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Heart rate variability: A new way to track well-being

Information is knowledge, and big tech companies know how important it is to collect and track data. When it comes to your health, it is now easy to measure and track all kinds of information. In the comfort of our homes we can check our weight, blood pressure, number of steps, calories, heart rate, and blood sugar. Recently some researchers have started to use an interesting marker for resilience and behavioral flexibility. It is called heart rate variability (HRV).

Have you ever wondered what the health impact of a stressful day was? Will you perform well during your long run tomorrow morning? Is there anything you can do today that would improve your ability to have a better day moving forward? HRV may be the piece of data that could help you answer these questions.

What is HRV?

HRV is simply a measure of the variation in time between each heartbeat. This variation is controlled by a primitive part of the nervous system called the autonomic nervous system (ANS). It works regardless of our desire and regulates, among other things, our heart rate, blood pressure, breathing, and digestion. The ANS is subdivided into two large components, the sympathetic and the parasympathetic nervous system, also known as the fight-or-flight mechanism and the relaxation response.

The brain is constantly processing information in a region called the hypothalamus. The hypothalamus, through the ANS, sends signals to the rest of the body either to stimulate or to relax different functions. It responds not only to a poor night of sleep, or that sour interaction with your boss, but also to the exciting news that you got engaged, or to that delicious healthy meal you had for lunch. Our body handles all kinds of stimuli and life goes on. However, if we have persistent instigators such as stress, poor sleep, unhealthy diet, dysfunctional relationships, isolation or solitude, and lack of exercise, this balance may be disrupted, and your fight-or-flight response can shift into overdrive.

Why check heart rate variability?

HRV is an interesting and noninvasive way to identify these ANS imbalances. If a person's system is in more of a fight-or-flight mode, the variation between subsequent heartbeats is low. If one is in a more relaxed state, the variation between beats is high. In other words, the healthier the ANS the faster you are able to switch gears, showing more resilience and flexibility. Over the past few decades, research has shown a

relationship between low HRV and worsening depression or anxiety. A low HRV is even associated with an increased risk of death and cardiovascular disease.

People who have a high HRV may have greater cardiovascular fitness and be more resilient to stress. HRV may also provide personal feedback about your lifestyle and help motivate those who are considering taking steps toward a healthier life. It is fascinating to see how HRV changes as you incorporate more mindfulness, meditation, sleep, and especially physical activity into your life. For those who love data and numbers, this can be a nice way to track how your nervous system is reacting not only to the environment, but also to your emotions, thoughts, and feelings.

How do you check your heart rate variability?

The gold standard is to analyze a long strip of an electrocardiogram, the test we frequently do in the medical office where we attach wires to the chest. But over the past few years, several companies have launched apps and heart rate monitors that do something similar. The accuracy of these methods is still under scrutiny, but I feel the technology is improving substantially. A word of caution is that there are no agencies regulating these devices, and they may not be as accurate as they claim. The easiest and cheapest way to check HRV is to buy a chest strap heart monitor (Polar, Wahoo) and download a free app (Elite HRV is a good one) to analyze the data. The chest strap monitor tends to be more accurate than wrist or finger devices. Check your HRV in the mornings after you wake up, a few times a week, and track for changes as you incorporate healthier interventions.

The bottom line

Tracking HRV may be a great tool to motivate behavioral change for some. HRV measurements can help create more awareness of how you live and think, and how your behavior affects your nervous system and bodily functions. While it obviously can't help you avoid stress, it could help you understand how to respond to stress in a healthier way. There are questions about measurement accuracy and reliability. However, I am hoping an independent agency eventually identifies which devices and software provide data we can trust. In the meantime, if you decide to use HRV as another piece of data, do not get too confident if you have a high HRV, or too scared if your HRV is low. Think of HRV as a preventive tool, a visual insight into the most primitive part of your brain.

Sources

Heart rate variability and myocardial infarction: systematic literature review and metanalysis. *European Review for Medical and Pharmacological Sciences*, July-August 2009.

Reduced heart rate variability and mortality risk in an elderly cohort. The Framingham Heart Study. *Circulation*, August 1994.