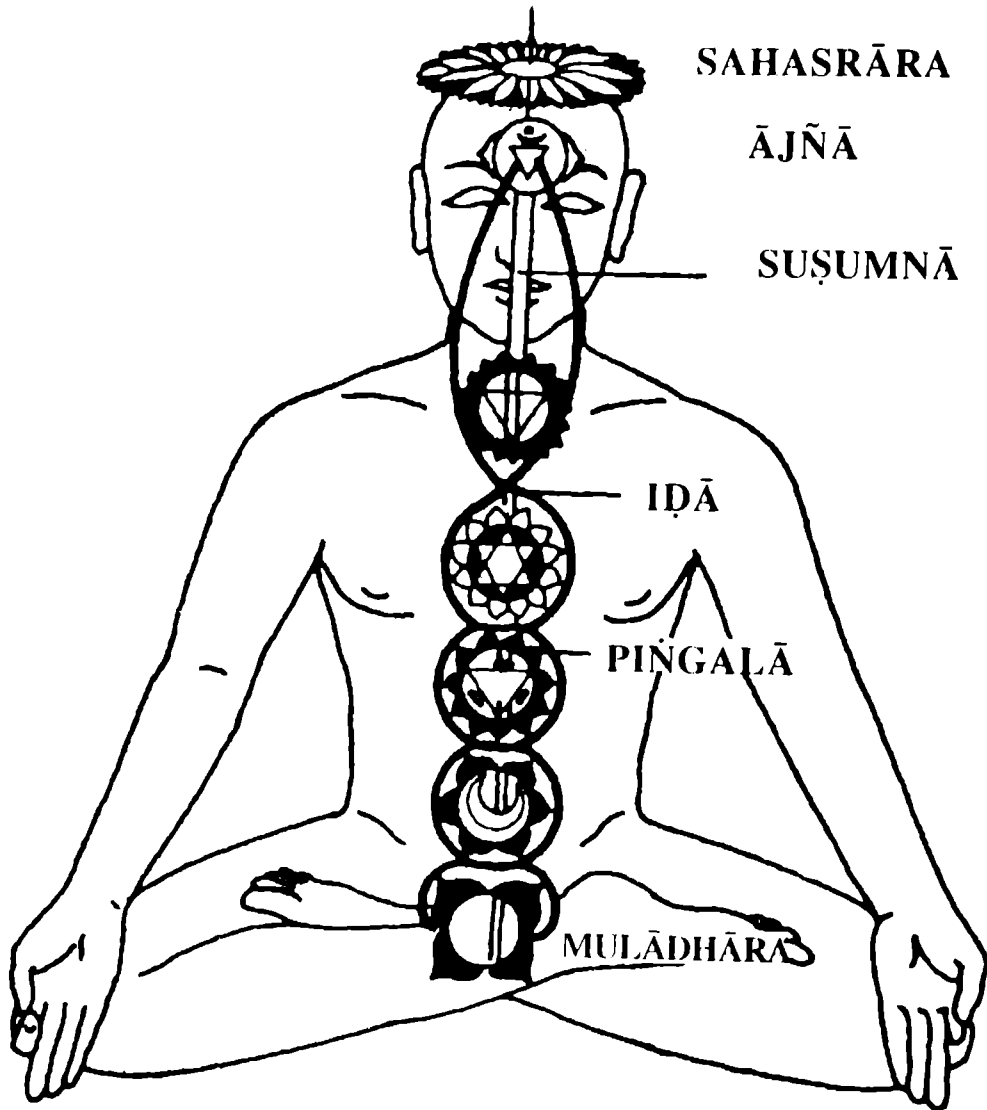
प्लाविनी Plāvinī - Floating Prāṇāyāma

Sit in Padmāsana or Vajrāsana with erect spine and keep the whole body relaxed. The Sthiti - the preparatory pose is common for all Prāṇāyāmas described in this book.

By swallowing the air, the stomach is filled up to make the body lighter so that it can float on water with ease.



**PRĀṆAMAYA BODY:
STRUCTURE AND BALANCE**



Kuṇḍalinī Pathways

PRĀṆAMAYA BODY: STRUCTURE AND BALANCE

The two nostrils riddle is not yet resolved in respiratory physiology. Does breathing through the left nostril and/or the right nostril make a difference? Yes, recent electroencephalogram recordings on a group of people, who were made to breathe only through the left first and the right next showed significant differences. It appears that the left nostril breathing promoted the functioning of the right hemisphere of the brain and *vice versa*. However, more tests are needed to get at the conclusive results.

In Yoga, the importance of breathing through left or right has been recognised for millennia. The left nostril breathing is a manifestation of Prāṇa flowing through the Candra Nāḍī and the right nostril breathing is for flow of Prāṇa through Sūrya Nāḍī. What are these Nāḍīs and what are their significances in Prāṇāyāma? We will study now.

The Anatomy of the physical Body and Prāṇic Body

Medical research has unraveled many of the hidden mysteries of this physical body. Starting with the cells as the fundamental smallest units of life, the tissues, organs, systems and the whole human body are understood with great accuracy. Our ancient seers had known the structure and functioning of the vital body called Prāṇamaya Kośa. Just as there are large number of blood vessels and nerves in the physical body, there are 72 lakh Nāḍīs in our Prāṇamaya Kośa through which the Vyāna flows. They are spread throughout the vital body. There are three principal Nāḍīs called Idā, Piṅgalā and Suṣumnā. Positioned at the centre of the spinal canal is Suṣumnā. The Idā and Piṅgalā go up from the base spiralling around the straight and vertical Suṣumnā Nāḍī. The Idā is called Candra Nāḍī and Piṅgalā the Sūrya nāḍī while prāṇa flows through Idā and Piṅgalā incessantly manifesting as breath through left

and the right nostrils respectively, the central Nāḍī, Suṣumnā is not operating in almost all of us.

The Sūrya (sun) as the name indicates, is burning in character. It stimulates. The moon, Candra is cooling in nature, it soothes - relaxes.

Catabolic and Anabolic Processes

It is well-known in modern physiology that in our human system large number of cells get formed continuously and an equal number of cells get destroyed. Medical researchers have found that in about 7 years almost all the cells in our body get replaced.

We are new persons every 7 years. Our entire life is governed by these processes of Catabolism (destruction) and Anabolism (creation). Let us designate the rate at which the cells get destroyed as C and rate at which the cells are constructed as A. We can divide our entire life into three stages :

Stage 1 : $A \gg C$ ('A' far more than 'C')

In childhood there are lot more cells being formed and, therefore, the growth is seen. This is represented below :

Anabolic and Catabolic rates governing the life cycle

Childhood $A \gg C$
Adulthood $A \sim C$
Old Age $A \ll C$

As we reach adulthood, they get balanced Stage 2 : $A \sim C$ ('A' approximately equals to 'C').

When we enter the old age, more of decaying starts and Stage 3 : $A \ll C$ ('A' far less than 'C'), the decay continues culminating in death.

A combination of A and C is the metabolic rate.

These processes (A and C) are governed by the flow of Prāṇa through Idā (A) and Piṅgalā (C) Nāḍīs respectively.

It is also well-known that sympathetic-parasympathetic balance called homeostasis is vital to promote positive well-being. Normally, Sympathetic Nervous System (SNS) is stimulating in character while Parasympathetic Nervous System (PSNS) brings the system to normalcy (is soothing in character). Even here, it looks that Idā and Piṅgalā play a key role in bringing into action PSNS and SNS respectively.

There is a misunderstanding among many people that Idā and Piṅgalā Nāḍīs are nothing but PSNS and SNS. Such people even conjecture that Cakras are nothing but plexi at different levels of the spine. For them, Prāṇa is nothing but oxygen, the breath!

The facts presented in the earlier chapter must convince the readers that our Yogīs were very clear that Nāḍīs exist in Prāṇamaya Kośa, and so do Cakras. **They cannot be found in the physical body by dissection.** Hence, SNS and PSNS are physical manifests (Annamaya counterparts) of Piṅgalā and Idā Nāḍīs in Prāṇamaya Kośa (vital body). And the flow of Prāṇa in these nāḍīs governs and controls the basic functions of Anabolism, Catabolism, nerve impulses through SNS and PSNS and therefore, is considered most important in the practice of Prāṇāyāma.

The interesting aspect found by our seers is that the flow of Prāṇa through these Idā and Piṅgalā Nāḍīs is connected with the left and right nostrils breathing respectively. **When the breath is balanced between the two nostrils and slowed down with awareness, the imbalances of Prāṇa vanish.** The Prāṇic balance, thus, obtained in Prāṇamaya Kośa opens up Suṣumna which is popularly known as Kuṇḍalinī Jāgrī. Such subtle Prāṇic movements will help manifest the dormant potentialities within us which are called supernatural powers.

To bring out this balance, the texts on Yoga offer very simple practices of Prāṇāyāma which can be classed as

Anuloma-Viloma Prāṇāyāmas. Anuloma means breathing in and Viloma means breathing out. These are permutations and combinations of breathing in and out slowly through a single nostril, alternate nostrils and both nostrils. The six possibilities are shown here;

Anuloma-Viloma Prāṇāyāmas

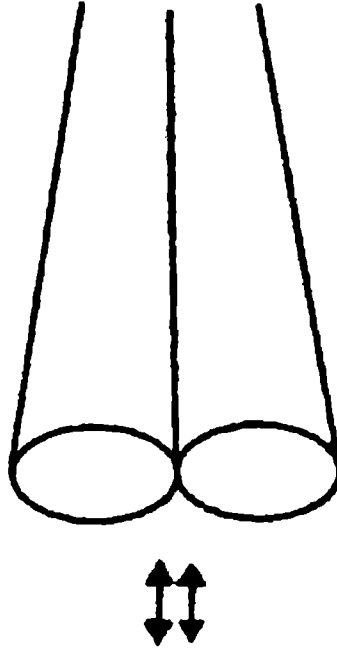
1. Both nostrils : Sukha Prāṇāyāma
2. Single nostrils : a. Candrānuloma-Viloma
b. Sūryānuloma-Viloma
3. Alternate nostrils : a. Candra Bhedana
b. Sūrya Bhedana
c. Nāḍī Śuddhi

1. **Both Nostrils** : Breathing in and out goes on through both the nostrils. This is Sukha Prāṇāyāma also called Dīrgha Śavāsana. This is the simplest of the prāṇāyāmas.

