

All the kriyas should be done under the guidance of an expert.

Nauli is an exercise of the classical Hatha Yoga. Nauli is considered as a difficult exercise, which can be learned only with determination and patience only after the mastery over uddiyan bandh and agnisara. There are four different variations, which are gradually learned one after another:

- 1.Center /madyama nauli: the isolated contraction of the central muscles of the abdomen. Cyclic rotation with uddiyanbandh.
- 2.left nauli: the isolated contraction of the left part of the central muscles of the abdomen
- 3.Right nauli: the isolated contraction of the right part of the central muscles of the abdomen



Scientific View Of Yoga

Dr. S. D. Pathak , M. S., F.C.P.S. , M. N. A. M. S.

Research Officer, Physiology, Scientific Research Dept., Kaivalyadhama, Lonavla
Retired General Surgeon Govt. ESIS hospital, Yoga Consultant

Introduction

Due to modernization and mechanization India is on the way of becoming one of the developed countries. Like people of advanced countries our mind is becoming like a machine running around to get more and more material comforts. In these efforts, we are forgetting our health and also mental tension is mounting more & more. Human being of this modern era is becoming victim of tension prone diseases like diabetes, High Blood pressure ,Obesity and Heart attack. People have become rich by material wealth. In spite of comforts and luxury they have lost their peace of mind. The Sages have said that science of Yoga, ancient Indian heritage, is today's need and a culture of tomorrow.

In most developed countries, lifestyle diseases is the major cause of early morbidity & mortality. In a Cardiologists conference it was stated that in coming days there will be a phenomenal increase in incidences of myo-cardial infarction by 3 fold in rural & 6 fold in urban areas. We are losing intellectual class at a very young age which is a serious concern from the view point of national assets.

By practicing different yogic cleansing processes all systems function properly and body's immunity improves & it heals on its own. Stress can be relieved by practices like Prayer, Omkar, Gayatri, Shavasana & Trataka.

Being a surgeon author has an insight into human anatomy and physiology. Here, the favorable anatomical and physiological changes occurring in our body, due to some of these Yogic practices, have been shown with the help of audio-visual slide show.

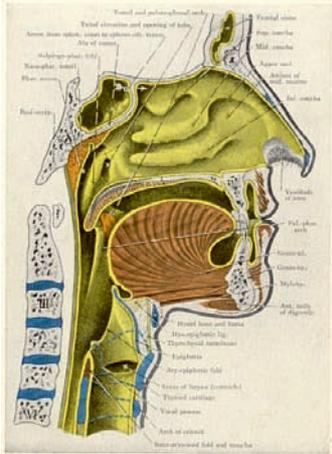
JALANETI

This is a cleansing process of nasal passage. We take lukewarm water in the neti pot & add little salt to it. We tilt the neck in such a position that the water flows through the other nostril.

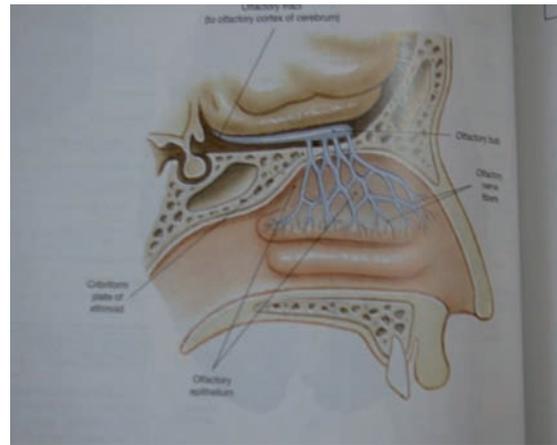
Nasal passage carries the air from atmosphere to the trachea. Nasal passage is lined by mucus membrane. If there is swelling over this mucus membrane, the passage is blocked and there is difficulty in breathing. Frontal, Maxillary & Olfactory sinuses are small close rooms around the nose & they open into nasal passage. These sinuses are covered from inside by mucus membrane. This membrane secretes fluid which cleanses the sinus wall and throws the dirty fluid collected in sinus. Thus sinusitis is helped.

At the upper part of the nostril there are olfactory nerves which tell us about smell. If these nerve ends are covered with some debris we don't smell. This is Anosmia. By doing jalaneti the salted luke warm water flows from one nostril to the other and it cleanses all the nasal passages. It throws out all debris due to absorption capacity of salty water. The edema of the nasal mucus membrane reduces and person does not get difficulty in breathing.

