Stress Reactions: Its Management

by

Preksha Meditation & Yoga

Chapter-1

Introduction
INTRODUCTION

STRESS

Stress arises out of tension and tension can be muscular, mental or emotional, creating imbalance in the nervous system. Muscular tension is not difficult to eliminate and can be easily worked out by a sensible diet and proper rest. Mental tension is due to our wrong way of thinking and living, emotional tension arises from how we react to persons, objects and events in life.

The emotional effect caused by the stress and strain of modern living which is expressed in so many psychosomatic diseases or stress diseases. Emotional stress can cause distressing symptoms. Emotion can upset glandular functions, metabolic balance and also cause gastric distress. There is a growing awareness of the importance of emotional factors involved in the activities and efficiency of the heart and the circulatory system. All these reactions really depend on our personality, temperament, emotional stability and attitude which ultimately determine our threshold.

Concept of stress

1. The concept of Stress was first introduced in the life sciences by Hans Selye (1936) it is borrowed from the natural sciences. During the last 15 years the Stress has been widely used in relation to work organisation. Mason 1975 reviewed literature on stress and concluded that there was confusion and a lack of concensus regarding its definition.

In Physiology the various changes in the physiological functions in response to evocative agents denote stress (rather than strain).
In Psychology stress refers to a state of the organism resulting from some interaction with the environment.

In Psycho-physiology stress is that stimulus which impose detectable strain that can not be easily accommodated by the body and so presents itself as impaired health or behaviours.

2. Stress is your body's way of responding to any kind of demand. It can be caused by both good and bad experiences. When people feel stressed by something going on around them, their bodies react by releasing chemicals into the blood. These chemicals give people more energy and strength, which can be a good thing if their stress is caused by physical danger. But this can also be a bad thing, if their stress is in response to something emotional and there is no outlet for this extra energy and strength. This class will discuss different causes of stress, how stress affects you, the difference between 'good' or 'positive' stress and 'bad' or 'negative' stress, and some common facts about how stress affects people today.

**Stress Physiology**

Ever since the phenomenal description of the response to the noxious stimuli such as heat, cold, epinephrine, strenuous muscular exercise and x-rays by Hans Selye's (Selye, 1936), General Adoption Syndrome (GAS) has been widely held as comprehensive model to explain the stress phenomenon. The cascade of cellular responses throughout the body produced by the hormonal and tissue mediators that are released in response to stressful challenges are protective in the short run and help to maintain homeostasis but can be damaging in the long run if they are over produced or deregulated. Homeostasis refers to the maintenance of a narrow range of vital physiologic parameters necessary for survival. In common usage, stress usually refers to an event or succession of events that challenges homeostasis and causes a response, often in the form of “stress”.
The term ‘stress’ is often used to mean the event (stressor) or the response (stress response) and is frequently used to describe a chronic state of imbalance in response to stress. Here stress refer to the physiological and behavioural response to a stressor (a challenge to the individual that perturbs homeostasis) and require an adaptive response. It can also be challenge that is interpreted as threatening and results in a hormonal or behavioural response, even if physiologic homeostasis is not compromised.

When an organism is confronted with a threat, the general physiological response occurs in the three stages.


The potential causes of stress are numerous and highly individual and depends, at least in part, and its perception

**Body’s Response to Stress**

The most commonly studied physiological systems that respond to the stress are hypothalamic-pituitary-adrenal (HPA) axis and the autonomic nervous system (ANS) particularly the sympathetic response of the adrenal medulla and sympathetic nerves. These systems respond in daily life according to stressful events and to the diurnal cycle of the rest and activity.

When one perceive a threat, the nervous system responds by releasing a flood of stress hormones, including adrenaline and cortisol. These hormones arouse the body for emergency action. The heart beats faster, muscles tighten, blood pressure rises, breath quickens, and senses become sharper. These physical changes increase the strength and stamina, speed up reaction time, and enhance the focus – preparing to either fight or flight from the danger at hand.

Stress is a normal physical response to events that make to feel threatened or upset the balance in some way. When body sense danger – whether it’s real or imagined – the body’s defenses kick into 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. When working properly, it helps to stay focused, energetic, and alert. In emergency situations, stress can save the life—giving extra strength to defend the self, for example, or spurring to slam on the brakes to avoid an accident.

The stress response also helps to rise to meet challenges. Stress is what keeps on the toes during a presentation at work, sharpens the concentration when attempting the game-winning free throw, or drives to study for an examination or watching TV.

But beyond a certain point, stress stops being helpful and starts causing major damage to health, mood, productivity, relationships, and quality of life.

Nature of stress

1. Stimulus Oriented Approach:

Stress is regarded as an external force which is perceived as threatening, itself is as stress. According to Dr. Hans Selye any external event or any internal drive which threatens to upset the organismic equilibrium is stress.

2. Response Oriented Approach:

The response oriented approaches describe how stress is reacted to and how people function under stress. The biologically oriented approach to stress is also response-oriented it views the reaction of the organism as attempts to come to terms with environment. Having the first separated mind from body of a living unity, devices are then invented to relate the two through parallelism, inter-actionism or epi-phenomenonism.

3. The psycho-somatic Approach:
Considers an event external or internal, which poses a threat to integrity of organism leading to the disorganisation of personality as stress. Stress presage loss of ego support. Stress may be induced by interpersonal (external) or inter-psychic (between own impulses and ego) factors resulting in anxiety.

**Causative factors of stress**

Many different things can cause stress -- from physical (such as fear of something dangerous) to emotional (such as worry over family or job). Identifying what may be causing the stress is often the first step in learning how to better deal with stress. Some of the most common sources of stress are:

**Threat**

A perceived threat will lead a person to feel stressed. This can include physical threats, social threats, financial threat, and so on. In particular it will be worse when the person feels they have no response that can reduce the threat, as this affects the need for a sense of control.

Generally speaking, any threat to **needs** is likely to lead to stress being experienced.

**Fear**

Threat can lead to **fear**, which again leads to stress. Fear leads to imagined outcomes, which are the real source of stress.

**Uncertainty**

When one is not **certain**, and unable to **predict**, and hence not in **control**, and hence may feel fear or feel threatened by that which is causing the uncertainty.

**Cognitive dissonance**

When there is a gap between what we do and what we think, then we experience cognitive dissonance, which is felt as stress. Thus, if I think I am a nice
person then do something that hurts someone else, I will experience dissonance and stress.

Dissonance also occurs when we cannot meet our commitments. We believe we are honest and committed, but when circumstances prevent us from meeting our promises we are faced with the possibility of being perceived as dishonest or incapable (ie. a social threat).

A. Other Life causes of Stress

There are many causes of stress in life including:

- Death: of spouse, family member, friend
- Health: injury, illness, pregnancy
- Crime: Sexual molestation, mugging, burglary, pick-pocketed
- Self-abuse: drug abuse, alcoholism, self-harm
- Family change: separation, divorce, new baby, marriage
- Sexual problems: getting partner, with partner
- Argument: with spouse, family, friends, co-workers, boss
- Physical changes: lack of sleep, new work hours
- New location: vacation, moving house
- Money: lack of it, owing it, investing it
- Environmental changes: in school, job, house, town
- Responsibility increase: new dependent, new job

Stress at work

1. The demands of the job
2. The control staff have over how they do their work
3. The support they receive from colleagues and superiors
4. Their relationships with colleagues
5. Whether they understand their roles and responsibilities
6. How far the company consults staff over workplace changes.

