BIORS

HSC Bioscanner Wellness automatic report

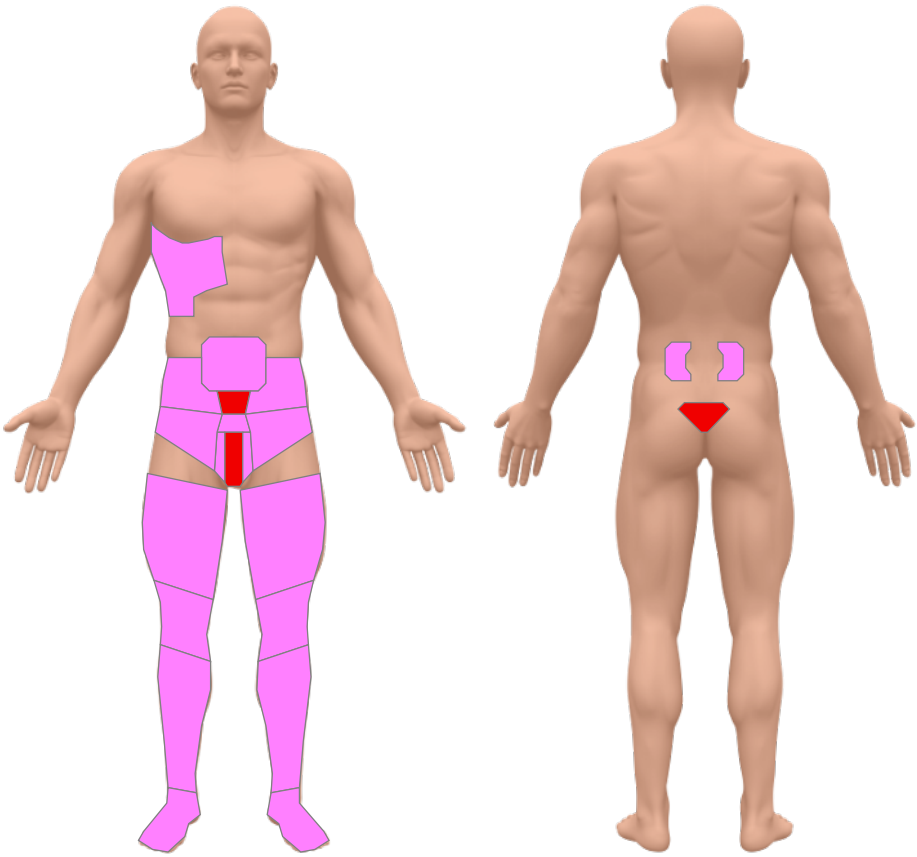
06.12.2017

Xy Xo

Age: 37

Attention! The obtained automatic reports are not a reason for the establishing clinical diagnosis. In case the stable abnormalities are revealed it is necessary to see a doctor for the detailed examination.

Electrosomatogram

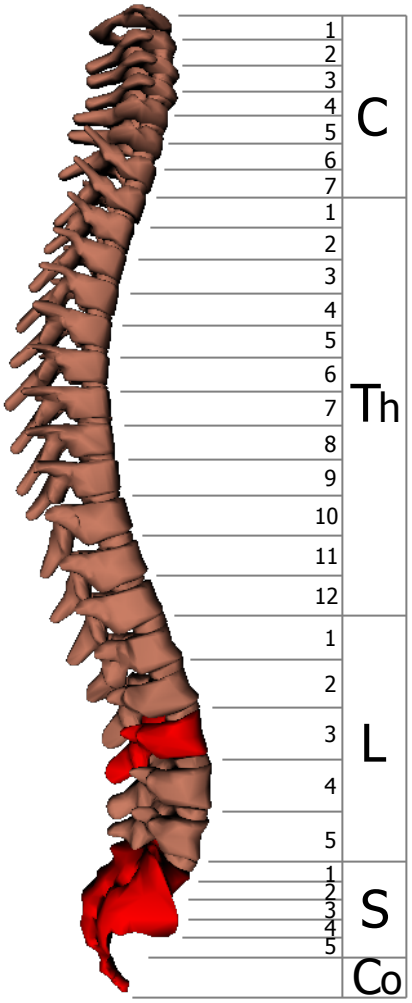


- overstrain
- stress state
- hyperactivity
- normal range
- fatigue
- over-fatigue
- body reserve depletion

☑ Show only areas with deviations from the norm

Target zones	
31%	Urinary bladder region
31%	External sex organs region
31%	Rectum region
14%	Small intestine region
14%	Prostate gland region
11%	Hip neurovascular apparatus, right side
11%	Knee region, right side

Lesions in spine



	Probable symptoms
L 3	Urinary bladder diseases, sexual dysfunction, knee pain
S 1-5	Sacrum pain, haemorrhoids, pelvic organ dysfunction

hyperactivity
fatigue

Assumed pathology

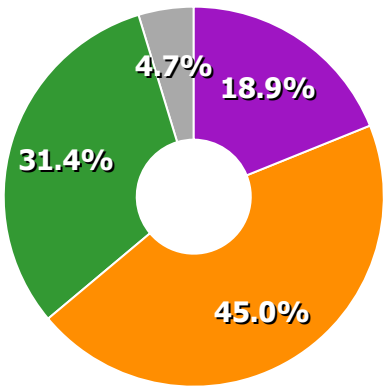
Probability of urinary bladder atony. Urogenital system diseases. Hemorrhoids.