Usually for Sinusitis antral puncture is done which gives temporary relief as this artificial puncture closes shortly. But if we do kapalabhati and neti regularly, this opening in nasal cavity does not get blocked and so no sinus problem is evident. Debris over olfactory nerve gets washed out and there is no anosmia (absence of smell sensation)



Cut section of Nose showing its anatomy



--figure showing Olfactory nerve

Rubber neti helps to get rid of deviated nasal septum in addition to above benefits.

Benefits of Jalaneti

1. Cleans all nasal passage
2. Opens up the openings of sinuses in nasal cavity thus draining the secretions of sinuses in nasal cavity so as to get relief from Sinusitis
3. Improves the smell sensation
4. Gets rid of Deviated nasal septum if rubber neti performed daily
5. As the nasal blockage due to congestion of mucosa is removed helps in proper breathing of air through nose in turn helps to get good oxygen saturation of blood which is necessary for normal functioning of all organs in human body.

JALA-DHAUTI or Waman or Kunjal

Let us first see Anatomy & Physiology of Digestive & Excretory system as it will help to understand the benefits of Jala dhauti.

Digestive system starts from mouth. The parts are

- | | | |
|------------------------|--------------------|----------------|
| 1. Mouth (Oral Cavity) | 5. Stomach | 9. Rectum |
| 2. Throat | 6. Duodenum | 10. Anal Canal |
| 3. Salivary Glands | 7. Small Intestine | 11. Liver |
| 4. Esophagus | 8. Large intestine | 12. Pancreas |

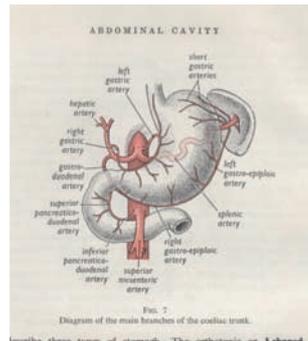
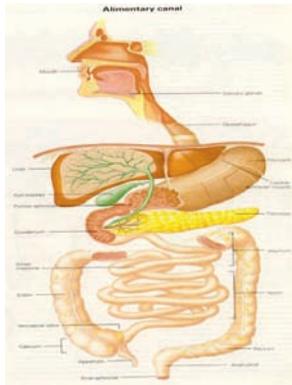


Figure showing stomach & Duodenum

Stomach has got fundus, body and pylorus. The food taken comes in stomach, stays there for two to two and half hours, whereby it is digested the medium of hydrochloric acid, pepsin and mucin.

Stomach opens into a C-shaped duodenum which is guarded by a valve called pylorus. These valves open at periodic intervals to allow the bolus to enter the duodenum. Pancreas is situated behind the stomach in the space of C shaped duodenum, as shown in the figure.

Common bile duct and pancreatic duct opens into duodenum. These ducts bring bile from liver and pancreatic juice from pancreas. They contain many enzymes necessary for digestion. Insulin, bile and pancreatic juices help in further digestion of the food ready to be absorbed in small intestine. Duodenum opens in small intestine which is five meters in length. First part is called Jejunum and later as ileum.

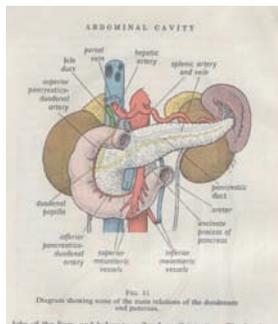


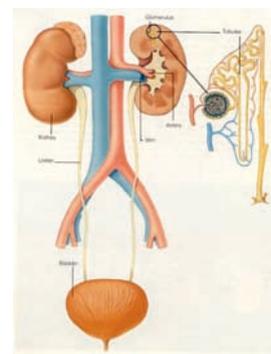
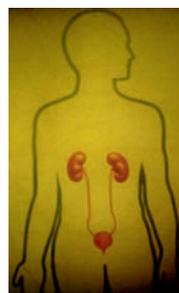
Figure showing Pancreas behind stomach

These intestines are held in position with the help of mesentery which consists of blood vessels and nerves supplying to intestines. Caecum is the junction between small and large intestine. Caecum has got an ileo-caecal valve which regulates the entry of food bolus from small intestine to large intestine. At this junction there is a small tube like organ called appendix which has not got much function in human being. The sigmoid colon leads to rectum and anal canal which form the terminal part of digestive system.

The gastro intestinal tract starting from esophagus to rectum has got mucus membrane lining at the inner surface. This mucus membrane contains glands which secrete different enzymes and digestive juices which, in turn, are poured into the lumen helping in the digestion of food. Mucus membrane has also got the ability to absorb the digested food.

