



## **PRIDE The Benefits of Heart Rate Variability (HRV) Biofeedback Training**

The goal of HRV biofeedback training is to create a wave pattern in your heart by maintaining a slow, steady breathing pace. When you are successful at this paced breathing technique, your heart will speed up as you inhale and slow down as you exhale. You may find it interesting to know that the amount of HRV that you are able to create is related to your health and your age. People who are more physically fit will be able to create more HRV (a bigger wave pattern in their heart rates), and people who are less physically fit will be able to create less HRV. The amount of HRV that you can generate with paced breathing also declines as you get older.

As part of your HRV biofeedback training, you may have done a test to determine an optimal pace for creating the most HRV (the pace that seemed to coordinate best with your heart rate pattern and that created the largest wave in your heart). When you breathe at your optimal pace, you create resonance in your nervous system, similar to the resonance that is created when you strum an acoustic guitar. The breathing test was to help determine your individual resonance frequency. You may have downloaded a breathing pacer on your phone. An auditory pacer is also available on the PRIDE Patient Resources website <http://intranet-external.pridedallas.com/index.php>. These pacers can help you learn to breathe at your resonance frequency.

There are three reasons why someone would want to do HRV biofeedback and then practice resonance frequency breathing.

1. After you get good at your optimal resonance breathing pace, you can use it as a tool to help relax, reduce stress, or to get symptoms under control. You can do it when you are feeling tense or anxious, when you can't get to sleep at night, or when your pain flares up.
2. HRV biofeedback is also used as an optimal performance strategy for athletes, musicians, and other performers. By practicing and using paced breathing at their

resonance frequencies, performers can keep their nervous systems working within an optimal range and can effectively control stress and performance anxiety.

3. If you practice resonance frequency breathing on a regular basis (20 minutes or more per day) there can be a general health benefit. There are two ways that researchers have demonstrated this to be true.

First you can evaluate the natural amount of variability in a person's heart, and then measure how the variability changes after several weeks of resonance frequency breathing practice. Researchers can determine the amount of variability in a person's heart by measuring the spaces between each heart beat with a 24-hour heart rate monitor. Less variability in your heart means that it is beating very steady, like a clock. This suggests that your nervous system has limited flexibility in adapting to changes within your body. More variability in your heart indicates more flexibility in your nervous system, helping to maintain balance and optimal functioning. It has been determined in many studies that low HRV is associated with poorer health and dying younger, and that high HRV is associated with better health and living longer. Studies show that when people practice paced breathing regularly, their natural amount of HRV can increase significantly, which can result in improved health.

A second way that researchers have determined that regular paced breathing can have a health benefit is by studying specific disorders. Studies have shown that HRV biofeedback training, and regular practice with resonance frequency breathing, has been effective in improving a variety of symptoms and disorders, including high blood pressure, asthma, irritable bowel syndrome, depression, anxiety, post-traumatic stress disorder, chronic pain, and other medical problems.