Technique

- Sit comfortably in any posture, if necessary, to begin with, sit even on a couch or armed chair. With practice, you should be able to sit in Vajrāsana or Padmāsana with the spine erect.
- Relax all parts of the body; keep a smiling face.
- Inhale as slowly as you can. Feel that the whole body is getting light and energized.
- Enjoy the turnover at the end of inhalation and promote Kevala Kumbhaka.
- Exhale slowly and effortlessly.

memory, concentration power to improve the quality of life and to promote positive health.



Sukha Prāṇāyāma

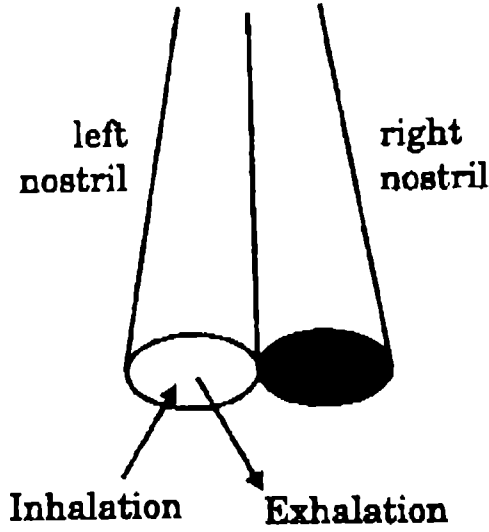
There are no restrictions of age, sex, caste, creed or religion. Sukha Prāṇāyāma reduces the basal metabolic rate, increases the vital capacity, strengthens the immune system and is the one we use under all conditions of rehabilitation. Even cancer patients have started reaping the benefits of this simple technique.

2. **Single Nostril** : In this, breathing is done either through the left or the right. These are called Candrānuloma-Viloma or Sūryānuloma-Viloma, respectively.

Methods

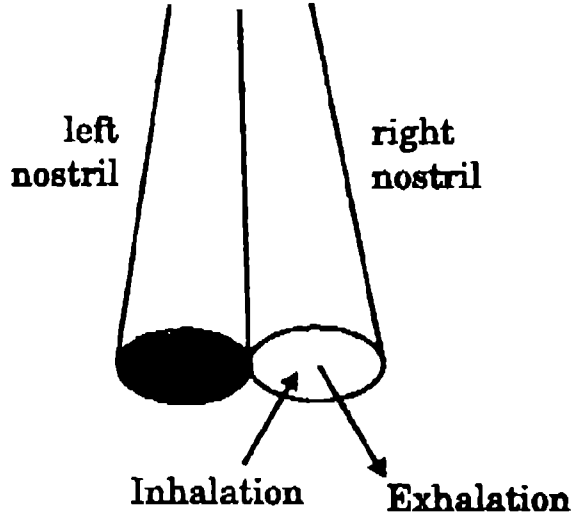
a. Candrānuloma-Viloma Prāṇāyāma

Here the inhalation and exhalation are through the left nostril (Candra Nāḍī) only. Right nostril is kept closed all the time using the right thumb in Nāsikā Mudrā, the shoulders loose, elbow resting on the abdomen and the face relaxed.



Chandra Anuloma-Viloma Prāṇāyāma

b. **Sūryānuloma-Viloma Prāṇāyāma**



Sūrya Anuloma-Viloma Prāṇāyāma

In this, inhalation and exhalation are carried out through the right nostril (Sūrya Nāḍī) only, keeping the left nostril closed all the time.

Benefits

Physical : These Prāṇāyāmas help in clearing up the nasal passages. With regular and long practice, flow of breath through each of the nostrils becomes smooth and slow.

Therapeutic : Very useful for Nasal allergy, Deviated Nasal Spectrum (DNS)

A young man 25 years, 5" 10" with a weight of 40 kgs was trying his best - eating a lot, consuming tonics, etc. to increase his weight. He came to Kanyakumari on a visit and sought advice for his problem through Yoga. He said that he was eating 5 times with a content of about 5000 calories per day. On examination, his left nostril was almost inoperative and breathig rate was 34 per minute. All that he had to do was to reduce his intake, open up the left nostril and slow down his breath. He gained weight, reaching 65 kgs in just 4 months.

A leading lady advocate 4" 6" tall with a weight of 95 kgs had tried all methods of weight reduction with hardly any effect. She started off with Sūryānuloma-Viloma Prāṇāyāma, Śavāsana and an hour of Āsanas regularly in our Yoga classes. Losing 4 to 5 kgs every month, her weight came down to 46 kgs in one year. Those who saw her after an year thought that she must be the daughter of the advocate. Even now, after 15 years, she still maintains her weight and youthfulness.

Candrānuloma-Viloma helps in increasing weight and Sūryānuloma-Viloma in reducing the obesity effectively.

For specific significant improvement, the recommended schedule is to have 27 rounds of these Prāṇāyāmas four times a day (before breakfast, lunch, supper and before going to bed). Systematic practices have benefited a large number of obese and underweight persons gained normal weight.

Spiritual : Cleaning of Candra and Sūrya Nāḍīs is the first step to bring the balance between the two Nāḍīs. They lead towards unfolding of the inner layers of Consciousness.

3. Alternate Nostrils : In this series three combinations of Inhalation & Exhalation can be seen: a. Inhale through left and exhale through right - Candra Bhedana, b. Inhale through right and exhale through left - Sūrya Bhedana and c. Inhale through left, exhale through right and inhale through right and exhale through left - Nāḍī Śuddhi.

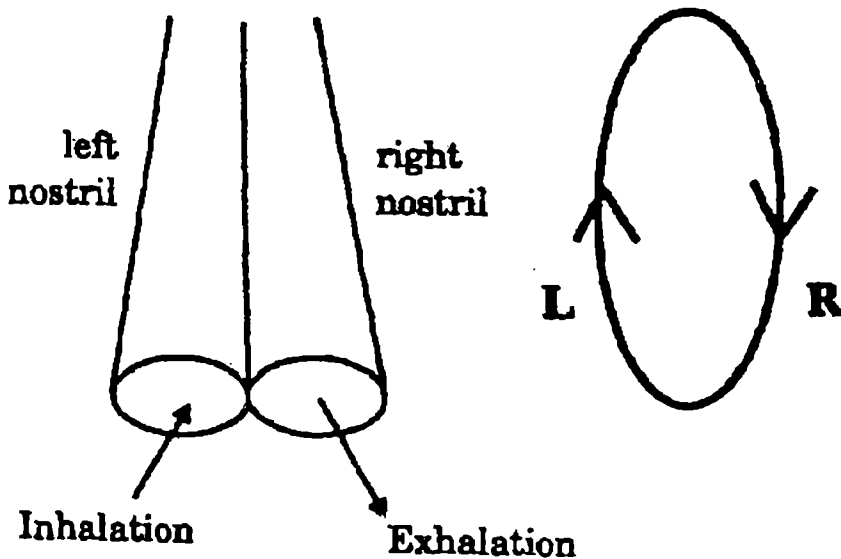
Techniques

a. Candra Bhedana

- Sit comfortably in Vajrāsana or Padmāsana and if not possible, in Sukhāsana., Use Nāsikā Mudrā and close the right nostril with right thumb.
- Slowly breathe in through the left nostril, gently, smoothly and allow the breath to switch over at the end of full inhalation.
- Enjoy the Kevala Kumbhaka.
- Breathe out slowly through the right nostril and switch to the next round.
- Promote Kevala kumbhaka to last longer and longer.

This completes one round of Candra Bhedana. Repeat the prescribed number of rounds (9 rounds).

Candrabhedana Prāṇāyāma



B) Sūrya Bhedana

The technique with Kumbhaka is described in Haṭha Yoga Pradīpikā :

आसने सुखदे योगी बद्ध्वा चैवासनं ततः ।

दक्षनाड्या समाकृष्य बहिःस्थं पवनं शनैः ॥ (ह.यो.प्र : २.४८)

आकेशादानखाग्राच्च निरोधावधि कुंभयेत् ।

ततः शनैः सव्यनाड्या रेचयेत्पवनं शनैः ॥ (ह.यो.प्र : २.४९)

Āsane sukhade yogī baddhavā caivāsanam tataḥ,

Dakṣanāḍyā samākṛṣya bahiḥstham pavanam śaniaḥ.

