



## SweetWater Health Meditation Report

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Female

### Research

Meditation has been practiced for thousands of years and was originally meant to help deepen understanding of the sacred and mystical forces of life. These days, meditation is commonly used for relaxation and stress reduction, and is considered a type of mind-body complementary medicine. It provides a sense of calm, peace and balance that benefits your emotional well-being and your overall health.

In recent years, meditation has been studied in the clinical setting with surprising results. MRI scans show that after an eight-week course of mindfulness meditation, the brain's "fight or flight" center, the amygdala, appears to shrink. This primal region of the brain, associated with fear, is involved in the initiation of the body's response to stress.

As the amygdala shrinks, the pre-frontal cortex - associated with higher order brain functions such as awareness, concentration and decision-making - becomes thicker. In addition, the connection between the fear mongering amygdala and the rest of the brain gets weaker, while the connections between areas associated with attention and concentration get stronger.

Research also shows that during and after meditation, meditators show significantly better physiological reactions in heart rate and respiratory amplitude. Changes in HRV and EEG (brain waves) power suggest that meditation has a measureable impact on the autonomic nervous system 1.

The results also show that HRV is improved post meditation with an increase in [HF](#) (HF is the HRV metric for the parasympathetic "rest and digest" activity) and a decrease in [LF](#) (LF is the HRV metric for sympathetic "fight or flight" activity) for the meditation group verses the relaxation group. In a study of



meditation and HRV, Kubota et al. 3 found a relationship between HRV and activity of the frontal cortex neural circuitry and Murata et al. 4, amongst many others, observed an increase in HF parasympathetic power and a decrease in the LF/HF ratio.

## **Meditation and Coherence**

Many SweetBeatHRV customers also use HeartMath coherence training techniques - excellent! For those of you not familiar with coherence, an explanation is in order.

Breathing and especially deep breathing has a large effect on HRV. This effect is called Respiratory Sinus Arrhythmia (RSA). RSA is the phenomenon where inhalation increases heart rate and exhalation decreases heart rate. RSA combined with the feelings of peace can produce a state called coherence.

How can you tell if you are [coherent](#)? The easiest way is to look at your heart rate graph. If it looks like a sine wave then you are likely coherent! Here is an example of a coherent heart rate graph and a non-coherent heart rate graph that is displayed in real time in SweetBeatHRV.



**Working at desk - Not Coherent**



**Meditating - Coherent**

This state of coherence is also reflected in either the LF or HF band depending on the frequency of your breathing. For example slower breathing at 6 breaths/minute will create a peak at around 0.1 Hz which falls into the LF band. Breathing at a pace of 10 breaths/minute will create a peak at around 0.17 Hz and create a peak in the HF band<sup>2</sup>. SweetBeatHRV does not detect coherence (we leave that to our friends at HeartMath) and so you may see a high LF and low HF and thus a high stress reading while you are meditating. No worries! This does not mean you are stressed, rather that you are benefitting from coherence!

For this reason this report does not include stress results during meditation as it can be misleading. Instead, we look at stress levels while relaxing and breathing normally (not meditating) in order to measure your baseline progress.

On the other hand, your HRV score is not derived from LF or HF and will likely increase during meditation, especially if you are coherent. So your HRV score during meditation is included in this report!



## **Guidelines**

Because one size does not fit all, we recommend you find a meditation practice that works for you. If you are unfamiliar with the different varieties, simply do an internet search on "types of meditation" and start with one that resonates with you.

Meditation does not require religious or spiritual beliefs. All it requires is a desire to improve your health, relationships and cognitive performance and to make time to sit, breathe and connect with the self. This can be as little as 5-10 minutes each day! Like anything else you add into your busy life, choose a time of day and length of meditation that fits into your schedule.

Given the above research, we highly recommend that you measure your HRV while you are relaxing as well as while you are meditating. This will allow you to see the changes in your baseline (relaxing) HRV and will provide insight into what is working for you and what is not. There are so many types of meditation and SweetBeatHRV allows you to actually measure your results and select the type of meditation that is producing results.

We live in exciting times and we at SweetWater Health are delighted that you are using SweetBeatHRV to objectively measure your progress with meditation and your journey to health, clarity of thought and a happier life. A better world starts with a better you!

