



The Spring
center for natural medicine

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Heart Rate Variability (Nerve Express)

This is a computer based system that provides a Quantative Assessment of the state of the Autonomic Nervous System (ANS).

The **AUTONOMIC nervous system** is the “self-governing”, automatic or independent part of the nervous system, which keeps the body functions in a steady, balanced state. The state of the body adjusting to external environment to make the internal environment survive is called homeostasis. It has short term and long term purposes.

Short term:

1. Fluid volume balance at cellular level.
2. pH levels
3. Mineral levels (ion exchange)
4. Oxygen and CO2 regulation in the blood, heart and lungs.
5. Digestion and assimilation of nutrients/ energy balance (fat).
6. Blood flow and pressure throughout the tissues.
7. Disposal of wastes.
8. Body temperature
9. Reproductive behavior
10. Defense behaviors

Long term:

1. Body recovery (control of circadian rhythms, of sleep and wakefulness)
2. Growth and development and maintenance of body organs and tissues.
3. Body protection (immune system, inflammatory processes).

These short and long term functions operate in a narrow range (having predetermined set points).

This system can become damaged from long term stimulation (caffeine, nicotine, junk foods, sugar, bad diet) chemical and toxin exposure (drugs, environmental pollution), stress, physical injuries and infections. Most all disease results from the failure of the autonomic system (example; heart failure, diabetes, cancer, etc.). Thus the Heart Rate Variability (HRV) tool is an excellent method for finding out what stage a person is at, as well as looking inside the body and seeing what is occurring with the two parts of the autonomic system.



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The **Autonomic nervous system** has two parts that act against each other to keep the body in a surviving state:

a. Sympathetic Nervous System

- reacts towards stress, mobilizing or preparing the body for emergency or stress situations. It is considered the “accelerator” of the nervous system. All the body actions and responses of a person being chased by a lion would be sympathetic nervous system reactions. It functions in quick responses. This part of the nervous system is located in the brain, spinal cord and adrenal glands.

- Acceleration of heart and lung action.
- Inhibition of stomach and intestinal action.
- Constriction of blood vessels in many parts of the body.
- Liberation of nutrients for muscular action.
- Dilation of pupil.
- Relaxation of bladder, but sphincter closed.
- Inhibition of erection.
- Release of stored sugar for energy.

b. Parasympathetic Nervous System

- reacts during rest times and relaxation. It is considered the “brakes” of the nervous system. It calls for rest and digestive responses. It is involved in deep sleep, normal digestion, erections in males, slows heart beats, reduces blood pressure, etc. The parasympathetic system is concerned with conservation and restoration of energy, increasing off-urine secretion, bronchial tube contraction, relaxation of schincters, gastric secretions secreted, absorption of nutrients and consequently, the excretion of waste products. The system counters the sympathetic N.S.

It is well known that the autonomic response is the first human response to any physical, mental or cellular stress activity. Likewise, any pathological process will affect the ANS even before disease sets in. Most tissue of the body will react predominately to **ONLY** one of the autonomic systems. The pacemaker of the heart cells are the exception.

1. Most target tissues react predominately to only one of the autonomic systems (the pacemaker cells in the heart are the one exception).”

**Autonomic Failure, A textbook of Clinical Disorders
Of the Autonomic Nervous System, Fourth Edition,
Christopher Mathias, Sir Roger Bannister, Pg. 6
Oxford Medical Publication, 2006**

So the heart rate is an excellent factor to evaluate both systems – sympathetic and parasympathetic. This is why the heart is used to measure both systems. **Through assessing the heart rate changes in various positions, one can observe or see how the ANS is behaving.**