(HYP : 2.48)

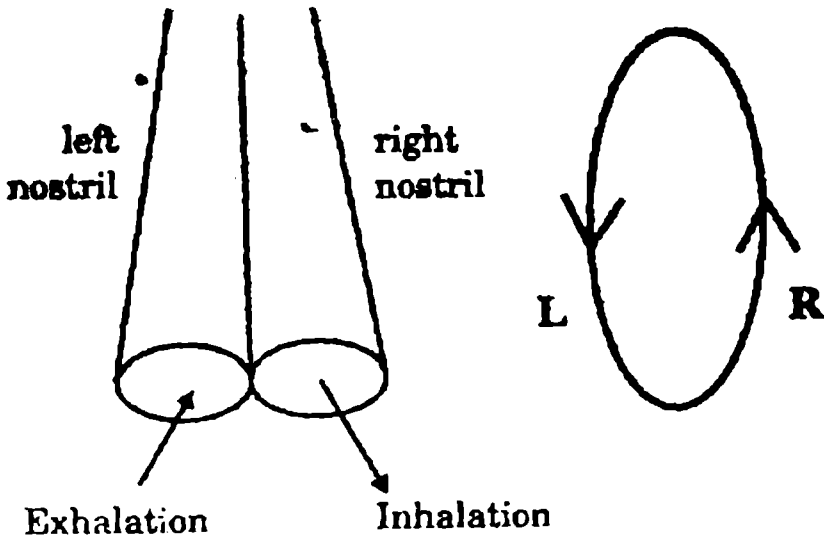
Ākeśādānakhāgrācca nirodhāvadhi kumbhayet,

Tataḥ śaniaḥ savyanāḍyā recayetpavanam śaniaḥ. (HYP : 2.49)

Assuming the posture with ease and steadiness, the Yogī inhale slowly through the right nostril, holds it to tips of fingers and exhales slowly through the left nostril.

And this is exactly opposite of Candra Bhedana technique.

Sūryabhedana Prāṇāyāma



c. Nāḍī Śuddhi

Nāḍī Śuddhi is so important and fundamental that it has become synonymous with Prāṇāyāma. In Haṭha Yoga Pradīpīka the process is this :

बद्धपद्मासनो योगी प्राणं चन्द्रेण पूरयेत् ।

धारयित्वा यथाशक्ति भूयः सूर्येण रेचयेत् ॥ (ह.यो.प्र : २.७)

प्राणं सूर्येण चाकृष्य पूरयेदुदरं शनैः ।

विधिवत्स्तम्भकं कृत्वा पुनश्चन्द्रेण रेचयेत् ॥ (ह.यो.प्र : २.८)

Baddhapadmāsano yogī prāṇam candreṇa pūrayet,
Dhārayitvā yathāśakti bhūyaḥ sūryeṇa recayet. (HYP: 2.7)

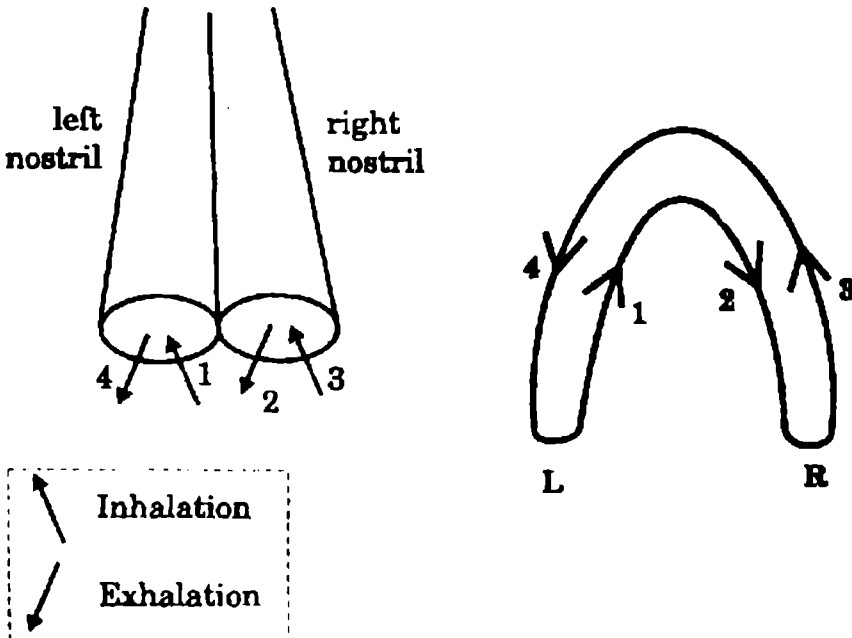
Prāṇam sūryeṇa cākṛṣya pūrayedudaram śanaiḥ,
Vidhivatstambhakam kṛtvā punaścandreṇa recayet.

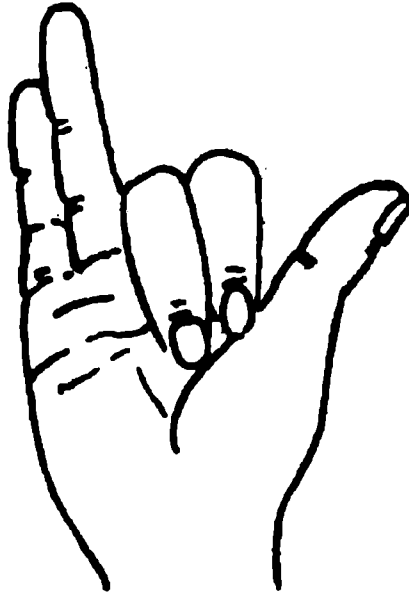
(HYP: 2.8)

Sitting in Padmāsana, the Yogi inhales through the left nostril, holds the breath as per one's capacity, exhale through the right, and inhales through right; after performing Kumbhaka, exhales through the left.

Nāḍī Śuddhi Prāṇāyāma

Begin by exhaling completely
through the left nostril





Nāsikā Mudrā

Technique

- Take up sthiti.
- Inhale through the left nostril by closing the right nostril with the thumb in Nāsikā Mudrā.
- Enjoy the turnover and lengthen the duration of Kevala kumbhaka.
- Open the right nostril and close the left with the ring finger and the little finger to exhale slowly through the right.
- Enjoy the turnover and Kevala kumbhaka.
- Slowly inhale through the right nostril.
- Promote Kevala kumbhaka.
- Open the left and close the right nostril through the thumb of the right hand (in Nāsikā Mudrā) and exhale through the left nostril.
- Enjoy and promote Kevala kumbhaka.

This completes one round of Nāḍī Śuddhi. Repeat the prescribed number of rounds (9 rounds).

Benefits

Physical : These three Prāṇāyāmas promote balance between the two nostrils effectively apart from cleansing the nasal tract.

A balance between the Sympathetic Nervous System and Para-Sympathetic Nervous System, and Anabolic and Catabolic processes is brought about and the homeostasis is restored. Metabolic rate is decreased as in all other Prāṇāyāmas.

Therapeutic : Bronchial Asthma, Nasal Allergy, Bronchitis and many other respiratory disorders are helped by these practices. Reduction in anxiety and stress levels are the therapeutic benefits. Patients with high BP should concentrate on Candra Bhedana and Nāḍī Śuddhi; patients with chronic cold on Sūrya Bhedana.

Spiritual : Bringing balance in Prāṇa in the Prāṇamaya Kośa is vital to spiritual growth. These Prāṇāyāmas are used extensively as preparation to higher life and spiritual progress. Concentration, clarity of mind, memory, Intelligence Quotient and creativity are enhanced by these Prāṇāyāmas. Sūrya Bhedana particularly for IQ (featuring the left brain), Candra Bhedana for development of creative and intuition (featuring the right brain) and Nāḍī Śuddhi for the rest are the well-known benefits.

The great Yogīs and spiritual masters in this country had recognised the importance of these balancing Prāṇāyāmas and prescribed Nāḍī Śuddhi to all (those who sought guidance) for six months. Half an hour to one hour twice a day for 6 months can build a beautiful foundation for a fine superstructure of spiritual and Yoga way of living. It is also mentioned in Haṭha Yoga Pradīpikā (2.10) that one can practise 4 times a day for 3 months, 80 rounds each time to achieve Nāḍī Śuddhi. It is for this reason that we have included Nāḍī Śuddhi as an intergral part of all our Yoga courses.

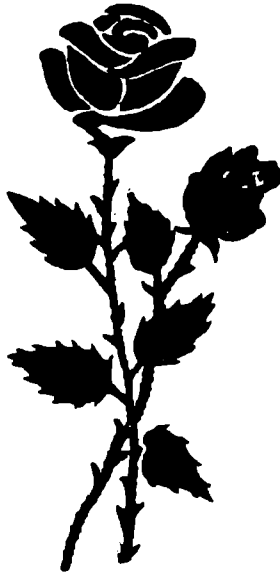
The lop-sided growth of personalities can be effectively

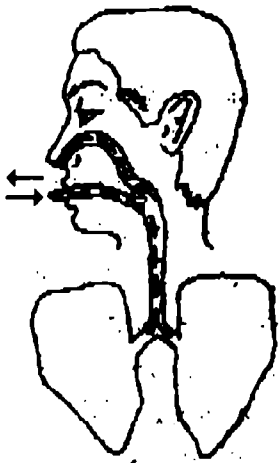
brought to a balance suitably by adjusting the practices of Candra and Sūrya Bhedana Prāṇāyāmas. For example, an artist, as a creative person, needs his critical faculty to be sharp and hence, Sūrya Bhedana is prescribed more. Similarly a highly analytical mind getting too dry (which may lead to excessive intellectualisation, neurosis or schizophrenia) can be balanced by developing the 'heart' featured by love, affection, intuition, creativity, etc. by practising Candra Bhedana Prāṇāyāma. Thus, personality change can be brought about effectively. Steady systematic practice of Nāḍī Śuddhi Prāṇāyāma can bring balance - (samatva) equanimity - the key to spiritual growth.

It is important to remember that keeping awareness is the key in the performance of all Prāṇāyāmas. The building up of awareness should be kept up through the Prāṇāyāmas described in this chapter in addition to the balancing aspects.

