ES TECK SYSTEM

- GENERAL INFORMATION'S

ES Teck Measurements
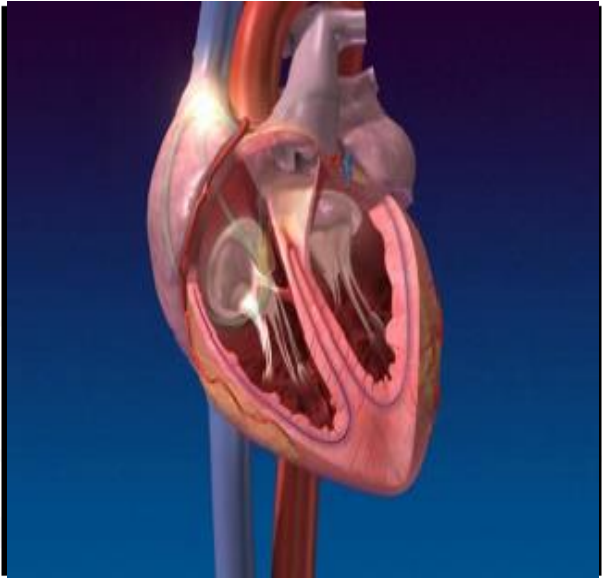
Autonomic Nervous System and Heart rate variability
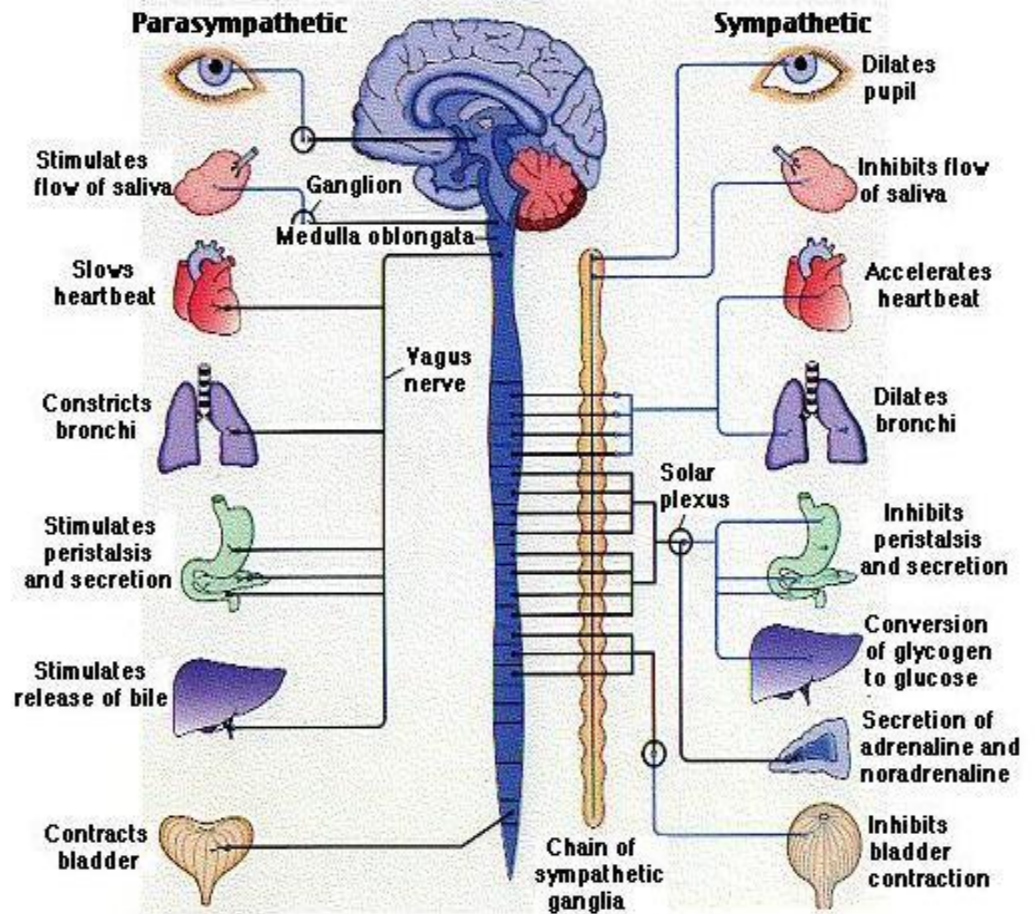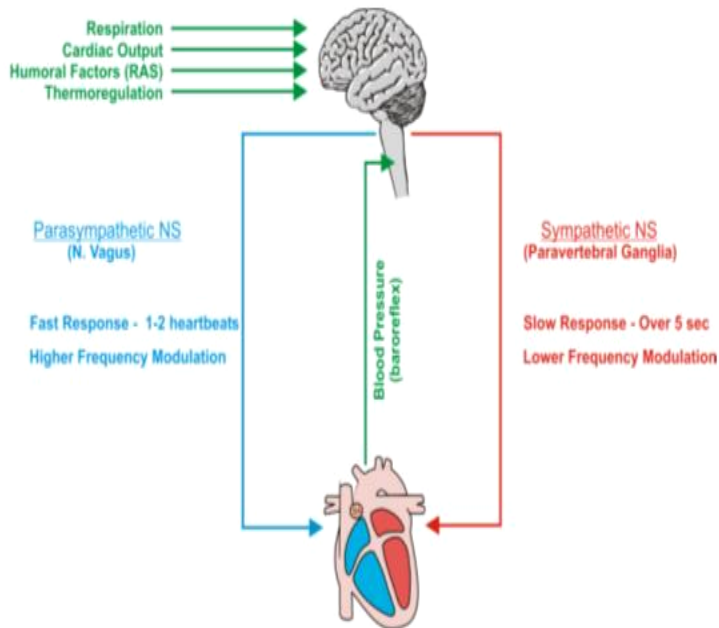
SpO2 AND Photoelectrical Plethysmography

