

## **The Anatomy and Yogic Treatment of Stress**

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### **Part 1: Understanding Stress**

The stress response has its purpose. It saves us in emergencies when we need to react quickly and forcefully. It is a biological survival mechanism built into our systems. However, in the modern world, The American Academy of Family Physicians has noted that stress related symptoms prompt two-thirds of the office visits to family physicians. So an excess of stress can cause health breakdown.

#### **Definition**

Stress is a word used commonly to denote feelings of discomfort. More precisely, in the biological context, stress is defined as what results when an animal (possibly a person) fails to respond appropriately to emotional or physical threats whether they are real or imagined. Stress is characterized by a state of alarm, resistance, exhaustion, an inability to focus and irritability among other symptoms. The word *stressor* refers to the stimulus and the word *stress* denotes the physical-emotional response. Stress can range from mild irritation to drastic dysfunction leading to severe health breakdown.

#### **Symptomology**

Stress can be sensed as mental, emotional, physical or behavioral change. Mental signs include poor judgment, a general negative outlook, excessive worrying, moodiness, irritability, agitation, inability to relax, loneliness, isolation or depression. Physical symptoms include aches and pains, diarrhea, constipation, nausea, dizziness, chest pain, rapid heartbeat, eating too much or not enough, sleeping too much or not enough. Behavioral changes include social withdrawal, procrastination or neglect of responsibilities, increased alcohol nicotine or drug consumption, or nervous habits such as pacing or nail-biting. Acute stressors affect an organism in the short term; chronic stressors over the longer term.

#### **Stages of Stress Response**

Physiologists have identified three distinct stages of the stress response.

1. **Alarm:** When the threat is first noticed, the body moves into a state of alarm. During this stage the release of the hormone adrenaline causes the fight-or-flight response. There is also some activation of the hypothalamic-pituitary-adrenal axis, producing cortisol.

2. **Resistance:** If the stressor persists, the mind-body begins to try to cope with the stress. As the body-mind tries to adapt to the strains of the environment, resources are gradually depleted.

3. **Exhaustion:** in the final stage, all of the body's resources are depleted and the body is unable to maintain normal function. The initial autonomic nervous system symptoms may reappear (sweating, raised heart rate, etc.). If stage three is extended, long term damage may result as the capacity of glands, especially the adrenal gland, and the immune system is exhausted and function is impaired resulting in decompensation (the loss of functioning in a bodily system).

The result of prolonged stress can manifest itself in illnesses such as ulcers, depression, diabetes, trouble with the digestive system or even cardiovascular problems, along with mental illnesses.

## Types of Stress

Stress may be grossly divided into two types, positive and negative. Positive stress, coined *eustress* by endocrinologist Hans Selye in 1975, enhances the organisms functioning. An example would be lifting weights to increase lean muscle mass for increased cell vitality. Initially there are feelings of discomfort and possibly even some pain, but if not overdone, eventually the person builds strength and physiological ability. This is eustress. Another example would be a person in a challenging work situation that requires building new skills. For a while, the worker may go home at night completed exhausted and possibly overwhelmed, but eventually, if all goes well, he/she will have solved new problems and created new reasoning abilities becoming a more productive and sought after worker.

The other main type of stress, *distress*, is produced by ongoing tension that the individual cannot resolve through coping or adaptation. This type of stress may lead to the loss in social function. Common signs of this loss are anxiety, withdrawal and depression.

The factors that determine whether an individual will translate an experience into eustress or distress include a/ the difference between an actual experience and what the person expected to happen and b/ his/her learned repertoire of coping mechanisms. It is important to note that the stimulus triggering the stress response can be real or imagined.

## Appraising Stress

R. S. Lazarus, once a Professor of Psychology at UC Berkeley, created a transactional model of stress in which he asserted that in order for a psychosocial situation to be stressful, we must judge it to be so, we must decide whether it is a challenge or benign.

In this argument, he reasons that “cognitive processes of appraisal are central” in deciding whether a situation is a threat, that is, it might lead to harm or loss.

In our primary appraisal of a situation, we are influenced by learned and environmental factors. In a threatening situation, this primary appraisal might trigger a set of coping behaviors or processes. “Problem-focused coping is directed at managing the problem, while emotion-focused coping processes are directed at managing the negative emotions.”