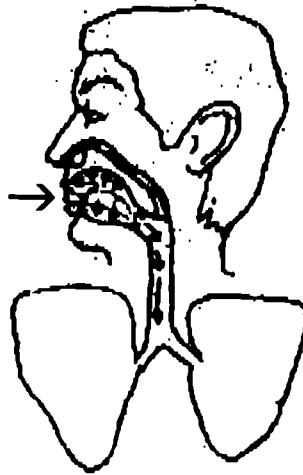
Thus we have learnt so far the three basic factors of Prāṇāyāma :

1. Slowing of breath.
2. Awareness of breathing, and
3. Balancing of breath.

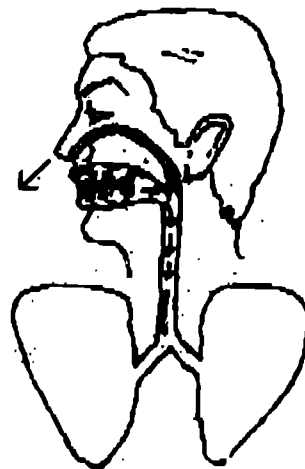




Sitali



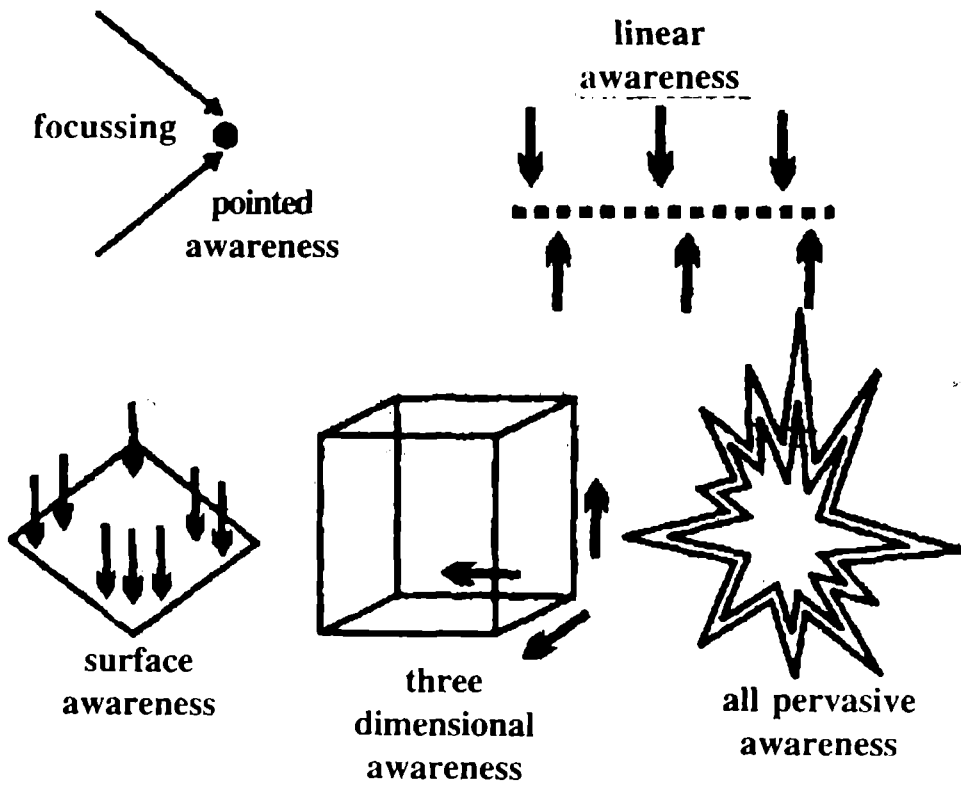
Sītkāri



Sadanta

EXPANSION OF AWARENESS

**From pointed...to
three dimensional and all pervasive awareness**



Expansion of Awareness

EXPANSION OF AWARENESS

Progress in Prāṇāyāma results in two basic facets of growth:

1. **Increased sensitivity, and**
2. **Expansion of awareness**

Having built a fine base through the three facets of Prāṇāyāma - slowing down, awareness and balancing breath, the Yogī would step into subtler and deeper aspects of Prāṇāyāma. We have already stated as to how we build the first aspect of Prāṇāyāma. Awareness starts as attention. Attention brings the conscious brain (neo-cortex) into operation. In the initial stages of any Prāṇāyāma, the awareness is in the form of attention and the progress is fast. But soon the process runs mechanical. Stagnation is a common feature not only in all Prāṇāyāmas but also in all Yoga practices. Why does this happen? This is because our physical system is built that way.

Initially, we may pay full attention while learning the technique; our 'conscious' brain (called the cortical region of the brain or neo-cortex) comes into operation. It is this part of the brain which distinguishes the brain of a human being from that of monkeys and other animals. All conscious activities are governed by the neo-cortex which programmes the entire process and passes on the task to the lower brain which continues the process repeatedly without involving the neo-cortex. It is then that the process is said to have become mechanical. This process is called 'Automatisation', This is how our conscious brain is spared from involvement in day-to-day trivial activities like walking, cycling, driving, etc.

Naturally the remedy is Yoga which is a **conscious process of de-automatisation by breaking this chain or feedback loop**. It is for this reason that awareness is much emphasised in all the techniques of Yoga including Prāṇāyāma.

Attention is the first step to enter into awareness.

Attention and awareness are built only if sensitivity develops. Tamas has to be shattered for invoking sensitivity which is a facet of Rajas. Modern age has invoked Rajas by increasing desires for enjoyment. No doubt, we have turned active and sensitive in the wake of this age of attractions of sense pleasures. This sensitivity and sharpness has increased our understanding of the physical universe around and has brought us to this Hi-Tech era. However, this increased sensitivity has started turning into over-sensitivity with all its attendant hazards mentioned earlier.

Exactly the same thing may happen if we invoke sensitivity by Kapālabhāti and use only 'attention' in all the Prāṇāyāmas. There could be lop-sided growth of sensitivity which may lead to hazards of over-sensitivity in the life of a Sādhaka to irritability, anger, excessive hunger, sexual urge, etc. **Hence, the growth of sensitivity should go hand in hand with the expansion of awareness.** From attention as a first step in awareness called pointed-awareness to linear, surface and three-dimensional awareness.

Before we proceed to cooling Prāṇāyāmas, we will explain as first the Ujjāyī Prāṇāyāma, which makes us attentive and thus we enter in the sphere of awareness. Attention at the throat in Ujjāyī brings the conscious brain into action and thus relieves a practitioner from the stagnant mechanism of life.

उज्जायी Ujjāyī

The Samskr̥ta term Ujjāyī means victorious; Ujji is the root which means to conquer or acquire by conquest. It is also known as the psychic breath.

In this Prāṇāyāma, flow of air through the trachea constricted by the partial closure of epiglottis makes the air rub through the surface and produces a hissing sound. **Awareness is built in process.**

In Hathayoga Pradīpikā, this Prāṇāyāma is explained thus:

मुखं संयम्य नाडीभ्यामाकृष्य पवनं शनैः ।

यथा लगति कंठान्तु हृदयावधि सस्वनम् । (ह.यो.प्र.: २.५१)

पूर्ववत्कुम्भयेत्प्राणं रेचयेदिडया तथा।

श्लेष्मदोषहरं कंठे देहानलविवर्धनम् ॥ (ह.यो.प्र. : २.५२)

Mukham samyamyā nāḍībhyāmākṛṣya pavanam śanaiḥ,
Yathā lagati kaṅṭhāntu hr̥dayāvadhī sasvanam. (HYP : 2.51)

Pūrvatkuṃbhayetprāṇam recayedīdayā tathā,
Śleṣmadoṣaharam kaṅṭhe dehānalavivardhanam. (HYP : 2.52)

Controlling the mouth (partially closing the larynx) the air should be so inhaled through the nostrils that a fine rubbing or hissing sound is produced from the throat down to the lungs; holding the breath, the air should be exhaled through the left nostril.

Technique

- Sit comfortably in any posture. If you can sit in Padmāsana or Vajrāsana with ease, it will be better.
- Relax the body and the face.
- Inhale slowly producing a hissing sound at the throat by partial contraction of the glottis. This can be learnt by imitating swallowing action but not fully. This allows the air to get in slowly. The hissing is the frictional sound as that of water flowing through a pipe.
- After full inhalation allow the breath to stop with ease and relax before you start exhalation. Kevala Kumbhaka can be experienced effectively at this juncture. Relax and enjoy this phase. It will help effectively in prolonging the Kevala Kumbhaka.
- Slowly start exhaling through the left nostril by closing the right nostril with thumb in Nāsikā Mudrā. Prolong the exhalation as long as possible with ease. Enjoy the hissing sound.
- With the complete exhalation, the breath stops automatically before inhalation. Promote this Kevala Kumbhaka by enjoying and relaxing.

This is one round of Ujjāyī Prāṇāyāma; continue the prescribed number of rounds (9 rounds).

Benefits

Physiological : Apart from the usual benefits of Prāṇāyāma breathing, Ujjāyī strengthens the muscles of epiglottis which helps in reducing snoring and helps in voice culture.

Therapeutic : Tonsilitis, sore throat, chronic cold and bronchial asthma are greatly reduced by Ujjāyī. Cases of hypersensitive throat, problems like cough, excessive hiccups, etc. are also helped. Patients with anxiety will find this Prāṇāyāma very useful.

Spiritual : Pointed awareness or attention at the throat region is the beginning for spiritual growth.

Ujjāyī is a basic Prāṇāyāma and can be used in combination with most of the Prāṇāyāma.

Let us see now, how we expand awareness through the cooling Prāṇāyāmas.

Cooling Prāṇāyāmas

Three types of Prāṇāyāmas in this series are used:

शीतली	Śītalī
सीत्कारी	Sītkārī
सदन्त	Sadanta

Here, we use 'temperature' as a tool to recognise the flow of air to expand our awareness and increase sensitivity.

