

The Physiology of Meditation

excerpted from *Āsanas* by Swāmī Kūvalayānanda

The object of the meditative poses is to offer a comfortable posture to the student of Yoga for Prāṇāyāma, Dhāraṇā, Dhyāna and Samādhi and in coordination with other Yogic exercises to help in the awakening of Kuṇḍalinī. Let us now examine the physiology of these meditative poses and see whether that physiology can bring about this object.

If we study the meditative poses, we are at once struck by three physiological features which are so characteristic of them:

1. The erect position of the spine with a view to eliminate the possibility of the compression of the abdominal viscera and also to free the mind from the burden of the body.

2. A richer blood supply for the pelvic region toning up the coccygeal and sacral nerves and helping the awakening of Kuṇḍalinī in coordination with other Yogic practices.

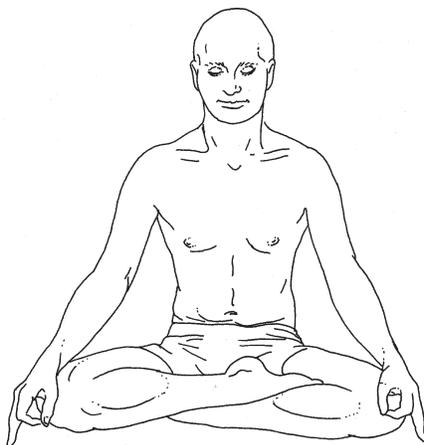
3. Minimum production of carbon dioxide in the body, resulting in slowing the activity of the lungs and the heart, and excluding the body consciousness from the concentrating mind.

Let us now examine these features in some detail.

Every meditative pose requires the spine to be kept erect. We know, however, that the spinal column is not quite straight, but has two convenient bents in its length. So when we talk about keeping the spine erect, we only mean that no new curves are to be introduced in the spinal column. The straight spine is secured by holding the trunk and the head perpendicular to the ground.

The physiological advantage of keeping the spine erect is very often pointed out to be that it keeps the spinal cord erect and thus keeps it in its proper place and allows it to function properly. This sort of argument does not appeal to us for the following reasons. First of all, the spinal cord will

not be quite straight, but will maintain its natural curve owing to the curved shape of the vertebral column in which it is held. Again, the anatomical provisions for the protection of the spinal cord are so thorough that there is no possibility of any interference with its functional activity due to the position of the spinal column.



Without entering into details we might note here that the spinal cord is invested by three membranes, and is surrounded by an amount of fluid, and also a considerable amount of fatty tissue that serves as a packing material. Thus the cord is supported in the canal by its membranes, and by means of them and of the fluid and packing of fatty tissue, it is protected from shocks and jars. When the vertebral column undergoes curves and twists, of course within particular limits, it is this protective arrangement inside the canal that keeps the cord safe and sound.

So there is no chance of any interference with the functional activity of the spinal cord, even if the spine is not kept erect. Thus we see that the physiological advantage alleged to accrue from the maintenance of an erect spine, is more or less imaginary, and we have to seek the advantage elsewhere.

We are inclined to think that the Yogic texts insist upon an erect posture in meditation to avoid the compression of the

abdominal viscera and the consequent train of diseases due to their congestion. If a serious student of meditation sits for hours every day in a forward bent, slumped posture, the abdominal muscles would become weak and the abdominal organs compressed. This would lead to constipation, which in turn gives rise to a number of ailments of a more or less dangerous character. All these troubles can be avoided if a practitioner maintains an erect posture. Thus Yogic texts require an erect vertebral column as a part of the technique of meditative poses.

There is another reason why during meditation the spine is required to be held erect. During the period of meditation, the mind must be entirely relieved of the burden of the body. That means that the body must be given a posture which would be at once easy, comfortable and balanced.

Now all these advantages are secured in the meditative poses because of the erect spine, the broad triangular base prepared by the folded legs, and the hands that rest either on the knees or on the heels arranged in front of the pelvis. If we exclude the horizontal position assumed by the spine when we lie down, an erect position is the most comfortable one that the spinal column can maintain.

The horizontal position is not available for Yogic meditation, because in that position the student is in danger of falling asleep. Students who practice meditation find the meditative poses extremely comfortable, leaving the mind free to follow its own activities, without being disturbed by the body.

The second physiological feature of the



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to what lies within us.

Oliver Wendell Holmes

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meditative poses is their capacity to keep a richer blood supply playing about the pelvic region and thus toning up the coccygeal and sacral nerves. In all these poses, the flexors of the lower extremities are greatly contracted and pressed. The remaining muscles lie inactive across a considerable length of time. For these reasons, there is interference with the circulation of the blood. This provides the pelvic region with a larger blood supply from the bifurcations of the abdominal aorta. Consequently the nerves that issue from that part of the vertebral column, namely the coccygeal and sacral nerves, get the advantage of this richer blood supply. This increased blood supply

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and the consequent toning up of the nerves, is to some extent responsible for the awakening of Kuṇḍalinī, when of course, other Yogic exercises for Kuṇḍalinī arousal are coordinated with these meditative poses.

The third and last physiological feature that we have to consider is the minimum production of carbon dioxide. This minimum production of carbon dioxide is due to the fact that these poses involve a very, very small amount of muscular activity. Though not as small as the energy spent in lying down or sleeping, it can still be safely maintained that out of all the possible poses assumed in sitting or standing, the meditative poses entail the least expenditure of muscle energy. Therefore, the production of carbon dioxide during the maintenance of these poses is also reduced to the minimum.

Now it is an acknowledged physiological fact that the activity of the lungs is proportionate to the production of carbon dioxide in the body. If large quantities of carbon dioxide are manufactured, the activity of the lungs is largely increased, as when athletes are running, wrestling, rowing, etc. On the contrary, if carbon dioxide is produced on a small scale, the movements of the lungs become very slow, as when we are lying down or sleeping. And the action of the heart keeps pace with the action of the lungs. When the

action of the lungs is exaggerated, cardiac activity is also accentuated, but when the lungs move quietly, the heart also slows down.

According to these physiological facts, when the production of carbon dioxide is minimized during the meditative poses, both the lungs and the heart have a tendency to slow down. When these poses are maintained for a considerable length of time, even for a half-hour at a stretch, breathing becomes so shallow and the heart beat becomes so controlled, that all activity *appears* to come to a standstill. Under these circumstances, breathing becomes exclusively abdominal and it is only the slightly backward and forward movements of the abdominal muscles that reveal the working of the lungs to a careful observer.

Such being the case, the mind of the Yoga student ceases *almost entirely* to be disturbed by physical movements, voluntary and involuntary. He finds himself free, first to direct his mind inward to fathom its own mysteries, then to isolate himself even from his mental equipment, and stand face to face with Reality, into which he merges at last and with which he becomes ultimately identified.

Swāmī Kuvalayānanda (1931). Scientific Survey of Yogic Poses. *Āsanas*. (128-132)
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