Measurement table of bioimpedance

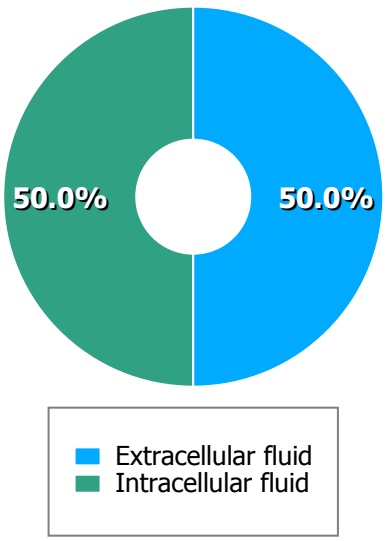
	50000 Hz
Right hand - Right foot	R 330 Xc 58
Left hand - Left foot	R 332 Xc 60

Parameter	Value	Normal value
Height (cm)	190	
Weight (kg)	100	
Waist circumference (cm)	98	
Hip circumference (cm)	112	
Body mass index (kg/m2)	● 27.7	20.5 - 27.0
BMI classification		
Waist-hip ratio	0.88	0.70 - 0.95
Phase angle (degree)	● 10.16	6.64 - 9.48
Fat mass (kg)	18.9	13.9 - 21.9
Proportion of fat mass (%)	18.9	13.9 - 21.9
Lean body mass (kg)	81.1	71.6 - 91.6
Cell mass (kg)	● 45.0	47.1 - 68.1
Proportion of cell mass (%)	55.5	50.0 - 56.0
Skeletal muscle mass (kg)	● 50.0	33.3 - 39.3
Proportion of skeletal muscle mass (%)	● 61.7	41.1 - 48.5
The total liquid (kg)	● 62.8	56.0 - 62.7
Extracellular fluid (kg)	● 31.4	15.0 - 23.0
Intracellular fluid (kg)	● 31.4	33.0 - 47.7
Basal metabolism (kcal/day)	2530	

