In Tune with the Elements

by Swami Sivadasananda

Have a knowledge of the structure of the body, the functions of the organs, the science of dietetics, the laws of health and hygiene, diseases, their causes and treatment and possess good health which is necessary for attaining success in life and God-Realisation. Endeavour to qualify yourself as your own doctor. Health is wealth. —SWAMI SIVANANDA

The uniqueness of hatha yoga lies in its holistic approach, in which body and mind are understood as an integral system, and awareness of the soul or underlying unchanging Self is a constant aim.

We can better understand this uniqueness of hatha yoga if we contrast its approach to that of the academic disciplines of anatomy and physiology. These sciences analyze the body in terms of biological systems. The mind is considered to exist only in as far as its functions can be mapped in the brain. According to this view there is just one factor which integrates these separate systems—homeostasis, or the capacity of the body to maintain a relatively constant internal environment despite changes in the external environment. In other words these sciences are occupied with questions having only to do with survival. While not rejecting the findings of modern-day anatomy and physiology, the view of the body according to the five elements of nature opens the way to a deeper understanding of our yoga experience.

Both the preventive and curative effects of hatha yoga are vast and the pioneer work of yoga masters and dedicated research institutes have laid the foundation for the world-wide credibility which yoga enjoys today. Much useful work has gone into explaining the benefits of yoga in terms of Western science. It should, however, be remembered that the traditional approach of yoga is not the study of the body as a collection of distinct body systems, nor a cataloging of specific localized effects. Yoga was originally conceived as producing benefits that were primarily mental, with physical benefits seen as secondary. Thus, a risk of presenting the benefits of yoga in purely physical terms is the loss of fidelity to the actual experience of the yoga practitioner, who perceives its effects primarily in terms of *prana* (vital energy).

In the yogic model, the physical body is described according to the five elements of nature: earth (*prithvi*), water (*apas*), air (*vayu*), fire (*agni*) and ether (*akash*). As these elements go from the grossest to the most subtle levels, the first four can be discussed in terms of body systems; the last (*ether, akash*) cannot.

The Earth Principle

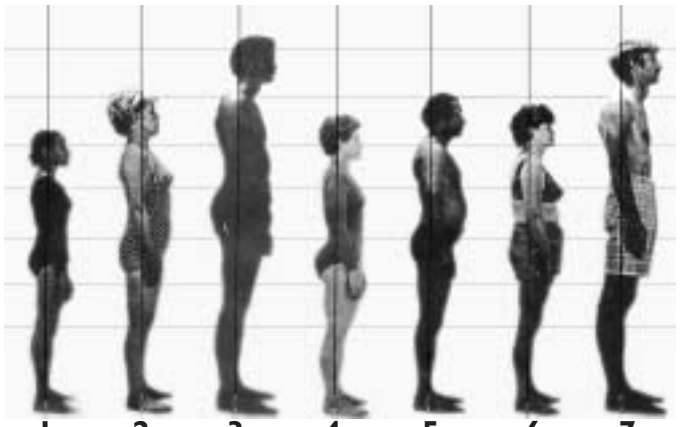
EARTH IS MATTER IN ITS MOST DENSE AND SOLID STATE. IN THE BODY IT CORRESPONDS TO BONES, JOINTS, MUSCLES AND ORGANS.

Asanas and Spinal Alignment

Exaggerated or malformed spinal curves primarily originate from poor working habits. A faulty posture crystallizes in unbalanced muscle length and muscle strength. Neither massage nor readjustment of vertebrae can compensate for or restore missing muscle length or muscle strength. Only exercise can do this. Asanas are an extremely simple, safe and efficient method to develop proper muscle condition.

Lordosis or exaggerated lumbar curve is a typical faulty alignment caused by our modern life styles—characterized by shortened hamstrings, shortened back muscles and weak abdominal muscles. To maintain its balance, the body counter-reacts either with an increased kyphosis (thoracic curve) or a projection of the neck.

lordosis plus kyphosis — lordosis plus projected neck



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Study made by Swami Vishnu-devananda at the Sivananda Ashram Yoga Camp, Val Morin, Canada
1: excellent body alignment. **2:** head posterior to plumb line.
3: head thrust forward of plumb line. **4:** marked lordosis (sway back)
5: lordosis, kyphosis. **6:** flat back (opposite of lordosis)
7. Lordosis, kyphosis and head thrust forward

Most asanas consist of muscle flexions or extensions, resulting in a balancing of muscle length and muscle strength in the back and the front of the body: the hamstrings and lower back muscles are stretched and the abdominal muscles are strengthened. With regular practice, asanas can improve spinal alignment, and most importantly, stop the progressive degeneration of body alignment, which happens progressively over age.

