WHAT IS A GALVANIC SKIN RESPONSE?

The Galvanic Skin Response (GSR) is defined as a change in the electrical properties of the skin. The signal can be used for capturing the autonomic nerve responses as a parameter of the sweat gland function. The measurement is relatively simple, and has a good repeatability. Combined with the Pulse Wave Velocity (PWV) analysis, the GSR screening provides additional details about a patient’s autonomic function.

WHY DO WE DO THE GSR TEST?

The skin conductance response is the phenomenon that the skin momentarily becomes a better conductor of electricity when either external or internal stimuli occur that are physiologically arousing. Arousal is a broad term referring to overall activation, and is widely considered to be one of the two main dimensions of an emotional response. Arousal has been found to be a strong predictor of the response of our autonomic nervous system (ANS).

WHAT TYPE OF STIMULUS IS PROVIDED?

Electrodermal activity correlates positively with the novelty, intensity, emotional content, and significance of the stimulus. In each of these contexts, an orienting response is activated in the central nervous system. Both tonic and phasic skin conductance are influenced by psychosocial contexts. During the screening, each patient is asked to complete 3 simple actions: deep breathing, standing, and coughing. Additionally, patients listen to 5 sounds that will typically elicit electrodermal activity. The galvanic skin response is recorded throughout the test with examples on the right.
Autonomic Nervous System Screening
Heart Rate Variability

Cardiovascular disease (CVD) is the leading cause of death and disability worldwide. The understanding of the risk factors for CVD may yield important insights into the prevention, etiology, course, and treatment of this major public health concern. Autonomic imbalance, characterized by a hyperactive sympathetic system and a hypoactive parasympathetic system, is associated with various pathological conditions. Over time, excessive energy demands on the system can lead to premature aging and diseases. Therefore, autonomic imbalance may be a final common pathway to increased morbidity and mortality from a host of conditions and diseases, including cardiovascular disease.

**WHAT IS A HEART RATE VARIABILITY SCREENING?**

Heart rate variability (HRV) screening may be used to assess autonomic imbalances, diseases and mortality. Parasympathetic activity and HRV have been associated with a wide range of conditions including CVD. There is ample evidence linking HRV to established and emerging CVD risk factors such as hypertension, obesity, family history and work stress. Substantial evidence exists to support the notion that decreased HRV precedes the development of a number of risk factors and that lowering risk profiles is associated with increased HRV.

**HOW IS THE HRV SCREENING COMPLETED?**

The HRV screening is based on time–frequency analysis of heart rate variability concurrent with other measurements during rest, breathing exercises, and postural changes.