## **Report Overview**

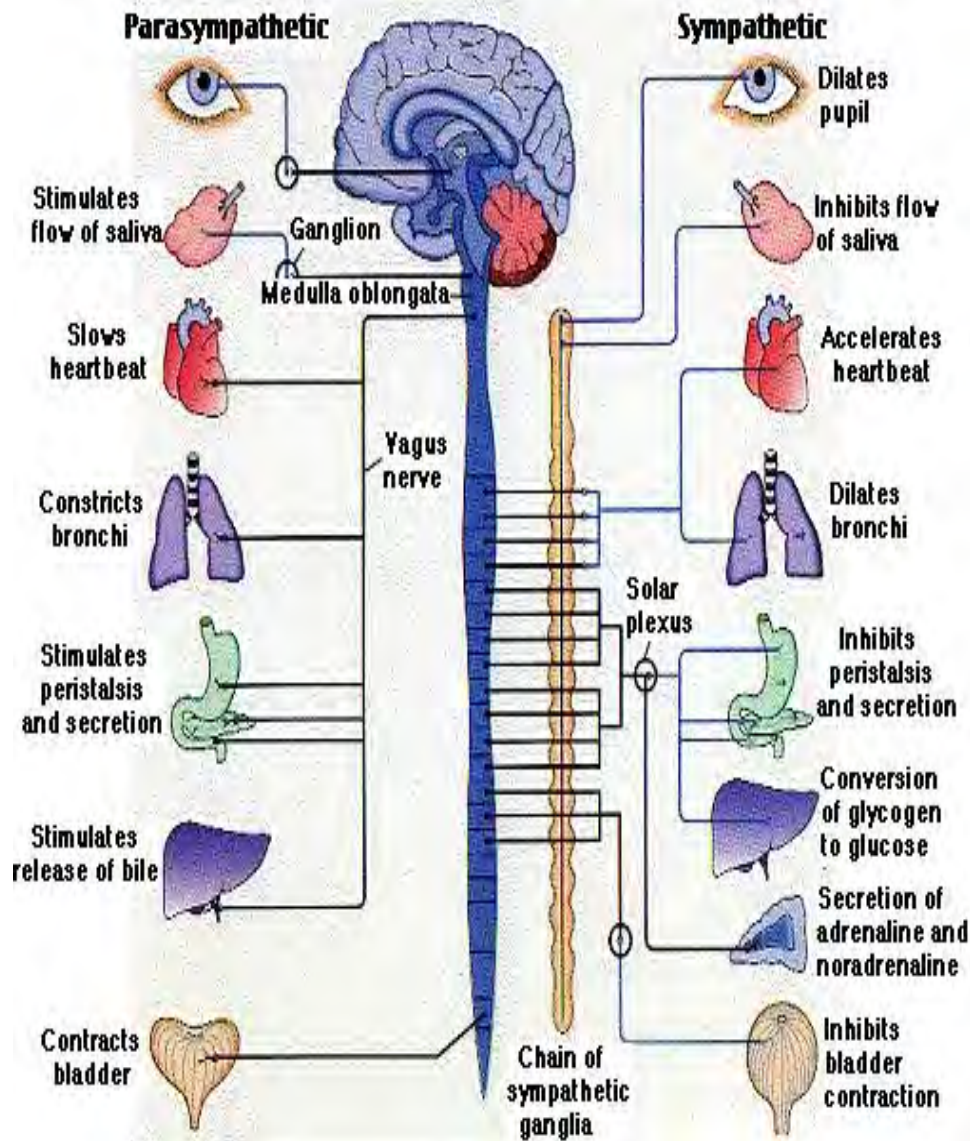
This report provides a view into your session summaries from which to evaluate your progress, including:

- HRV while Relaxing
- HRV while Meditating
- Stress while Relaxing
- Heart Rate while Relaxing
- Heart Rate while Meditating

Each chart also has reference lines to indicate the low, median and high values for your age and gender based on [this](#) research paper from the Journal of the American College of Cardiology.

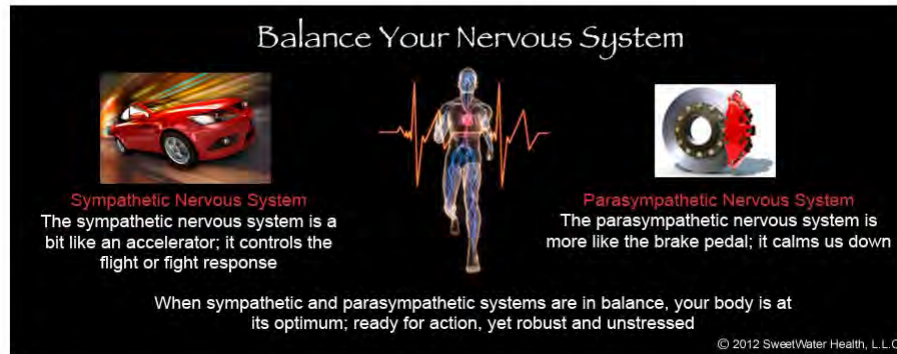
## **HRV**

- The HRV value is a number between 0 -100 and represents Vagal Tone.
- The Vagus nerve is the 10th of 12 paired cranial nerves and acts to lower heart rate.
- Vagal innervation is a mediator of HRV and therefore HRV is an indication of Vagal Tone.
- The higher the HRV, the stronger the Vagal Tone.
- A high HRV is an indication of your ability to "put the brakes on stress"



### Stress

- The stress value is a number between 1-5 where 1 = low stress and 5 = high stress.
- The Autonomic Nervous System has 2 branches, the Sympathetic "Fight or Flight" branch and the Parasympathetic "Rest and Digest" branch.
- Stress is measure of your "fight or flight" response relative to your "rest and digest" response.
- An overactive fight or flight response is an indication of stress.
- If the fight or flight response is always dominant, it may be an indication of chronic stress.