LEDs

finger

Photodiode

SpO2 Probe

Infra red/ Red

660/905 nm

RBC

HbO₂

Photo diode

SpO2 %

PR

Vascular waves
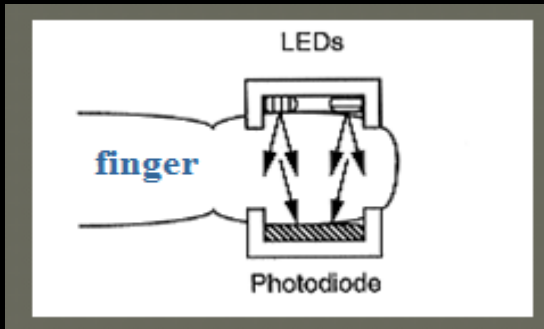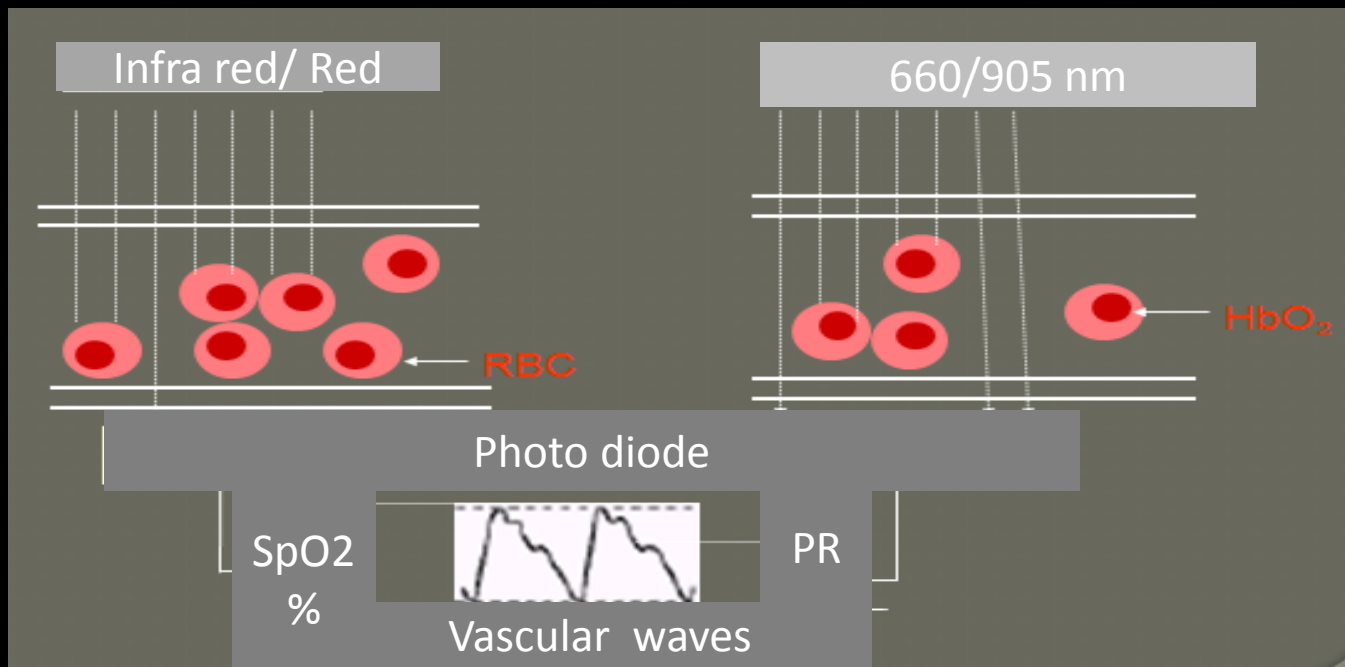
SpO2 ANALYSIS

