



Nervous System Library Heart Rate Variability (HRV) Algorithm

We enable any kind of wearable device that contains PPG optical sensor and an accelerometer to track the Nervous System by precisely measure the HRV. HRV is a measure of the variation in time between each heartbeat.



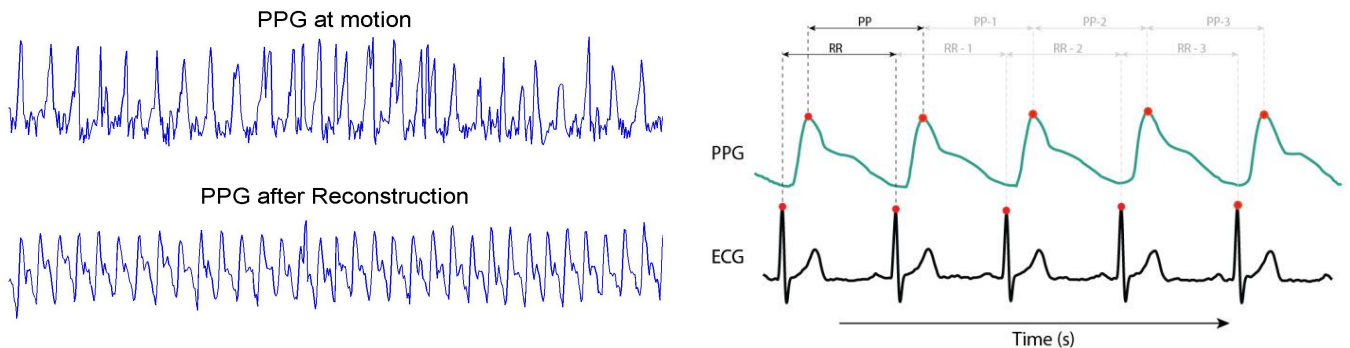
Why is HRV measurement important?

HRV is a significant indicator of physical fitness and mental stresses.

Measuring HRV is a non-invasive, practical method for objectively assessing a performer’s readiness, workload, stress, and recovery status; when combined with additional data sources, it provides an affordable and scalable solution for gaining actionable information to support the facilitation and maintenance of operational performance.

How do we do it?

Our reconstruction recursive filters enables us to precisely reconstruct the PPG signals’ shape so we can detect their peaks and calculate the time intervals between them. The solution works both at rest and during daily life activities.



Nohayo HRV algorithm performance

The algorithm is implemented in embedded C and can run on wearables like a smartwatch, ring, and earbuds that has a PPG, a 3D accelerometer, and a DSP unit.

The Algorithm calculates not only the intervals between the peaks, but also all standard HRV indexes such as SDNN, SDNN, RMSSD, NN50, pNN50.

The algorithm was compared to Polar chest strap, and shows the accuracy shown in the table:

	HR	RMSSD	SDNN	pNN50	LP/HP
Pearson correlation, Rest	1	0.996	0.999	0.994	0.961
Pearson correlation, Active	0.991	0.982	0.978	0.965	0.921