Other stress indicators at work include:

- High staff turnover
- Poor communication between teams
- Bullying
- Lack of feedback on performance
- Value and contribution
- Technological change
- Lack of clarity of roles and responsibilities
- Dissatisfaction with non-monetary benefits
- Working long hours
- Boring and mundane work
- One-off incidents
- Uncomfortable workplace
- Lack of training

Muscles work in opposing pairs, with movement caused when one contracts whilst the other relaxes. Stress can result in both muscles working at once. There is thus no movement, but still muscular tension.

**Survival Stress** - You may have heard the phrase "fight or flight" before. This is a common response to danger in all people and animals. When you are afraid that someone or something may physically hurt you, your body naturally responds with a burst of energy so that you will be better able to survive the dangerous situation (fight) or escape it all together (flight). This is survival stress.
**Internal Stress**- Have you ever caught yourself worrying about things you can do nothing about or worrying for no reason at all? This is internal stress and it is one of the most important kinds of stress to understand and manage. Internal stress is when people make themselves stressed. This often happens when we worry about things we can't control or put ourselves in situations we know will cause us stress. Some people become addicted to the kind of hurried, tense, lifestyle that results from being under stress. They even look for stressful situations and feel stress about things that aren't stressful.

**Environmental Stress**- This is a response to things around you that cause stress, such as noise, crowding, and pressure from work or family. Identifying these environmental stresses and learning to avoid them or deal with them will help lower your stress level.

**Fatigue and Overwork** - This kind of stress builds up over a long time and can take a hard toll on your body. It can be caused by working too much or too hard at your job(s), school, or home. It can also be caused by not knowing how to manage your time well or how to take time out for rest and relaxation. This can be one of the hardest kinds of stress to avoid because many people feel this is out of their control. Later in this course we will show you that you do have options and offer some useful tips for dealing with fatigue.

**Signs and Symptoms of Stress**

It’s important to learn how to recognize when the stress levels are out of control. The most dangerous thing about stress is how easily it can creep up on. The signs and symptoms of stress overload can be almost anything. Stress affects the mind, body, and behavior in many ways, and everyone experiences stress differently.

The following table lists some of the common warning signs and symptoms of stress. The more signs and symptoms to notice is the closer to be stress overload.

Keep in mind that the signs and symptoms of stress can also be caused by other psychological and medical problems. If experienced any of the warning signs of
stress, it’s important to see a doctor for a full evaluation. The doctor can help to
determine whether or not the symptoms are stress-related.

One can’t completely eliminate stress from the life, but can control much affects. Relaxation techniques such as Preksha Meditation, Yoga and Deep Breathing activate the body’s relaxation response, a state of restfulness that is the opposite of the stress response. When practiced regularly, these activities lead to a reduction in stress levels and a boost in the feelings of joy and serenity. They also increase the ability to stay calm and cool under pressure.

Stress can show itself as physical outwards signs or by changing the way you feel emotionally.

Some of the signs include:

- Sleep disturbances.
- Being impatient or irritable.
- Lack of concentration.
- Unable to make decisions.
- Drinking or smoking more.
- Unable to relax.
- Feeling tense.

These signs and feelings are caused by the increased activity of the nervous system and the actions of two hormones, adrenaline and cortical.

Adrenaline is the hormone that gets you ready for action, preparing you to “fight” or “flight”. It stimulates the heart to beat faster and redirects blood to the brain, heart and muscles. As blood is rapidly pumped around your body, your blood pressure rises. The blood becomes stickier and the liver releases sugars and fats into the bloodstream to give you instant energy.

A. Physical Signs
Dizziness, general aches and pains, grinding teeth, clenched jaws, headaches, indigestion, muscle tension, difficulty in sleeping, racing heart, ringing in the ears, stooped posture, sweaty palms, tiredness, exhaustion, trembling, weight gain or loss, upset stomach

B. Mental Signs

Constant worry, difficulty in making decisions, forgetfulness, inability to concentrate, lack of creativity, loss of sense of humor

C. Emotional Signs

Anger, anxiety, crying, depression, feeling powerless, frequent mood swings, irritability, loneliness, negative thinking, nervousness, & sadness.

D. Behavioral Signs

Bossiness, compulsive eating, critical attitude of others, explosive actions, frequent job changes, impulsive actions, increased use of alcohol or drugs, withdrawal from relationships or social situations

Effect of Stress on health

Stress can affect both the body and mind. People under acute stress can become tired, sick, and unable to concentrate or think clearly. Sometimes, they even suffer mental breakdowns.

Long-term exposure to stress can lead to serious health problems. Chronic stress disrupts nearly every system in the body. It can raise blood pressure, suppress the immune system, increases the risk of heart attack and stroke,

Contribute to infertility and speed up the aging process. Long-term stress can even rewire the brain, leaving you more vulnerable to anxiety and depression.
A. Good Stress versus Bad Stress

So if stress can be so bad for some one, how can there be "good" or "positive" stress? If some one is suffering from extreme stress or long-term stress, his/her body will eventually wear itself down. But sometimes, small amounts of stress can actually be good. Understanding the stress level is important. If nothing in the life causes the stress or excitement, become bored or may not be living up to the potential. If everything in the life, or large portions of the life, cause stress, and may experience health or mental problems that will make the behavior worse.

- Millions of people in the world suffer from stress each year.
- In fact, 3 out of 4 people say they experience stress at least twice a month.
- Over half of those people say they suffer from 'high' levels of stress at least twice a month.

- Stress can contribute to heart disease, high blood pressure, and strokes, and make you more likely to catch less serious illnesses like colds. It can also contribute to alcoholism, obesity, drug addiction, cigarette use, depression, and other harmful behaviors.

- In the last 20 years, the number of people reporting that stress affects their work has gone up more than four times. Whereas the number of people reporting that other illnesses affect their work have gone down.

- One fourth of all the drugs prescribed in the world go to the treatment of stress.

B. Brief overview of the effects of stress on the body:

The nervous system: During stress, the brain triggers the release of adrenaline and cortisol in the adrenal glands. When the levels of these chemicals are steadily high, it can affect memory and learning and also increase the risk of depression.

The endocrine system: The moment a stressful situation occurs, the body’s stress hormones induce the liver to release blood sugar. For those who are already type 2 diabetic, or at risk, higher blood sugar levels can actually result in diabetes.
The respiratory system: The normal reaction to stress is rapid breathing, breathlessness and in some cases, hyperventilation. If this is prolonged, it can cause upper respiratory tract infections.

The cardiovascular system: Sometimes specific situations like the prospect of facing an exam or an interview can raise the pulse rate and blood pressure. When the pressure of performance is constant, it can gradually result in the narrowing of the arteries and high cholesterol levels. This opens the door to cardiac diseases, cardiac arrest and stroke.

The reproductive system: For women, in particular, the effects of stress on the body can be in the form of shorter or irregular menstrual cycles and painful periods. Stress during pregnancy can result in the baby becoming prone to asthma and other allergies.

The immune system: While short-term positive stress is good for the immune system by assisting it in combating infection, continued stress can reverse this process. This can make injuries heal slowly, causes skin conditions like acne, eczema, psoriasis and general infection.

