

YOGA FOR THE HEART

By Srivatsa Ramaswami

Sri Krishnamacharya, my Guru would characterize yoga as a Sarvanga Sadhana or a method that is helpful for all parts of the body, not just the skeletal muscles. Every part of the body can be accessed and treated, over the yogis. Therefore some of Yoga's influence on the heart may be considered here. One of the views expressed repeatedly by my Guru was that the heart should not be strained; that even while you exercise yoga procedures like asanas, the heart rate should not increase significantly, which is markedly different from the 'aerobic' approach. Further there is another aspect. There are six vital kosas or sacs in the body which are the six important internal organs. The Heart is called the hrudaya Kosa or the Heart sac, which is in the thoracic cavity and is responsible for the circulation of blood (rakta-sanchara) to all the purificatory organs like the kidneys, the lungs etc., and also to all the tissues in the body. The heart is surrounded by the twin walled heart covering or sac called pericardium, which allows the heart to move smoothly within the thoracic cavity. This organ which is made up of musculature is attached to the chest walls which are also made of muscles. These muscles, due to our upright position most of the time, tend to sag due to gravity, over time, even though they are well supported. This sagging of the Hrudaya Kosa according to Yogis has a progressively debilitating effect on the Heart-- which becomes less efficient by the slow downward displacement of the organ from its original intended position. This hypothesis of the 'heart sag' engaged the attention of the yogis. So in this article let us examine what the yogis of yesteryears did to 1. Help the heart in its function of pumping blood and also 2. Correct the slow decline in its efficiency due to physical descent, albeit slight, of the heart and also its elasticity.

There are two segments to rakta sanchara or blood circulation. First is the return of the blood to the heart so that the heart can then pump blood to various parts of the body including the purifying organs like lungs (svasa Kosa) and kidneys. All the blood that is received by

the various muscles and tissues will have to return to the heart. The muscles, especially the skeletal muscles are partially contracted all the time so that they maintain a tone. This slight contraction helps to squeeze some 'used' blood out of the muscles into the venous system. The veins contain valves which prevent the blood from backtracking to the muscles. Further, during the movements of these muscles the blood is pushed slowly towards the main vein which carries all the return blood to the heart. In terms of skeletal muscles both the extensor and flexor muscles under normal enervation maintain constant tone while at rest. Thus even a 'couch potato' is able to get the blood circulating, due to this phenomenon called 'muscle pump' though such circulation is not very efficient. If the return blood to the heart is scanty or below normal, the heart will have to pump more often to push out the same amount of blood per unit time. If this 'stroke volume' is increased then the heart would be able to pump blood more efficiently. It will beat a fewer number of times to circulate the same amount of blood, which according to yogis will help to reduce the strain on the heart. It is considered desirable.

There are a few things the yogi does to improve this venous return. By doing a number of vinyasas, she/he is able to squeeze out more blood out of the cells. In vinyasakrama, by a well thought out regimen of vinyasas and asanas, one will be able to work out all the muscles, tissues and cells of skeletal system, so much so that there is a more complete scavenging of the system. And as the 'deoxygenated blood' is wringed out of the tissues, fresh nourishing blood enters the tissues.

What is equally important or more important is the effect of breathing on this venous return of the blood. When we breathe in we do it by expanding the chest. When we expand the chest during inhalation, the diaphragm also descends and there is a partial vacuum created in the thoracic cavity, -- there is a significant pressure gradient between the thoracic cavity and the outside atmosphere. So as the chest expands, due to the pressure difference, the air rushes into the lungs through the nostrils, trachea etc. Normally this takes place for a couple of seconds, then the involuntary inhalation stops, then the exhalation starts due to the relaxation of the chest muscles and some

air, say about 500ccs out of the 5 liters or so of air in the chest is expelled. This is normal breathing. What is important in our discussion is that when the chest expands, the partial vacuum created has also an effect on the heart which is in the same thoracic cavity. The blood which is slowly moving through the main vein, the vena cava, is sucked in by this partial vacuum and its suction has the effect of accelerating the flow of blood to the heart chamber. The Yogis take advantage of this phenomenon, also called the 'respiratory pump' effect. By expanding the chest more, and more slowly, the negative pressure in the chest cavity is increased and maintained longer, by holding the breath for a period of time, during Kumbhaka. During the long inhalation and breath holding, the suction pump effect is maintained and the flow of blood back to the heart is accelerated. Thus a good Pranayama practice helps the venous return of the blood to the heart.