Oxygen - hemoglobin Affinity Changes.

The functions of hemoglobin are oxygen pickup and delivery. The hemoglobin has an affinity (the strength of bond between oxygen and hemoglobin) that can be increased or decreased due to various situations. If hemoglobin has an increased affinity, it is highly saturated; but oxygen is less available for release to the tissues due to the strong bond. The reverse is also true.
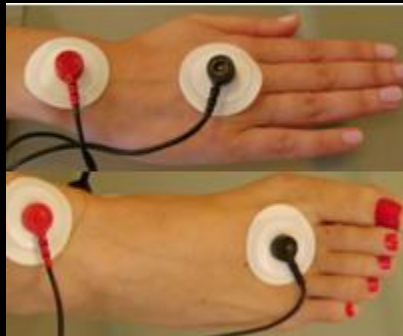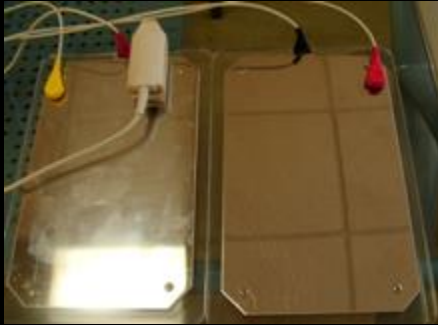
97% saturation = 97 PaO2 (normal)

90% saturation = 60 PaO2 (danger)