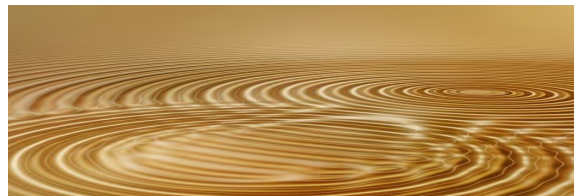
## Heart Rate

- The heart rate value is your average heart rate in beats per minute (BPM).
- The norm is between 60 and 100 BPM with most people falling between 60 and 80 BPM.
- Heart rate and HRV are mutually exclusive.
- Many people relate a low heart rate with greater health.
- Actually a high HRV trumps a low heart rate as a systemic health metric.

## Results

Each chart also has reference lines indicate the low, average and high values for your age and gender based on [this](#) research paper from the Journal of the American College of Cardiology.

## **Relaxation HRV**



Because thoughts and emotions can cause stress and affect your HRV reading you can get great insight into your baseline stress levels by doing SweetBeatHRV sessions while truly relaxing.

The brain is a giant filter and pattern matcher. It filters out anything familiar even if it is dysfunctional or unhealthy. For this reason, we may feel quite normal and relaxed even if we are operating in a state of chronic stress. This is why many people who believe themselves to be quite healthy are taken by surprise when they discover that they have high blood pressure or other stress related markers. For this reason, it is important to actually measure stress and determine if you are in chronic fight or flight mode.

We recommend doing a 5 minute session at least once a week while listening to the birds, looking at pleasing images or thinking of something pleasant and in a relaxed position.

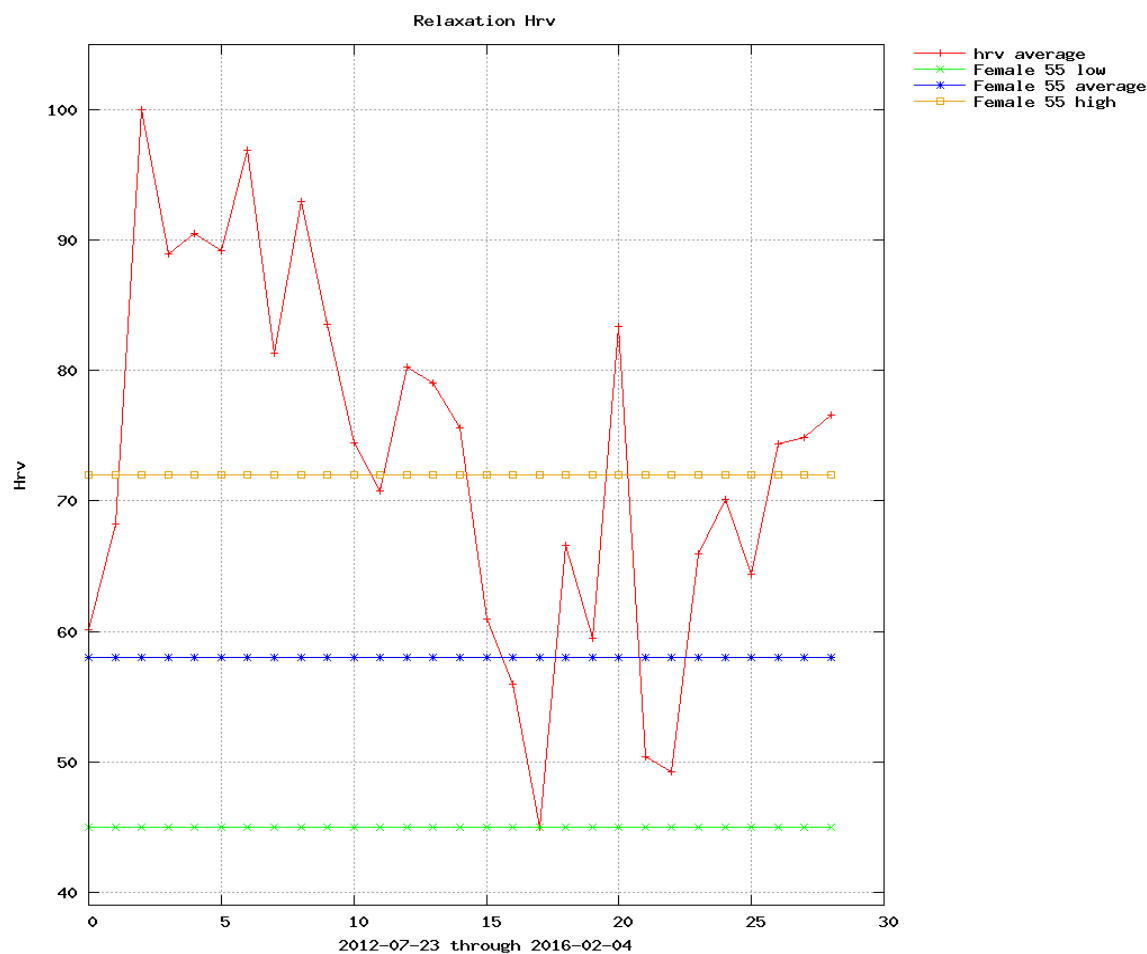




Because HRV has a circadian rhythm (varies naturally throughout a 24 hour period) and is dependent on your position (sitting, standing, lying down) it is best to do your sessions at around the same time of day and in the same position to track your relaxation HRV.

Depending on the success your meditation and other stress reduction techniques, you should see your relaxation HRV start to increase.