The digestive system: Acute stress could cause dry mouth, indigestion, nausea, gas, diarrhea or constipation. When these become chronic, it can turn into uncomfortable conditions like IBS, heartburn, ulcers etc.

The musculo-skeletal system: It is common to feel one’s muscles bracing themselves in unusual situations. Continued exposure to risky situations can result in headaches, back pain, and tight shoulders. It could also cause osteoporosis. While it is virtually impossible to get rid of stress, it is possible to control the effects of stress on the body to some extent through natural methods and relaxation techniques like Hypnotherapy, Yoga, Meditation and Deep Breathing. Through hypnotherapy stress can be managed effectively. Hypnotherapy identifies and explores why an individual reacts in a particular way to specific situations. Coping strategies are then developed to help the individual overcome stressors. Hypnosis has a calming effect and helps the person make a reassessment of the stressors.
Stress Induced disorders in various systems of the body

*(Young and welsh, 2005)*

<table>
<thead>
<tr>
<th>System</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervous</td>
<td>Migraine, headaches, tilting sensation in fingers &amp; toes, Sleep disturbances, aching jaw, tight forehead, Sweaty palms, anger, anxiety, frustration, Concentration problems, depression, learning and memory problems, Perkin’s Disease and Alzheimer's Disease</td>
</tr>
<tr>
<td>Digestive</td>
<td>Problems retaining food, change in appetite &amp; Duodenal ulcer</td>
</tr>
<tr>
<td>Immunae</td>
<td>Low grade fever, Bacterial &amp; Viral infection.</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Tightness in chest, back, shoulders, shortness of breath, dizziness, cold or sore throat and asthma</td>
</tr>
<tr>
<td>Cardio-Vascular</td>
<td>Increased HR/PR increased BP, Myocardial Infraction.</td>
</tr>
<tr>
<td>Others</td>
<td>Diabetes, breast cancer, cervical cancer, goiter etc.</td>
</tr>
</tbody>
</table>
Stress Reactions

Whenever one encounters a psychological stressful situation, an elaborate innate mechanism is automatically put into action. This mechanism involves (Acharya Mahaprajana, 2003):

1. Hypothalamus- the remarkable portion of the brain which integrates all functions of the body which are not normally controlled by the conscious mind.

2. Pituitary gland, which is called master of the endocrine system because it regulates the other glands.

3. Adrenal gland which secretes adrenal and other hormones to keep the body tense and alert.

4. Sympathetic components of the autonomic nervous system which is responsible to ultimately prepare the body for fight or flight.

The integrated mechanism of all the above components make following changes in Physiological, Biochemical & Psychological conditions of the body:

1. The heart beats faster to pump more blood where it is most needed and blood pressure/heart rate/pulse rate rises.

2. Respiration rate increases: breathing becomes faster or gasping.

3. Salivary glands dry up & blood supply to the digestive system curtailed: digestion slows down resulting increase level of stress hormone cortisol.

4. Many other complex changes generates muscle-tension & constant state of anxiety & frustration
**BLOOD PRESSURE**

Human Heart play a vital roll for a healthy life style as it provides energy riched nutrients to all organs of the body and its malfunction due to various factors one of which is stress causes various diseases. To evaluate its proper function the estimation of above said parameters is essential.

**Human Heart Anatomy**

The heart is a large, muscular, hollow organ with a weight of approximately 300 grams. Its function is to keep the blood moving by rhythmic activity. This hollow muscle is built in such a way that, during the contraction of the chambers (systole), the blood is pushed into the large arteries of the general circulatory and the pulmonary systems, while simultaneously it draws the blood from the veins into the auricles.

During the subsequent relaxation of the chambers (diastole), the cardiac ventricles fill up again with blood from the auricles. The heart and the vessels form the cardiac circulatory system or blood circulation, which supplies all cells of the organism with vital substances, at the same time removing waste products.

In shape, the heart can be compared with a cone lying on its side. It is located in the center of the thoracic cavity and is completely surrounded by the lungs. Two thirds are situated in the left and one third in the right half of the thoracic cavity. The inner lining of the heart consist of a thin layer (endocardium), continued on the outside by a muscular layer (myocardium) which performs the functions of the heart. The heart is surrounded by the double-walled heart sac (pericardium).

The heart sac allows the heart to move smoothly within the thoracic cavity and prevents a straining of the cardiac wall. In its interior, the heart is divided by a membrane (septum) into what is called “right heart” and “left heart”. Each half is divided into the atrium and a heart chamber situated below the atrium, the ventricle. The heart is nourished by its own vascular system, the coronary arteries. The heart
contracts 60 to 80 times per minute each time forcing approximately 0.075 liters (0.02 gallons) of pulmonary blood from the left heart into the aorta and the same quantity of blood from the right heart into the lung (venous blood). Day after day, approximately 7,000 liters (1820 gallons) without tiring! This is made possible by a muscle type unique to the heart, with longitudinally ramifying fibers, and by its own pacemaker, the sinoatrial node, an aggregation of nerve cells the size of a pinhead in the right atrial wall.

The everyday stress of modern life and work can definitely increase your blood pressure levels by accelerating your heart rate. But this is a temporary, non permanent rising of blood pressure levels used quite normally by the human body to prepare you to respond to 'threats'. This is often called the fight-or-flight response. However, it’s not necessarily correct to say that everyday stress causes permanently high blood pressure (hypertension).

Stress can cause temporary high blood pressure level, but these high levels will revert to normal once the source of the stress is removed and able to relax.

Research has shown no evidence that regular short term increases in blood pressure due to stress, do any permanent damage to the blood vessels or internal organs. Long term stress that causes high blood pressure levels for sustained periods of time is a much more serious thing than short term stress. Long term stress is a major cause of hypertension, and hypertension can and does lead to some very serious health problems.

Scientific research has also shown that long term stress does play a role in the increased risk of hypertension, but numerous other factors need also be considered, among them obesity, exercise, smoking, and psychological concerns like depression and anxiety levels. This all becomes a cycle when you consider that excess stress itself leads to many of the other contributing factor of hypertension. Highly stressed people often overeat, take little exercise and smoke more.

Regular stress suffered of extended periods of time can cause hypertension through the repeated raising of blood pressure levels as well as by stimulation of the nervous system to produce large amounts of vasoconstricting (artery tightening) hormones.
that increase blood pressure. Factors affecting blood pressure through long term stress include job strain, race, social environment, and emotional distress.

When one or more risk factors for high blood pressure are coupled together with other stress producing factors, the effect on blood pressure is multiplied. Overall, studies show that short term stress does not directly cause hypertension, but can have an effect on its development. Also, some of the side effects of stress, like overeating and lack of exercise can contribute to a person developing hypertension.

The high blood pressure caused by stress can mean more wear and tear on the heart. The stickiness of blood increases the risks of blood clots forming in the arteries and if the supplies of sugars and fats are not used up by the muscles they can stick to the artery walls and form “fatty deposits” which can fur up the arteries. All this is bad news for your heart and can put you at greater risk of coronary heart disease.

Reducing stress can help lower high blood pressure. Stress is a normal part of life. But too much stress can lead to emotional, psychological, and even physical problems-- including heart disease, high blood pressure, chest pains, or irregular heart beat.

Medical researchers aren't sure exactly how stress increases the risk of heart disease. Stress itself might be a risk factor, or it could be that high levels of stress make other risk factors (such as high cholesterol or high blood pressure) worse. For example, if you are under stress, your blood pressure goes up, you may overeat, you may exercise less, and you may be more likely to smoke.

