

Rechaka should be done through both nostrils. It can be done this way also : Inhale through both nostrils and fill the lungs upto the level of the heart. Hold the breath inside as much as possible. Then exhale slowly through left nostril by closing the right nostril by the right thumb. We can say it resembles Suryabhedh Pranayama.

Kapalbhati or Bhastrika cannot be practised when the disease is severe or acute.

Ujjayi Pranayama decreases the feeling of heat inside the head. It decreases the degeneration of the body. Especially smelling capacity of the nose improves due to increase in blood circulation to inner walls of the nostrils. As special Pranashakti is available to the tongue and the glottis, breath can be clearly identified. As mentioned before the degeneration of the body diminishes, so body looks healthier.

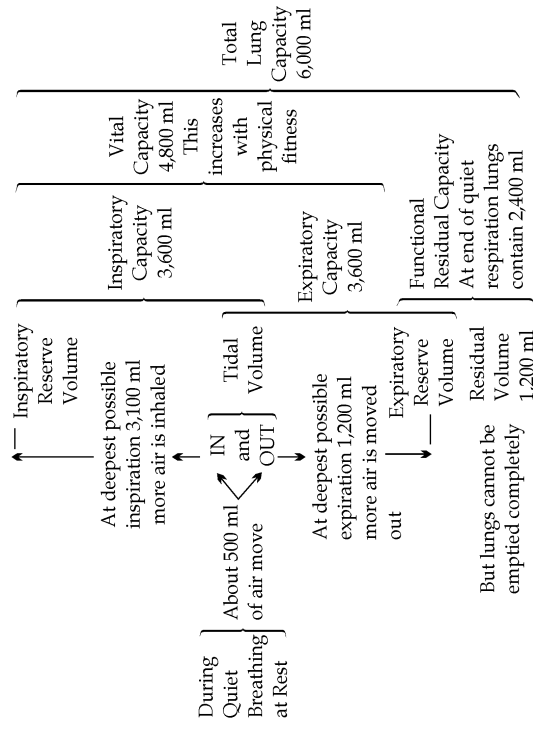
We are going to discuss about Kapalbhathi. It is one of the Shatkriya. There are six Kriyas for the purification of the body. They are Neti-Dhauti, Basti, Nauli, Uddiyan, Kapalbhathi and Trataka. We will discuss about it later on. Though Kapalbhathi is a breathing process it is not included in Pranayama but it is included in Kriyas (Shatkriya).

Kapal means forehead and Bhati means to shine. Kapalbhathi means shining forehead. If the nose is filled up by common cold, the face of a beautiful lady would also look pale and dull. The voice also becomes heavy. Common cold becomes evident from the face. Kapalbhathi Kriya keeps the nose clean. The nostrils have external openings which can be seen. On the back side they open in the upper part of the throat (nasopharynx). From the lower part of the throat the larynx starts and it continues as bronchial tube which divides in to two for each lung. Kapalbhathi Kriya does the cleansing of the inner side of bronchial tube and the lungs. One third of our lungs work generally, but by practice of Kapalbhathi entire lungs would work to their total capacity.

7. RESPIRATORY SYSTEM

We have discussed before that generally we breathe for twelve times in one minute. It has been described in detail in this chart. The aim of all this discussion is that deeper the breathing, more is the availability of oxygen in the smallest alveoli of the lungs. As the availability of Pranashakti in the alveoli is more the body becomes diseaseless and the functioning capacity of the body improves. Let us understand in detail about the changes which occur in skeletal muscles and the thoracic capacity

Volumes and Capacities of Lungs (a)



while breathing.

PURAKA

At the time of normal breathing

- External intercostal muscles are active at the time of routine breathing. The first rib is fixed. During inhalation the sternum and the upper ribs move upwards and outwards.
- There is increase in transverse diameter and front to back diameter of thorax (chest).
- There is downward movement of diaphragm due to its contraction, so the vertical diameter of the thorax increases.
- The thoracic cavity has enlarged.
- There is negative pressure in the pleural cavity which becomes more negative (from -2 to -6 mm of Hg.) due to increase in the size of thoracic cavity. It has the pulling effect on the lung tissue.
- It pulls the elastic tissue of the lungs.
- The pressure in the alveoli (the terminal part of the air passage) has decreased (-1.5 mm of Hg.) which is less than the outer atmospheric pressure.
- Due to this pressure difference the external atmospheric air is pulled in to the alveoli.

RECHAKA

- The external intercostal muscles relax during Rechaka.
- The ribs and the sternum moved inwards and downwards. So the transverse and front to back diameter of the thorax decreases. The diaphragm also relaxes and moves upwards. So the vertical diameter of thoracic cavity decreases. Hence the thoracic cavity becomes small.
- The intrapleural pressure rises from -6 to -2 mm of Hg. So the pulling effect on the lung tissue decreases and the lung tissue collapses. Now intraalveolar pressure rises to 1.5 mm of Hg. (It is more than

external atmospheric pressure.) Due to this pressure difference the alveolar air is pushed out.