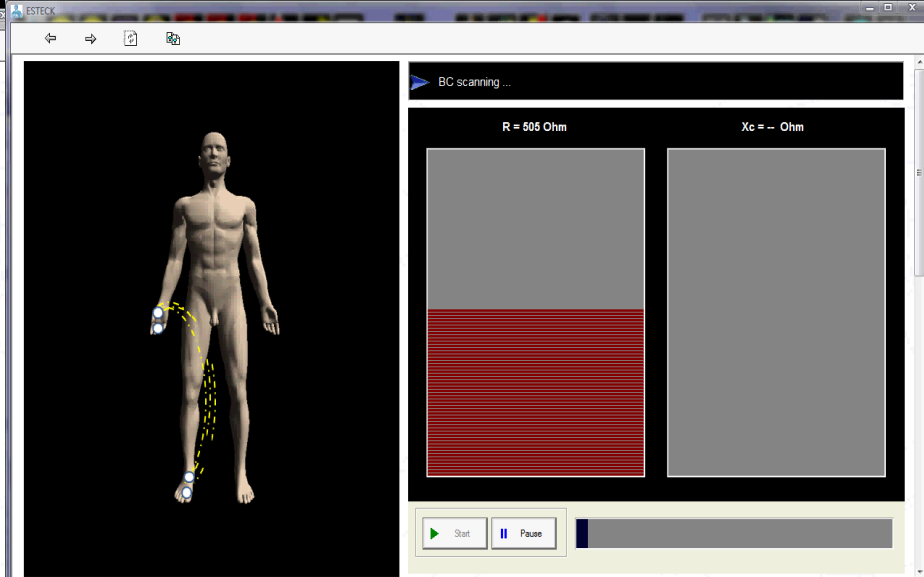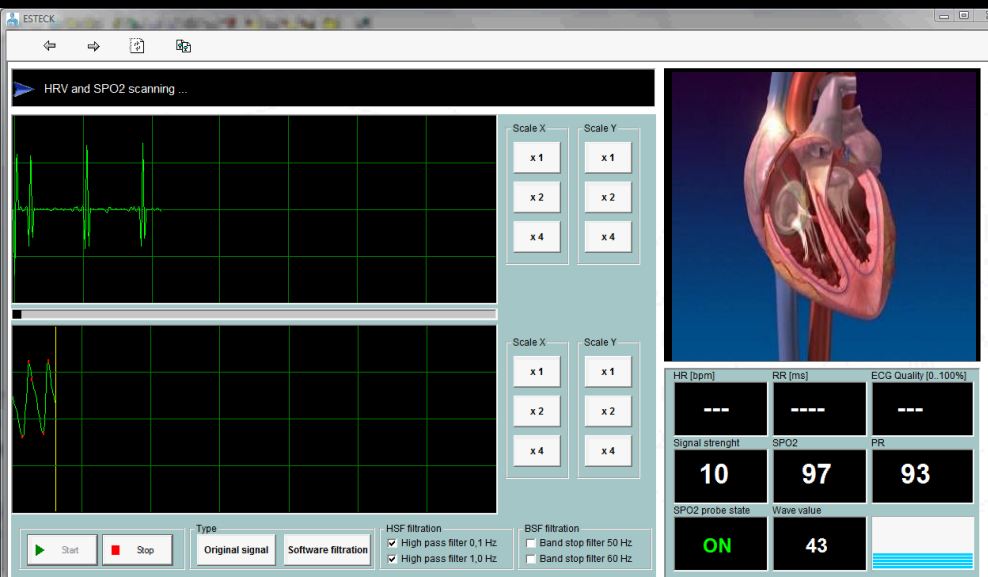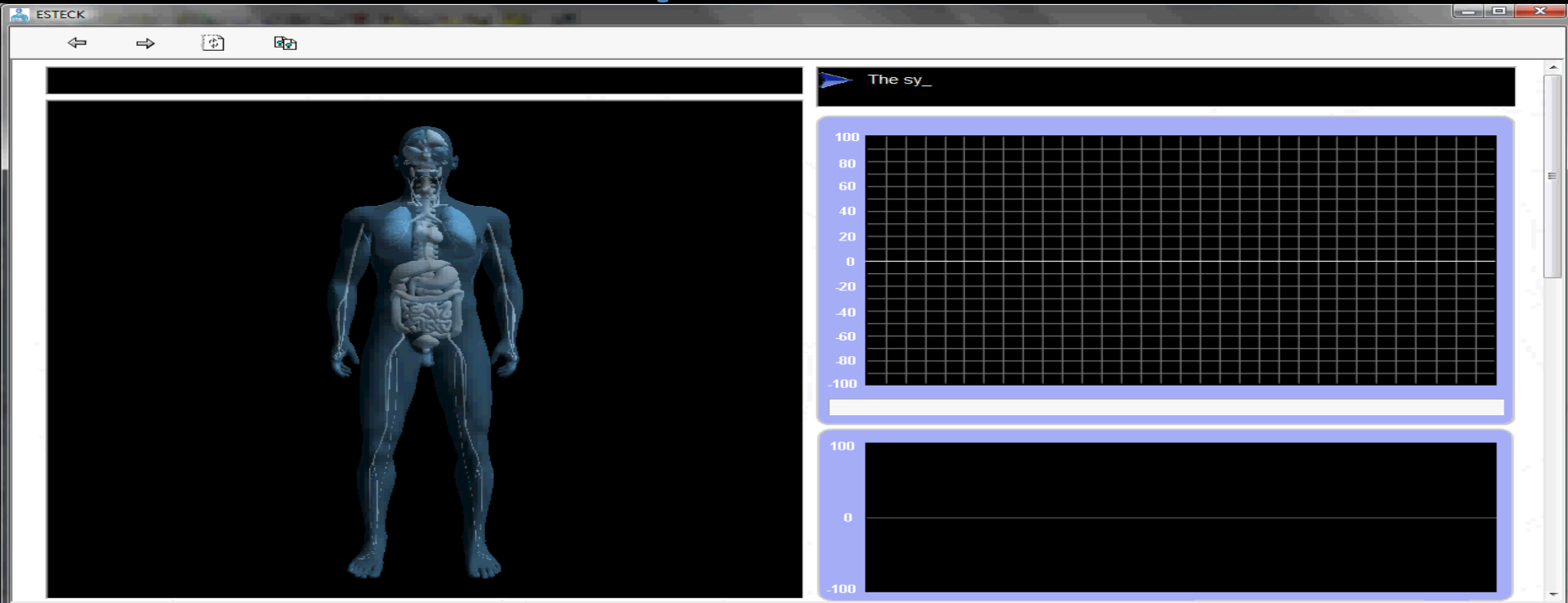80% saturation = 45 PaO2 (severe hypoxia)