If stress itself is a risk factor for heart disease, it could be because chronic stress exposes your body to unhealthy, persistently elevated levels of stress hormones like adrenaline and cortisol. Studies also link stress to changes in the way blood clots, which increases the risk of heart attack.
Figure: 1.1 Front View of Human Heart

Figure: 1.2 Cross Section of Human Heart
**Hormones and Blood Pressure**

Several hormones have effects on blood pressure (Fig. 1.3). The adrenal medulla secretes norepinephrine and epinephrine in stress situations. Norepinephrine stimulates vasoconstriction, which raises blood pressure. Epinephrine also causes vasoconstriction, and increases heart rate and force of contraction, both increases blood pressure. Antidiuretic hormone (ADH) is secreted by the posterior pituitary gland when the water content of the body decreases. ADH increases the reabsorption of water by the kidneys to prevent further loss of water in urine and further decrease in blood pressure. Aldosterone, a hormone from the adrenal cortex, has a similar effect on blood volume. When blood pressure decreases, secretion of aldosterone stimulates the reabsorption of Na ions by kidneys. Water follows sodium back to the blood, which maintains blood volume to prevent further drop in blood pressure.

Atrial natriuretic peptide (ANP), secreted by the atria of the heart, function in opposition to aldosterone. ANP increases the excretion of Na ions and water by the kidneys, which decreases blood volume and lower blood pressure.

**Regulation of Blood Pressure**

The mechanism that regulates systemic blood pressure may be divided in to two types: intrinsic mechanisms and nervous mechanisms. The nervous mechanisms involve the nervous system, and the intrinsic mechanisms do not require nerve impulses.

**Intrinsic mechanisms**

The term intrinsic means “within”. Intrinsic mechanisms work because of internal characteristics of certain organs. The first such organ is the heart. When venous return increases, cardiac muscle fibers are stretched, and the ventricles pump more
forcefully (Starling’s law). Thus, cardiac output and blood pressure increase. This is what happens during exercise, when a higher blood pressure is needed. When exercise ends and venous return decreases, the heart pump less forcefully, which helps return blood pressure to a normal resting level. The second intrinsic mechanism involves the kidneys. When blood flow through the kidneys decreases the process of filtration decreases and less urine is formed. This decrease in urinary output preserves blood volume so that it does no decrease further. Following severe hemorrhage or any other type of dehydration, this is very important to maintain blood pressure. The kidneys are also involved in the reninangiotensin mechanism. When blood pressure decreases, the kidneys secrete the enzyme rennin, which initiate a series of reactions the result in the formation of angiotensin II (Fig-1.4). Angiotestosterone II causes vasoconstriction and stimulates secretion of aldosterone by the adrenal cortex, both of which will increase the blood pressure.
Figure: 1. 3 Hormones that affect blood pressure

Figure: 1.4 Renin-angiotensin mechanism began at “Decreased B. P.”
Nervous Mechanisms

The medulla and autonomic nervous system are directly involved in the regulation of blood pressure (Fig-1.5). The nervous mechanism involves peripheral resistance, which is the degree of constriction of the arteries and arterioles and, to a lesser extent, the veins. The medulla contains the vasomotor center, which consists of a vasoconstrictor area and a vasodilator area. The vasodilator area may suppress the vasoconstrictor area to bring about vasodilatation, which will decrease blood pressure. The vasoconstrictor area may bring about more vasoconstriction by way of the sympathetic division of the autonomic nervous system. Sympathetic vasoconstrictor fibers innervate the smooth muscle of all arteries and veins, and several impulses per seconds along with these fibers maintain normal vasoconstriction. More impulses per second bring about greater vasoconstriction, and fewer impulses per second cause vasodilatation. The medulla receives the information to make such changes from the pressoreceptors in the carotid sinuses and the aortic sinus. The inability to maintain normal blood pressure is one aspect of circulatory shock (Scanlon, 2007)

Figure: 1.5  Nervous mechanisms to regulate blood pressure.
**Pulse Rate**

A healthy adult has a resting pulse rate of 60-70 beats per minute, which is the rate of depolarization of SA Node. (The SA node actually has a slightly faster rate, closer to 100 beats per minute, but is slowed by parasympathetic nerve impulses to what we consider a normal resting rate.) A rate less than 60 (except for athletes) is called bradycardia; a prolong or consistent rate greater than 100 beats per minute is called tachycardia. A child’s normal pulse rate may be as high as 100 beats per minute, that of an infant as high as 120, and that of a near-term fetus as high as 140 beats per minute. These higher rates are not related to age, but rather to size; the smaller the individual, the higher the metabolic rate and the faster the heart rate.

**Regulation of Pulse Rate**

Although the heart generates and maintains its own beat, the rate of contraction can be changed to adapt to different situations. The nervous system can and does bring about necessary changes in heart rate as well as in force of contraction. The medulla of the brain contains the two cardiac centers, the accelerator center and inhibitory center. These centers send impulses to the heart along autonomic nerves. The autonomic nervous system has two divisions: sympathetic and parasympathetic. Sympathetic impulses from the accelerator center along sympathetic nerves increases heart rate and force of contraction during exercise and stressful situations. Parasympathetic impulses from the inhibitory center along with vagus nerve decrease the pulse rate. At rest these impulses slow down the depolarisation of SA node to what we consider a normal resting rate, and they also slow the heart after exercise is over. Basically changes in the blood pressure and oxygen level of the blood are stimuli for changes in the heart rate. Pressoreceptors and chemoreceptors are located in the carotid arteries and aortic arch. Pressoreceptors in the carotid sinuses and aortic sinus detect changes in the blood pressure. Chemoreceptors in the carotid bodies and aortic body detect changes in oxygen content of the blood.
sensory nerves for the carotid receptors are the glossopharyngeal (9th cranial) nerves; the sensory nerves for the aortic arch receptors are the vagus (10th cranial) nerves. The sudden drop in blood pressure cause fewer impulses to be generated by pressoreceptors. These impulses travel along the glossopharyngeal nerves to medulla, and decrease in the frequency of impulses that are carried by sympathetic nerves to SA node, AV node, and ventricular myocardium. As heart rate and force increase, blood pressure to the brain raised to normal, and sensation of light-headness passes. When blood pressure to the brain is restored to normal, the heart receives more parasympathetic impulses from the inhibitory center along the vagus nerves to SA node and AV Nod. These parasympathetic impulses slow the heart rate to a normal resting pace.

**Cortisol and Stress**

Cortisol is a corticosteroid hormone or glucocorticoid produced by the adrenal cortex, that is part of the adrenal gland (in the Zona fasciculata and the Zona reticularis of the adrenal cortex). It is usually referred to as the "stress hormone" as it is involved in response to stress and anxiety, controlled by CRH. It increases blood pressure and blood sugar, and reduces immune responses. Various synthetic forms of cortisol are used to treat a variety of different illnesses. The most well-known of these are a natural metabolic intermediary of cortisol named hydrocortisone. When first introduced as a treatment for rheumatoid arthritis, hydrocortisone was referred to as Compound E.