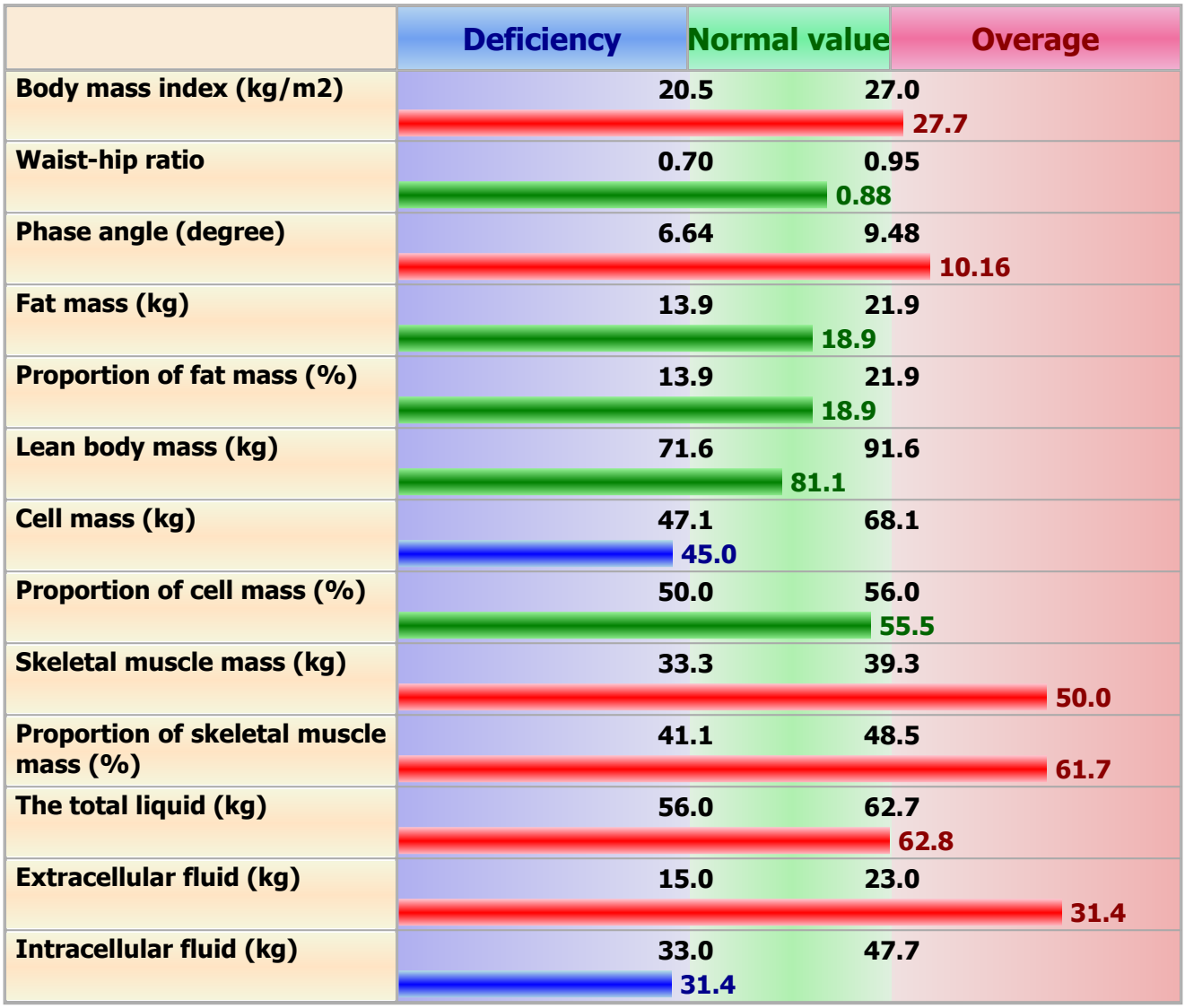
Body mass distribution



Body fluid distribution



Calculation of body composition



Explanations corresponding to the calculated values

Body mass index (kg/m2) BMI is a weight to height ratio of a person. This value makes it possible to evaluate how well these measures relate to each other. It is used for the assessment of obesity or cachexia level. The body shape and bone tissue thickness have direct impact on BMI. The same BMI value (depending on the availability/ conditional absence of muscle mass) can relate to a person of solid build/obese or athletically built/fit person.
Observed value: 27.7 *kg/m2 (Normal range: 20.5 - 27.0 kg/m2)*

Phase angle (deg) It can be considered as a score of muscle tissue state and performance capability as well as a score of metabolic activity. Healthy people are characterized by phase angle score in the upper range of the interval of allowed values. When the person is healthy, high values point to the good state of cell membranes as well as high activity and high proportion of musculoskeletal mass. Sick people (especially with chronic illnesses) are characterized by phase angle score in the lower range of the interval of allowed values. As a general rule, the lower the values, the more unfavorable prognosis for a disease.
Observed value: 10.2 *deg (Normal range: 6.6 - 9.5 deg)*

Fat mass (kg) The total mass of the body fat cells. Standard levels of the body fat mass are varied between men and women. Normal levels are defined depending on height and age. Too high proportion of fat mass results in the negative changes of metabolism, which make further fat gain easier. Guarding health and body shape throughout a long period of time is only possible when values are set in the normal range. Each kilogram of fat is about 7000 kcal. Such a high level of energy explains why it is much harder to degrade fat than muscle mass (1100 kcal per kilogram).
Observed value: 18.9 *kg (Normal range: 13.9 - 21.9 kg)*

Lean body mass (kg) The part of the body mass including all tissues which are not fat: muscles, all organs, the brain, nerves, bones and all body fluids.
Observed value: 81.1 *kg (Normal range: 71.6 - 91.6 kg)*

Cell mass (kg) This part of the lean body mass depends on the age, height and genetic characteristics. Body cell mass includes muscles, organs, the brain, and nervous cells. Therefore fat degradation and maintenance of cell mass (fat loss occurs in this particular tissue) are very important aspects of weight loss. Cell mass loss is a main reason of failure with maintaining the weight loss because the progress is hindered after the first successes. Consequently, it is necessary to keep an adequate nutrition of the cell mass. The proteins should be included in the diet. They are 'building blocks' for all the body cells, enzymes, hormones. Exceptionally proteins can be a source of energy. The body constantly needs proteins because it is essential for the cell mass maintaining. Dietary fats are the source of fat-soluble vitamins A, E, K, D, essential fatty acids, lecithin. The fats are vital source of energy. The fats are part of cells and cell organelles, they are involved in the metabolic processes. Normal proportion of body fat is an important condition of a good health, performance capability, and well-being. Excess of dietary fat can be a threat of liver and pancreas illnesses, obesity, atherosclerotic vascular disease, cholelithiasis. Carbohydrates are the source of energy for all body cells. They form certain enzymes, hormones and other biologically important compounds when paired with proteins. Complex carbohydrates satisfy the appetite perfectly. Carbohydrate-rich foods are potatoes, whole grains, macaroni products from durum wheat, legumes. When the cell mass gets enough energy from the carbohydrates it helps maintain the basal metabolic rate and calorie intake by the body. Simple carbohydrates (sugars) are contained in sweets, juices, honey, fruits. You should eat them only as an addition to complex carbohydrates, in limited quantities.
Observed value: 45.0 *kg (Normal range: 47.1 - 68.1 kg)*

Proportion of cell mass (%) Too low or too high percentage of body cell mass leads to esurience. Low percentage of cell mass can point to malnutrition.
Observed value: 55.5 *% (Normal range: 50.0 - 56.0 %)*

Skeletal muscle mass (kg) It is the measure of body's adaptive reserve.
Observed value: 50.0 *kg (Normal range: 33.3 - 39.3 kg)*

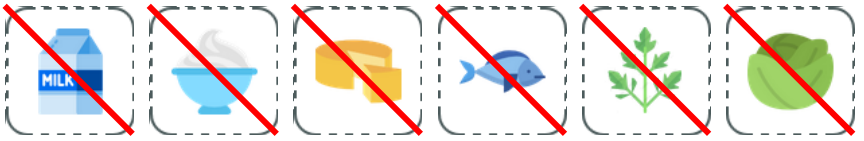
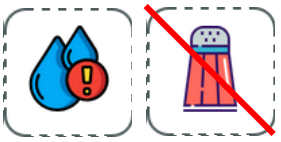
The total liquid (kg) Total body water includes intracellular and extracellular fluid.
Observed value: 62.8 *kg (Normal range: 56.0 - 62.7 kg)*

Extracellular fluid (kg) The part of the total body water. The fluid outside the cells (blood, lymph, spinal and synovial fluid).
Observed value: 31.4 *kg (Normal range: 15.0 - 23.0 kg)*

Intracellular fluid (kg) The part of the total body water. The fluid inside the human cells
Observed value: 31.4 kg (Normal range: 33.0 - 47.7 kg)