E.S TECK COMPLEX

- GENERAL INFORMATION'S

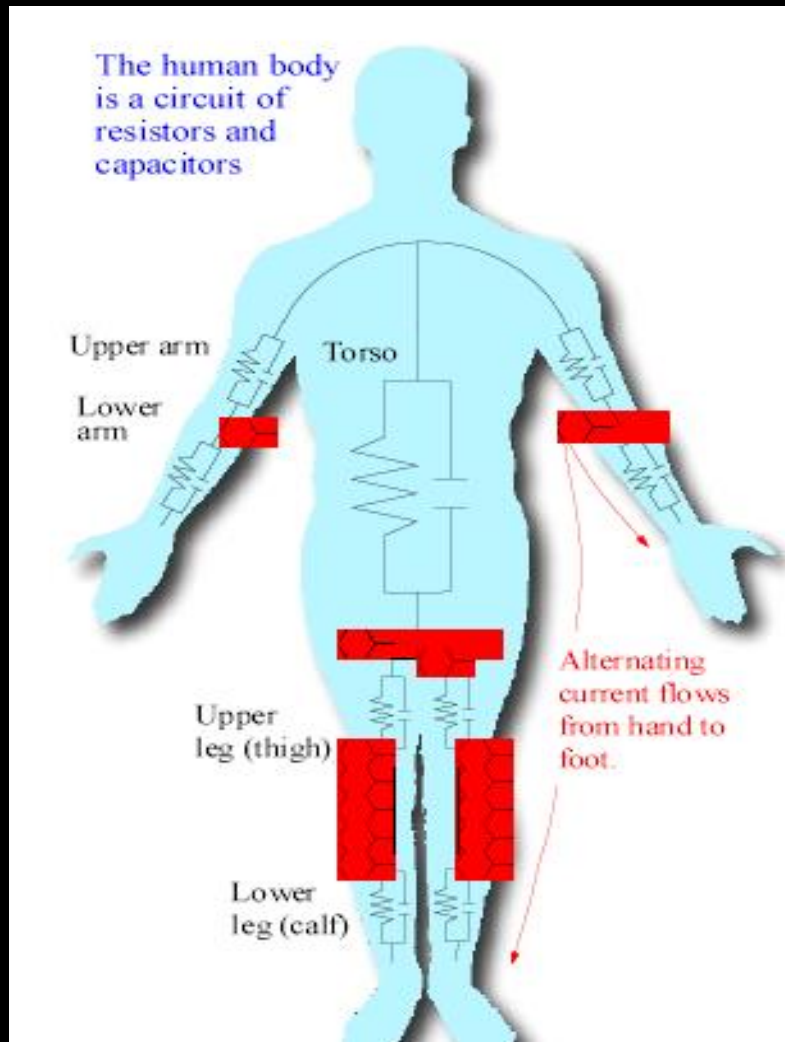# ES TECK COMPLEX THE NATURAL EIS UPDATE

ES Teck Complex Measurements

E.S TECK COMPLEX INTENDED USES

- **HRV module:** To analyze the basic rhythms of the NN or RR intervals in electrocardiograms, both in the time domain and in the frequency domain (short time 5 minutes)
- It only provides numerical analyses of the input electrocardiogram.
  - **Estimate of the parasympathetic and sympathetic system stimulation.**
- **PP module**: Analyze the pulse waveform by photoelectric plethysmography and Pulse rate.
  - **Evaluation of Large and small artery**
- **EIS module**:
  - **Monitoring of diseases, functional and lifestyle ' treatments**
    - **Adjunct to conventional diagnosis of ADHD children**
- **BIA module** :
- **Calculation and Historical Tracking of body composition**

Body Impedance Analysis (BIA)

The human body is a circuit of resistors and capacitors

Upper arm
Torso
Lower arm

Alternating current flows from hand to foot.

Upper leg (thigh)

Lower leg (calf)

Measurement of the Resistance and Reactance in Tetra polar mode with a frequency of 50 KHz

Resistance and Reactance measurements

- Resistance is a measure of how difficult it is for electricity to flow through an object.

- Reactance

Most objects have some capacitance, which is a measure of ability to store an electrical charge. The more capacitance the object has, or the faster the current changes direction, the less the object will "react" to the current.