Cortisol is the most potent glucocorticoid produced by the human adrenal. It is synthesized from cholesterol and its production is stimulated by pituitary adrenocorticotropic hormone (ACTH) which is regulated by corticotrophin releasing factor (CRF). ACTH and CRF secretions are inhibited by high cortisol levels in a negative feedback loop. In plasma a majority of cortisol is bound with high affinity to corticosteroid binding globulin (CBG or transcotin). Cortisol acts through specific
intracellular receptors and affects numerous physiologic systems including immune function, glucose counter regulation, vascular tone, and bone metabolism.

Cortisol production has an ACTH-dependent circadian rhythm with peak levels in the early morning and a nadir at night. The factor controlling this rhythm is not completely defined and can be disrupted by a number of physical and psychological conditions. ACTH and cortisol are secreted independent of circadian rhythm in response to physical and psychological stress.\textsuperscript{(Sapolsky, 1998)}

Elevated cortisol levels and lack of diurnal variation have been identified with Cushing’s disease (ACTH hyper secretion). Elevated circulating cortisol levels have also been identified in patients with adrenal tumors. Low cortisol levels are found in primary adrenal insufficiency (e.g. adrenal hypoplasia, Addison’s disease) and in ACTH deficiency. Due to the normal circadian variation in cortisol levels, distinguishing normal from abnormally low cortisol levels can be difficult, therefore several daily collections are recommended.

Prolonged high levels of cortisol can lead to heart disease and other health problems.

\textbf{Physiology of Cortisol}

The amount of cortisol present in the blood undergoes diurnal variation, with the highest levels present in the early morning, and the lowest levels present around midnight, or 3-5 hours after the onset of sleep. Information about the light/dark cycle is transmitted from the retina to the paired suprachiasmatic nuclei in the hypothalamus. The pattern is not present at birth (estimates of when it starts vary from two weeks to 9 months).

Changed patterns of serum cortisol levels have been observed in connection with abnormal ACTH levels, clinical depression, psychological stress, and such physiological stressors as hypoglycemia, illness, fever, trauma, surgery, fear, pain, physical exertion or extremes of temperature.
There is also significant individual variation, although a given person tends to have consistent rhythms.

- It is an important hormone in the body, secreted by the adrenal glands and involved in the following functions and more:
  - Proper glucose metabolism
  - Regulation of blood pressure
  - Insulin release for blood sugar maintenance
  - Immune function
  - Inflammatory response
- Normally, it’s present in the body at higher levels in the morning and at its lowest at night.

Although stress isn’t the only reason that cortisol is secreted into the bloodstream, it has been termed “Stress Hormone” because it’s also secreted in higher levels during the body’s ‘fight or flight’ response to stress, and is responsible for several stress-related changes in the body. Small increases of cortisol have some positive effects:

- A quick burst of energy for survival reasons.
- Heightened memory functions
- A burst of increased immunity
- Lower sensitivity to pain
- Helps maintain homeostasis in the body

While cortisol is an important and helpful part of the body’s response to stress, it’s important that the body’s relaxation response to be activated so the body’s functions can return to normal following a stressful event. Unfortunately, in our current high-stress culture, the body’s stress response is activated so often that the body doesn’t always have a chance to return to normal, resulting in a state of chronic stress.

Higher and more prolonged levels of cortisol in the bloodstream (like those associated with chronic stress) have been shown to have negative effects, such as:

- Impaired cognitive performance
- Suppressed thyroid function
• Blood sugar imbalances such as hyperglycemia
• Decreased bone density
• Decrease in muscle tissue Higher blood pressure
• Lowered immunity and inflammatory response in the body

**Binding of Cortisol**

Most serum cortisol, all but about 4%, is bound to proteins including corticosteroid binding globulin (CBG), and serum albumin. Only free cortisol is available to most receptors.

**Effects of Cortisol**

High levels of cortisol interfere with memory. If the stress is short term (ie less than 6 months) the effect is not permanent, and memory will return to normal once cortisol levels drop. However, repeated and long-term stress can atrophy or shrink the hippocampus the very part of the brain where we store memories.

Cortisol affects long-term memory more than short-term recall. One can still learn under stress, but it’s harder to recall after 24 hours. A study by the American National Institute of Health it showed that cortisol, significantly reduces the body’s ability to grow new brain cells.

A study reported in the International Journal of Neuroscience found that high stress levels could be linked with the onset of Alzheimer’s disease. Research into drugs that lower cortisol levels is being pursued.

It lowers bone formation thus favoring development of osteoporosis in the long term. Cortisol moves potassium out of cells in exchange for an equal number of sodium ions as mentioned above. This can cause a major problem with the hyperkalemia of metabolic shock from surgery. Cortisol reduces calcium absorption in the intestine.

It cooperates with epinephrine (adrenaline) to create memories of short-term emotional events; this is the proposed mechanism for storage of flash bulb memories,
and may originate as a means to remember what to avoid in the future. However, long-term exposure to cortisol results in damage to cells in the hippocampus. This damage results in impaired learning. The desirability of inhibiting activity during infection is no doubt the reason why cortisol is responsible for creating euphoria. The desirability of not disturbing tissues weakened by infection or of not cutting off their blood supply could explain the inhibition of pain widely observed for cortisol.(Sapolsky, 1998)

Additional effects of Cortisol

- It increases blood pressure by increasing the sensitivity of the vasculature to epinephrine and nor epinephrine. In the absence of cortisol, widespread vasodilatation occurs.
- It inhibits the secretion of corticotrophin-releasing hormone (CRH), resulting in feedback inhibition of ACTH (Adrenocorticotropic hormone or corticotrophin) secretion. Some researchers believe that this normal feedback system may become deregulated when animals are exposed to chronic stress.
- It allows for the kidneys to produce hypotonic urine.
- It has anti-inflammatory effects by reducing histamine secretion and stabilizing lysosomal membranes. The stabilization of lysosomal membranes prevents their rupture, thereby preventing damage to healthy tissues.
- It stimulates hepatic detoxification by inducing tryptophan oxygenize (to reduce serotonin levels in the brain), glutamine synthase (reduce glutamate and ammonia levels in the brain), cytochrome P-450 hemoprotein (mobilizes arachidonic acid), and metallothionein (reduces heavy metals in the body).
- In addition to the effects caused by cortisol binding to the glucocorticoid receptor, because of its molecular similarity to aldosterone, it also binds to the mineralocorticoid receptor. Aldosterone and cortisol have similar affinity for the mineralocorticoid receptor however, glucocorticoids circulate atRoughly 100 times the level of mineralocorticoids. An enzyme exists in mineralocorticoid target tissues
to prevent over stimulation by glucocorticoids and allow selective mineralocorticoid action. This enzyme, 11-beta hydroxysteroid dehydrogenase type II (Protein: HSD11B2), catalyzes the deactivation of glucocorticoids to 11-dehydro metabolites.

**Stress, Anxiety and Frustration**

Fear and Frustration are also the cause of anxiety. Frustration is the feeling annoyed or impatient because of failure to achieve what we want. Frustration includes *aggression, reservation, regression* and *fixation*. These aspects of frustration were included in defense mechanism describe by Freud. Since defense mechanisms are the reaction to reduce anxiety so decrease in defense mechanism may be the sign of low anxiety. When an individual experiences anxiety many physiological changes take place. Autonomic nervous system is activated which is termed as ‘flight or fight response’ as these changes prepare the individual either to go away from the danger or to fight the danger. People experienced anxiety, typically feel that their heart is pounding and increasing, increased blood pressure, decreasing electrical resistance of the skin due to perspiration, increased sympathetic activity, change in stomach activity, glandular secretion etc.

