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A CRITICAL EVALUATION OF STRESS AND ITS MANAGEMENT THROUGH YOGA

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ABSTRACT

The term Stress was coined by Selye, which denotes increased psychological distress as a result of excessive nervous strain in life. Stress has been dubbed the "health epidemic of the 21st century "by the WHO. Stress can be managed through modern treatment modalities but it is a long term therapy along with various side effects. Through *Yoga* one can have control over stress as mentioned in *Patanjali Yoga Darshan* as *'Chitta Vritti Nirodhah' Yoga* i.e. the restriction of the fluctuations of mind stuff. The word *Nirodhah* has been invariably translated as control of mind. The stress response is entirely appropriate in an acute condition such as a stage performance, competitive sport etc, where an increased level of performance can be appreciated. The physiological mechanisms effecting fright, fight and flight response declines to normal level. But in day to day life most of the common stressors we experience are not physical rather they are psychosocial in nature as in job insecurity, work stress, family issues etc. *Yoga* is all about harmonizing the body with the mind and breath through the means of various *Pranayama* (breathing techniques), *Asana* (*Yoga* postures). *Yoga* includes physical, mental & spiritual practices or disciplines that aim to transform body and mind. By encouraging the practice of *Asana* like *Shavasana, Siddhasana* etc. reduces the stress hormone cortisol and helps in lowering blood pressure and heart rate, improving digestion and boosting the immune system as well as easing symptoms of stress such as anxiety, depression, fatigue, insomnia.

KEYWORDS: Stress, Yoga, Asana.

INTRODUCTION

Stress is our body's way of responding to any kind of demand or threat. When you sense danger—whether it's real or imagined—the body's defense kicks into a high gear in a rapid, automatic process known as the "fight-or-flight" reaction, or the stress response. The stress response is the body's way of protecting you. When working properly, it helps you stay focused, energetic, and alert. In emergency situations, stress can save your life—giving you extra strength to defend yourself, for example, spurring you to slam on the brakes to avoid an accident. Stress can also help you rise to meet challenges. It's what keeps you on your toes during a presentation at work, sharpens your concentration when you're attempting the game-winning free throw, or drives you to study for an exam when you'd rather be watching TV. But beyond a certain point, stress stops being helpful and starts causing major damage to your health, your mood, your productivity, your relationships, and your quality of life.

Anatomy of structures related to Stress

In order to understand the Stress response, we must first understand its foundations, which reside in the structure and function of the human nervous systems. The body's stress response is mediated by the interplay between the sympathetic nervous system (SNS) and the hypothalmic-pituitary-adrenal (HPA) axis. A complex interaction of direct influences and indirect feedback mechanisms among the SNS, the hypothalmus, the pituitary gland and the adrenal glands contributes to the neuroendocrine regulation involved in reactions to stress.

General Organization of the Autonomic Nervous System[1]

The autonomic nervous system is activated mainly by centers located in the spinal cord, brain stem, and hypothalamus. Also, portions of the cerebral cortex, especially of the limbic cortex, can transmit signals to the lower centers and in this way influence autonomic control. The autonomic nervous system also often operates by means of visceral reflexes. That is, subconscious sensory signals from a visceral organ can enter the autonomic ganglia, the brain stem, or the hypothalamus and then return subconscious reflex responses directly back to the visceral organ to control its activities. The efferent autonomic signals are transmitted to the various organs of the body through two major subdivisions called the sympathetic nervous system and the parasympathetic nervous system.

Special Nature of the Sympathetic Nerve Endings in the Adrenal Medullae[2]

Preganglionic sympathetic nerve fibers pass, without synapsing, all the way from the intermediolateral horn cells of the spinal cord, through the sympathetic chains, then through the splanchnic nerves, and finally into the two adrenal medullae. There they end directly on modified neuronal cells that secrete epinephrine and norepinephrine into the blood stream. These secretory cells are derived from nervous tissue and are actually themselves postganglionic neurons; indeed, they even have rudimentary nerve fibers, and it is the endings of these fibers that secrete the adrenal hormones epinephrine and norepinephrine.