After the primary appraisal is made, a secondary appraisal follows in which there is an evaluation of the resources available to cope with the problem. The result of the secondary appraisal can affect the primary appraisal. For example, in a primary appraisal, a child might feel threatened by a parent’s anger and fear rejection. In the secondary appraisal, after assessing his available resources to remedy the problem, the child might decide that there is nothing that can be done to win the parent’s affection and change the primary evaluation of the threat (loss of parent’s support) to a lesser level because it is not a battle that can be won and therefore it is not worth fighting for. Coping strategies are usually tested in the situation and assessed as to their effectiveness. An individual might very well switch coping strategies until one works.

### **The Play of the Endocrine System**

On a neurological level, it is believed that the stress response begins when special neurons secrete a trigger that releases a hormone into a portal system. (More specifically, the paraventricular nuclei of neurons (PVN) in the hypothalamus dump corticotrophin-releasing hormone (CRH) and arginine-vasopressin (AVP) into the hypophyseal portal system.) Alongside this dumping of corticals into the portal system, the adrenals become active and use brain epinephrine to set off autonomic nervous system reactions and nervous system to endocrine system reactions. These processes together create the feeling of alarm throughout the body often called Fight or Flight. In the fight or flight response, (sometimes elaborated as “fight, flight or freeze”), the autonomic nervous systems ramps up the sympathetic nervous system and ramps down the parasympathetic nervous system. In other words, the limbs of the body are put into overdrive driven by a fast beating heart while inner systems like digestion are turned way down. In this response, two hormones, cortisol and glucocorticoids circulate through the bloodstream. These hormones lower inflammation but lessen the body’s ability to fight infection.

### **Effects of Chronic Stress**

Regularly recurring stress called chronic stress can significantly affect many of the body's immune system. Interactions between mental state, nervous system and immune system are grouped together as psychoneuroimmunology. When, over time, the immune system is compromised through chronic stress, the individual is more vulnerable to infection. Some of the observed effects of chronic stress include outbreaks of psoriasis, impaired developmental growth, and higher levels of visceral fat.

## **Common Stressors**

Stress can be brought on by positive or negative input. Some common stressors include:

- overload of sensory input (pain, heat or cold, bright light)
- environmental issues (lack of food, housing, health, freedom, or mobility)
- social issues (struggles with difficult individuals, losing social standing, ostracism)
- relationship issues (conflict in a primary relationship, deception, or break ups, and major events such as birth and deaths, marriage, and divorce.)
- mental issues (anxiety, obsessive compulsive disorder)
- work issues ( project deadlines, insufficient resources in light of expectations, tests)
- lifestyle issues (heavy drinking, unemployment, insufficient sleep)

Additionally, difficult experiences during development such as prenatal exposure to maternal stress, poor attachment histories and sexual abuse are thought to contribute to deficits in the maturity of an individual's stress response systems.

## **Assessing Stress Levels**

People's personalities play such a large role in how stress is handled, displayed and processed, that measuring stress level is tricky. While some people are able to process many stressors simultaneously, others can barely address a few. For this reason, most psychological stress tests involve self assessments. Two main factors are weighted in modern stress tests, the number of stressors in a person's life and how close the person is to "burnout".

## **Summary**

Responses to stress commonly include adaptation, psychological coping, anxiety, and depression. Over the long term, distress can diminish a person's health and increased his/her vulnerability to illness. To avoid becoming sick, stress must be managed.

Stress management involves learning techniques to help a person use effective coping mechanisms for dealing with psychological stress. Strategies may include both coping with and altering negative situations. Behaviors like setting limits and saying "no" to others' demands can be helpful. Another strategy is to switch thinking to pleasant thoughts. This behavior can be supported by engaging in a pleasant pastime such as a hobby, listening to soothing music or spending time in a garden.

## **Part 2: Yoga Therapy for Stress**

### **Treat Stress Perception & Stress Response**

Stress shows itself not only a bodily manifestation, but also a set of thought patterns that lead to the bodily conditions. While allopathic doctors tend to prescribe treatments for stress that rely heavily on prescription medications and lifestyle changes, Yoga Therapy is uniquely situated to treat both mind and body. Many of the lifestyle changes doctors recommend for patients with stress such as dietary changes, relaxation, self-awareness, gentle exercise are, in fact, the mainstay of yoga practice.

### **The Breath**

Under stress, we tend to breathe shallowly and quickly. Pranayama can help restore fuller breathing capacity which can calm down the stress response and foster feelings of well-being. Pranayama such as sama vritti, creating an even and measured breath, can help to balance the mind. Pranayama such as slowing the outbreath can help slow down a racing heart and mind.