All sessions with the tag "Relaxing" will be shown in the following summary. Research shows that HRV declines with age and differs between men and women, so the Min, Med and Max lines are for the age and gender you entered when you created your SweetBeathRV account.



Relaxing HRV is High

sample@sweetwaterhrv.com your average HRV while relaxing is 73 which is high for your age and gender. Excellent, keep up the good work! This trend may change in a response to nutrition/diet, sleep quality and mental and physical stressors.

Be sure to continue tracking your relaxing HRV and take note of what you were doing, thinking, feeling



and eating on days that your HRV is lower than usual. By being mindful of what lowers your HRV you will be able to steer clear of these behaviors and continue to maintain a robust and resilient nervous system! If you see a sudden, persistent decline in your HRV this could be a sign of impending health issue so be particularly attentive to your body and emotions. If you are not aware of any new stressors, food or sleep changes you may want to see your doctor for a checkup.

Meditation has been shown to improve and maintain resting HRV so be sure to do your daily meditation as well as record your relaxing HRV several days a week at around the same time of day.



## Meditation HRV

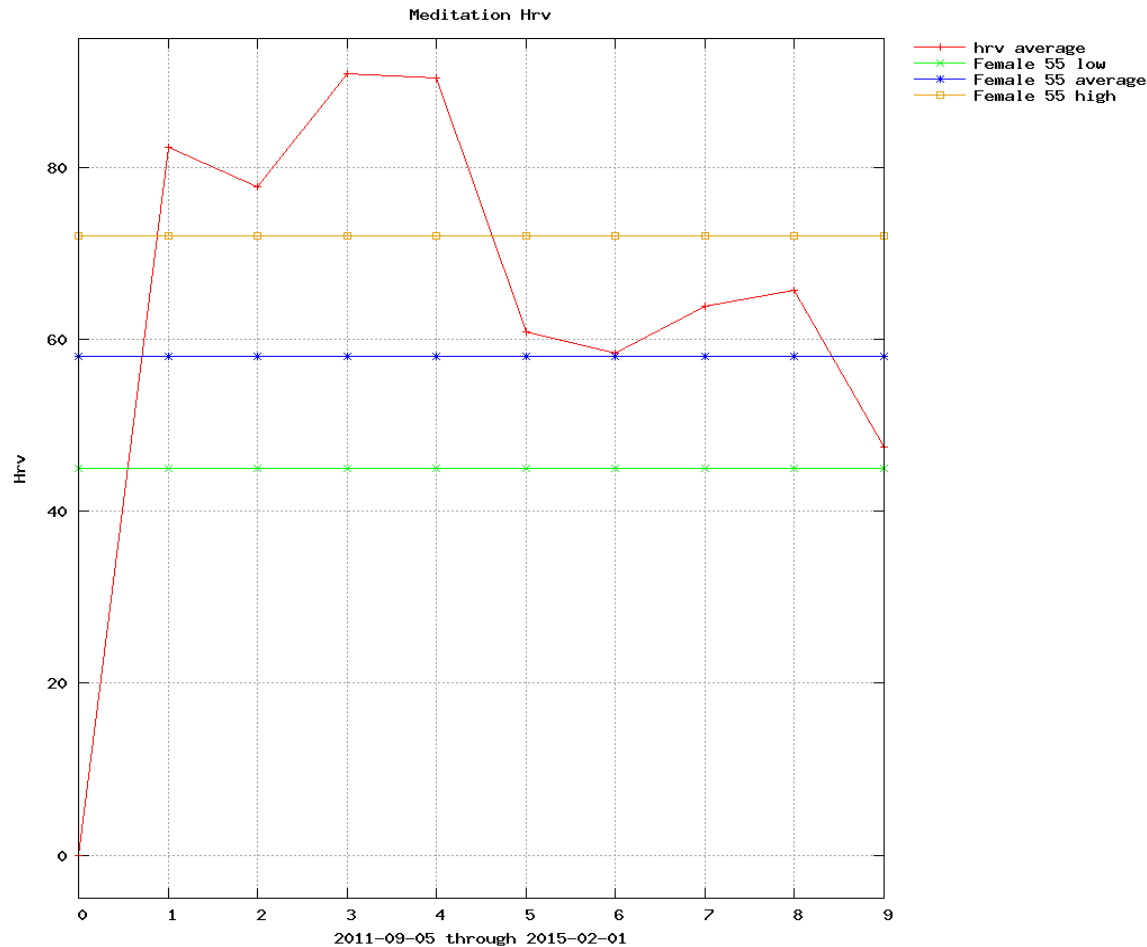


Meditation is usually associated with a relaxed state of the body and mind. However, meditation can also be experienced as a type of mental training and associated with mental effort and physiological arousal. Therefore the cardiovascular effects of meditation may vary depending on the type of meditation, degree of mental effort and amount of practice. A few examples are loving kindness meditation, observing thoughts meditations and observing breath meditations.

Heart disease is a leading cause of death in the developed world. The 30 years of HRV research has uncovered specific markers for increased risk of sudden death due to a heart attack. Some research indicates that this HRV cardiac marker is greatly improved during some types of meditation and is associated with greater parasympathetic activity. Because neurons that ["fire together wire together"](#) meditation can lead to lasting changes in the brain and autonomic nervous system leading to greater resilience, emotional stability, happiness and health throughout life.