The Techniques

1. शीतली Śītalī (Beak-tongue Prāṇāyāma)

In Haṭhayoga Pradīpikā :

जिह्वया वायुमाकृष्य पूर्ववत्कुंभसाधनम् ।

शनकैर्घ्राणरंध्राभ्यां रेचयेत् पवनं सुधीः ॥ (ह.यो.प्र.: २.५७)

*Jihvayā vāyumākr̥ṣya pūrvavatkuṃbhāsādhanam,
Śanakairghrāṇarandhrābhyām recayet pavanam sudhīḥ.*

Suck the air through (beak of) the tongue; hold the breath as before and exhale slowly through the nostrils.

Technique

- Take up Sthiti.
- Stretch the tongue forward out of the mouth and fold it so as to resemble the beak of a crow.
- Slowly suck in the air through the beak and feel the jet of cool air passing down the trachea into the lungs.
- Enjoy the turnover and Kevala Kumbhaka
- Slowly exhale through the nostrils, carefully feeling the movement of warm air all the way up from the lungs through the trachea and the nasal passages.
- Enjoy the stoppage of breath and promote this blissful Keval kumbhaka before the breath starts moving in again through the beak of the tongue.

This completes one round of Śītalī Prāṇāyāma. Repeat 5 rounds.

2. सीत्कारी Sītkārī (Hissing Breath)

In Haṭhayoga Pradīpikā :

सीत्कां कुर्यात्तथा वक्त्रेघ्राणेनैव विजृम्भिकाम् ।

एवमभ्यासयोगेन कामदेवो द्वितीयकः ॥ (ह.यो.प्र. : २.५४)

Sītkām kuryāttathā vaktreghrāṇenaiva vijṛmbhikām,
Évamabhyāsayogena Kāmadevo dvitīyakaḥ. (HYP : 2.54)

By drawing the breath in through the mouth, make a hissing sound, without gaping, and exhale through the nose. By practising this, one becomes a second Kāmadeva.

Technique

- Take up Sthiti.
- Fold the tip of the tongue inwards and press the root of

the upper palate with the tip of the tongue. The folded tongue slightly comes out between the two rows of teeth and provides a narrow opening on both the sides.

- Slowly suck in the air which enters in through the two sides and diffuses throughout the mouth and moves down the trachea into the lungs.
- Promote Kevala Kumbhaka and feel its effects.
- The warm air is exhaled out slowly through the trachea, nasal passages and the nostrils and the breath stops automatically.
- The deep relaxation obtained due to cooling extends the Kevala Kumbhaka.

This completes one round of Sītkārī. Repeat 5 rounds.

3. सदन्त Sadanta (Clenched-Teeth Prāṇāyāma)

दन्तेन सह इति सदनतः ॥

Dantena saha iti sadantaḥ.

The Prāṇāyāma performed using the teeth, is Sadanta.

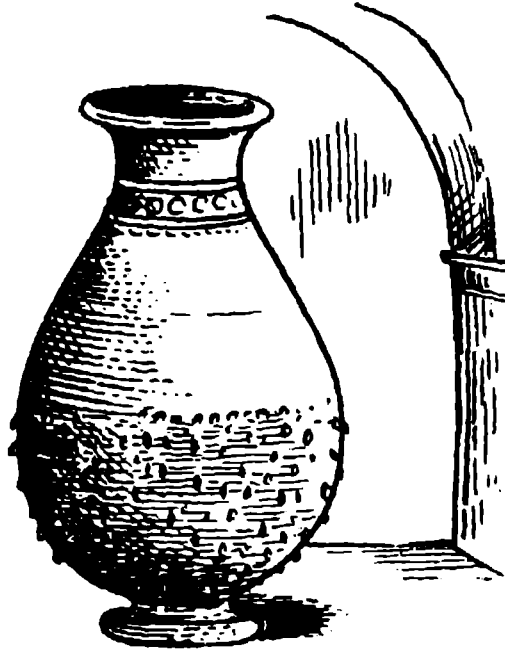
In this Prāṇāyāma, the teeth are pressed together, tip of the tongue kept behind the teeth and air is sucked in. The air moves over the gums and slowly through the crevices of the teeth into the mouth and passes down the trachea into the lungs. Except this change, all other steps are the same as in Śītalī and Sītkārī Prāṇāyāmas.

Principle of Differential Evaporation

You all must have seen the water in a mud pot remains cold. This is because the water particles come out of the pores and evaporate. The latent heat of evaporation is absorbed and the water gets cold.

In the same way, when air flows over the surface of the tongue, the saliva evaporates and the heat sensors on the tongue record a cooling effect. In the inner surfaces of trachea, etc, the coolness is due to the evaporation of the mucous secretions.

Principle of Cooling Prāṇāyāmas



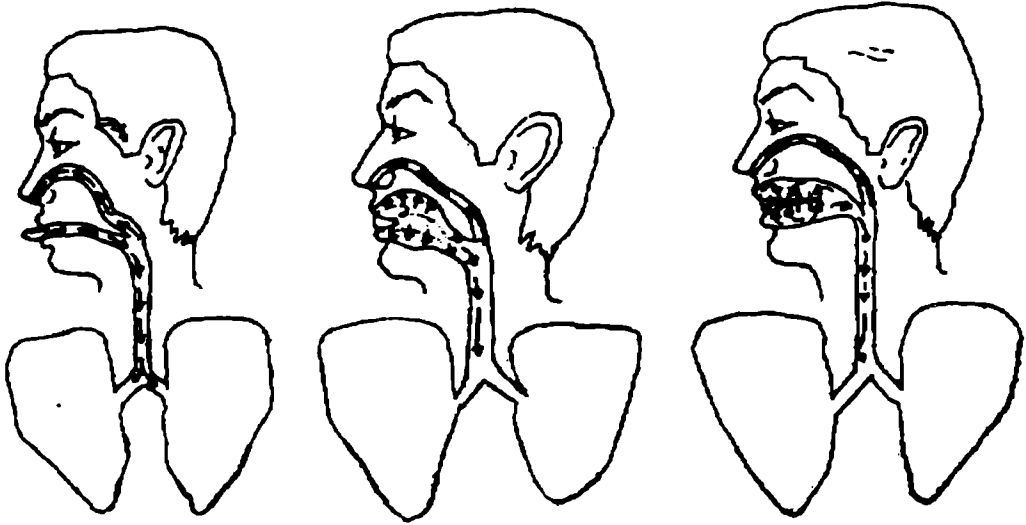
As air enters the lungs, it will acquire or attain the temperature of the body. This warmed up air moves upwards during exhalation and can be felt as the surface is already cooled earlier.

This temperature differential is the one that helps in recognising the movement of air and thus builds up awareness and expands the same from linear awareness to surface awareness.

Flow of Air in the Three Prāṇāyāmas

In Śītalī Prāṇāyāma the air moves in through the beak of the tongue slowly as a jet into the trachea and lungs. The coolness is felt due to the movement of air all the way from the tip of the tongue down the lungs. The warm air from the lungs coming all the way out through the nostrils can be felt. The awareness is not restricted to throat only as in Ujjāī (pointed awareness) but also spreads to the tongue, trachea and thus the entire respiratory tract. The coolness and warmth (temperature aspects) are responsible for the recognition. Hence the first step in expanding the awareness from Ujjāī to Śītalī is from pointed awareness to linear awareness.

This schematic diagram shows the flow of air through the mouth and down the trachea in the three Prāṇāyāmas.



ŚĪTALĪ

SĪTKĀRĪ

SADANTA

In Sītkārī Prāṇāyāma, the air enters from the sides through the openings of the tongue, turns over and moves in through the surface of the tongue not as a jet, but touching the entire inner surface of the mouth. Recognise the fine cool touch and the gentle diffused movement of cool air at all points on the inner surfaces of the mouth. This is Surface Awareness in the mouth.

In Sadanta, we grow more sensitive and encompass the entire respiratory tract - mouth, trachea, bronchi and lungs, upper nasal tract, etc. **as we allow the air to rub gently throughout the respiratory tract.**

The feeling of poise, bliss and elation characterises the growth in awareness. Due to deeper relaxation, the metabolic rate decreases and the length of Kevala Kumbhaka increases very significantly.

Benefits

Physical : All the three Prāṇāyāmas are helpful in relaxing the muscles, soothing the nervous system and even to reduce the Basal Metabolic Rate effectively. An overall cooling effect is observed. We feel light and fresh after performing Prāṇāyāmas. Particularly, the taste buds and the mouth are sensitized and the vital capacity of the lungs enhanced.

Therapeutic : Allergies due to cold can be effectively overcome by prolonged practice of these Prāṇāyāmas. Anxiety neurotics feel highly benefitted by these. These help in reducing the stress and tensions effectively. Sadanta is of particular value in reducing problems of the teeth and gums - decaying teeth, toothache, pyorrhoea, etc. Sītkaṛī is of great value in hypertension.

Spiritual : Expansion of awareness is a facet of spiritual growth, which systematically moves from pointed to linear and then to surface awareness for perceiving things which were not perceptible until now. The unfoldment of the hidden dimensions of consciousness starts with the growth of awareness.

Limitations

In the initial stages of cold, sore throat, etc. the performance of these Prāṇāyāmas can aggravate the situation. Similarly patients of bronchitis are told not to perform these to begin with.

Breathing through the mouth

Often the question arises: Is it advisable to breathe through the mouth in these practices?

Normal breathing should be through the nostrils since the nose acts as an effective air conditioner by -

- a. removing the dust and other foreign particles.
- b. bringing the air temperature to body temperature, and
- c. controlling the humidity of air to match with that of the body.

When the nose is not used for breathing, all these three factors of control are absent. That is why doctors recommend to breathe through nostrils and not through mouth.

However, in these Prāṇāyāmas, purification of air takes place as the air goes through the tongue or crevices of the teeth. The dry air, if any, will get humidified while inhaling and absorbing the salivary secretions in the mouth. Regarding temperature, we are consciously using the differential for the growth of awareness. Hence all the three aspects of our air conditioning are taken care of.