**Stress and emotional health**

Eventually reality kicks in and our bodies give up on trying maintaining a high level of stress. Parts of the body literally start to break down and we become very unwell. If we continue to fight this situation, we may even die.

**Emotions**

Emotions are our feelings. Literally we feel them in our bodies as tingles, hot spots and muscular tension. There are cognitive aspects, but the physical sensation is what makes them really different.
Association and emotion: when we associate with people and events, we feel emotions.

- Basic emotions: there are lots of emotions, but what are the basic ones?
- Purpose of emotion: what is the real value of emotions?
- Emotional arousal: The process of getting emotional.
- Emotion and decision: our decisions are largely emotional.
- Emotion and rationality: which often seem to be mutually exclusive.
- Emotional Intelligence is to emotions what IQ is to cognitive intelligence.
- Empathy: the ability to feel what others feel.
- Facial emotional indicators: Detecting emotions through their expressions.
- Primary and secondary emotions: Those that are key drivers and others.
- Temperament, Mood and Emotion: Emotional states of different duration and cause.
- Theories about emotion: deeper stuff about emotion.
- The Seven Deadly Sins are all emotions, as are The Seven Virtues.

A basic of much emotional arousal is that there is a goal at stake somewhere. Our emotions thus cause us to want and not want. And when we have what we wanted, we then have emotions about owning it.

- Emotions of wanting: greed, hope, envy, desire, love
- Emotions of not wanting: fear, shame, repulsion, contentment
- Emotions of having: happiness, pride, guilt, jealousy
- Emotions of not having: anger, sadness, distress
- Other emotions: surprise

Emotions often lead to coping activities. When one feel something and consequently respond to that feeling. This can be both in the immediate (and often subconscious) response to the feeling and also in the more thoughtful handling of
the aftermath. Where this has been a negative feeling, the response may range from vigorous justification of our actions to conciliatory apologies and other 'making up'. A common response to the repression of unwanted emotions is displacement, where one act out of frustration in other ways. Thus a reprimanded child, knowing they cannot answer back, may go and 'punish' their toys.

Emotions affect and are a part of our mood, which is usually a more sustained emotional state. Mood affects our judgment and changes how we process decisions.

Most people ignore their emotional health until there’s a problem. But just as it requires time and energy to build or maintain the physical health, so it is with the emotional well-being. People with good emotional health have an ability to bounce back from stress and adversity. This ability is called resilience. They remain focused, flexible, and positive in bad times as well as good

**Anxiety and Frustration both are the end results of stress.**

Stress can come from any situation or thought that makes you feel frustrated, angry, or anxious. What is stressful to one person is not necessarily stressful to another.

Anxiety is a feeling of apprehension or fear. The source of this uneasiness is not always known or recognized, which can add to the distress you feel.

Psychological stress is a result of many factors and should be dealt with very carefully. Stress can be defined as a set of interactions between the person and the environment that result in an unpleasant emotional state, such as anxiety, tension, guilt, or shame. Many studies have concluded that the effects on our physical health from stress can be extremely detrimental. These adverse physical effects include heart disease and formations of cancer. There are also some societal issues that psychological stress can hamper. There are numerous elements that trigger the effects of psychological stress. Frustration is one of these elements that will trigger stress. Frustration is one of the most prevalent sources of stress in my life at this moment. A lot of different events will cause frustration. Frustration occurs from something blocking our attainment of certain goals or needs (Corey 2007). All of the little things that frustrate us include waiting in lines or traffic, sense of failure or inadequacies.
Stress is a normal part of life. In small quantities, stress is good it can motivate and help to be more productive. However, too much stress, or a strong response to stress, is harmful. It can set for general poor health as well as specific physical or psychological illnesses like infection, heart disease, or depression. Persistent and unrelenting stress often leads to anxiety and unhealthy behaviors like overeating and abuse of alcohol or drugs.

Emotional states like grief or depression and health conditions like an overactive thyroid, low blood sugar, or heart attack can also cause stress. Anxiety is often accompanied by physical symptoms, including:

- Twitching or trembling
- Muscle tension, headaches
- Sweating
- Dry mouth, difficulty swallowing
- Abdominal pain (may be the only symptom of stress, especially in a child)

Sometimes other symptoms accompany anxiety:

- Dizziness
- Rapid or irregular heart rate
- Rapid breathing
- Diarrhea or frequent need to urinate
- Fatigue
- Irritability, including loss of your temper
- Sleeping difficulties and nightmares
- Decreased concentration
- Sexual problems
Anxiety include: **generalized anxiety disorder**, **specific phobias**, **obsessive-compulsive disorder**, disorders are a group of psychiatric conditions that involve excessive anxiety.

Frustration can be considered a problem–response behavior, and can have a number of effects, depending on the mental health of the individual. In positive cases, this frustration will build until a level that is too great for the individual to contend with, and thus produce action directed at solving the inherent problem. In negative cases, however, the individual may perceive the source of frustration to be outside of their control, and thus the frustration will continue to build, leading eventually to further problematic behavior (e.g. violent reaction).

Stubborn refusal to respond to new conditions affecting the goal, such as removal or modification of the barrier, sometimes occurs. As pointed out by Brown (1954) severe punishment may cause individuals to continue nonadaptive behavior blindly: Either it may have an effect opposite to that of reward and as such, discourage the repetition of the act, or, by functioning as a frustrating agent, it may lead to fixation and the other symptoms of frustration as well. It follows that punishment is a dangerous tool, since it often has effects which are entirely the opposite of those desired.
YOGA

The word yoga means "union" in Sanskrit, the language of ancient India where yoga originated. We can think of the union occurring between the mind, body and spirit. What is commonly referred to as "yoga" can be more accurately described by the Sanskrit word asana, which refers to the practice of physical postures or poses.

Asana is only one of the eight "limbs" of yoga, the majority of which are more concerned with mental and spiritual well being than physical activity. In the West, however, the words asana and yoga are often used.

The word Yoga comes from the Sanskrit word "Yuj" meaning to yoke, join or unite. This implies joining or integrating all aspects of the individual - body with mind and mind with soul - to achieve a happy, balanced and useful life, and spiritually, uniting the individual with the supreme.

In India, Yoga is considered one of the six branches of classical philosophy and is referred to throughout the Vedas - ancient Indian scriptures and amongst the oldest texts in existence. The Upanishads are also broadly philosophical treatises which postdate the Vedas and deal with the nature of the "soul" and universe.

However, the origins of yoga are believed to be much older than that, stemming from the oral traditions of Yogis, where knowledge of Yoga was handed down from Guru (spiritual teacher) to Sisya (spiritual student) all the way back to the originators of Yoga, "the Rishis," who first began investigation into the nature of reality and man's inner world.

Legend has it that knowledge of Yoga was first passed by Lord Shiva to his wife Parvati and from there into the lives of men.
The Aim of Yoga

According to the Yoga *Sutras* of Patanjali, the ultimate aim of Yoga is to reach "Kaivalya" (emancipation or ultimate freedom). This is the experience of one's innermost being or "soul" (the *Purusa*). Then one becomes free of chains of cause and effect (*Karma*) which tie us to continual reincarnation. In Kaivalya one is said to exist in peace and tranquility, having attained absolute knowledge of the difference between the spiritual which is timeless, unchanging and free of sorrows, and the material which is not.