Measuring HRV during meditation allows you to choose to a meditation type that provides the most benefit for you as well providing feedback that allows you to fine tune your practice and increase the effectiveness of your technique.





### Meditating HRV is Median

sample@sweetwaterhrv.com your average HRV while meditating is 63 which is around average for your age and gender. While your meditations are going pretty well, there are many things to consider that will help you further improve the effect of your practice. You can be sure that you are not alone if you don't always have a deep meditation! It is a human challenge and not a problem with "you just not being able to meditate".

First, be sure that you are in a comfortable position. While the media depicts meditators in a cross legged position with a straight spine, this is by no means required! While it is advised to have a straight spine, you may sit cross legged with your back supported, in a chair with your feet on the floor or you may choose to lie down. The important thing is to be comfortable! Otherwise your thoughts will be focused on the discomfort.

Be sure that you are not too hot and not too cold and choose a room with few distractions. Consciously relax your shoulders and facial muscles, tune into your body!

Also, start SweetBeatHRV before you start meditating and then dim the screen and set your device aside so that you are not distracted by the HRV measurement. Some common challenges in meditation include mental chatter, restlessness, unwanted feelings and unmet expectations.



-Mental chatter is the most common challenge. Internal dialog is the nature of the mind and one of the key reasons to meditate is to be able to notice this constant chatter. So rather than resisting this stream of thoughts, simply watch the thoughts as if they clouds floating by in the sky. Focus on the blue sky in between the stream of clouds. When you find yourself consumed in a thought, simply notice it, smile and come back to observing the thoughts and the space between the thoughts.

-Restlessness is often a result of mental chatter. It doesn't take long for you to start thinking of all the things you could be doing, should be doing! Restlessness can also be a physical reaction when the body starts to unwind. Just observe the restlessness and breathe into it. Anything that needs to be done will still be there after your meditation and you will be able to attend to it with more presence and ease.

-Unwanted feelings often arise once our mind starts to slow down. We live in a feeling Universe which is at odds with a culture that often suppresses uncomfortable feelings. Simply allow feelings to be present and observe how they can lead stories that will hijack you into mental chatter. If this happens, come back to the feeling and let the story go.

-Meditation is different for each person and varies from day to day so it is important not to have expectations as you enter into meditation. Expectations are a way for your mind and ego to sneak in through the back door and impose on your meditative peace. So let go and trust that whatever experience you are having, it is the right one for that day.

Whatever you are experiencing is just fine and normal. The key is to keep a regular practice, even if it is only 5-10 minutes each day!



## Relaxing Stress Levels



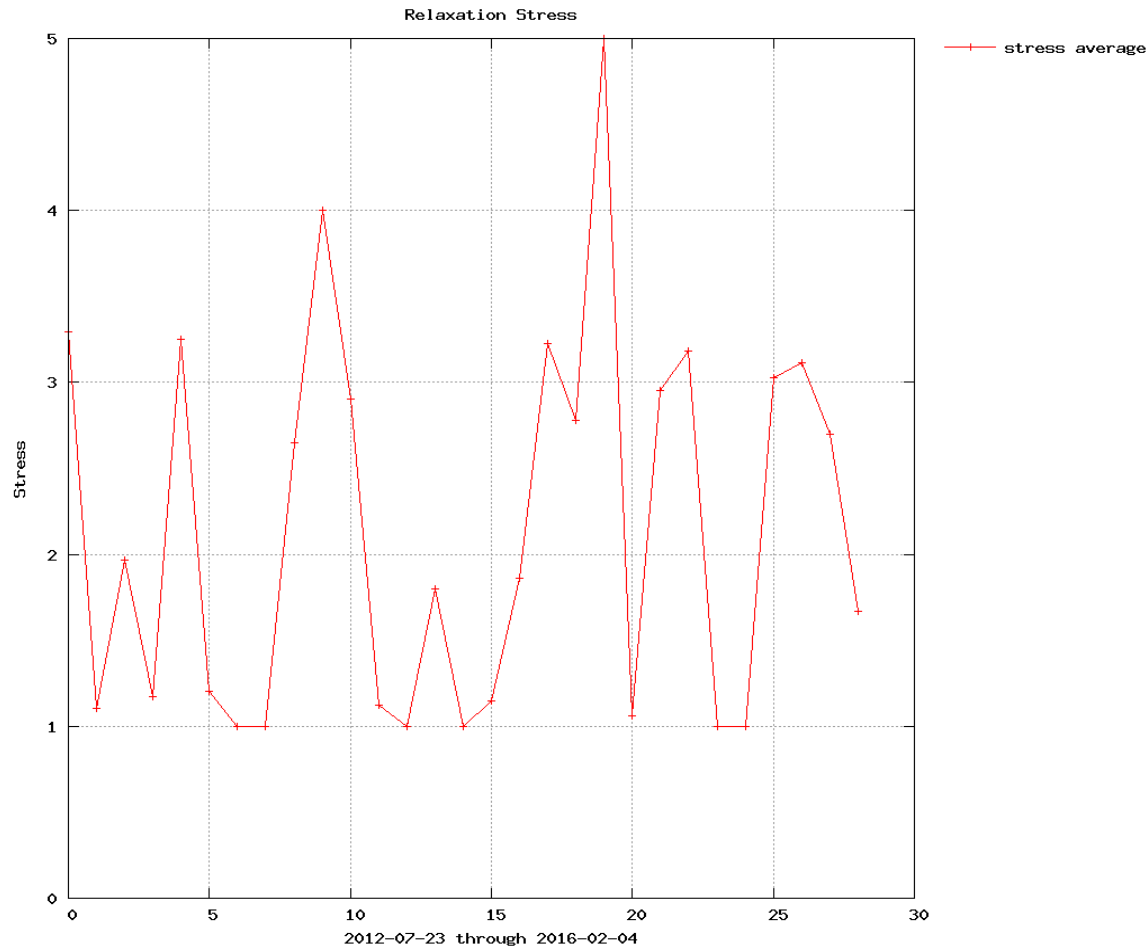
The Autonomic nervous system regulates the function of our internal organs such as the heart, stomach, intestines and blood pressure. It controls functions that we are not consciously aware of. For example we do not notice when blood vessels change size or when blood flows to our muscles.