EIS B I A

Peer reviews formula

- Total Body Water :TWB

5-19 y.o Davies et al 1988

20-80 y.o Lukaski and Bolonchuk 1988

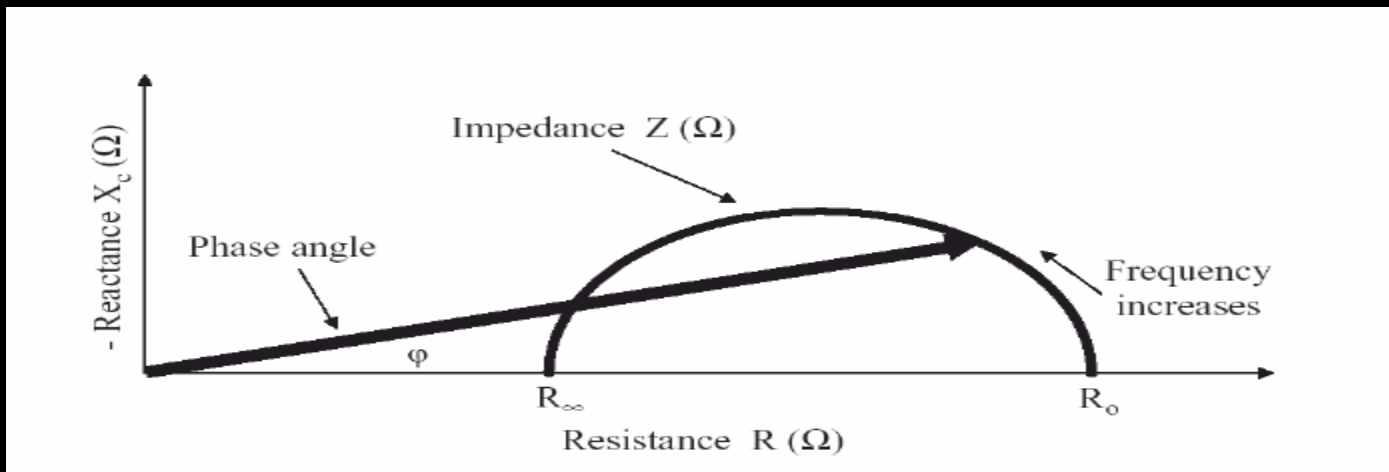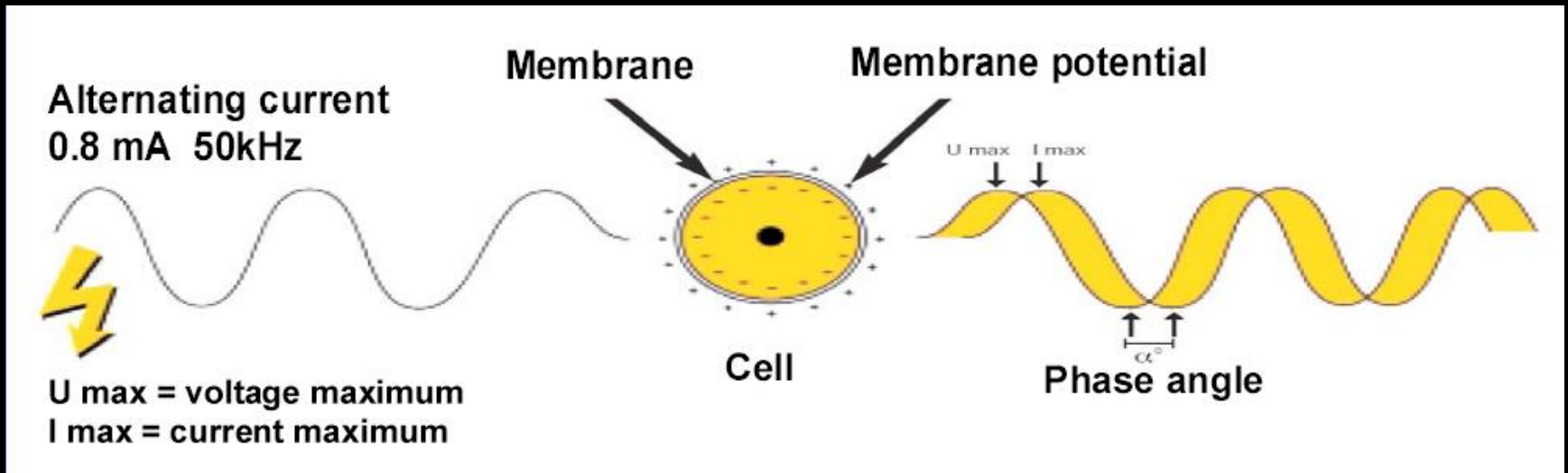Adult obese subjects: Segal et al 1988

