



Autonomic Nervous System Dominance

Homeostasis

The nervous system and the endocrine system both share the responsibility of maintaining homeostasis in the body. Recall that homeostasis is a state of physiological balance where body chemistry and cell activity is functional within the context of good health, reliable performance and smooth operation. Homeostasis is also an ideal state, where both parts of the Autonomic Nervous System (ANS) are in balance.

Stress may be defined as a disturbance of homeostasis. It can appear as both a single or multi-dimensional reaction of the body to forces often considered deleterious, which tend to disrupt or disturb its normal physiologic equilibrium. In the context of this particular section, stress is defined as a chronic imbalance of the ANS.

There are two major components of the autonomic nervous system, the sympathetic and the parasympathetic systems.

Autonomic Nervous System (ANS)

Sympathetic Dominance

- excitement
- aggression
- hostility
- heightened awareness

Parasympathetic Dominance

- relaxation
- sleepiness
- depression
- feelings of hopelessness

But before we explore the concept of autonomic nervous system dominance, let's first analyze the nervous system itself as a whole system in the body. The nervous system can sense change inside and out, analyze stimuli and store data, and respond to stimuli through motor function, such as muscular contraction or gland secretion.

Divisions of the Nervous System

The two major divisions of the nervous system are the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS includes the brain and the spinal cord. This is where incoming messages are processed, emotions rise and fall and images of past experience are stored. Muscle contraction is stimulated from nerve impulses which originate from the CNS, so a healthy and well-nourished nervous system is essential to coordination, the development of skill, muscle strength, power and muscle endurance.

Neurons

The nervous system is highly sensitive and “intelligent”, consisting of two principal types of cells (1) neuroglia (glia) and (2) neurons. Glia cells outnumber neurons by up to 50 times and serve to nurture and protect neurons. It is the glia cells that produce the multilayered lipid and protein covering called the myelin sheath that surrounds most neurons. This sheath acts as a form of electrical insulation that increases the conducting speed of nerve impulses. We know that lipid soluble antioxidants and enzymes protect the myelin sheath from damage.

Most neurons consist of a cell body, dendrites and an axon. The cell body contains a nucleus surrounded by cytoplasm and organelles. Neurons vary greatly in shape and size. Dendrites and axons are also called nerve fibers. A nerve is a bundle of many nerve fibers often consisting of both sensory and motor nerve fibers.

The peripheral nervous system is comprised of cranial nerves that extend from the brain and spinal nerves that emerge from the spinal cord. Components of these nerves feed information “in” to the CNS while other portions send nerve impulses “out”. The input segment of the PNS is made of specialized neurons called sensory or afferent neurons, while the output segment consists of specialized neurons called motor or efferent neurons.

[afferent] conducting inwards or towards

[efferent] conducting outwards

Structure of a neuron