The Autonomic nervous system has 2 branches, the Sympathetic or "Fight or Flight" branch and the Parasympathetic "Rest and Digest" branch. The Sympathetic branch is activated when you are called into action. Your heart rate speeds up, your digestion slows and your blood pressure increases. The Parasympathetic branch kicks in when you are relaxed and comfortable. Your heart rate decreases along with your blood pressure, and your digestion process runs smoothly.

Stress levels are a measure of your "fight or flight" response relative to your "rest and digest" response. While relaxing your "fight or flight" levels should be much lower than your "rest and digest" levels. If not, you could be experiencing chronic stress. It is important to measure this because your brain acts as a giant filter, ignoring anything familiar even if it is dysfunctional. Thus, many people feel relaxed (or unable to feel the stress and tension) even if their Fight or Flight response is in overdrive.

While our body is wired to react to real dangers via the stress response, the demands of daily life often lead to minor hassles being interpreted by the body as threats. Not being able to find your keys or a traffic jam can lead to a fight or flight response. Cortisol and adrenaline surge, increasing your heart rate, blood pressure and energy supplies. Cortisol also alters the immune system, suppresses the digestive system and communicates with regions of your brain that control mood, motivation and fear.

In nature or in the event of actual danger, our bodies tremble or shake to remove the excess energy that built up during the stressful event. If you have ever been in a car accident you may recall uncontrollable shaking which is normal and desirable. Unfortunately we do not shake off the stress energy acquired while we looked for our keys or after we survived a traffic jam and thus accumulate this energy over a lifetime. This leads to Cortisol overdrive which leads to heart disease and hypertension, amongst other diseases, in otherwise healthy people.



### Relaxing Stress is Low

sample@sweetwaterhrv.com your average Stress while relaxing is 2 which is excellent! This demonstrates that you are able to truly relax and do not exhibit signs of chronic stress. Keep up the good mental and physical lifestyle!

It is now time for you to check your stress sensitivity level in SweetBeathRV and if you are not already on level 5, move to the next level (the default level is 3). These sensitivity levels are like challenge levels in a video game. The novice starts at level 1 and the goal is to be able to get into the "cool blue" zone at level 5. To change your sensitivity, simply select the "gear" icon in the top right corner of the Monitor screen then select sensitivity setting.

If you are on level 5, congratulations! As a gentle reminder here are some helpful tips to keep your stress levels in check. Be sure you are not watching upsetting or violent news or programs on TV while you do your session! The information we are exposed to in the media have a real impact on our stress levels. According to one US Survey, exposure to the news is a major source of stress for people and it turns out that stress caused by news creates a greater sense of hopelessness than stressors from daily hassles.



Try being aware of low level tension you are holding in your body and do regular shoulder circles and body scans each day. A few minutes of some simple stretches, yoga poses or Qi Gong can go a long way in diffusing the stress energy stored in the cells. Try 3-5 minutes of some sort of clearing exercise before doing your relaxation readings!

Part of the "busy" epidemic includes not getting enough sleep. "I only got 4 hours sleep" or "I wake up at 3am and can't get back to sleep" have become the status quo. Most adults need 7-9 hours of sleep each night. The nervous system repairs and recovers fully after a quality night of sleep and goes a long way to reduce stress.

