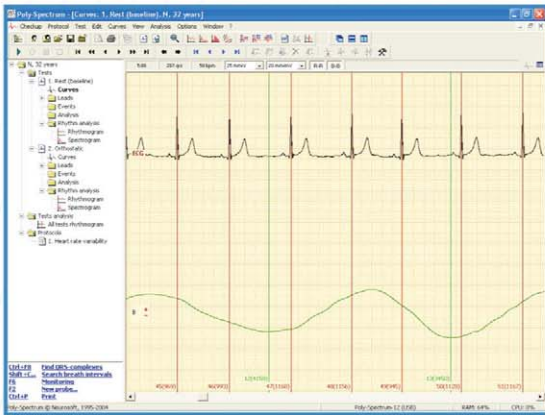
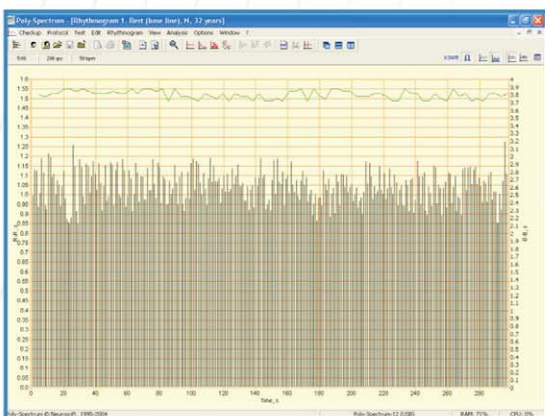


Poly-Spectrum-Rhythm

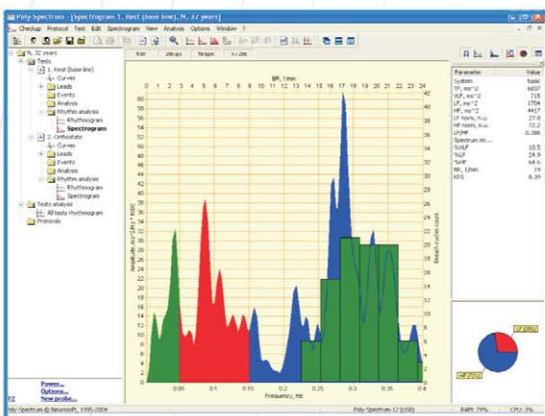
Heart Rate Variability (HRV) Analysis Software



1. Electrocardiogram with QRS markers and calculated R-R intervals; pneumogram with markers at the start of each breath cycle and calculated «breath-breath» intervals.



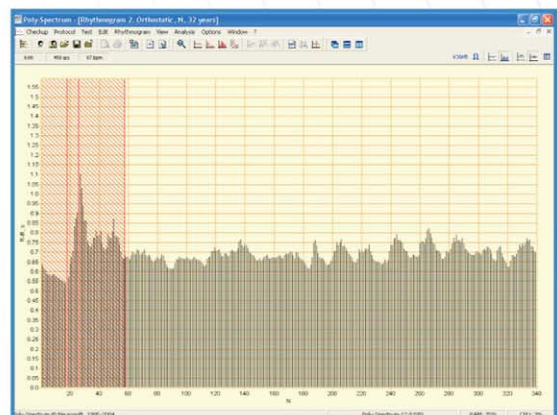
2. Rhythmogram is a graphic chart that shows the dependence of R-R interval duration on time. Rhythmogram oscillations are the result of the regulation systems influence on heart (autonomic nervous system in particular). The green line is the breath rhythmogram. Its changes are determined by work of breath rate regulation systems.



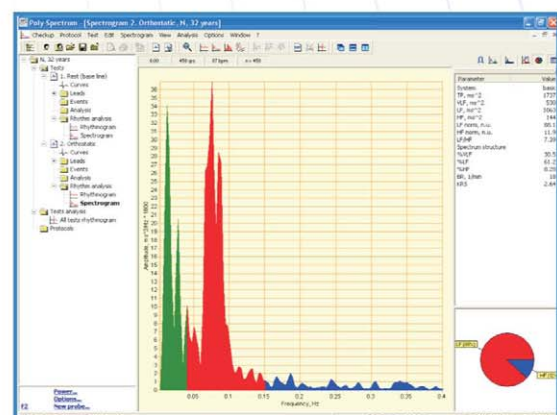
3. Spectrogram is a graphic chart that shows the dependence of rhythmogram oscillations amplitude on their frequency. Frequency ranges are differently colored: the dark blue area is proportional to the parasympathetic regulation power; the red one is proportional to the sympathetic regulation power.

The last two decades have witnessed the recognition of a significant relationship between the autonomic nervous system and cardiovascular mortality, including sudden cardiac death. Experimental evidence for an association between propensity for lethal arrhythmias and signs of either increased sympathetic or reduced vagal activity has spurred efforts for the development of quantitative markers of autonomic activity. HRV represents one of the most promising markers.

In 1996 the European Society of Cardiology and the North American Society of Pacing and Electrophysiology constituted a Task Force which developed and published «Heart Rate Variability Standards of Measurement, Physiological Interpretation, and Clinical Use».