Basal metabolism (kcal/day) This is the amount of energy required to sustain the body's vital functions while resting in a neutrally temperate environment when the digestive system is inactive. It reflects how much energy the body spends for the constant activity of the heart, kidneys, liver, breathing muscles and some other organs and tissues. The heat energy released during metabolism is spent on maintenance of the constancy of body temperature.
Observed value: 2530.3 *kcal/day (Normal range: 2233.9 - 2857.9 kcal/day)*

Recommendations

Diagnosis	
Main risks	
Suggestion	The use of anabolic steroid hormones and drugs with similar effects is strictly prohibited.
Recommendations	 1. Refusal to use specialized sports nutrition (especially nutrition enriched with amino acids), refuse to use the proteins.  2. Reduction in the diet the amount of food fortified with calcium: dairy products (cottage cheese, milk, yogurt, hard cheeses); seafood (fish: canned sardines, salmon, mackerel); vegetables (basil, parsley, celery, white cabbage).  3. Normalization of the drinking regime. 4. A gradual decrease in the intensity of strength training while maintaining training in aerobic mode.
Additionally	It is necessary to evaluate the physical activity level, correct intensity of the weight loss program depending on the reduction of active cell mass.  Salt consumtion should be reduced to a minimum. It is necessary to avoid of adding more salt to ready-made foods and salt consumption in its pure state. Evaluation of the probability of developing heart diseases and urinary system pathology should be made. Higher metabolic rate against the background of the increasing physical activity.

Indices of heart rate variability

	Indicators of cardiac rhythm		Normal value	
HR	Heart Rate	88.4	60.0 - 85.0	bpm
mRR	Mean value of RR intervals	678	700 - 1000	ms
sdRR	Standart deviation	17.1	40.0 - 90.0	ms
RMSSD	The root mean square deviation of RR-intervals	18.4	30.0 - 65.0	ms
pNN50	The ratio of pairs of RR-intervals (>50 ms) to the number of all RR-intervals	0	2.0 - 30.0	%
VAR	The coefficient of variation	2.5	3 - 8	%
Mn	The minimum value of the length of the RR-interval	642	700 - 1000	ms
Mx	The maximum value of the length of the PR-interval	715	700 - 1000	ms
MxDMn	The Difference Mx-Mn	73	150 - 300	ms
Mo	Mode	670	700 - 900	ms
Amo	Amplitude mode	85	30 - 50	%
SI	Stress index	868.9	50.0 - 200.0	conv.un.
TP	Total power	913	2350 - 4550	ms2
ULF	Power in excess of low-frequency domain HRV spectrum		200 - 310	ms2
VLF	Very low frequency power for the domain of HRV spectrum	214	355 - 1175	ms2
LF	Low-frequency power in domain HRV spectrum	354	754 - 1586	ms2
HF	The power of a high frequency domain HRV spectrum	345	772 - 1178	ms2
LF/HF	The power ratio of the low - and high-frequency domains	1.0	0.5 - 2.0	conv.un.
VLFmx	The maximum power of the waves range VLF	10.1	-	ms2
LFmx	The maximum power of the waves range LF	12.4	-	ms2
HFmx	The maximum power of the waves range HF	3.5	-	ms2
VLFav	The average power of the waves range VLF	19.5	-	ms2
LFav	The average power of the waves range LF	10.7	-	ms2
HFav	The average power of the waves range HF	4.5	-	ms2
(LF/HF)av	The ratio of average values of low and high frequency component of HRV	2.4	-	conv.un.
VLFt	The dominant period component VLF	74.7	-	sec
LFt	The dominant period component LF	14.2	-	sec
HFt	The dominant period component HF	4.3	-	sec
VLF%	The relative value of the power of the waves range VLF	23	17 - 40	%
LF%	The relative value of the power of the waves range LF	39	24 - 43	%
HF%	The relative value of the power of the waves range HF	38	21 - 51	%
HFnu	The relative value of the power of the waves range HF in normalized units	49.4	40 - 59	n. u.
LFnu	The relative value of the power of the waves range LF in normalized units	50.6	41 - 60	n. u.
(LF/HF)nu	The ratio of LFnu to Hfnu	1.0	0.9 - 3.0	conv.un.
IC	The index of centralization	1.6	0.9 - 3.0	conv.un.
ISCA	The index activation of subcortical nerve centers	0.6	0.3 - 1.5	conv.un.
VB	The index of autonomic balance	1.0	0.6 - 2.0	conv.un.
IARS	The activity index of regulatory systems (IARS)	5	0 - 2	conv.un.
SPO2	Level of blood saturation	94	94 - 99	%

Conclusion:
Moderate tachycardia. Mild sinus arrhythmia. Moderate predominance of the sympathetic nervous system. A moderate weakening of the activity of subcortical nerve centers. State regulatory systems: expressed functional voltage. Moderate reduction potential. Moderate mobilizing potential. Low hormonal modulation of regulatory mechanisms. Adaptive capacity of the organism reduced (the tendency to fatigue and reduced disability).

Functional status

0	Optimal level of regulation	Normality
1	Normal level of regulation	
2	Moderate functional stress	
3	Expressed functional stress	Functional stress
4	Pronounced functional stress	
5	Overstrain of regulatory mechanisms	Overexertion
6	Pronounced overstrain of regulatory mechanisms	
7	Depletion of regulatory systems	Depletion of regulatory systems and stress-adaptation failure
8	Pronounced depletion of regulatory systems	
9	Failure mechanisms of regulation	

The normal adaptation level. The autonomic regulation is low. The normal energy supply of the body. The psycho-emotional state is good. Health status is normal.