- Fat free fat mass:

7-15 y.o Deurenberg et al 1991

16-83 y.o Deurenberg et al 1991

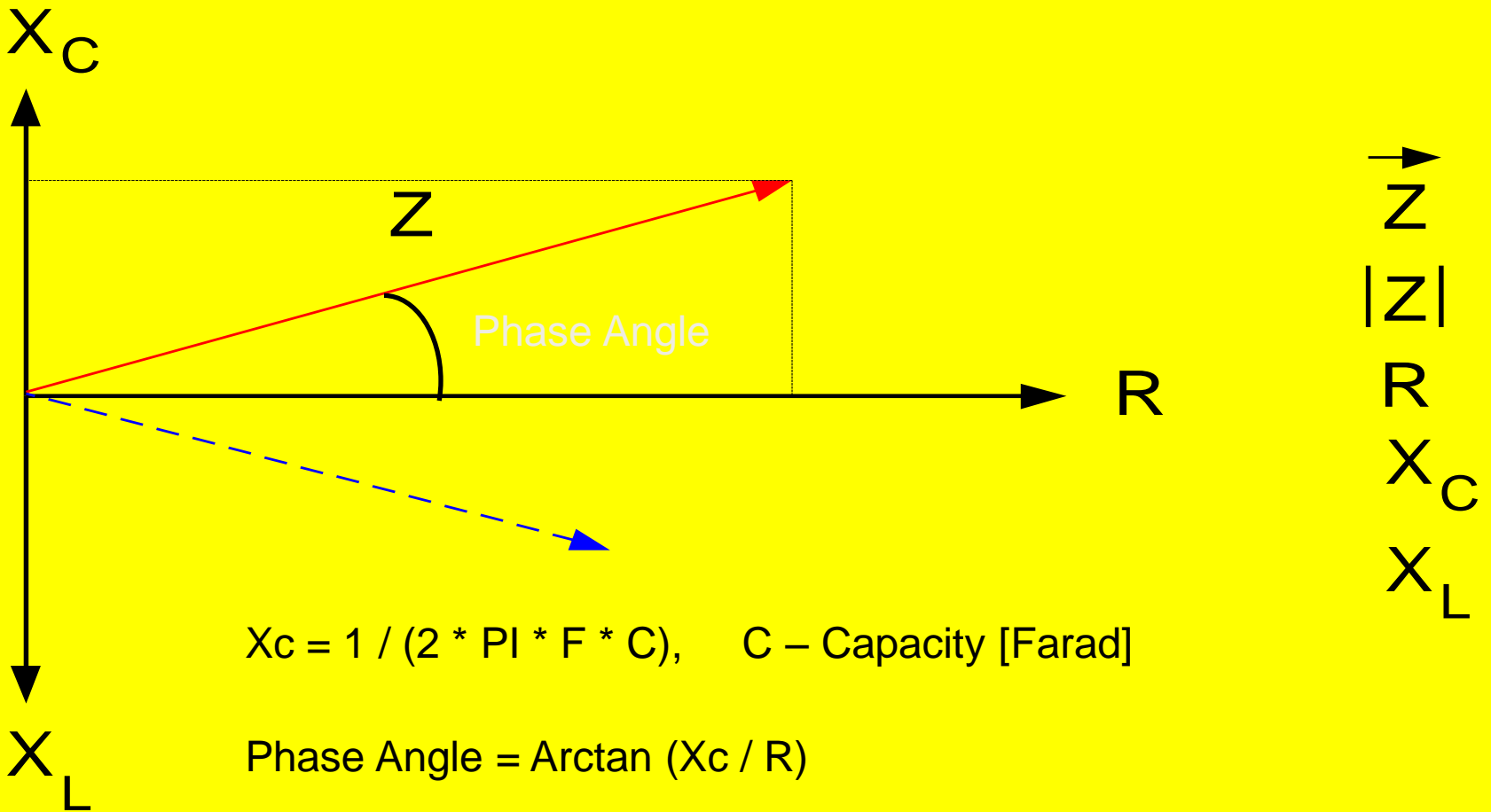- Extra cellular water volume : EWC
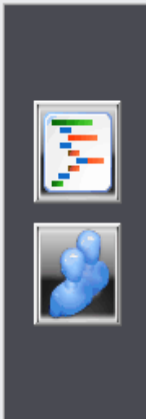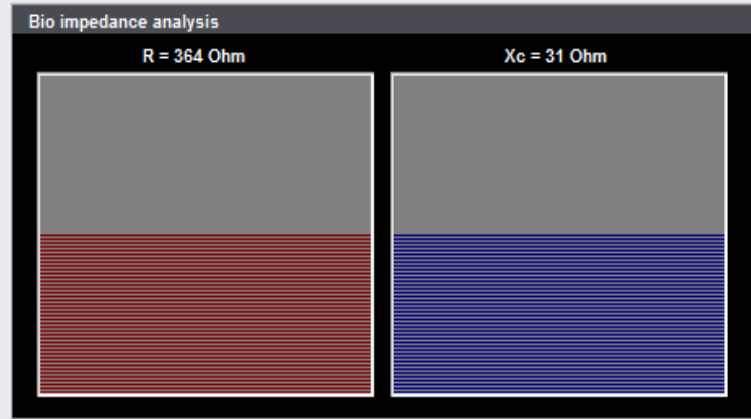
Sergi G, et al 1994

