

Yoga Science for Stress Reduction

Stress is a very familiar experience in our fast paced society. We hear phrases such as “I am under a lot of stress,” “I feel stressed-out,” or we say that a particular situation “is very stressful” all too often. We tend to assume that life is generally stressful, so we adapt certain behaviors to deal with the inevitable “stress”.

What we don't understand is that stress is not generated from the external world. The stress response is triggered from within, from reacting to external stimuli. The external world is what is. Sometimes things work in our favor, sometimes they don't. Some situations are under our control, others are not. At times we are well prepared to deal with certain situations, and other times we are caught totally unprepared. This is the reality of life which is unavoidable. In this equation, there is only one thing we can predictably control, and that is our “reaction” to the external world.

This is where the ancient science of Yoga is extremely helpful. The Yogis examined life in much the same way as modern scientist examine life; the difference being that modern science places a greater emphasis on the external world, whereas the Yogis focused more on the internal world. Both inner and outer sciences help us to uncover the mystery of life and death. One without the other is incomplete. Through centuries of deep introspection and internal experimentation, the Yogis developed the science of Yoga and Meditation.

The Yogis discovered that in order to control our reaction to external stimuli and thus minimize our stress response, we must first gain control over the autonomic nervous system. The only scientific method to achieve this is through regulating the breath. Breathing is the only physiological process that is both voluntary and involuntary. Even though breathing is mostly involuntary, through practice we can regulate and “control” the way we breathe.

The autonomic nervous system is subdivided into the sympathetic and parasympathetic systems. As the names indicate, these two systems work in seeming opposition to each other, yet the net result is a harmonious balance. The parasympathetic system, for instance, slows down the heart rate while the sympathetic system accelerates it, and between these two opposing actions, the heart rate is regulated. The fight or flight (stress) response is a function of the sympathetic system, whereas the relaxation response is a function of the parasympathetic system. Through regular practice of breathing exercises, one can very easily learn to greatly reduce stress through stimulating the relaxation response of the parasympathetic system and minimizing the habitual sympathetic stress response.

There are commonly two ways in which we breathe. One is chest breathing, the other is diaphragmatic. Chest breathing involves the movement of the intercostal muscles of the rib cage, which results in the expansion and contraction of the chest cavity. The second

way involves the diaphragm muscle located between the base of the ribcage and the stomach (solar plexus area). When the diaphragm muscle contracts, it moves towards the stomach. This action greatly increases the volume of the chest area, thus allowing the lungs to fill with air. When the diaphragm muscle relaxes, it moves up towards the chest, decreasing the volume of the chest and encouraging the movement of air out of the lungs.

In regards to the affects upon the nervous system, chest breathing stimulates the sympathetic system, whereas diaphragmatic breathing stimulates the parasympathetic system. Habitual chest breathing makes it virtually impossible to manage stress. By triggering the sympathetic nervous system, chest breathing tends to produce a stress prone or reactive personality. A person who chest breathes reacts physically, mentally, and emotionally to the external stimulus of life. This person tends to feel “out of control.” It becomes very difficult for them to fully relax and calm their minds and emotions. If one consciously breathes diaphragmatically, one can access the relaxation response of the parasympathetic system and, to a great extent, eliminate stress.

Most situations in life can be dealt with by first assessing the situation and then creatively and intelligently responding. Some situations we can even choose to not respond to at all. If we are functioning predominately from sympathetic stimulation, we will most likely “react” to situations. Those reactions are repeated, and they form deep habit patterns. Stress becomes our habitual way of dealing with life. Parasympathetic stimulation allows us the freedom to choose. It enables us to calm our nervous system long enough to allow our intelligence and creativity to influence how we deal with life’s ups and downs. If we examine life, we realize that unlike our primitive ancestors, we are very rarely faced with situations that truly require a “fight or flight” response. Why then do we move through life constantly stimulating our stress response?

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