

## Heart Rate Variability (HRV)

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### Overview

Heart rate variability is the measure of the variation in time between each heartbeat which is controlled by the ANS during inhalation and exhalation, heart rate variability is different from heart rate. The autonomic nervous system is divided into 2 subdivisions: the sympathetic (fight or flight) and the parasympathetic (rest and digest). Heart rate variability is most optimal when these 2 subdivisions are in balance. Many things in our daily lives can throw off this balance such as lack of sleep, unhealthy diet, stress, isolation, lack of exercise and pain which shift the sympathetic nervous system into overdrive which will affect how your body adapts to its internal and external environment. A high heart rate variability is optimal, this means that a person has a greater adaptability, greater sense of well being, better physical performance, and enhanced cognitive performance. Those with a low heart rate variability have low adaptability, imbalance of heart and mind, are easily exhausted, and have possible health issues.

### Process

Heart rate variability will be assessed at your initial evaluation to obtain a baseline measurement. As treatment progresses certain findings and numbers will be monitored. As these scores improve this will demonstrate an improvement in heart rate variability which correlates to improved balance between the subdivisions of the parasympathetic nervous system showing improvement with overall health and well being.

- Your physical therapist will have you remove all personal electronics (watches, cell phones, credit cards) since these can interfere with the monitoring
- Patient wets their wrists with water or saline spray and 2 clips that are connected to the computer are placed on either wrist (the patient will not feel anything!)
- The patient at rest and arms down by their sides, try to make sure there is minimal arm movement, dark room with eyes closed, controlled environment, no external conversation
- This process will run for about 5 minutes or until you achieve 300 RR intervals
- Once the process is completed the therapist will go over the results with you. This process will likely occur before and after treatment with results compared

## Findings and Interpretation

There are many different types of findings that will be determined with heart rate variability monitoring and each has an optimal range that an individual should be in if they have a healthy and high HRV

- ECG
- Vegetative Regulation: relation between the sympathetic and parasympathetic nervous system as it reacts to environmental changes
- Neurohumoral Regulation: ability of the autonomic nervous system to regulate hormones
- \*Psychoemotional State: Your ability to think clearly and with a normal process
- Spine Map: Energy flow of the spine
- Fractal Analysis: Degree of harmonization between body organs and body systems
  - \*Biological Age: Assessment of the body's adaptation level
- HRV index: Tracks progress over time

## HRV and Neubie

When we have extreme pain or stress our sympathetic nervous system is kicked into overdrive. Since our heart rate variability is based on the balance between our sympathetic and parasympathetic nervous system when this occurs our heart rate variability (HRV) drops. When our HRV is lower it affects our body's ability to adapt to external and internal stimuli creating almost a cascade effect. We use the neubie to target the nervous system over time, this helps to desensitize the signals of pain that the brain is sending to different parts of our body.

As we use the neubie for pain relief and neuromuscular re-education this is also helping to regain balance of the sympathetic and parasympathetic nervous system (as our fight or flight instinct decreases) which in turn will increase our heart rate variability and help us to achieve or return to optimal levels with our findings during the HRV process and improve overall health and well being.