Functional Anatomy of the Parasympathetic Nervous System[3]

The parasympathetic nervous system demonstrating that parasympathetic fibers leave the central nervous system through cranial nerves III, VII, IX, and X; additional parasympathetic fibers leave the lowermost part of the spinal cord through the second and third sacral spinal nerves and occasionally the first and fourth sacral nerves. About 75 per cent of all parasympathetic nerve fibers are in the vagus nerves (cranial nerve X), passing to the entire thoracic and abdominal regions of the body. Therefore, a physiologist speaking of the parasympathetic nervous system often thinks mainly of the two vagus nerves. The vagus nerves supply parasympathetic nerves to the heart, lungs, esophagus, stomach, entire small intestine, proximal half of the colon, liver, gallbladder, pancreas, kidneys, and upper portions of the ureters. Parasympathetic fibers in the third cranial nerve go to the pupillary sphincter and ciliary muscle of the eye. Fibers from the seventh cranial nerve pass to the lacrimal, nasal, and submandibular glands. And fibers from the ninth cranial nerve go to the parotid gland. The sacral parasympathetic fibers are in the pelvic nerves, which pass through the spinal nerve sacral plexus on each side of the cord at the S-2 and S-3 levels. These fibers then distribute to the descending colon, rectum, urinary bladder, and lower portions of the ureters. Also, this sacral group of parasympathetics supplies nerve signals to the external genitalia to cause erection.

Stress Response of the Sympathetic Nervous System[4]

When large portions of the sympathetic nervous system discharge at the time of stress there is mass discharge of neurons—this increases in many ways the ability of the body to perform vigorous muscle activity. The sum of these effects permits a person to perform far more strenuous physical activity than would otherwise be possible. Because either mental or physical stress can excite the sympathetic system, it is frequently said that the purpose of the

sympathetic system is to provide extra activation of the body in states of stress: this is called the sympathetic stress response. The sympathetic system is especially strongly activated in many emotional states. For instance, in the state of rage, which is elicited to a great extent by stimulating the hypothalamus, signals are transmitted downward through the reticular formation of the brain stem and into the spinal cord to cause massive sympathetic discharge; most aforementioned sympathetic events ensue immediately. This is called the sympathetic alarm reaction. It is also called the fight or flight reaction because an animal in this state decides almost instantly whether to stand and fight or to run. In either event, the sympathetic alarm reaction makes the animal's subsequent activities vigorous organs.

Review on *Yoga*

Yoga is an ancient science of living and as such is intended to be incorporated in day today life. *Yoga* is in existence since more than five thousand years. The word Yoga is derived from the root (*yujir yoge*) which means 'union'. The union denotes that of the individual soul (*Jivatma*) with universal soul (*Paramatma*). *Patanjali Yogasutra* explains *Ashtanga Yoga.*

1. *Yama* (universal moral commandments)
2. *Niyama* (self purification by discipline)
3. *Asana* (posture)
4. *Pranayama* (rhythmic control of breath)
5. *Pratyahara* (withdrawal and emancipation of mind from the domaination of senses and exterior objects)
6. *Dharana* (concentration)
7. *Dhyana* (meditation)
8. *Samadhi* (a state of superconsciousness brought about by the profound meditation, in which the *Sadhaka* becomes one with the object of meditation – *Paramatma*).

Asana means a state of being in which one can remain physically and mentally steady, calm, quiet and comfortable. In the *Yoga Sutras* of *Patanjali* there is a concise definition of *Yogasanas*: *"Sthiram Sukham Aasanam*", meaning that position which is comfortable and steady.[5] For maintaining a good physical and mental health, one should adopt these types of yogic practices. These are *Asana*, like *Sukhasana*, *Ardhapadmasna*, *Padmaasana*, *Shavasana*.

1. *Sukhasana* (easy pose)

It is a sitting posture. It is the easiest and most comfortable of the meditation postures. It can be done without ill effect by persons who are unable to sit in the more difficult meditation postures. It facilitates mental and physical balance without causing strain or pain.[6]

2. Padmasana

It is a sitting posture. *Padmasana* allows the body to be held completely steady for long periods of time. It holds the trunk and head like a pillar with the legs as the firm foundation. As the body is steadied, the mind becomes calm. This steadiness and calmness is the first step towards real meditation. This posture applies pressure to the lower spine, which has a relaxing effect on the nervous system. *Ardhapadmasana* has same benefits as that of *Padmasna.*[7]

3. *Shavasana* (corpse pose)

This asana is also known as Mritasana, the dead man's pose. (Lying posture). This *Asana* relaxes the whole psycho-physiological system. It should ideally be practiced before sleep; before, during and after *Asana* practice, particularly after dynamic exercises such as *Surya namaskara;* and when the practitioner feels physically and mentally tired. It develops body awareness. When the body is completely relaxed, awareness of the mind get increases.[8]