4. Orthostatic test rhythmogram. The wave appearing in the first 30 sec. is the vagus reaction.



5. Orthostatic test spectrogram. Here one may clearly observe sympathetic response – the red area increase.

There are three HRV measurement approaches: time-domain analysis, frequency-domain analysis and the responses to standardized stimuli – cardiovascular reflex tests (standard battery of tests according to D. Ewing). The first two of above listed approaches are described in the Standard 1996, and the last is given in details in D. Ewing's publications. Ewing proposed using the standard battery of cardiovascular reflex tests.

These simple noninvasive cardiovascular reflex tests have now become the gold standard by which an autonomic neuropathy is diagnosed objectively, and by which other tests are judged. Their use was pioneered in the assessment of diabetes, but they are being used increasingly in a number of other conditions in which autonomic damage is suspected.

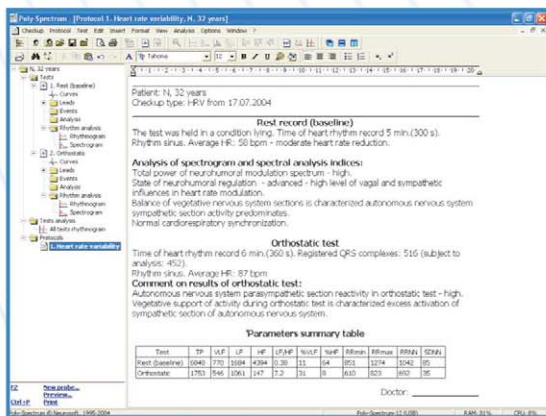
A perfect implementation of the described methods is HRV analysis software **Poly-Spectrum-Rhythm**. Nowadays many cardiologists and medical specialists all over

the world successfully use this software in their daily clinical work. You can also get such a splendid opportunity.

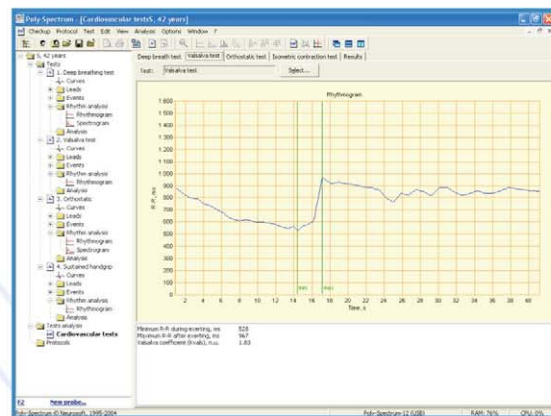
Poly-Spectrum-Rhythm General Properties:

- Vegetative tonus examination by HRV analysis (time-domain and frequency-domain) in accordance with the International Standard (1996).
- Responses to standardized stimuli – cardiovascular reflex tests (standard battery of tests according to D. Ewing) analysis with automatic calculation of vegetative reactivity standardized indices.
- Diabetic and alcoholic autonomic neuropathy diagnostics with the use of cardiovascular reflex tests.
- Vegetative balance and psychoemotional strain examination by breath rhythm and heart rate variability cross-analysis (RF patent 2195163).

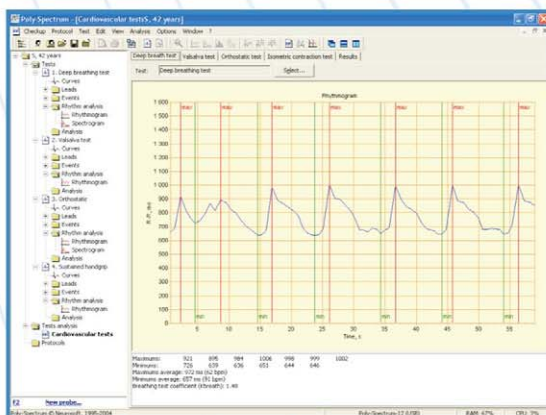
Poly-Spectrum-Rhythm software allows analyzing electrocardiograms recorded by different units: **Poly-Spectrum, Rheo-Spectrum, VNS-Micro, Neuron-Spectrum, Neuro-MEP** produced by **Neurosoft** Company.



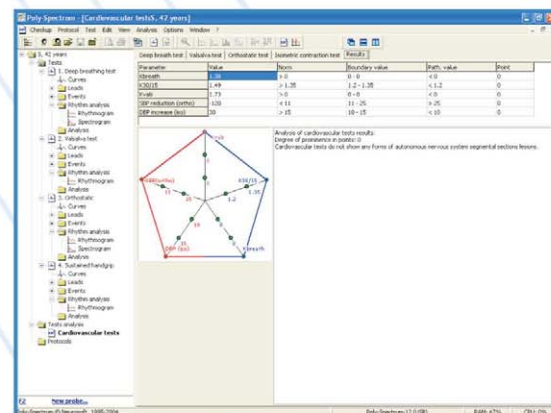
6. Checkup report of the HRV analysis by orthostatic test results.



8. Valsalva maneuver rhythmogram.



7. Rhythmogram of deep breath testing. The heart rate modulation by breath is clearly seen. The leading role in this process belongs to the vagus.



9. Interpretation of the cardiovascular tests results.

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