This is considered desirable as life is analyzed as ultimately full of sorrows and pain—even pleasure and joy leave pain and loss when they have gone as nothing in the material world is permanent.

Yoga is therefore a spiritual quest. However, along the path of yoga, the aspirant also gains health, happiness, tranquility and knowledge which are indicators of progress and an encouragement to continue their practice. Buddhism and other Eastern spiritual traditions use many techniques derived from Yoga.

**Importance of Yoga**

Yoga is not a religion; it is a way of living whose aim is ‘a healthy mind in a healthy body.’

Man is a physical, mental and spiritual being; yoga helps promote a balanced development of all the three. Other forms of physical exercises, like aerobics, assure only physical well-being. They have little to do with the development of the spiritual or astral body. Yogic exercises recharge the body with cosmic energy.

This facilitates
Attainment of perfect equilibrium and harmony
Promotes self-healing.
Removes negative blocks from the mind and toxins from the body
Enhances Personal power
Increases self-awareness
Helps in attention focus and concentration, especially important for children
Reduces stress and tension in the physical body by activating the parasympathetic nervous system

The aspirant feels rejuvenated and energized. Thus, Yoga bestows upon every aspirant the powers to control body and mind.

The Paths of Yoga

There are said to be 4 main paths (Margas), according to the Bhagavad-Gita, by which to reach the ultimate goal of Yoga- "Kaivalya". There is the path of Knowledge (Jnana Marga) in which one learns to discriminate between what is real and what is illusory, the path of selfless work (Karma marga), the path of devotion (Bhakti Marga) and the path of control of the mind (Yoga Marga) where all the activities of the mind and consciousness are studied and brought under control. From these have come the various paths of yoga which can be followed.

- **Raja** yoga involves mastery of the mind and senses in Samadhi; essentially the advanced aspects of Patanjali’s astanga yoga.
- **Hatha** yoga is the yoga of the will which involves cultivating ones energy to arouse Kundalini primarily by means of asana and pranayama.
- **Mantra** yoga involves reciting sacred syllables to reach perfection.
- **Laya** yoga involves absorption in god to experience ultimate bliss.
- **Bhakti** yoga requires absolute devotion to god to achieve the ultimate goal.
- **Karma** yoga achieves this through selfless work without thought of personal reward.
- **Jnana** yoga is the yoga of knowledge cultivating the discrimination between spiritual reality and the illusion of the material world.

It must be realized that there are no clear cut boundaries between these various paths and all draw on the practices and philosophy of the others; effectively all paths have the same goal and "tread the same terrain". They are different views of the same topic.

Patanjali yoga is considered as the most ancient and established yoga tradition. It consists of eight steps viz. Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi. Dhyana (Meditation) is an integral component and it works on modulating the functions of both mind and body. Preksha Dhyana is one of several established meditation systems.
The word Preksha is derived from the root *iksa*, which means ‘to see’. When the prefix 'pra' is added, it becomes *pra + iksa = preksa* which means ‘perceive carefully and profoundly’ (*Acharya Mahaprajana*, 1994).

Preksha Meditation (Preksha means seeing deeply) tries to re-educate the person to alter his habitual reaction Pattern, develop a coping mechanism and thus holds the key to better living. The tenet propounded by Lord Mahaveer “Perceive and know” is given more prominence because perception is strictly concerned with the phenomenon of the present, neither past nor future. He stated “*Sampikkhae appagamappaenam*” means ‘see you thyself’ or perceive and realize yourself, which later becomes the principal of Jain yoga tradition, and formulated as Preksha Meditation by Late Acharya Tulsi and Acharya Mahaprajna.

As stated above our conscious mind is capable of two categories of functions viz. thinking and perceiving-conception and perception. But it is incapable of being engaged in both the categories simultaneously. One either thinks or perceives. Exclusive perception of a single object can thus become an efficient tool for steadying the ever-wan-dearing mind. If one concentrates in perceiving any external object, he fined that his mind has steadied and his train of thoughts has almost halted. Similarly when one concentrates on the perception of his own phenomena such as sensations, vibrations or even thoughts, he will realized that the mind has stopped its usual meandering and is fully engaged in perception.

In ‘Preksha’ perception always means experience devoid of duality of like and dislike. When the experience is contaminated with pleasure and pain, like ans dislike, perception looses its primary position.

Preksha Meditation has laid down psychosomatic means through various psychophysiological processes for dealing with the body mind complex and tries to harmonies and integrate the human personality at all levels and stages of life. In this
context it is worth to organize a systematic scientific study to evaluate the therapeutic effect and application of Preksha Meditation.

Modern life is full of hassles, deadlines, frustrations, and demands. For many people, stress is so commonplace that it has become a way of life. Stress isn’t always bad. In small doses, it can help you perform under pressure and motivate you to do your best. But when you’re constantly running in emergency mode, your mind and body pay the price.

**Preksha means to observe or to perceive.**

If one frequently find self feeling frazzled and overwhelmed, it’s time to take action to bring the nervous system back into balance. One can protect self by learning how to recognize the signs and symptoms of stress and taking steps to reduce its harmful effects.

This practice of self-observation unravels the mysteries of the conscious mind and brings about catharsis. It is the technique where one is able to see one's own self to directly perceive and realize the most subtle aspects of one's own body, mind and consciousness. It is a comprehensive system of meditation based on ancient philosophy and modern scientific knowledge. There is a common misconception that meditation is an exotic and complex art that can be practiced only after retirement or when you renounce life and find a cave in the Himalayas. In this fast-paced technology-driven lifestyle, it is important to release stress every once in a while. People often forget to even qualify as priority.

Preksha yoga is an uncompleted, easy to learn technique of yoga. It is comprised of the following components (Muni Dharmesh, 1999)

**a) Main Components:**

(i) **Kayotsarga (Relaxation):** It means relaxation with self awareness. To make the mind and body free from physical (i.e. muscular stress), mental (nervous) and emotional tension(Acharya Mahapragya,1994).
(ii) Antaryatra (Internal Trip): Perception of sushumna (spinal cord) up to Gyana Kendra (i.e. cerebrobral cortex) which stimulate the nervous system (especially ANS). Acharya Mahapragya, 1994.

(iii) SwasPreksha (Perception of Breathing): A complete scientific breathing through the proper functioning of all muscles to enhance the capacity of lungs and balance the metabolism. (Acharya Mahapragya, 1995)

(iv) ShariraPreksha (Perception of Body): It is a process of complete body awareness, it helps each cell to revitalize itself, thereby improving overall systemic functions. (Acharya Mahapragya, 1995)

(v) ChaitanyakendraPreksha (Perception of Psychic centres): A practice to strengthen the neuro-endocrine system through regulation the secretions of hormones and neurotransmitters. (Acharya Mahapragya, 1995)

(vi) Lesya-dhyana (Perception of Psychic Colours): This technique works as colour therapy which intrigrate action of the endocrine system and the nerous system. (Acharya Mahapragya, 1994)

(vii) Bhavna (Autosuggestion): It eradicates psychological distortions and reinforce the power of reasoning mind (Acharya Mahapragya, 1994).