During Puraka there is contraction of the muscles of nose and glottis so the air enters in the lungs. There is upward movement of the first rib due to contraction of the muscles of neck. Sternum also moves upwards and forwards.

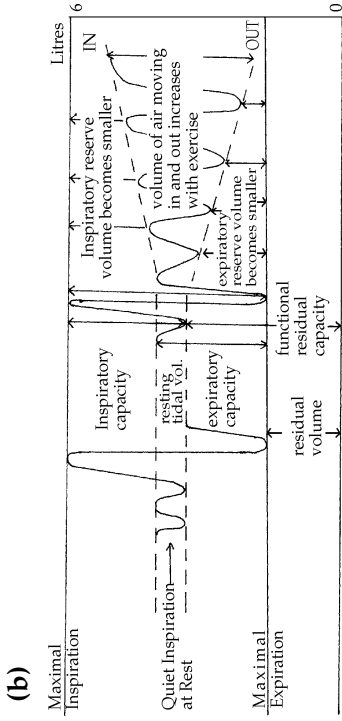
During Rechaka there is contraction of the internal intercostal muscles. The ribs move downwards. There is contraction of the abdominal muscles which pushes the diaphragm upwards.

In Ujjayi Pranayama we have seen that inspiration is done easily as much as possible. Then expiration is done through left nostril by closing the right nostril, or Rechaka is done through both the nostrils. The chest should expand while inspiration. The typical noise occurs due to partial closure of the glottis.

KAPALBHATI KRIYA

Now we discuss about Kapalbhati. The Puraka is to be done slowly and silently. Then the breath should be removed rapidly. When we take breath in all the alveoli of the lungs are filled completely and when we exhale all the alveoli get emptied partially. The diaphragm moves up with force. The breathing capacity increases. By doing regular practice of Kapalbhati there is no accumulation of any unwanted material in the bronchi and even the smallest alveoli due to enough and proper movement of air through them.

In India we always do sweeping two times and mopping on the floor once everyday. Every alternate day we clean all the things. In foreign countries also vacuum cleaning is to be done every alternate day. In Florida and Texas most of the people have swimming pools. A permanent cleaner is put on the floor of the swimming pool. It continuously moves to prevent the accumulation of dirt on the floor. The same way the practice of Kapalbhati completely cleanses the nostrils, the inner



linings of the bronchial tubes, all the small and big alveoli, pleural surface. This practice prevents allergic problem and there is development of resistance against the respiratory diseases.

Here we have scientifically analysed in detail about lung capacity and the mechanism of respiration. Its purpose is to increase the working capacity of our lungs tremendously by practicing Ujjayi, Kapalbhathi and Bhastrika like Kriyas.

It is clear that India is an agricultural country so people are accustomed to dust, sand and fumes. It is not like that in America. The people suffer from allergy due to various fragrances, spray, Eu D colons as well as due to various food items and smells. Now there are three seasons in America also the winter, fall and construction. The repairing work of large highways connecting whole America, freeways, and their exits is going on most of the times.

The problems of dust, sand and fumes will be there though the car is closed or there are air conditioners. It does not mean that we don't have medical treatment, drugs, injections or inhalers but even if little regular practice of Pranayama is done we will not have to search for the solution of the problems of breathing. Hence Shrikrishna says that 'Swalpamapyasya Dharmasya Trayate Mahato Bhayat'. You will be free from a great danger if you practise even a little.

8. BHASTRIKA PRANAYAMA

(Warning : The persons having weak heart or having any type of the heart disease, high diabetes, severe asthma should practise Bhastrika Pranayama only in the presence of a doctor or Yoga Guru.)

The bellows are known as Bhastrika in Sanskrit language. To forcefully inhale and exhale just as bellows is the characteristic of this Pranayama. In Bhastrika Pranayama the breathing is done rapidly and rhythmically which resembles the bellows of the blacksmith.

Bhastrika Pranayama can be practised by sitting in Padmasana, Siddhasana, Swastikasana, Vajrasana or Sukhasana. The head, chest and trunk should be in one straight line. (Samam Shiro Griva Kayam.) The mouth should be kept closed. Like the bellows of the blacksmith inspiration and expiration should be done rapidly and forcefully for twenty times. The abdomen should enlarge while inhaling and it should also be contracted completely while exhaling.

During the practice of this Pranayama a sound resembling the forceful hissing by serpents will be produced. The eyes should be closed while practising it. Don't see here and there. One should be seriously careful. One should not be depressed at the time of practice.

The inner self should be pleasant and joyful. The Kumbhaka should not be performed between Puraka and Rechaka. In the beginning do one cycle of breathing for twenty times only. After completing twenty strokes of