Explanations corresponding to the calculated values

Mild tachycardia refers to a fast resting heart rate – between 90 and 120 beats per minute (the adult resting heart beats between 60 and 90 times per minute).

Short-term mild tachycardia may be considered as a norm in the following conditions:

- emotional excitement;
- intense physical exercise (also a short period of time thereafter);
- pregnancy.

The following conditions and illnesses are possible causes:

- overuse of coffee, green and black tea, alcohol;
- smoking;
- infection with fever (it is accepted that 1°C increase in temperature corresponds to 10 beats increase in the heart rate);
- nervous system dysregulation and mental illness (neurotic disorders, vegetovascular dysfunction);
- long-term ingestion or inadequate administration of some drugs (atropine, corticosteroids, diuretics, thyroid hormones, hypotensive drugs, etc.);
- blood loss and anemia (a low level of hemoglobin – the protein inside red blood cells that carries oxygen);
- cardiac disorders (heart failure, myocarditis, etc.);
- increase of thyroid function (hyperthyroid).

Cases when tachycardia can be dangerous:

Mild tachycardia is not a particular disease. It can be a prodrome (an early symptom indicating the onset of a disease) especially if it is a frequent and/or long-term condition. Besides, it can be a sign of the listed above diseases.

Mild sinus arrhythmia is not a particular disease, but sometimes it can be a sign of the nervous system dysregulation. A human heart normally has a regular rhythm at a rate of approximately 60-90 beats per minute at rest, but from time to time a healthy person can have a mild irregularity of the rhythm. Normal rhythm is also called a sinus rhythm, since the sinus node, situated in the right atrium, normally controls the heart rhythm by producing electrical impulses that initiate each heartbeat. Normally the time difference between heart beats should not exceed 10%.

Respiratory sinus arrhythmia is commonly found, when the heart rate increases during inspiration and decreases during expiration. It is caused by influence on the heart of so-called vagus nerve which activity increases during inspiration.

Mild sinus arrhythmia can be provoked by:

- pregnancy due changes of autonomic nervous system during that period (i. e. nervous regulation of internal organs, endocrine glands and vessels);
- consuming coffee, green and black tea, alcohol;
- smoking;

Cases when sinus arrhythmia can be dangerous:

As usual, mild sinus arrhythmia is not accompanied by any symptoms. It is not a dangerous condition, but it requires readjustment of the disturbed body balance.

Mild predominance of sympathetic nervous system means that balance is shifted to prevalence of excitation and energy expenditure. In this case stress hormone adrenaline is produced which makes body organs and systems work more active. It can be accompanied by slight increase in heart and breathing rate.

The possible causes:

- emotional excitement;
- intoxication or infection;
- chronic sleep deprivation;
- jet lag (the stress of frequently changing time zones);
- hormonal alterations (during puberty, pregnancy, climacteric phase);
- endocrine disorders (thyroid, adrenal and sex glands disorders);
- nervous system dysregulation (for example, vegetovascular dysfunction).

Cases when this condition can be dangerous:

- Too much energy expenditure leads to faster body wear-and-tear and different organs diseases. Usually, in the first place, functions of the most vulnerable organs are impaired - the ones weakened by infection or in cases when the liability to disease presents.
- This condition can lead to insomnia, neurotic and other mental disorders.
- The sympathetic nervous system induces vasoconstriction (narrowing of the blood vessels). Generalized vasoconstriction usually results in an increase in systemic blood pressure and therefore carries the risk of hypertension. Furthermore it can increase the possibility of stomach or duodenal ulcer.

Mild activity reduction of subcortical nervous centers may not threaten human health but, when combined with other adverse symptoms, it can point to the disease state or be a prodrome (an early symptom indicating the onset of a disease) of different diseases.
High nervous centers of brain cortex are responsible for the nervous regulation of the body in general as well as for the body interaction with the environment. The subcortical nervous centers provide the balance of the different body systems (cardiovascular, respiratory systems etc.). The signals from these centers to organs intensify or inhibit their activity. For example, decrease in activity of the cardiovascular center slows down the heart rate.

The following conditions and illnesses are possible causes:

- different chronic diseases;
- long-term stress;
- long-term intake of psychostimulants (alcohol, caffeine and others) exhausts nervous system and leads to decrease in excitability of subcortical centers.

Expressed functional stress is a result of high mental or physical activity, when the level of regulatory system stress is above the normal.

High functional stress with activation of cholinergic division of autonomic nervous system can occur during:

- problem solving, athletic training, exam preparation, etc.;
- infections and other diseases when the organism requires more resources to heal.

Cases when this condition can be dangerous:

This condition is characterized by decrease in functional reserves and can be related to prodrome (an early symptom indicating the onset of a disease). Higher load of regulatory systems can lead to the fast depletion of body resources and different organs diseases. Usually, in the first place, functions of the most vulnerable organs are impaired - the ones weakened by infection or in cases when the liability to disease presents.

Body adaptive capability is an ability of the organism to constantly adapt to the changes of internal and external environment. Decrease in adaptive capability leads to the low level of functional reserves which spent on balance maintenance. Severe body imbalance can lead to different diseases.

Moderate level of restoration potential means that the organism has average restoration ability. Usually it relates to the overstrain of regulatory systems, long-term diseases and average level of training.