Omentum is a long thin sheet which is attached to transverse colon. The free border is fanned out on all intestines like a cover.

EXCRETORY SYSTEM



In an obese person, this omentum & mesentery is having abundant fat..

Two kidneys are situated in the abdomen on posterior wall in lumbar region, one on right side and the other on left side of the vertebral column. Kidneys have got filtration plants in the form of nephrons which filter the blood. It filters unwanted, excess, toxic material and throws them out in the form of urine.

This urine is carried from kidneys through tube like structure called as ureter. Right and left ureters open in the urinary bladder which is situated in lowest part of the abdomen, the pelvis. When the amount of urine in the bladder increases it sends sensory impulses to brain for emptying it. Then the brain sends motor impulses, to bladder musculature, to contract so as to start the act of micturition.

Gastro intestinal tract does the work of digestion of food. The end product of digestion is passed forward in rectum and excreted through anal canal which has got a voluntary control mechanism. The feces contain undigested food particles, bacteria and water. a

Liver
Stomach
Small Intestine
Large Intestine
Stomach Mucosa



Jala-dhauti is done for controlling acidity.

Causes of acidity

1. Mental tension takes 50% toll.
2. Eating spicy, stale & oily food, drinking, smoking and tobacco chewing cause a rise in acidity.

During yogic practices like *Omkar*, *Gayatri* and *breath awareness*, the mind becomes cool and unburdened. Gastric secretion becomes less; in turn, there is less of acidity. Proper dietetic regime and stoppage of alcohol, tobacco chewing and smoking, which are a trigger to acid secretion, helps to reduce acid level in the stomach. And if still some acid remains, it can be washed out with the help of *jala-dhauti*. In a hyper acidity patient there is an excessive secretion of acid in stomach. Two hours after lunch or dinner the food passes out of the stomach and what remains in stomach is an excess of acid which causes corrosive effect on the stomach and duodenum mucosa causing ulcer in the process. *Jaladhauti* is advised to be done in the morning when you get up from sleep.

At night when we sleep after dinner the food is slowly digested and what remains in stomach is an excessive acid which attends it's maximum level at 6 a.m. the time normally we get up from sleep. This is the ideal time to do *jala dhauti*, when drinking lots of water dilutes the acid and removes it.

Benefits of Jaldhouthi -

- 1) When we drink 6-8 glasses of water it goes in stomach and gets mixed with the acid which is diluted and becomes harmless. We throw it out by vomiting so it reduces acid contents of the stomach and so there is no acidity problem. One teaspoon of concentrated acid will definitely cause burns over hand but if the same acid is put in bucketful water you will not even realize its presence.
- 2) Whatever amount of water we drink 1/2 to 3/4 of it comes out. Remnant of water will flow ahead through the small and large intestine. It, in turn, cleans the entire intestine. It improves the functioning of intestine. Digestion improves. Even If you take a little amount of food we get a maximum benefit out of it, as it is completely digested. More water content in fecal matter makes the fecal matter soft instead of hard. Due to soft fecal matter there is no constipation. It requires a lot of pressure to evacuate the hard stools which often leads to piles, because of rubbing of the hard stool against the rectal mucosa, often leading to bleeding. Since no hard stool, there are no piles, and also no bleeding piles.

- 3) The excess of water going in small intestine is absorbed in blood and when it goes to kidneys it is filtered and thrown out as urine. So, *jala dhauti* causes excessive urination. Due to pressure of this excessive water in urine debris in urinary passage are thrown out. Urinary passage becomes clean and there is no chance of stone formation. Stone at initial stage is of mustard size & if this is thrown out by excess water pressure in urine after *jala dhauti* will not increase in size to become a big stone. In modern medicine same principle is applied to get rid of small stones by doing hydration therapy.
- 4) The periodical practice of *jala dhauti* will maintain a limited acid in stomach. Due to limited acid, intake of food will be less which will avoid obesity. While performing dhauti we do *Uddiyana*, so there is a pressure of intestines on stomach, as well as, on lung alveoli so when acid is thrown out secretions in lungs are also thrown out which helps to open & make more alveoli available for exchange of gases.
- 5) Because of the *dhauti* the bile duct and pancreatic duct opening in duodenum are cleaned up so they do not get blocked. So, these juices enter the intestine properly and it helps proper digestion.
- 6) If the openings of these ducts are blocked the bile and pancreatic juices get stagnated in liver, gall bladder and pancreas respectively which cause stones in gall bladder or pancreas. This is avoided by doing *jala dhauti*.
- 7) Acid in stomach is notorious which demands different food stuffs like non veg., tobacco, alcohol. So, if the acid level is limited in stomach all these bad habits come under control.
- 8) Acid goes in muscles and forms salts, which, in turn, reduces mobility, flexibility of muscles. Due to *dhauti* there is no excessive acid and thus flexibility of muscles is maintained so *vata dosh* can be eliminated.
- 9) Thus, *jala dhauti* is said to be helpful in balancing three *dosha* or humors (*vata pitta and cough*) and according to Ayurvedic science if all these *dosha* are under control person enjoys health. If *Jala dhauti* is practiced daily the acid level in stomach will become zero. As acid is first step of digestion so it should not become zero. Patients of following disease should not practice *Jaldhouti* as it may harm them 1) high blood pressure 2) heart attack 3) In case of a major abdominal or any other surgery 4) having any type of hernia & 5) Females having menstrual problem or excessive bleeding