The Vinyasakrama method of doing yoga practice therefore has an additional advantage. Performing the tens of scores of vinyasas helps squeeze out 'bad blood' from every muscle and joint, the simultaneous synchronized slow breathing employed especially the inhalation helps to suck more blood to the heart. As the vinyasas and asanas help to squeeze out blood, the slow deeper inhalation by maintaining a negative pressure of the chest cavity for a much longer period of time helps to return more blood to the heart, so much so that every time the heart beats it is able to pump more blood, i.e., the stroke volume increases. In about half an hour of Vinyasakrama practice one can do about 100 vinyasas taking the rest periods into account and during this period there is a significant improvement in the blood circulation in the entire system. This yoga method has a marked difference with aerobic workouts. In these types of aerobic exercises-- which is what happens when people do yoga as a workout, without any reference to slow breathing-- the blood circulation improves but due to faster working of the heart and lungs. The same amount of blood circulation is achieved by a greater number of heart beats, which according to Yogis is inefficient and strains the heart. Further in the workouts, the body creates more waste products and creates more 'bad blood' due to substantially increased metabolism, whereas in Yoga where slow synchronized breathing is involved as in

Vinyasakrama taught by Sri Krishnamacharya, the increase in metabolism is minimal.

Yoga also takes care of blood circulation to the internal organs. Whereas the asanas help basically the skeletal muscles, Yogis have devised methods by which the vast amount of muscles and tissues inside the body are also exercised so that the large quantity of blood in the muscles and tissues inside the body also is squeezed out and brought into circulation. Deep inhalation done during pranayama pushes the diaphragm down and puts useful pressure on the abdominal and pelvic organs. Further some adept yogis also do mulabandha and some Uddiyanabandha after inhalation (and holding the breath) so that there is pressure on the internal organs (the abdominal and pelvic organs) from above, below and the anterior side, virtually wringing more blood out of these organs and muscles. Again after exhalation more powerful bandhas are employed by which the internal muscles and organs are exercised, squeezed and massaged. In Uddiyana bandha while doing bahya

Kumbhaka, the adept Yogi, like my Guru, is able to push the diaphragm pretty deep up into the thoracic cavity providing a healthy external pressure on the heart muscles to squeeze out blood even from the heart muscles and providing a gentle massage to the heart, thereby helping the elasticity of the heart muscles in the process.

There is another unique procedure the yogis employ for the venous return of blood to the heart. It is the inversion asanas, like Headstand, Shoulder stand and the various vinyasas in these poses. The heart is way up in the body, almost 2/3rd or even higher up, in normal upright position. While it helps the heart to pump out more blood efficiently to the 2/3rds of the body like the visceral organs and the lower extremities, the return of the blood to the heart is somewhat hampered due to gravitational resistance. So the inversions like Sarvangasana help to drain fluids, especially blood from the lower extremities and also visceral muscles. This is accentuated by doing a variety of Vinyasas in the inversions. The combination of Vinyasas in inverted poses, synchronized breathing and employing the bandhas helps to return more blood to the heart from the muscles and

tissues below the heart. Again exercises like Kapalabhati, Vanhi sara (agni sara) and the bandhas help in the process.