Role of Asana in stress management

The science of *Yoga* begins to work on the outermost aspect of the personality, the physical body, which for most people is a practical and familiar starting point. When imbalance is experienced at hormonal level, the organs, muscles and nerves no longer function in harmony; rather they act in opposition to each other. For instance, the endocrine system might become irregular and the efficiency of the nervous system decrease to such an extent that a disease will manifest. Yoga aims at bringing the different bodily functions into perfect coordination so that they work for the good of the whole body. Physical and mental cleansing and strengthening is one of *Yoga's* most important achievements. What makes it so powerful and effective is the fact that it works on the holistic principles of harmony and unification. According to medical scientists, yoga therapy is successful because of the balance created in the nervous and endocrine systems which directly influences all the other systems and organs of the body.[9]

DISCUSSION

Asanas are meant for physical and mental wellbeing, bringing comfortness. The following *Asanas* have been dealt with in context of stress. *Sukhasana*, which is a *Asana* in sitting posture, here both the body and mind are active having impact on central nervous and autonomnic nervous system, thus reducing the levels of stress. *Padmasana* and *Ardhapadmasana* are also *Asanas* in sitting posture, here also body steadiness is achieved that leads to calmness of mind, hence having relaxing effect on CNS. *Shavasana*, is a *Asana* in lying posture, complete psycho-somatic relaxation is achieved, as there is rapid flow of energy from top to bottom.

Anatomical explanation of sitting and supine posture

Knees flexed, Hip joints flexed, Spine in neutral curves or axial extension. Skull balanced on spine. In sitting position, if the knees are above the hip joints, the pelvis can tip posteriorly, causing the spinal curves to go into flexion, especially if there is tightness in the hamstrings. To maintain an upright shape, the erector muscles contract to extend the spine, and the psoas muscles contract to pull the anterior lumbar spine forward (attempting to restore the lumbar curve). Unfortunately, this psoas action tends to also pull the hips into greater flexion, reinforcing the posterior tilt of the pelvis, which calls a host of other muscles into play in attempt to compensate. In order for a seated asana to be maintained in a comfortable manner for any length of time, for most people, the hip joints need to be at least slightly elevated above the knees. This requires the use of a cushion, folded blanket, or other aid. With the hips elevated above the knees, the lumbar and other spinal curves are restored, and the weight of the head can balance with minimal muscular effort. In a well-supported seated asana, the intrinsic equilibrium of the pelvis, spine, and breathing mechanism sup- port the body, and the energy that has been liberated from postural effort can be focused on deeper processes, such as breathing or meditation.

Primary and Secondary Curves In savasana, the structures that are in full, weight-bearing contact with the floor exhibit the primary curves of the body. These include the pos- terior surfaces of the calcaneus, gastocnemius, hamstrings, gluteus maximus, sacrum, thoracic spine, scapulae, and occiput. The structures that are off the floor mirror the secondary curves of the body— specifically, the posterior surfaces of the Achilles tendons, knee joints, lumbar region, and cervical spine. In *Shavasana*, the body is completely at rest and its metabolism is freed of the demands of contending with gravity, making it possible to practice the most

difficult breathing exercise of all: the act of being fully aware of but not controlling the breath's movements. Normally, when you are aware of your breathing, in some way you alter its natural rhythm. When you are not aware of the breath, it is driven by a combination of autonomic impulses and unconscious habit.

Maintaining a yoga practice can be a great way to reduce stress, stay in shape and calm the mind. But when it comes to stress relief, not all *Yoga* poses are created equal: Some positions are particularly effective for promoting relaxation, tension relief and restfulness.

CONCLUSION

Yoga is an ancient Indian discipline that includes meditation, controlled breathing techniques and exercise for preserving overall health and healing various ailments. *Yoga* and meditation are part of a holistic approach to self-healing that brings about harmony between body, mind and soul and helps in relieving numerous aliments. Yoga is the best way of relieving stress and anxiety and features among the tips for fighting depression. Our list of effective *Yoga* poses not only calm and rejuvenate the mind, but also help in refreshing the body. It is indeed the ultimate medication for all diseases, practiced and propagated by great yogis. From above study it can be concluded that asana like *Sukhasana*, *Ardhpadmasana*, *Padmasana* and *Shavasna*, help in reducing the stress levels in the body by acting on autonomic nervous system. Practicing *Yoga* is not only an effective stress reliever, but also a way to ease symptoms of anxiety. By transferring focus and attention to the body and breath, *Yoga* can help to temper anxiety while also releasing physical tension.

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