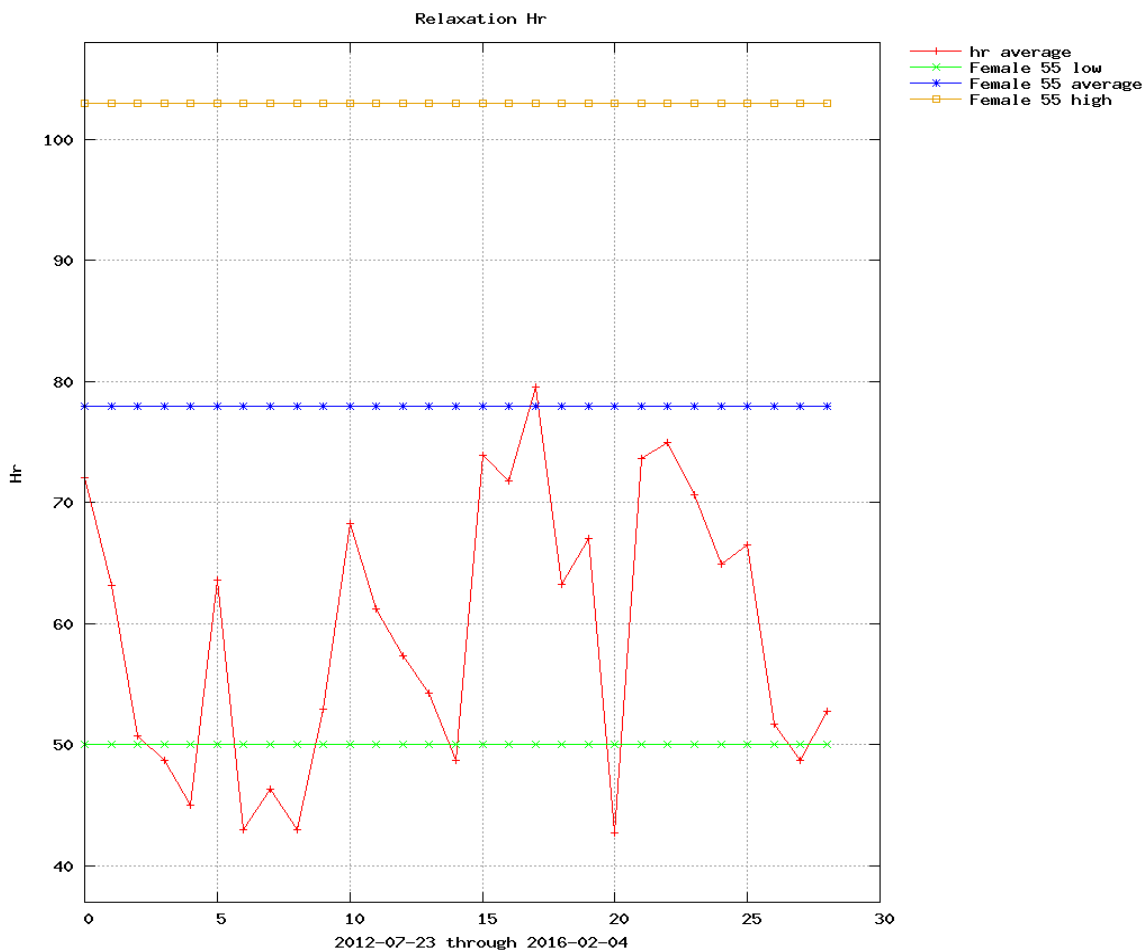
Remember, chronic stress builds slowly over a lifetime often from basic life hassles like "where are my keys" or "I'm late" and from watching news and other unhappy media. Being aware and making different choices can make a big difference in your stress levels and ultimately your life long health.



## Relaxing Heart Rate

Even if you're not an athlete, knowledge about your heart rate can help you monitor your fitness level - and it might even help you spot developing health problems. Your heart rate, or pulse, is the number of times your heart beats per minute. Normal heart rate varies from person to person. Knowing yours can be an important heart-health gauge.

Your average heart rate should remain within approximately a 15 beat range during the day. Of course this does not include the effects of intense exercise though your heart rate should recover from that trip to the gym within an hour or two. Elevated heart rate can be a sign of sensitivities to food or the environment (such as dust or pollen) and can be a result of emotional stress as well.



## Relaxing Heart Rate is Low

sample@sweetwaterhrv.com your average heart rate while relaxing is 59 which is on the low side for your age and gender. This may be due to genetics or high levels of fitness. While we are not doctors