As mentioned earlier, another view that used to be strongly expressed by my Guru is that all the internal organs get slowly displaced or tend to sag from their original positions and thus become less efficient/ become diseased over a period of time due to partial loss of tone. The muscle tone of the heart is very good when one is young but with age and gravity the muscles start sagging--lose their tone a bit, become less elastic, like all other muscles. So the yogis resorted to inversions or viparitakarani. For the heart, Sarvangasana is ideal, and in that position the heart snugly rests in the upper portion of the chest cavity, well supported and rested. Perhaps this is one of the reasons why Sarvangasana is referred to as the Heart of the Asanas. A ten minute stint in Sarvangasana, with the bandhas helps to restore -- or slightly overcorrect-- the heart back to its original position. The Pranayama that is done thereafter is said to normalize the position by neutralizing any over correction during the inversion. Deep Uddiyanabandha and other abdominal exercises like Kapalabhati, Vahni Sara etc, help to massage and strengthen the heart muscles, so that the heart can continue to pump blood to all parts of the body efficiently.

Therefore, if the heart condition is normal for a person, then, it may be a good practice to do exercises for the chest and the accessory muscles of the thorax first. Please refer to hasthavinyasas in Tadasana chapter in my book "The Complete Book of Vinyasa Yoga". These help to exercise the accessory muscles of breathing and help to expand the chest significantly. Then do as many vinyasas as possible in different asanas to cover the whole body. Stay in Shoulder stand for a good ten minutes doing also a variety of Vinyasas. It is better if one can do Headstand as well for several minutes. Do Pranayama for about ten minutes preceded by Kapalabhati and accompanied by Bandhas. Do good meditation for about 10 to 15 minutes so that the mind relaxes and the heart and the chest muscles relax. You may also consider chanting aloud vedic or other laukika mantras like Sahasranamas etc. Or read aloud from the scriptures for about 15 to 20 minutes

everyday.

It is said that prayer is very efficacious. There is a vedic prayer addressed to Sun god (the sun is the god of health) specifically for the good functioning of the heart.

“hrudrogam mama surya
harimaanca nasaya”

Oh! Lord Sun. Do remove my heart ailment and the greenish patches in my skin (due to improper oxygenation and blood circulation)

In due course the rest heart rate itself comes down. Following my Guru’s advice, one should avoid doing yoga as a workout as that substantially increases the heart rate. In Hatayogapradipika, the author Svatanmarama, quoting another great Hatayogi, Gorkshanatha, mentions that the yogi should not do strenuous activities (kaaya klesa) and these are detrimental to overall progress in Yoga. Brahmananda who has written a lucid commentary on this text, gives examples that are considered to be strenuous exercises that are fit to be eschewed by the Yogi. He specifically gives the examples like lifting and carrying heavy weights and doing repeated Sun Salutations (bahu surynamaskara) as strenuous exercise which a yogi should avoid doing. My teacher also would say that the yogi should be thin (krisa) and not overweight. One could say,
“Overweight is bad
Lean or fat”
as overweight puts additional strain on the heart.

Aerobic Exercises are good in their own way; they help to strengthen the cardiovascular system. Even so Yoga, as practiced by the Vinyasakrama system, is the antithesis of aerobic exercises. The Breath-yoga deliberately reduces the breath rate and consequently the heart rate, whereas the aerobic and the aerobic like yoga (like the continuous 108 Suryanamaskaras), significantly increase the breath rate and heart rate during exercise. While workouts and practice of

yoga as a workout help to reduce Rajas, they also accentuate Tamas. But, breath-vinyasakrama-yoga done slowly, with synchronized breathing, followed by deep Pranayama helps not only reduce Rajas but also Tamas. The reduction of these Gunas makes the mind calmer and fresh or Satwic and a calmer mind is conducive to the healthy functioning of the heart. Therefore it may be a good 'Health Policy' to encourage youngsters, especially teenagers to practice yoga, the breath-ASANAS and vinyasas, pranayama, various mudras, vipatitakarani and appropriate meditation, eat moderate and satwic food and thereby they can take lifelong care of the heart.

Srivatsa Ramaswami