

Hans Selye

Hans Selye is often considered one of the early pioneers of modern stress theory. His scientific research helped to shape our understanding of stress.

History

Hans Selye was born in Vienna in 1907. He earned a medical degree and Ph.D., from German University in Prague and a D. Sc. from McGill University in Montreal. His scientific research resulted in 38 books and over 1600 technical articles.

Selye's Definition of Stress

Selye defined stress as:

“Stress is the nonspecific response of the body to any demand, whether it is caused by, or results in, pleasant or unpleasant conditions.”

Hans Selye's

General Adaptation Syndrome

Scientist Hans Selye (1907-1982) introduced the General Adaptation Syndrome model in 1936 showing in three phases what the alleged effects of stress has on the body.

In his work, Selye - '*the father of stress research*,' developed the theory that stress is a major cause of disease because chronic stress causes long-term chemical changes.

He observed that the body would respond to any external biological source of stress with a predictable biological pattern in an attempt to restore the body's internal homeostasis.

This initial hormonal reaction is your fight or flight stress response - and its purpose is for handling stress very quickly! The process of the body's struggle to maintain balance is what Selye termed, the *General Adaptation Syndrome*.

Pressures, tensions, and other stressors can greatly influence your normal metabolism. Selye determined that there is a limited supply of adaptive energy to deal with stress. That amount declines with continuous exposure.

“Every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older.”

~ Hans Selye

Going through a series of steps, your body consistently works to regain stability. With the general adaptation syndrome, a human's adaptive response to stress has three distinct phases:

ALARM STAGE

First reaction to stress recognizes there's a danger and prepares to deal with the threat, the fight or flight response. Activation of the HPA axis, the nervous system (SNS) and the adrenal glands take place.

During this phase the main stress hormones cortisol, adrenaline, and noradrenaline, is released to provide instant energy.

If this energy is repeatedly not used by physical activity, it can become harmful.

Too much adrenaline results in a surge of blood pressure that can damage blood vessels of the heart and brain – a risk factor in heart attack and stroke.

The excess production of the cortisol hormone can cause damage to cells and muscle tissues. Stress related disorders and disease from cortisol include cardiovascular conditions, stroke, gastric ulcers, and high blood sugar levels.

At this stage everything is working as it should – you have a stressful event, your body alarms you with a sudden jolt of hormonal changes, and you are now immediately equipped with enough energy to handle it.

RESISTANCE STAGE

The body shifts into this second phase with the source of stress being possibly resolved. Homeostasis begins restoring balance and a period of recovery for repair and renewal takes place.

Stress hormone levels may return to normal but you may have reduced defenses and adaptive energy left.

If a stressful condition persists, your body adapts by a continued effort in resistance and remains in a state of arousal.

Problems begin to manifest when you find yourself repeating this process too often with little or no recovery. Ultimately this moves you into the final stage.

EXHAUSTION STAGE

At this phase, the stress has continued for some time. Body's ability to resist is lost because its adaptation energy supply is gone. Often referred to as overload, burnout, adrenal fatigue, maladaptation or dysfunction – Here is where stress levels go up and stay up!

The adaptation process is over and not surprisingly; this stage of the general adaptation syndrome is the most hazardous to your health.

Chronic stress can damage nerve cells in tissues and organs. Particularly vulnerable is the hippocampus section of the brain. Thinking and memory are likely to become impaired, with tendency toward anxiety and depression.

There can also be adverse function of the autonomic nervous system that contributes to high blood pressure, heart disease, rheumatoid arthritis, and other stress related illness.