



Heart rate variability training

For training heart rate variability we offer the new training program **BFHRV - heart rate variability and the associated radio module EXG**.

Heart rate variability (HRV) refers to an organism's ability to continuously adapt the interval between heartbeats to situational requirements. Physical exertion and mental stress result in a quickening of the heart rate; during recuperation and relaxation the heart rate falls again.

HRV is a good indicator of state of health, stress tolerance, resilience and biological age. Limited HRV is a sign of labile health, burnout, depressivity and a biological age that is higher than actual age.

Applications of heart rate variability training

- Reduction of mental and physiological tension
- Psychosomatic illnesses
- Supporting therapy for cardiac disease
- Psychovegetative exhaustion
- Insomnia
- High blood pressure
- Coping with stress and anxiety
- Raising levels of DHEA (the "youth hormone")
- Irritable bowel syndrome

Heart rate variability training program BFHRV

Training aims to achieve coherence between respiration, pulse and blood pressure. Three forms of training are available.

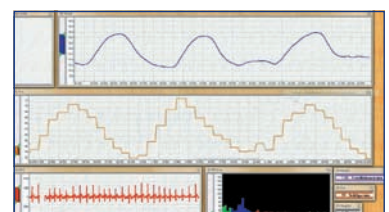
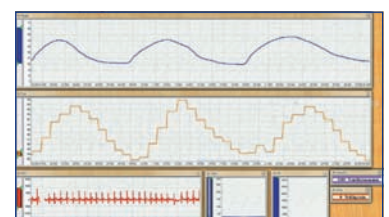
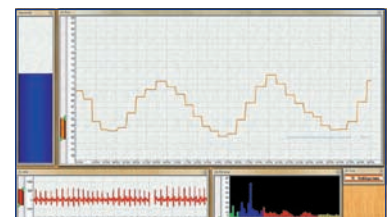
Using **baroreflex training** the client learns to breathe at a demonstrated frequency (6 breaths per minute).

The aim is to gradually synchronise breathing and pulse rate.

Coherence training provides feedback on respiration movement and frequency, pulse rate, the extent of the respiratory sinus arrhythmia (RSA) and the periodic fluctuations in arterial blood pressure (LF). This enable the three parameters of respiration, heart rate and blood pressure regulation to be synchronised in a controlled manner (coherence).

In **RSA training** a breathing curve is displayed and actual respiration is fed back. Parallel feedback of the pulse rate supports development of the respiratory sinus arrhythmia.

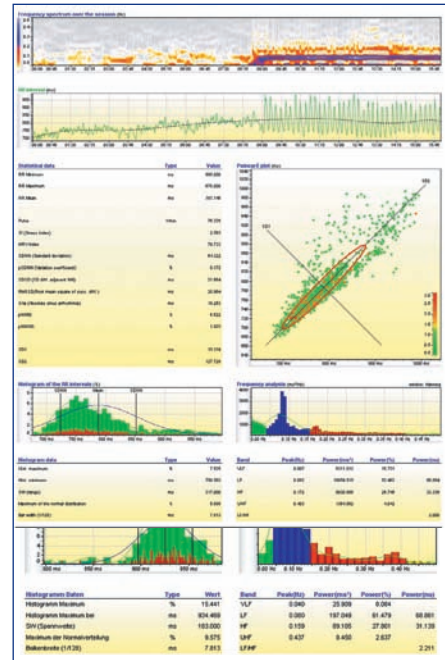
RSA and coherence training require a RESP module in addition to the EXG module.



Evaluation

The program provides comprehensive statistical evaluation with charts:

- Display of the EKG raw signal which can be switched to give a spectral view of the session (life fire)
- Display of the RR raw data which can be switched to display adjusted for trend (removed median)
- Poincaré plot for visual (qualitative) and mathematical (quantitative) assessment of the HRV
- Histogram with standard deviation, mean, regression line, Gauss curve, individual chart and statistics
- Frequency analysis by re-sampling the RR raw data and cubic spline interpolation
- Adjustment of the data for trend with polynomial regression
- Windowing of data to reduce the leakage effect with a choice of 8 procedures and automatic amplitude correction



Radio module EXG

We have developed a separate radio module for heart rate variability: the EXG radio module.

- 1 channel: "EKG" – raw curve
- 3 measurement ranges: from $\pm 800 \mu\text{V}$ to $\pm 3200 \mu\text{V}$
- Sampling rate: 1000 Hz
- Bandwidth: 1 Hz – 100 Hz
- Time resolution RR interval: 1 ms
- "EKG" raw signal, RR, Pulse, RSA, UHF, HF, LF, VLF



Simple three-pole recording of the heart potentials using disposable electrodes on the hands, shoulders or chest wall. Not sensitive to electrical artefacts. Biological artefacts minimized through use of ultra-flexible electrode cable.

With the new EXG radio module – used with the special BFEEG training program – a 2-channel EEG can also be recorded. The EXG radio module thus supplements and replaces the EEG module.

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