(viii) AnuPreksha (Contemplation): Repeated prolonged recitation of words or sentences can bring about a radical reform and enables the practioners to achieve a desirable objective. (Acharya Mahapragya, 1994)

(b) Supporting Components:

(i) Dhwani (Sound)

(ii) Mudra (Position of hands)

(iii) Asana (Yoga posture)

(c) Special Components:
In the present study we have formulated a practice capsule comprising few relevant components as given in the chapter of material and methods.

Meditation helps put things in perspective.
Using meditation as a tool, you can attain the balance required to live life comfortably. There are various meditation paths/techniques, with different names and different styles, which will all eventually lead you to the same result- **peace and harmony**.

**Benefits of Practicing Meditation**
Here I would like to list some benefits of meditation, so that someone with little or no knowledge about this ancient, yet powerful art can get motivated to try it out. This impressive list is by no means exhaustive; it is just the tip of the iceberg.

- **On physical level**, it helps each body cell to revitalize itself. It makes respiration more efficient and improves circulation and quality of blood.

- **On mental level**, it proves to be an applied method to, train the mind to concentrate. It offers a way to treat serious psychosomatic illness without drugs. It is an efficient tool for ending addictions and other bad habits. It reveals the mysteries of mind by realization and real experiences of the inner consciousness which includes the subconscious and the unconscious.

- **On emotional level**, the strengthening of conscious reasoning controls reaction to environmental conditions, situations, and behaviour of others; harmonization of the functioning of the nervous and endocrine system result in control and eradication of psychological distortions. These may include stress, depression or anger management.
• **On spiritual level**, regulation of blood-chemistry through proper systemization of neuro-endocrinal secretions, and dispassionate internal vibration lead one to attain the power to control the mind and become free from effects of external forces compelling one to lose equanimity.

**The Preksha Meditation Technique**

The Preksha Meditation technique balances and harmonizes the endocrine system which in turn controls the nervous system. Self perception moves the mind from gross to subtle and becomes aware of the chemical bio-electrical and magnetic energy in the nervous system. When this meditation is practiced slowly the systems are brought under control and especially the sympathetic and Para-sympathetic nervous systems are well-balanced.

The perception is performed in the following sequence:

1. Relaxation or Kayotsarga, which includes the Perception of Breath
2. Perception of the Body
3. Perception of Psychic Centres or Chakras
4. Perception of Psychic Centers with Colors.

**Relaxation or Kayotsarga**

The first step of meditation is Kayotsarga that is relaxation with self-awareness. Keep your body steady, relaxed and free from tension. Keep your spine and neck straight but without stiffness. Relax all the muscles of your body. Let your body become limp.

Kayotsarga has two implications

1. Complete relaxation of the body
2. Self awareness

For achieving complete relaxation of the body, mentally divide it into several parts and concentrate your mind on each part of the body one by one, from feet to head.
Allow your mind to spread in the whole part—allow it to undertake a trip in the whole part; use the technique of auto-suggestion to relax the whole part and experience the resulting relaxation. Experience that each and every muscle, each and every nerve has become relaxed. And in the same way attain the relaxation of the whole body.

Use deep concentration and remain completely alert. Practice Kayotsarga.

**Perception of Psychic Colours or Leshya Dhyan**

The astonishing effectiveness of color, Color is known to affect our mood. What is less known is that color also has therapeutic value? Meditation on shining colors is a good way to purify the mind. Red and yellow are hot colors and blue and green are cool.

- **Thymus Gland (Centre of Bliss)**— when we are struggling with a problem we should do a ten minute golden yellow color meditation on the chest near the heart.

- **Thyroid Gland** – Meditate on bright peacock blue color. Visualize the blue color on the thyroid glands, near the sound box in your throat. Deficiency of blue color increases anger.

- **Hypothalamus**— Meditate on bright orange color, like that of the rising sun. This improves the voltage of bioelectricity in the body, and overcome mental weakness. Visualize the orange color in the center of eye brows, inside the skull on your hypothalamus. This helps in intuitions.

- **Pituitary Gland (Centre of Knowledge)**— When our neurons get inactive, we need yellow. Focus on top of head (i.e. cerebral cortex) bright golden yellow color. Visualizing that you are in a store with glittering gold articles will help you in focusing on yellow color. This has direct relationship with intelligence.

- **Pineal Gland (Centre of Enlightenment)**— Concentrate on the center of your forehead, with bright white to conquer anger, arrogance, jealousy and attachment. Visualize clearly, project it on your mind screen with shining cool white light (like that of full moon). This is to cure disease and eliminate toxins from the body.
- **Adrenal glands** and **Gonads gland** are usually active therefore it is not necessary to meditate on these glands. Always concentrate on upper part of the body.

At the end do meditation for a couple of minutes on the top of the head with white light. Experience the peace and joy. Take few deep breaths and open eyes with a big smile on the face.

**Preksha Meditation Can:**

- Reduce physical stress and strengthen the immune system
- Improve mental and emotional health
- Develop personality, change harmful habits, and treat phobias
- Enhance mental abilities, concentration and operational efficiency
- Enhance creativity and develop career skills
- Increases Will-power; achieve goals, and much more
Preksha meditation and stress reduction

One commences the practice of this technique, with the perception of body containing the soul. Therefore, one must pierce the wall of the body to reach the content (soul). Again, 'breathing' is the part of the body and the essence of life, to breathe is to live and breath is a naturally qualified to be the first object of our perception, while the body itself would become the next one. Our conscious mind becomes sharpened to perceive the internal realities is due course and then it will be able to focus itself on...
the minutest and most subtle occurrence within the body. The direct perception of emotions, urges and other psychological events will then be possible.

Preksha meditation has many fold action (Acharya mahapragya, 1992) on physical level, it helps each bodily cell to revitalize itself; it facilitates digestion; it makes respiration more efficient and improves circulation and quality of blood. On the emotional level, the strengthening of conscious reasoning controls reactions to environmental conditions, and behaviour of others; harmonization of the functioning of nervous and endocrine system result in control and ultimate eradication of psychological distortions. On spiritual level, the firm control of the reasoning mind, regulation and transformation of blood-chemistry through proper systemization of neuroendocrinal secretions, and production of dispassionate internal vibration lead one to attain freedom from anguish and infatuation, and to become free the effect of mental afflictions and formants. Fortunately, we do also posses an innate mechanism which produces physiological conditions, which are diametrically opposite to the "fight or flight" response. Nobel laureate Swiss physiologist Dr. Walter described this response as a protective mechanism against overstress promoting restorative processes and called it trophotropic response. Dr. H. Benson, M.D. has termed this reaction as relaxation response.

In the system of Preksha Medication it is possible to train ourselves to activate the protective mechanism and to influence our reaction to stress. The increased secretions and out put of adrenaline can be normalized and the sympathetic dominance counter balanced by increased parasympathetic activity. Regular practice (both short term and long term) may be proved to be a potent remedy to reduce the disastrous effects of stress.

Stress managerial effects of Preksha Meditation includes (Muni Mahendra Kumar, 1991; Mishra & Kumar, 1993):

1. Balance between activity and rest i.e. relaxation
2. Mental vigilance, harmony in thoughts and deeds.
3. Development of will power and strength of determination.
4. Purity of mind genuine experience of reality.
5. Unemotional reaction of external stimuli.
6. Increased tolerance capacity.
7. Peace of mind
8. Effortless concentration; freedom from nervous and emotional tensions. All these findings curve the negative stress effects thereby promoting balanced physiological health state.