Further, the total number of breaths (about 30 for all the 3 types) is so small compared with the total number of breaths in a day that the breathing through the mouth will be of no danger at all. In fact, when our nostrils are blocked due to cold and nasal allergy, we breathe through the mouth for much longer time with hardly any danger to the system.

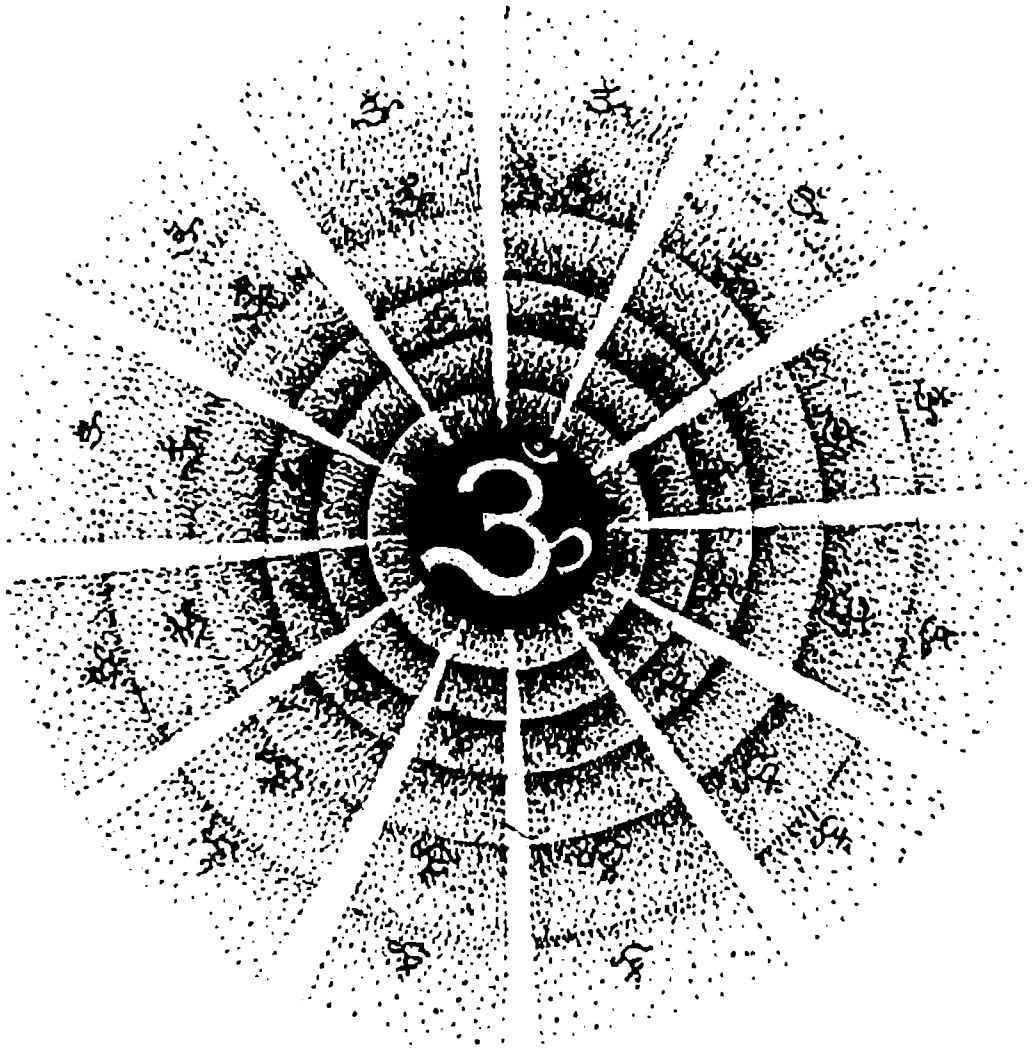
Other Varieties of Cooling Prāṇāyāmas

While the inhalation is fixed through the tongue or teeth, exhalation can be through both the nostrils, or either nostril or through alternate nostrils.

Breathing out through the right nostril increases the effectiveness of the cooling Prāṇāyāmas while exhalation through the left reduces its effects. One exhalation through right and another through left brings balance.



LAYA - THE MERGER



LAYA - THE MERGER

From surface awareness to three dimensional awareness and then to all pervasive awareness - this growth is accomplished by Bhrāmarī and Mūrccā Prāṇāyāmas described in this chapter. They come under the name Laya Prāṇāyāmas.

We have seen how awareness can be expanded by using the 'temperature difference' in the cooling Prāṇāyāma from pointed awareness to linear and surface awareness. Sound vibrations in Bhrāmarī Prāṇāyāma are used to further grow in awareness.

भ्रामरी Bhrāmarī (Humming bee Prāṇāyāma)

The term Bhrāmarī is a Samskr̥ta word meaning a female bee. Bhrāmarā is a male bee. In the Bhrāmarī Prāṇāyāma a humming sound resembling that of the female bee is produced.

In this Prāṇāyāma, in Haṭhayoga Pradīpikā it is said:

वेगाद्घोषं पूरकं भृङ्गनादं भृङ्गीनादं रेचकं मंदमंदम् ।

योगीन्द्राणामेवमभ्यासयोगाच्चित्ते जाता काचिदानन्दलीला ॥ (ह.यो.प्र. : २.६८)

Vegādghoṣam pūrakam bhṛṅganādam
bhṛṅgīnādam recakam mandamandam,
Yogīndrāṇāmevamabhyāsayogāccitte
jātā kācidānandalīlā. (HYP : 2.68)

While in faster inhalation (than exhaling) the air produces a humming sound like that of a male bee and in slow exhalations produce the humming sound of a female bee. The Yogīs do this Prāṇāyāma for long durations to get ecstatic state of mind.

Technique

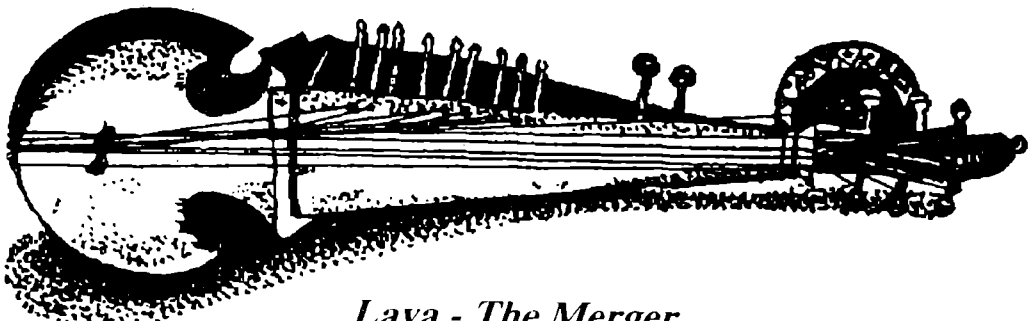
- Take up sthiti for Prāṇāyāma.
- Inhale fully.

- While exhaling produce the humming sound of a female bee. Prolong the breath and the sound as far as possible effortlessly, without jeopardising the feeling of vibrations throughout the body.
- The breath stops. Experience the fine Kevala Kumbhaka and the sound vibrations continuing to resonate throughout the body. Enjoy this blissful state of mind.
- The air starts moving in. Produce a high frequency sound of a male bee while inhaling. The whole body should feel the resonance produced by this Prāṇāyāma often called Bhrāmarā.
- The breath slows down and stops with ease. The high frequency sound mellows down to silence outside; but vibrations throughout the body elongate this phase of Kevala Kumbhaka as much as possible by enjoying the same.
- This completes one round of Bhrāmarī Prāṇāyāma. Repeat all the steps for the prescribed number of rounds (9).

Resonance - The Key in Bhrāmarī

The most important aspect in the performance of Bhrāmarī Prāṇāyāma is to produce resonant sound vibrations both during exhalation and inhalation.

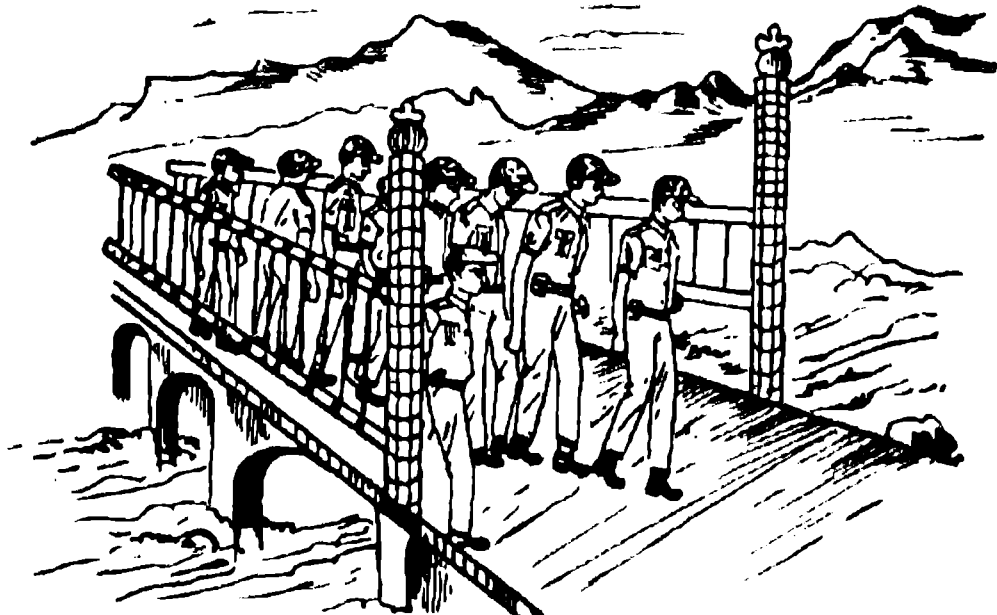
The tuning of a stringed musical instrument is an example of the positive usefulness of resonance. Vīnā or Violin is tuned effectively, plucking the string at one end would produce beautiful resonance and the vibrations can be felt in each and every part of the instrument.