Every person has so-called body functional reserves (reserve energy) which constantly spent on balance maintenance. In case of reduction of functional reserves, for various reasons, it is necessary to restore energy resources.

Low level of mobilizing potential reflects the average body ability of adequate reaction to the stress. In this case it is worth to wait and avoid of load increase.

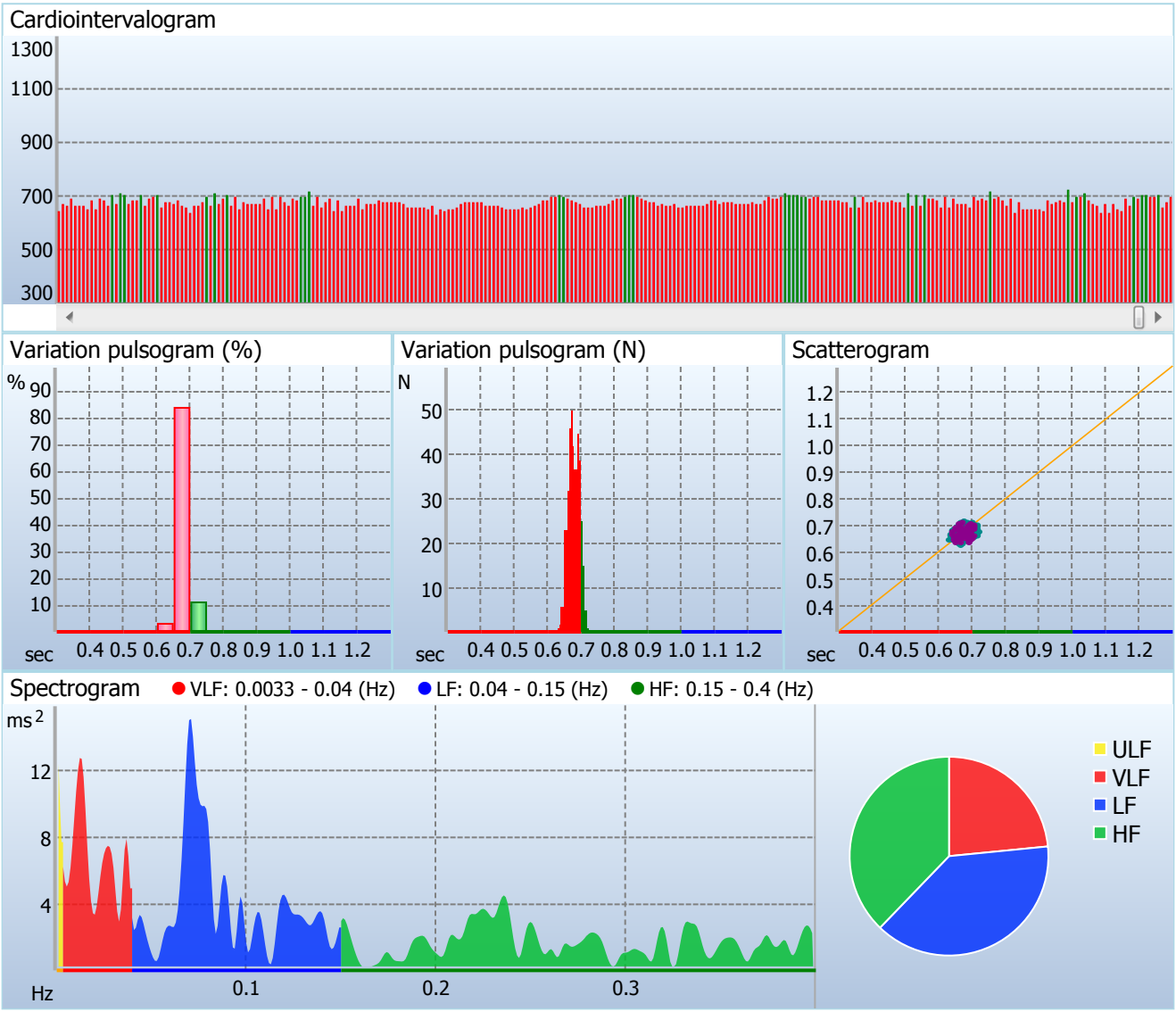
The organism constantly adapts to the changes of internal or external environment. When there is an additional load (stress) it is required to use (mobilize) so-called functional reserves, i. e. increase energy expenditure. The level of training plays the role in response to the stress reactions. The stress for the professional athlete can be a participation in a marathon, but for the patient with severe pulmonary disease it can be slow walking upstairs.

Low level of hormonal modulation of regulatory mechanisms points to the low involvement of hormones in the nervous regulation. Hormones are essential body resources so the low level of hormone involvement means that the nervous system works enough well. It relates to the high level of body adaptation.

