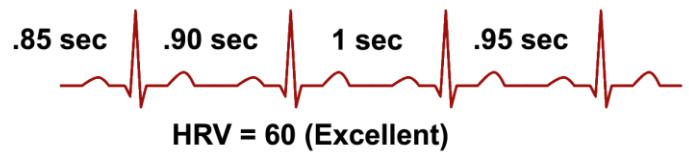


Average Heart Rate = 60 BPM



# Heart Rate Variability

The variation in the time interval between heartbeats.

## HOW TO MEASURE IT



It is measured by the variation in the beat-to-beat interval.. An ECG can measure HRV. So can the pulse wave signal derived from a photoplethysmograph (PPG) A PPG is often obtained by using a pulse oximeter which illuminates the skin and measures changes in light absorption.

Smartphones now incorporate PPG capability YAY and which is why I'm talking about it i.e. this is a very viable tool for us to be using – you do also need an app.

The app I am using that incorporates this technology is from [www.hrv4training.com](http://www.hrv4training.com)

If looking at other apps google the research and reviews around them and look for a minimum of 50 seconds recording time.

## THE RESULT WE ARE LOOKING FOR

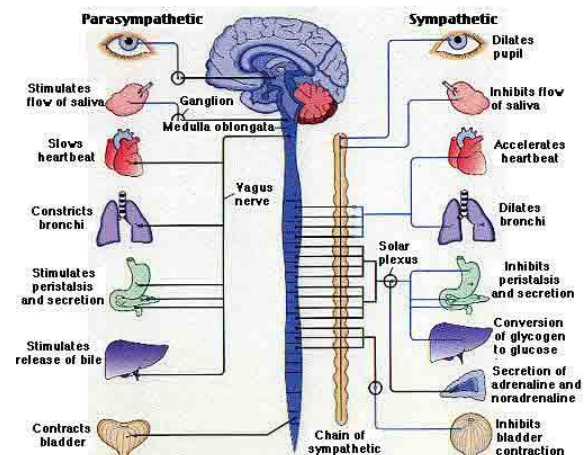
Generally - a *reduced* HRV is not desirable i.e. we are looking for a high HRV i.e. a high amount of variability.

'If your heart beats like a metronome, with intervals of identical length between each pulse, you have low heart rate variability; this is "bad." If your heart beats follow a more fractal pattern, with beat intervals of varying length, you have high heart rate variability; this is "good." It's a sign that it is responding to the altering demands of the body.

And so what does *that* mean?

In general, a high HRV indicates dominance of the parasympathetic response, the side of the autonomic nervous system that promotes relaxation, digestion, sleep, and recovery

A low HRV indicates dominance of the sympathetic response, the fight or flight side of the nervous system associated with stress, overtraining, and inflammation.



## WHAT DOES IT MEAN TO HAVE A HIGH OR LOW HRV

Reduced HRV (where there is dominance of the sympathetic or fight or flight response) has been shown to be a predictor of mortality after myocardial infarction congestive heart failure, diabetic neuropathy, depression, post-cardiac transplant, susceptibility to SIDS and poor survival in premature babies.

High-frequency/variation has been found to decrease (get worse) under conditions of acute time pressure and emotional strain and elevated state anxiety.

## SO WHAT DOES ALL THIS MEAN FOR YOU?

Apparently cardiac specialists have been using HRV for decades to track the health and recovery of their patients but much of the research happening in the last 5 years or so (that I am aware of anyway) is now with athletes – tracking their rest and recovery periods, pinpoint optimal training and competing times, and avoid overtraining but I would suggest it's application is far wider and could be helping our 'everyday' clients better understand their stress levels.

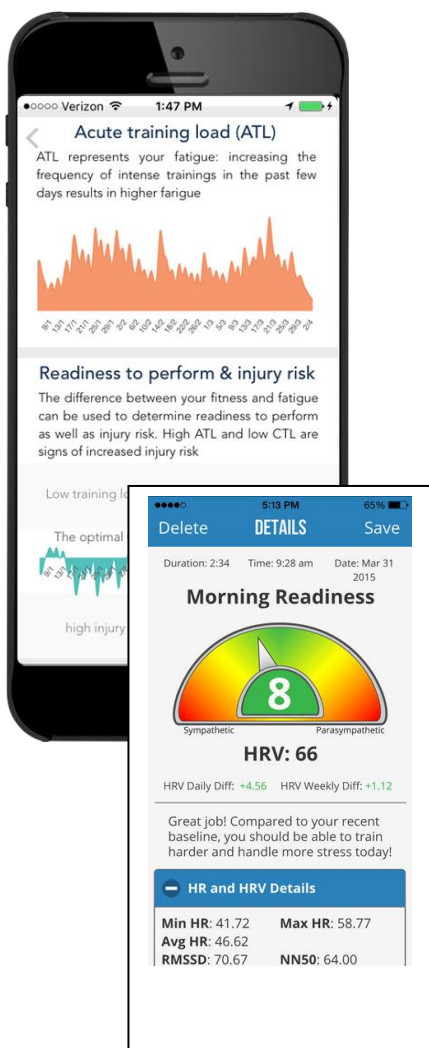
## THE BRONI EXAMPLES

- A) Mine got super low for the first time shortly after I arrived in LA – and I then got sick
- B) I did it on 2 couples one night at a dinner party. As I pretty much expected, the self-employed, sole income earner had very low HRV, (the stay at home partner with no children I should add) had a very high HRV.

## WHAT TO DO WHEN YOU GET A LOW OR 'BAD' RESULT

- a) Breathing exercises – these come with the app – but even without the app slow down to about 6 breaths per minute.
- b) Adjust your training – lower intensity
- c) Nurture your nervous system
- d)

## APPLYING WHAT WE HAVE LEARNED



1. YOURSELF
2. LOVED ONES
3. CLIENTS
4. CLASS MEMBERS

The future – Apps that allow us to give immediate feedback to our clients are GOLD. Keep an eye out for lots more of these types of things in the future 😊

Broni McSweeney – [www.catchfitness.co.nz](http://www.catchfitness.co.nz)