They should only drink 2-3 glasses of water in the morning and don't take anything for 45 minutes.

UJJAYI

Ujjayi is friction breathing. Friction is felt in throat instead of nostril.

1. Because of friction, heat is generated which liquefies the phlegm (lung secretion), which can be coughed out easily. Alveoli are cleared of secretion.
2. Sinus openings in the nose, if closed due to secretions, open up with Ujjayi. So, sinus troubles are also solved.
3. While doing ujjayi, we concentrate on breathing, which reduces external thoughts. Mind becomes relaxed. This helps keeping the blood pressure normal & thus, the risk of heart attack is reduced.
4. In patients suffering from Asthma, there is edema of the alveolar mucosa & hence the air breathed in at atmospheric pressure goes in through the small opening of the alveoli, but has to struggle to come out of it during expiration. This is the reason why the asthma patients have a wising sound during breathing.
5. During friction breathing, blood circulation improves, which helps to reduce the edema & the respiration becomes easy & effortless.

6. By practicing ujjayi, one can get rid of the problem of snoring.
7. Ujjayi is also called as cardiac breathing. It helps to improve the cardiac status. It reduces the risk of heart attack. So, it is very beneficial for heart patients.

Scientifically, from the medical point of view, it has been seen that it improves O₂ level in blood. Normal O₂ level, in pure blood should be 100%. In an average human being, it is 96-98%. After 3 months of ujjayi, it usually improves to 100%. In heart patients, it improves from 95-96% to 98%. In asthma patients, by doing ujjayi for 3 months, the O₂ level goes up from 85% to 96%. This has been tested with the help of pulse oxymeter. When Oxygen saturation of circulating blood improves heart will get good blood supply improving cardiac functions in the process.

Ujjai plays a definite role in improving the function of the respiratory system.

ASANAS

1. There is a space in between the ends of two bones which forms the joint. Ends of bones are covered by cartilage. The muscles around the joint maintain the space between the two ends of the bones with their ability of contraction & relaxation. If the muscles are not functioning properly, the distance between the ends of the two bones is reduced, joint space is reduced, the cartilage covering the bone ends gets rubbed and joint pain starts.
- 2 By doing Asanas, the muscles are stretched, pressed & are put under sustainable tension. Due to this, there is a slight increase in the length of the muscle, the tone is improved and so the elasticity of the muscle fibers also is improved. There is an increase in the body elasticity & the person remains fit. Improved elasticity of intercostals muscles & alveoli helps in a better respiratory function, good oxygenation to all organs of body, good vital capacity and a good cardiac output.

In every muscle, there is an arcade of pure & impure blood vessels. When muscles are in action, lactic acid is produced, which is a waste product. Due to the accumulation of lactic acid in the muscle, we feel tired. By doing Asanas, the vascular arcade in the muscle functions properly. Whatever lactic acid accumulates in the muscle due to any activity is washed out easily through impure blood vessel & you don't feel tired.

~~~

### Cultivation Of Psychological Attitude and Change in Personality in Psychosomatic Diseases.

Dr. Sharad Bhalekar

Kaivalyadham, Lonavala

In 1962 Swami Kuvalyanand wrote a book on yoga therapy, he summarised the principles of yoga in 3 ways:

1. Cultivation of correct psychological attitude
2. Reconditioning and add a new rhythm
3. Correction of nutrition and Cleansing

Cultivation of correct psychological attitude (change in the manasprakruti-personality) root cause of the diseases is in your mind (pradnyaparadha). More than 70% cases are psychosomatic. With Medicine diseases are treated symptomatically and temporary. Reversal of the disease is possible.

Anushasan / Yoga refines your brain functions attachment due to addiction. Brain is comprised in