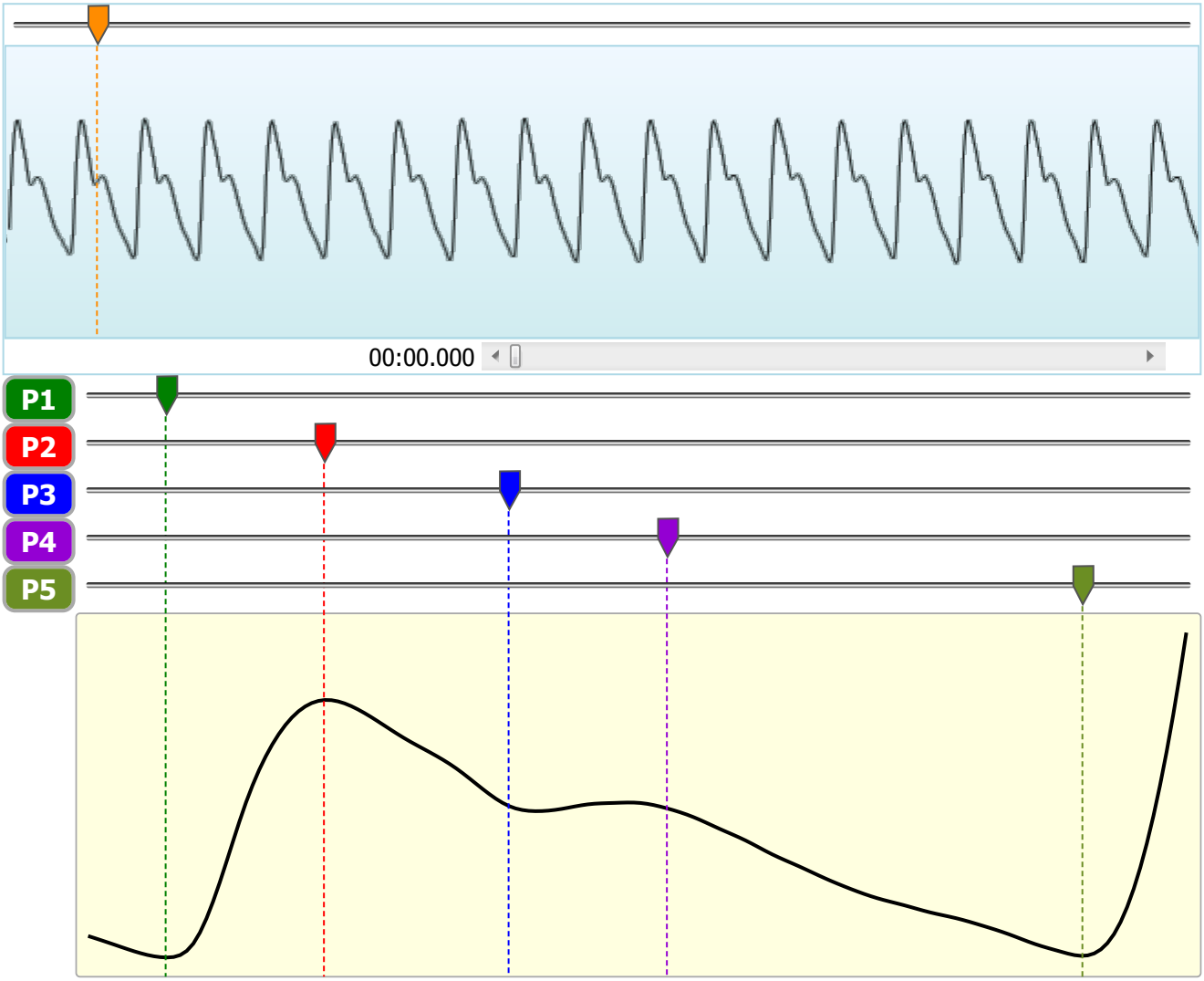
The organism adapts to the changes of internal or external environment by nervous system with the involvement of hormones produced by endocrine glands. For example, adrenal glands produce stress hormone adrenaline, thyroid produces thyroid hormones etc.

Low level of hormonal modulation of regulatory mechanisms relates to the good level of physical training and the adequate level of functional resources.