### **Asana and Mudra**

The biochemical and physiological changes that emotional trauma can bring can be addressed using asana and mudra. Asanas are the mildest therapy and involve bringing the body into specific poses. These poses may be held while breathing in a more static practice or the poses may be strung together and practiced as a form of movement or vinyasa, moving in and out of poses with the pattern of the breath.

Beneficial poses or asanas will include restorative postures, especially forward bends, which naturally encourage a long exhale and calm the mind. In restorative poses, the body is propped in place with bolsters and blocks creating the feeling of being supported or held. The poses are not meant to be challenging in any way but rather to be soft and relaxing so the body and mind can let down their guard. These poses can be held up to 10 or even 20 minutes as long as no discomfort creeps in while holding the position. Eyes pillows may be used to cover the eyes bringing relief to eyes that are tense, tired or have been crying. Sandbags can be used to create a feeling of weight which can be grounding.

For very mild cases of anxiety or stress response, sun salutations may be indicated if the client has the capacity for the challenge of a more physically engaging practice. But typically the body is already in overdrive meaning most of its vital energy is out in the limbs, so poses that return life force to the core are indicated. Examples of more inward poses would be child's pose and knee hug pose (both forward bends resembling the fetal position). Again for more mild cases, balance poses may help bring focus to the mind by virtue of forcing the mind to concentrate so the body doesn't topple. This level of concentration on a task can interrupt a flow of negative thinking.

*Trimunda Mudra*, where the student assumes a seated fetal position hugging her/his knees can be reassuring and calming especially when anxiety and exhaustion are issues.

## **Meditation**

Once the stress response has begun to subside, seated or lying meditation can help to foster a more balanced and calm state of mind. Using mantra or positive affirmation may help to keep the mind from falling back into the alarm state by giving the mind a focus that is uplifting. The self-awareness fostered by insight meditation or vipassana practice can be used to increase awareness of thought and behavior patterns.

## **Chakra Focal Point**

According to Sir Martin Brofman, Ph.D., “When you feel tension in your consciousness, you feel it in the chakra associated with that part of your consciousness experiencing the stress, and in the parts of the physical body associated with that chakra. Where you feel the stress depends upon why you feel the stress. The tension in the chakra is detected by the nerves of the plexus associated with that chakra, and transmitted to the parts of the body controlled by that plexus. When the tension continues over a period of time, or to a particular level of intensity, the person creates a symptom on the physical level.”

So stress could be associated with a number of different chakras. For instance, if the stressor is a threat to basic human identity, the stress could show up as a disturbance in the root chakra. If the stressor is associated with thwarted creativity or pro-creativity, it might show up in the svadhistana chakra. Thwarted willpower or sense of agency would affect the manipura chakra and heartache or lack of compassion could affect the anahata chakra.

However the stress response itself is largely an adrenal event and the adrenals glands are seated in the third chakra. So one would think the manipura chakra would be affected and worn down by all different sorts of stress. Asanas that help to balance mainpura chakra are Bow Pose (*dhanurasana*) and Wheel Pose (*Cakraasana*). Also, it would be helpful to strengthen ojas and prana of the manipura chakra with *Agneyii Mudra*. In this mudra the practitioner lies on his back, spreading arms on the earth, closes his eyes and concentrates on the third chakra, breathing in and out seven times without pausing. If stress is a manifestation of first or second chakras, *Parthivii Mudra* or *Ambhasii Mudras* could be added to calm and strengthen those areas respectively.

## **Combined Treatment**

According to Dr. Chandra Patel

“recognizing the problem is half the battle. Without knowing what stress is, and how it may strain our health, we will not be able to recognize it. Awareness is of primary importance if we are to learn to manage stress effectively. Our body is often the first place to reveal signs of a

problem. Unfortunately, our upbringing often trains us to be stoic, and in our anxiety not to appear weak, we often deny signs of stress.”

Combining these practices selectively may be the most effective for treating a client in the stress response. Having the client practice these technique regularly will also build a skills that can be called into play when the stressor arises in daily life.

### **Real Results**

As one yoga practitioner reported in an August 2009 article in the *London Sunday Times*, after years of panic attacks, learning to control her breath was very empowering, giving her back control in the face of adversity. She states “I began to feel in control of my body, instead of feeling as if my body was controlling me. Working through a series of postures, combined with breath work, made me feel grounded, centered and free.”