Laya - The Merger

The phenomenon of resonance was scientifically understood in the early parts of the nineteenth century.

A group of marching soldiers saw a bridge collapse as soon as they crossed it. Strong winds and floods did not seem to be the causes. Investigations later revealed that the "effect" of March Past on the bridge was responsible for it.



Break the steps on the bridge

*This episode brought to science a new phenomenon called resonance. When there is a matching of the frequencies from two or more sources, **the waves compliment one another and high amplitude waves are generated.** The natural frequency of the bridge matched with the frequency of the March Past and the bridge was subjected to high amplitude oscillations resulting in its collapse. Hence the rule 'break the steps while you cross the bridge' soon came into force in all army injunctions.*

A similar fine tuning it to be done in Bhramari Prāṇāyāma. This can happen when the frequency of the sound produced at the throat during inhalation and exhalation matches with the natural frequency of the body. We have to so adjust the frequency of our sound production that the resonance is produced. Qualitatively, we should be able to feel the vibrations throughout the body from head to toe. This is called the three dimensional

awareness - awareness developed throughout the body. Hence it is sound resonance which is most important in Bhrāmārī.

To begin with, we should concentrate on getting resonance only during exhalation. Many people try to prolong the sound and thus miss the aspect of resonance totally. The development of three-dimensional awareness will then be missed and the effect will be very marginal. **Hence it is more important to produce a fuller sound featured by resonance rather than trying to prolong the sound while performing Bhrāmārī Prāṇāyāma.** After learning the exhalation part correctly, we can go over to the production of sound during inhalation.

As we are accustomed to produce sound only during exhalation, it will be quite a task before we learn to generate sound during inhalation. We shall have to so constrict the glottis, neck and nasal cavities that the air entering into the voice box would vibrate the vocal chord very effectively to generate sound. With practice we will be able to increase the volume of the sound or alter the frequencies at our will, as we do in exhalation. It is then that we can get resonance even during inhalation.

The Female and the Male Bee Sounds

It is well-known that in human species, the female voice is at a higher pitch or frequency compared with that of a man. A lady's voice is sweeter, even when it is not cultured or trained compared to man's.

But it is interesting to note that in lower species like birds or insects, the opposite is exactly true. A male bee's voice is higher in pitch than a female bee's voice. It is sweeter and more attractive. In birds, it is the male that has the beautiful and decorative feather. Probably because it is the male of these lower species that need to attract the females.

Bhrāmārī Prāṇāyāma consists of two stages:

- a. Sound produced during exhalation like a female bee - lower in pitch/frequency.

- b. Higher frequency sound during inhalation resembling the humming sound of a male bee.

Apart from the Kevala Kumbhaka in between, there is a fine lulling effect of this Prāṇāyāma on the mind which leads to 'laya' or merging of the mind leading to Samādhi.

Stages in Bhrāmari

Continued practice of Bhrāmari leads not only to fine 3D awareness, but also to higher and subtler states of consciousness. A series of inner experiences result from the practice of Bhrāmari. Gheraṇḍa Samhitā describes these experiences vividly.

अर्धरात्रे गते योगी जन्तूनां शब्दवर्जिते ।

कर्णौ पिष्याय हस्ताभ्यां कुर्यात् पूरककुम्भकम् ॥ (घेरंड.सं.:५.७८)

Ardharātre gate yogī jantūnām śabdavarjite,

Karṇou pidhāya hastābhyām kuryāt pūrakakumbhakam.

At past midnight in a place where there are no sounds of animals to be heard, let the Yogī practise Pūraka and Kumbhaka closing the ears with the hands.

शृणुयाद्दक्षिणे कर्णे नादमन्तर्गतं शुभम् ।

प्रथमं झिञ्झीनादं च वंशीनादं ततः परम् ॥ (घेरंड.५.७९)

मेघझर्झरभ्रमरी घण्टाकांस्यं ततः परम् ।

तुरीभेरीमृदङ्गादिनिनादानकदुन्दुभिः ॥ (घेरंड.सं.:५.८०)

Śṛṇuyāddakṣiṇe karṇe nādamantargatam śubham,

Prathamam jhiñjhinādam ca vanśinādam tataḥ param.

Meghajharjharabhramarī ghaṇṭākāṁśyam tataḥ param.

Turībherīmṛdaṅgādininādānakadundubhiḥ. (Ghe.S.:5.79-80)

He will then hear various internal sounds in his right ear. The first sound will be like that of a drum, then that of a flute, then that of a thunder, then of a drum, then of a beetle, then of bells, then those of gongs of bell-metals trumpets, kettle-durms, mṛdaṅga, military drums, dundubhi, etc.

एवं नानाविधो नादो जायते नित्यमभ्यसात् ।

अनाहतस्य शब्दस्य तस्य शब्दस्य यो ध्वनिः ॥ (घेरंड.सं.५.८१)

ध्वनेरन्तर्गतं ज्योतिर्ज्योतिरन्तर्गतं मनः ।

तन्मनो विलयं याति तद्विष्णोः परमं पदम् ।

एवं भ्रामरीसंसिद्धिः समाधिसिद्धिमाप्नुयात् ॥ (घेरंड.स.५.८२)

Evam nānāvidho nādo jāyate nityamabhyasāt,

Anāhatasya śabdasya tasya śabdasya yo dhvaniḥ. (5.81)

Dhvanerantargatam jyotirjyotirantargatam manaḥ,

Tanmano vilayam yāti tadviṣṇoḥ paramam padam,

Evam bhrāmarīsansiddhiḥ samāhisiddhimāpnuyāt. (5.82)

Thus various sounds. are recognized by daily practice of this Kumbhaka. Last of all is heard the Anāhata sound rising from the heart. In this there is a resonance; in the resonance a light. In that light let the mind be immersed. When the mind is absorbed, it reaches the highest seat of Viṣṇu (Parama-Pada). By mastery over this Bhrāmarī Kumbhaka, one gets success in Samādhi.

We could see that Bhrāmarī Prāṇāyāma invokes consciousness at subtler states featured by :

- hearing different types of internal sounds.
- subtler sounds characterised by very subtle vibrations.
- visions of different types.
- jyoti darśana (experience of the light).
- experience of different mental states.
- laya or merger of the mind with vanishing of tripuṭi (threefold process of seer, seeing and the seen) called Samādhi.
- Keep the mind tuned to that point and enjoy the bliss of the process.

Unfoldment of the mind takes place as you lose body awareness. Longer the duration of Kevala Kumbhaka greater is the expansion and depth of perception.

Thus, the ultimate goal of Bhārmārī is, verily, Samādhi, the end point of Aṣṭāṅga Yoga of Patañjali.

Benefits

Physical : Bhārmārī soothens the nervous system by restoring homeostasis, cultures the voice by increasing the range of frequency (pitch) and melody.

Therapeutic : This is extremely useful in almost all ailments of the psychosomatic type as it reduces the stress factor and the associated imbalances, particularly, in dealing with the problems of sore-throat, tonsils, pains, etc.

Spiritual : As seen in different stages of Bharāmārī, it is an extremely beneficial Prāṇāyāma for spiritual progress, by developing three-dimensional awareness, the total body is felt. As Bhrāmārī stops, the resonance continues more and more and we will be able to feel the vibrations in the body and beyond. Gradually, the awareness expands beyond the body towards all pervasive awareness.

Bhrāmārī can be performed at any time of the day in any place. It has no limitations for its performance. The mark of progress in Bhrāmārī is **that the repetition of sound becomes more and more melodious, softer and gentler and continues for longer and longer duration**. As anusandhāna - repeated several times a day grows, the awareness expands and the art of tension-free action becomes a part and parcel of our lives.

मूर्च्छा Mūrccchā (Swooning Prāṇāyāma)

This word in Samskṛta means 'swooning'. This Prāṇāyāma brings the mind to such a state of lull that it resembles a swoon.

The progress and growth consists of expanding our awareness beyond the bodily awareness; from three-dimensional awareness to all pervasive awareness. The awareness is not limited by the physical boundaries of the body. As we expand our awareness, the body feeling reduces more and more to a point where you have no feeling of the body at all, and the awareness is expanded beyond limitations.

In Yogasūtras of Patañjali it is said :

ततः क्षीयते प्रकाशावरणम् । (प.यो.प्र. : २.५२)

Tataḥ kṣīyate prakāśāvaraṇam. (PYS : 2.52)

Then the cover for enlightenment vanishes.

This awareness transcends bodily awareness or three-dimensional awareness.

We have seen how Bhrāmārī in its higher states of performance leads us to this all pervasive awareness. We present here the Mūrccchā Prāṇāyāma from the Gheraṇḍa Samhitā:

सुखेन कुम्भकं कृत्वा मनश्च भ्रुवोरन्तरम् ।

संत्यज्य विषयान् सर्वान् मनोमूर्च्छां सुखप्रदा ।

आत्मनि मनसो योगादानन्दो जायते ध्रुवम् ॥ (घेरण्ड.सं.५.८३)

Sukhena kumbhakam kṛtvā manaśca bhruvorantaram,
Santyajya viṣayān sarvān manomūrccchā sukhapradā,
Ātmani manaso yogādānando jāyate dhruvam. (Ghe.S.:5.83)

Having performed kumbhaka with comfort, let us withdraw the mind from all objects and place it at the space between the two eyebrows. This causes fainting of the mind, and gives happiness. By joining the Manas with the Ātmā, the bliss of Yoga is certainly obtained.