Graphical view of heart rate variability



Photoplethysmogram



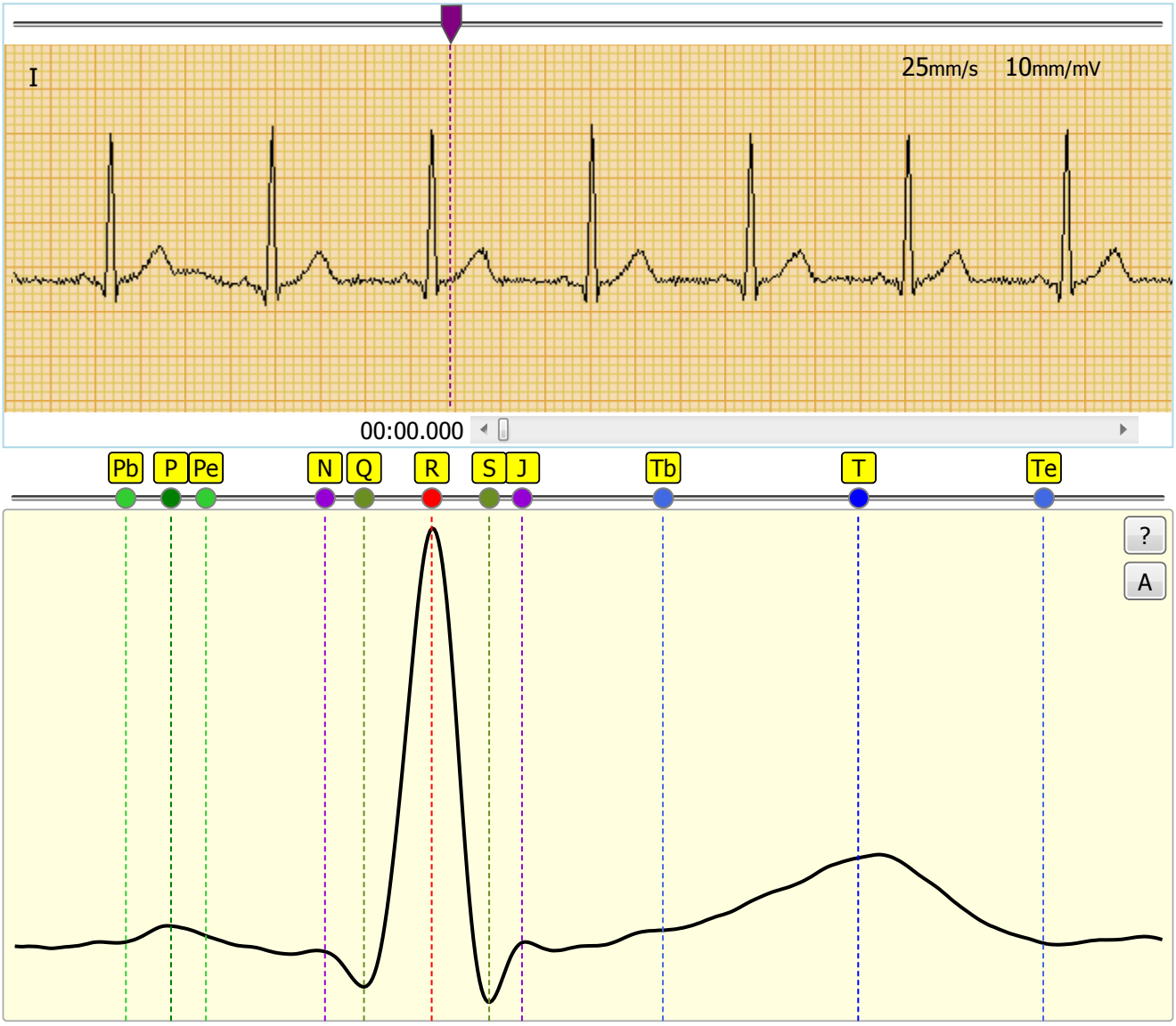
	Photoplethysmogram parameters		Normal value	
APW	Amplitude of Pulse Wave	0.99		conv.un.
ADW	Amplitude of Dicrotic Wave	0.57	0.49	conv.un.
HI	Height of Incisura	0.58	0.66	conv.un.
IDW	Index of Dicrotic Wave	● 58	60 - 75	%
DAP	Duration of Anacrotic Phase of pulse wave	260		ms
DDP	Duration of Dicrotic Phase of Pulse Wave	435		ms
DPW	Duration of Pulse Wave	● 695	700 - 1000	ms
IAW	Index of Anacrotic Wave	17	15 - 30	%
DF	Duration of Filling	120	60 - 200	ms
DS	Duration of the systolic phase of cardiac cycle	380	350 - 550	ms
DD	Duration of the diastolic phase of cardiac cycle	● 315	400 - 600	ms
DBW	Duration of Backward Wave	260	200 - 400	ms
IS	Index of Stiffness	7.3	5 - 9	1/s
IBW	Index of Backward Wave	57	40 - 70	%
HR	Heart Rate	● 86	60.0 - 85.0	bpm

Conclusion:

Index of Stiffness. It reflects the stiffness of arterial wall to the pulse volume. Standard values averaged about 5 - 9
Observed value: ***7.3 1/s***

Index of Backward Wave. It corresponds to the value of backward wave. It mainly reflects the tone of arterioles and minute vessels, indirectly indicates presence of atherosclerotic lesions (increase of atherosclerotic lesions). Standard values vary 40 - 70%.
Observed value: **57.0 %**

ECG contour analysis



Electrocardiogram parameters		Normal value	
Pulse rate	84	60.0 - 85.0	bpm
Mean duration of RR interval	712	700 - 1000	ms
Minimum duration of RR interval	● 682	700 - 1000	ms
Maximum duration of RR interval	745	700 - 1000	ms
Electrical axis of the heart	24	0 - 90	deg
Wave P duration	39	< 110	ms
Wave P amplitude	0.05	< 0.2	mV
Duration of PQ interval	97	< 210	ms
Macruz index	● 0.7	1.1 - 1.6	conv.un.
Wave Q duration	29	< 40	ms
Wave Q amplitude	0.14	< 0.38	mV
Duration of QRS complex	95	60 - 100	ms
Wave R amplitude	● 1.65	0.5 - 1.5	mV
Wave S amplitude	0.23	< 0.5	mV
Deviation of the beginning of ST segment (J)	0.03	-0.05 - 0.1	mV
Duration of ST segment	68	-	ms
Deviation of ST segment (J+60)	0.05	-	mV

Wave T duration	185	-	ms
Wave T amplitude	0.31	-	mV
Duration of QT interval	349	< 355	ms
Corrected value of QT interval	0.41	< 0.42	conv.un.

Conclusion:

Sinus rhythm, regular. Horizontal heart axis.

Sinus rhythm is a normal rhythm.
The horizontal position of the electrical axis of the heart can point to hypersthenic body type.

Macruz index. Ratio of wave P duration to segment PQ duration is called Macruz Index. Normal value of Macruz Index is 1,1-1,6. This index is used in diagnosis of atrial hypertrophy.
Observed value: 0.7 *conv.un.*

Wave R amplitude. R wave (the main wave on the ECG) represents a ventricular activation. R wave amplitude in standard and unipolar limb leads depends on the position of the electric axis of the heart.
Observed value: 1.7 *mV*

Risk analysis