The Earth Principle

Healthy Joints

The movements of the basic asanas and their variations encourage maximum mobility in all joints of the body. Along with a vegetarian diet and an occasional period of fasting many painful conditions (such as arthritis) caused by the accumulation of uric acids in the joints can be greatly alleviated.

Muscle Relaxation by Stretching

In order for muscles to function efficiently, they must be able to relax properly. And in order to do this, they must be regularly stretched. If we think of a cat we see how it moves with strength and agility; and we know that cats are good at relaxing. They also stretch themselves many times each day. Stretching of the muscles is essential for efficient muscle action. The yoga class begins with active stretching with the sun salutation and continues with an emphasis on stretching with the leg lifts, shoulderstand (*sarvangasana*), plough (*halasana*), fish (*matsyasana*) and forward bend (*paschimothanasana*).

Besides stretching, another method of relaxing muscles is to induce a short, strong contraction, followed by a conscious release of tension. This principle is applied in many asanas including the cobra (*bhujangasana*), locust (*salabhasana*), bow (*dhanurasana*) and crow (*kakasana*). It is also applied in the lifting and dropping exercise in preparation for final relaxation in corpse pose (*savasana*).

Asana Practice and Digestion

Peristalsis is the rhythmic muscular contractions that drives food through the digestive tract. All digestive processes that occur from swallowing food to the final elimination depend upon peristaltic movement. Stress greatly impairs proper peristaltic movement, whereas relaxation enhances it. During a yoga class it happens frequently that the re-starting of the peristaltic movement can be heard in the stomach or the intestines! Asanas which are specially designed to massage the digestive organs (i.e. the peristaltic muscles) are: plough (*halasana*), forward bend (*paschimottanasana*), cobra (*bhujangasana*), locust (*salabasana*), bow (*dhanurasana*), spinal twist (*ardha matsyendrasana*), peacock (*mayurasana*) and triangle (*trikonasana*).

The Water Principle

ABOUT EIGHTY PERCENT OF OUR BODY CONSISTS OF WATER WITH A CIRCULATORY SYSTEM THAT IS A WONDER OF EFFICIENCY AND COMPLEXITY, REACHING EACH OF THE BODY'S TRILLIONS OF CELLS WITH A CONSTANT SUPPLY OF OXYGEN AND NUTRIENTS, AND ENABLING THE ELIMINATION OF WASTE MATERIAL VIA THE KIDNEYS, LIVER, LUNGS AND SKIN.

Yoga and the Heart

Starling's Law of the Heart

The physiologist Earnest Henry Starling (1866–1927) discovered that increased return of venous ("used") blood to the heart induces a stronger stretch in the cardiac muscles, which in turn triggers a stronger contraction, i.e. a stronger heartbeat. Many yoga asanas take advantage of this mechanism to increase cardio-vascular action, without placing undue strain on the system:

- Inverted postures—blood returns automatically to the heart in the headstand (*sirsasana*) and shoulderstand (*sarvangasana*).
- Venous blood returning from the lower extremities is carried in major blood vessels which pass through the abdominal cavity. During abdominal breathing the intra-abdominal pressure varies considerably between inhalation and exhalation. The rhythmical change of pressure increases the blood flow from the abdomen to the heart.
- *Kapalabhati* (lung purification breathing exercise) and uddiyana bandha (abdominal lock) further increase the venous return from the abdomen.

Yoga and the Endocrine System

Hormones are released by the endocrine glands of the body into the blood stream. As chemical messengers, hormones affect the metabolic processes of every cell in the body, from fluid balance and body growth to stress responses and procreation. Yoga postures possess a unique ability to maintain the proper functioning of the endocrine glands.

As with all tissue in the body, these glands require an adequate blood supply for optimal functioning. Prolonged holding of the asana increases the circulation in the gland, through pressure between the body and floor, pressure between various body parts, or the pull of gravity. This toning of the gland tissues allows for a more balanced release of hormones and can prevent conditions such as hypersecretion (too much) or hyposecretion (too little) of hormones.

ENDOCRINE GLAND	LOCATION	ASANAS WHICH INCREASE LOCAL BLOOD CIRCULATION
Hypothalamus Pineal Gland Pituitary Gland	Brain	Headstand
Thyroid Parathyroids	Neck	Shoulderstand, Plouh, Fish
Adrenals Pancreas	Upper abdomen	Forward Bend Plough
Ovaries	Lower abdomen	Cobra, Bow

The Fire Principle

THE BODY CAN SURVIVE ONLY WITHIN A VERY NARROW MARGIN OF TEMPERATURE VARIANCE. *PATANJALI MAHARISHI* WRITES IN THE *RAJA YOGA SUTRAS*, CHAPTER II, VERSE 48: *FROM THE MASTERY OF ASANA, NO ASSAULTS COME FROM THE PAIRS OF OPPOSITES.*

Hypersensitivity to heat and cold disappears through asana practice. A person practicing asanas in a hot climate adjusts far better to the heat than one who does no yoga practice. Temperature regulation occurs during the process of relaxation. The pleasant warmth which is felt in the extremities during the process of relaxation is due to relaxation of the muscles in the wall of blood vessels and can be controlled through autosuggestion. This is also an efficient method to lower blood pressure.

