

The mechanics of stress.

There is no doubt that the science of Psychoneuroimmunology (PNI) establishes the fact that the mind and body are inextricably connected. Over a hundred years ago, Sir William Osler wrote about a patient who had an asthma attack after smelling an artificial rose. In 1975, Dr Robert Ader, a pioneer in PNI research, provided the scientific explanation for Osler's curious observation when he demonstrated that mammals are capable of conditioned (Pavlovian) immune responses. Ader's landmark research involved a drug; however, later studies just as effectively used thoughts and emotions to mediate changes in the immune system. Proving that system interaction even existed was an astounding finding, in and of itself, because until recently each body system was considered to function in a pristinely independent manner. Ader's experiments provided the first scientific evidence that our thoughts actually alter our immune system. In other words, scientific research had finally caught up with conventional wisdom: emotional stress indisputably and negatively impacts our physical health.

Lets look at stress. Stress is the absence of homeostasis or an imbalance in the harmonious workings of the organism, which results in the body's concerted effort to re-establish that balance. (Remember, the body is continually looking to create and maintain balance....it's all about cause and effect.) The stress response triggers the release of powerful hormones that generate arousal and anxiety. For example, in humans, elevation of the chemical stress pathway (glucocorticoids) tends to be associated with depression, whereas elevation of the electrical stress pathway (epinephrine) more frequently is correlated with anxiety. There are discrete differences in the hormonal response to acute stress compared with chronic stress. PNI research effectively demonstrates that chronic stress is destructive to health, creating an unremitting suppression of the immune system. The kidneys and adrenal glands are most affected with symptoms of chronic fatigue also evident. Yes...fear is a factor in stress and therefore kidney problems, but it is not the whole story. Basically it is the fight or flight response causing the body to direct it's efforts toward defence, rather than bodily maintenance. Blood and other nutrients are directed away from non-vital functions and sent to your heart and other muscles ready for you to either run or fight for your survival. While this is happening you can't digest your food and general cellular repair is put on hold.

In our modern society the programmed response to the threat of attack from a sabre toothed tiger has been replaced by the threat of not achieving or performing. Apoptosis is the end-stage of chronic stress. It is programmed cellular death, and it can be the programmed death of the individual. Humans are literally capable of worrying ourselves to death. It has long been known that there is both a stress response and a relaxation response. For example, stress raises and relaxation reduces blood pressure readings. Since the 1950s, researchers have succeeded in unravelling the precise sequence of hormonal reactions that occur during acute and chronic stress responses. Does the body only harbour a hormonal response for stress and not for relaxation? There is evidence of an endogenous relaxation system and the hormones and neuropeptides that substantiate the existence of this system. The term "theta healing system" was coined because the effect naturally occurs when the body is relaxed enough to allow the mind to enter a state of equanimity. Most probably occurring at the transitional point between an EEG reading of alpha and that of theta. While the sequence of hormonal release cannot yet be determined, the theory is substantiated with research on hormones that induce tranquillity as well as neuropeptides that are associated with deep relaxation.

Healing requires much more than just dealing with negative emotions, although this is an important aspect. As energy beings we are influenced by light, sound, electromagnetism and even prayer which translate into the chemical and electrical signals that orchestrate our physical health and mental well-being. Basically, the body will react to every input including your thoughts and attempt to maintain balance. There is no doubt that regular meditation will reduce stress and help to maintain good health. You must also guard against negative input (cause), including your own thoughts, in order to reduce the stress response (effect).

A summary of the Physiological response to stress by different systems of the body are listed below the image.



Physiological response to stress.

1. Nervous System

Under physical or psychological stress, your body suddenly shifts its energy resources to fighting off the perceived threat. In what is known as “fight or flight” response, the sympathetic nervous system signals the adrenal glands to release adrenaline and cortisol. This is the way Endocrine and other systems are affected as well.

2. Musculoskeletal System

Muscles tense up. The muscle contraction for extended period can trigger tension headaches migraines and various musculoskeletal disorder.

3. Respiratory System

The breathing becomes faster and more shallow to allow the body to take in more oxygen. This may lead to hyperventilation which can bring on panic attacks in some people.

4. Cardiovascular System

The heart beats faster and blood pressure rises to increase the distribution of oxygen and nutrients throughout the body. Repeated incidences of acute stress can cause inflammation in the coronary arteries, thought to lead to heart attack. Blood flow to the brain and muscles is increased and, at the same time, reduced to digestive organs.

5. Endocrine System

The brain sends signal from the hypothalamus causing the adrenal glands to release adrenaline and other stress hormones that prime certain organs to go into action, importantly liver which will produce more glucose, blood sugar that would give you the extra energy for “fight or flight”. Consequently, sweating increases to allow the body to burn more calories without a rise in body temperature. (In theory, sweating also makes the skin slippery and more difficult for a predator to grab)

6. Digestive / Gastrointestinal system

Oesophagus: Stress may prompt you eat less or more than you usually do. If you eat more or different foods or increase your use of tobaccos or alcohol, you may have heartburn or acid reflux.
Stomach: Your stomach can react with “butterflies” or even nausea or pain.
Bowels: Your digestion may be affected so is the absorption of nutrients by your intestines.

7. Reproductive System

Chronic stress in men can impair testosterone and sperm production, which can cause impotence. In women, stress cause absent or irregular menstrual cycles or more painful periods. Stress can also reduce sexual desire