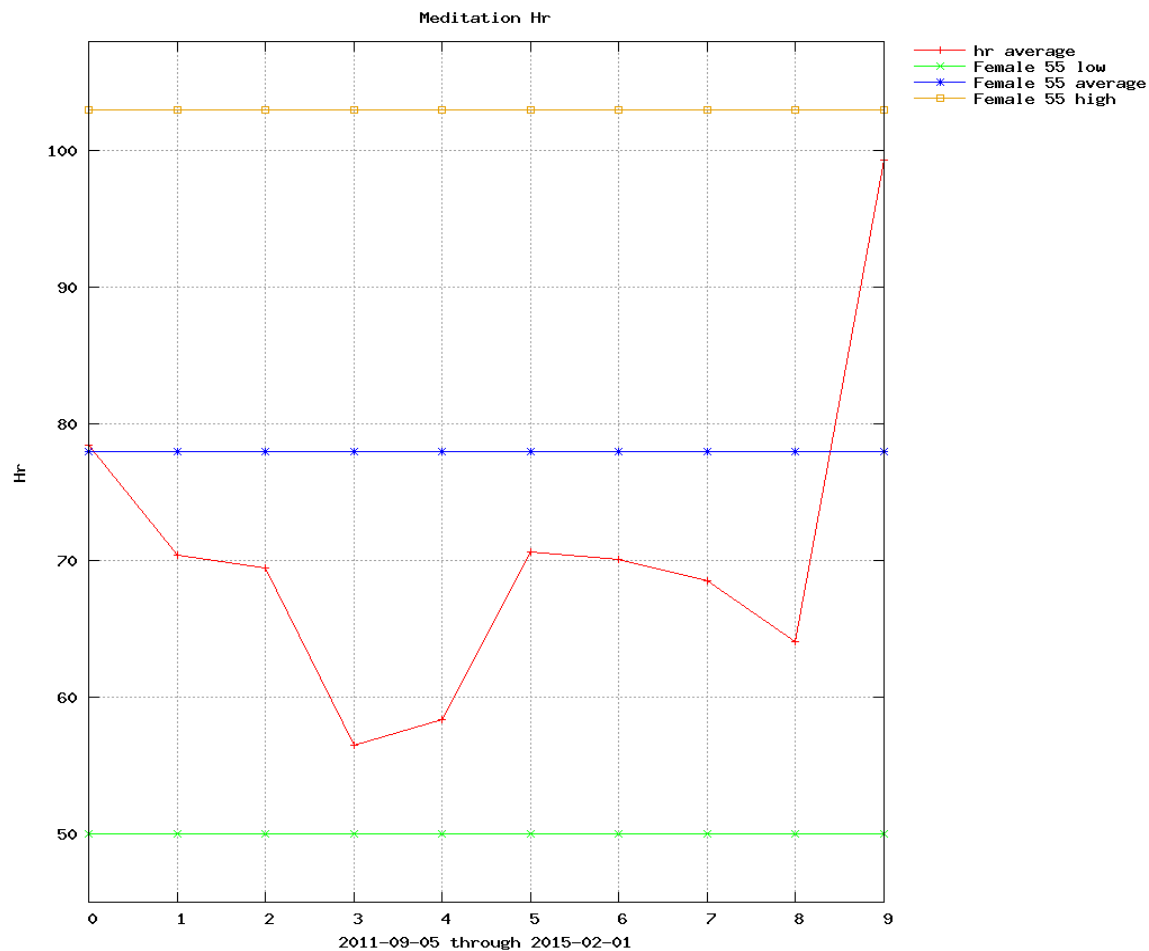
and do not offer medical advice, if you feel dizzy or fatigued, please let your doctor know. In order to get a better read on your resting heart rate, try doing a 2-5 minute relaxation session before you get out of bed in the morning. If you find that your resting heart rate is substantially lower in the morning then we recommend testing for Food Sensitivities using the built-in [Food Test in SweetBeatHRV](#).



## Meditating Heart Rate

For many people, meditation reduces the heart rate as the body relaxes and the mind lets go and focuses on whatever the meditation prescribes. That said, studies show that some meditations and associated breathing techniques can actually raise heart rate! So don't be alarmed if your meditating heart rate is occasionally, often or always higher than your resting heart rate.

You may decide to experiment with different meditation techniques to discover the effects on heart rate. If your resting heart rate is on the high side, you may prefer techniques that lower it and if your resting heart rate is on the low side, you may want to experiment with raising it.



## Meditating Heart Rate is Median

sample@sweetwaterhrv.com your average heart rate while meditating is 70 which is average for your age and gender. Research shows that heart rate can be influenced based on the type of meditation and breathing technique you are employing. A number of studies show that meditation can



decrease your heart rate, slow your rate of respiration, lower your blood pressure and decrease the number of stress hormones circulating in your bloodstream.

CK Peng et. Al. found that meditation "may produce active rather than quiescent cardiac dynamics" and so you may find your heart rate actually increasing during certain types of meditation.

1. Central and autonomic nervous system interaction is altered by short-term meditation Yi-Yuan Tanga,b,1, Yinghua Maa, Yaxin Fana, Hongbo Fenga, Junhong Wang, Shigang Fenga, Qilin Lua, Bing Hua, Yao Lina, Jian Lia, Ye Zhanga, Yan Wang, Li Zhoua, and Ming Fanc
2. [http://www.sweetwaterhrv.com/documentation/HRV\\_Measurement\\_Explanation.pdf](http://www.sweetwaterhrv.com/documentation/HRV_Measurement_Explanation.pdf)
3. Kubota Y, Sato W, Toichi M, Murai T, Okada T, Hayashi A, Sengoku A Brain Res Cogn Brain Res. 2001 Apr; 11(2):281-7.
4. Murata T, Takahashi T, Hamada T, Omori M, Kosaka H, Yoshida H, Wada Y Neuropsychobiology. 2004; 50(2):189-94.
5. Is meditation always relaxing? Investigating heart rate, heart rate variability, experienced effort and likeability during training of three types of meditation Anna-Lena Lumma, Bethany E. Kok, Tania Singer
6. Changes in Autonomic Variables Following Two Meditative States Described in Yoga Texts Shirley Telles, PhD, Bhat Ramachandra Raghavendra, MSc, Kalkuni Visweswaraiah Naveen, PhD, Nandi Krishnamurthy Manjunath, PhD, Sanjay Kumar, PhD, and Pailoor Subramanya, PhD
7. Heart rate dynamics during three forms of meditation. [Peng CK](#), Henry IC, Mietus JE, Hausdorff JM, Khalsa G, Benson H, Goldberger AL.