Even when sitting motionless in a cold environment the body can generate heat through the practice of pranayama. The stimulation of the solar plexus helps the body to create additional body warmth.

The words "Hatha Yoga" can be translated as "balance of sun and moon". In the body these correspond to the right nostril which is heating, and the left nostril, which is cooling. When lying in bed with the flu, it is a common experience that the body is either shivering or sweating with fever. When shivering, the left nostril will be more open than the right one, and when sweating the right nostril will be more open. By creating a balanced air flow between the two nostrils, the alternate nostril breathing pranayama helps maintain a temperature balance in the body.

The Air Principle

THE BODY CAN SURVIVE WITHOUT FOOD AND EVEN WITHOUT WATER FOR A CONSIDERABLE LENGTH OF TIME, YET WITHOUT OXYGEN, LIFE WILL STOP WITHIN A MATTER OF MINUTES. WITH A SINGLE BREATH, THE RESPIRATORY SYSTEMS PROVIDES FROM 500 ML TO 5000 ML OF AIR, DEPENDING ON THE MOMENTARY LEVEL OF PHYSICAL EXERTION.

In today´s world, we are far less physically active than those who lived generations before us. At the same time the speed at which we live has increased tremendously, placing a greater demand on the brain and nervous system. Within the body, the brain and nervous system are the organs consuming the highest percentage of oxygen in relation to their size, yet at the same time, our sedentary lifestyle does not stimulate us to breath accordingly.

Yoga breathing exercises (*pranayama*) meet this deficiency:

- —The *full* yogic *breath* fills first the base of the lungs, where the pulmonary lobes are much bigger in size than in the upper chest.
- —*Kapalabhati* increases the vital capacity by repeatedly emptying the lungs, thus making use of the expiratory reserve volume, which consists of up to 1200ml of air. Followed by two very deep inhalations, the inhalatory reserve volume fills to 3300ml of air. Finally the retention uses the increased vital capacity of up to 5000ml, allowing oxygen and carbon dioxide to exchange freely between the lungs and the circulatory system.
- —The practice of *anuloma viloma* counteracts poor breathing habits, resulting in proper breath control.

The Ether Principle

AT FIRST GLANCE IT COULD BE SAID THAT THE ELEMENT OF ETHER OR SPACE HAS NO PLACE IN MODERN-DAY ANATOMY AND PHYSIOLOGY. HOWEVER, QUANTUM PHYSICS HAS CLEARLY DEMONSTRATED THAT THE ATOM CONSISTS MAINLY OF EMPTY SPACE, AND ON INVESTIGATION AT AN EVEN DEEPER LEVEL, IT IS NOW EVIDENT THAT THE COMPONENT ELEMENTS OF THE ATOM SUCH AS ELECTRONS, PROTONS ETC., ARE MERELY ENERGY, AND NOT MATTER.
ACCORDING TO YOGA IT IS IN THIS ATOMIC SPACE THAT THE PRANA OR LIFE FORCE MOVES, AND AS A RESULT PERMEATES EVERY PART OF THE BODY. FROM THE YOGIC POINT OF VIEW ALL VITAL FUNCTIONS OF THE BODY ARE GOVERNED BY THIS SUBTLE LIFE FORCE.

From the Gross to the Subtle

For the beginner the benefits of asanas and pranayama are felt initially as mechanical changes in joints and muscles (earth principle), as increased blood circulation (water principle), as temperature changes (fire principle) and as improved control of the nervous system through breathing (air principle). According to yoga all these changes are really changes in prana currents. As we become more established in the asanas, we become sensitive to the changes in these pranic currents as well as to the physical changes described above. At this point, we also become aware of the connection between prana and the mind. Each change in bodily function brings about a reaction in the prana, which then registers as a change in our mental condition. An example of this can be seen after a prolonged, mildly painful stretching of a muscle. We feel a clear sensation of relief and well being in the mind as well as the body on release of the stretch.

With continued practice, the mental changes which occur along with the sensations in the body and the changes in prana, can be stimulated directly through the power of visualization, concentration and will. In turn this mental control of prana allows us to control many physical functions of the body at will. It is at this point where the practice of hatha yoga meets raja yoga. ॐ

Swami Sivadasananda is Yoga Acharya in Europe and South America and is renowned for his knowledge of hatha yoga.