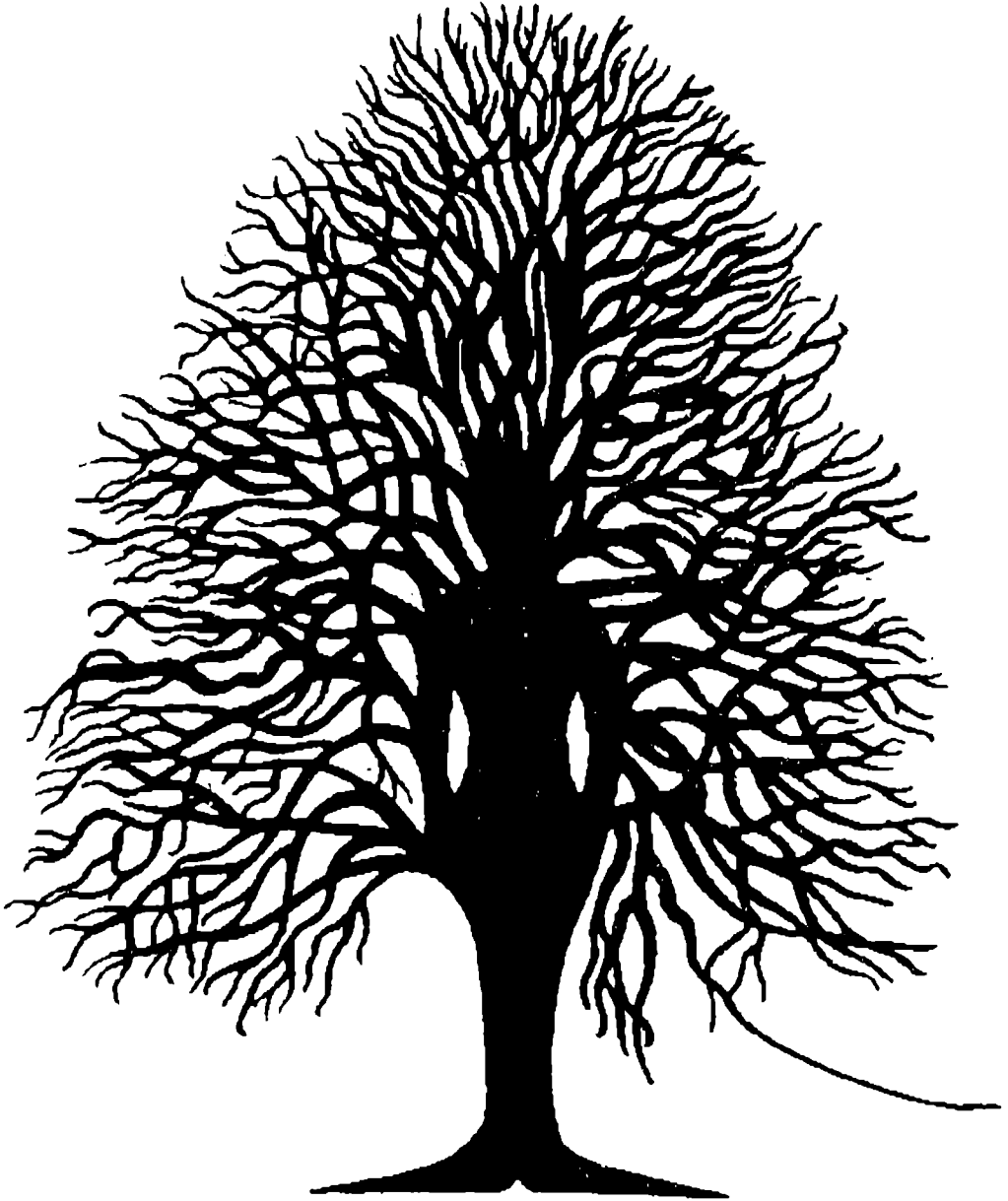
Focussing and defocussing spontaneously occurs in Mūrccchā Prāṇāyāma.

The Techique

- Come to sthiti.
- Inhale slowly allowing the breath to stop in Kevala kumbhaka spontaneously.
- Allow the mind to be focussed in between the two eyebrows, effortlessly.
- Let the breath move out spontaneously and automatically to the second Kevala Kumbhaka.

We could easily see that this Prāṇāyāma is very similar to Sukha Prāṇāyāma or Dīrgha Śavāsana and is very simple, effective and fruitful.

PRĀṆĀNUSANDHĀNA



PRĀṆĀNUSANDHĀNA

Mind, the manifest of Prāṇa in the human spectrum shows up imbalances in the form of cañcalatā, randomness, excessive rush of uncontrolled speed leading to neuroticism and in general Ādhi, stress leading to many psychosomatic problems of modern era.

Emotions, the intensified manifestations of mind packed with energy, trigger off reactions throughout the body through the twofold process: sympathetic and para-sympathetic nervous imbalance (electrical activity) & endocrine imbalance (chemical activity). Long standing emotional upsurges show up as distorted personalities and even lead to deep depressions.

We use intellect, the higher manifest of Prāṇa featured by the power of discrimination, and analysis to correct the wrong notions. Else, a sharp intellect with wrong notion can also lead to great misery and even psychosis.

Unless we gain mastery over prāṇa and thereby on mind, emotions and intellect; restlessness, cycles of emotional upsurges, and misery will continue to haunt our lives. **Prāṇāyāma, hence is mandatory to overcome the miseries and basic problems of our lives.**

Recognition of breathing imbalances is the first step in gaining mastery over breath and thereby on Prāṇa, inner blocks, constrictions etc. should first be cleared by Kriyās. Kapālabhāti is one of the most effective steps. Even Agnisāra Kriyā will be of great help. The excessive speed, jerks, randomness of breathing and wrong breathing habits should be corrected by Sectional Breathing.

Entering into the realm of Prāṇāyāma is accomplished through Bhastrikā. The next step is to increase sensitivity, recognise imbalances in breathing between the two nostrils, bring balance and further slow down the breath : Ujjāyī, Anuloma-Viloma group of Prāṇāyāmas and the most important Nāḍī Śuddhi. Then, sensitize further to increase

the depth of perception. Expansion of awareness should complement the increasing sensitivity. The awareness has to be expanded from pointed to linear and surface awareness. Bhrāmārī through sound expands the awareness to three Dimensions. Mūrccā can raise us to all pervasive awareness; finally towards the 'Silence' the abode of all bliss, knowledge, creativity and freedom. All these have been incorporated into the first module course on Prāṇāyāma. Thousands of people have been using this course and gained tremendous benefits in terms of reduced health hazards, improvement in the quality of life, fine progress towards the art of holistic living featured by bliss and poise, health and harmony, and peace and efficiency.

The practice of Prāṇāyāma should not be only limited to 30 minutes or 1 hour either in mornings or evenings, but start spreading throughout the day. Periodically check up your breathing-speed, which nostril is flowing freely and correct them. Also start feeling the Prāṇa throughout the body and develop the all pervasive awareness by recalling the vision of the beautiful blue sky. The following can be the specific times of the day for recall to begin with :

- As soon as we get up
- During morning hours of yoga practice
- While taking bath
- Before breakfast
- Pre-lunch session
- Before taking tea
- Evening after you come back from work
- Just before supper .
- Night before going to bed.

Everyday, in the beginning phases of practice, it is good to write in the diary, in the night before sleeping, review how many times, you were able to check up your breathing, to correct, expand your awareness and depth of perception.

After about 2 to 4 weeks you will find that your breath awareness becomes continuous. You will find your efficiency increasing greatly over weeks, months and years of practice.

Marks of progress

The clear mark of progress is the reduction of the basic rush of emotions, particularly of the six enemies काम Kāma (lust), क्रोध Krodha (anger), लोभ Lobha (miserliness), मोह Moha (infatuation), मद Mada (ego) and मात्सर्य Mātsarya (jealousy). You move from your slavery to these emotions, towards mastery over them. The stress reduction is clearly seen. Enthusiasm, bliss, lightness, peace, harmony, energy, compassion, service attitude, health will increase the perceptible improvements in the quality of life.

Memory, Intelligence quotient (IQ), creativity and enhancements are seen often clearly in many of the practitioners of Prāṇāyāma.

Some years after his return to India, Sri Aurobindo started certain practices of Yoga. He, however, was confined for the time being to sustained Prāṇāyāma, for three hours in the morning and two in the evening. The immediate effect was a marvellous mental illumination, prakāśamayātā from this resulted an unprecedented flow of poetry. His health improved too, his memory became sharp, the brain seemed to race with a new energy and a clearer sense of direction. Later he wrote 'Sāvitrī' which is the longest poem in the whole of English literature.

Research studies have clearly shown that Prāṇāyāma can improve the autonomic stability and harmonise the functioning of the brain.

With the emergence of inner bliss, peace and tranquillity, the broadening of vision, expansion of awareness, etc., service attitude, love for fellow beings, national awareness and compassion for the entire creation start manifesting. **The small petty egoistic personality is shattered. We move towards freedom and expanded awareness.**

When we know Prāṇa in its highest and subtlest form through Prāṇāyāma in its advanced stages, we will realise and experience this primal energy, Prāṇatattva प्राणतत्त्व the first

born of आत्मन् Ātman. Then we will transcend all the human limitations of Manah, Buddhi, Ahmkāra, Citta मन, बुद्धि, अहंकार, चित्त Mind, Intellect, Ego, Memory, etc., and perceive Superhuman levels of consciousness. Surely, one day this Prāṇavidyā प्राणविद्या Prāṇāyāma will make man Divine and take him to Divinity, perfection itself.

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