Phase Angle

Alternating current
0.8 mA 50kHz

Membrane

Membrane potential

U max   I max

U max = voltage maximum
I max = current maximum

Cell

α°

Phase angle

- Reactance X_c (Ω)

Impedance Z (Ω)

Phase angle

Frequency increases

φ

R_∞

R_o

Resistance R (Ω)

Impedance Components

$$Z = \sqrt{R^2 + X^2}$$

X_C

Z

Phase Angle

R

$\vec{Z}$

$|Z|$

R

X_C

X_L

X_L

Xc = 1 / (2 * PI * F * C),   C – Capacity [Farad]

Phase Angle = Arctan (Xc / R)
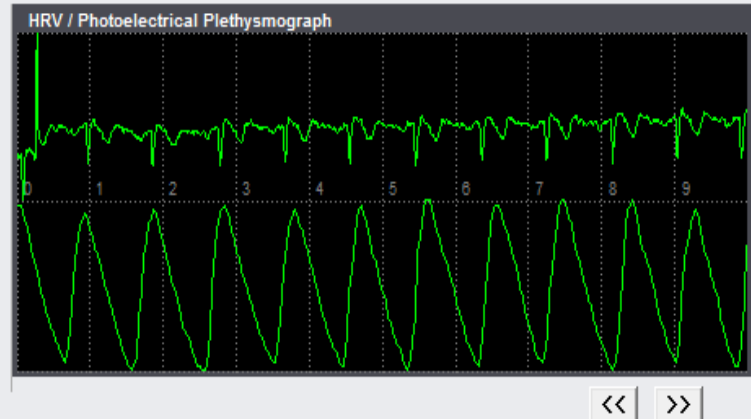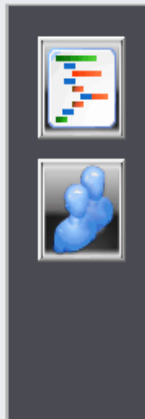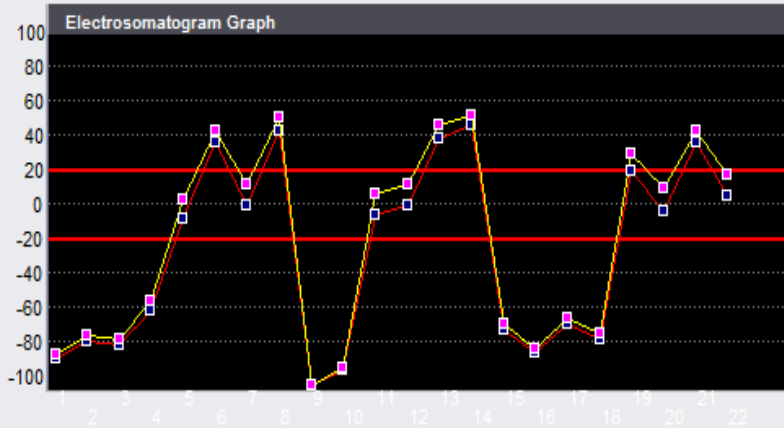
E.S TECK RESULTS

Age: 71
Gender: Male
Measurements: 1A1 (61) / 3.9.2008 13 : 38 , 1N1 (55) / 3.9.2008 13 : 34

Mitochondrial activity: Value Norm
Symptoms and treatments : Angiotensin conversion enzyme inhibitors (CEI) ; Beta-blocker ; Platelet anti-aggregants ;
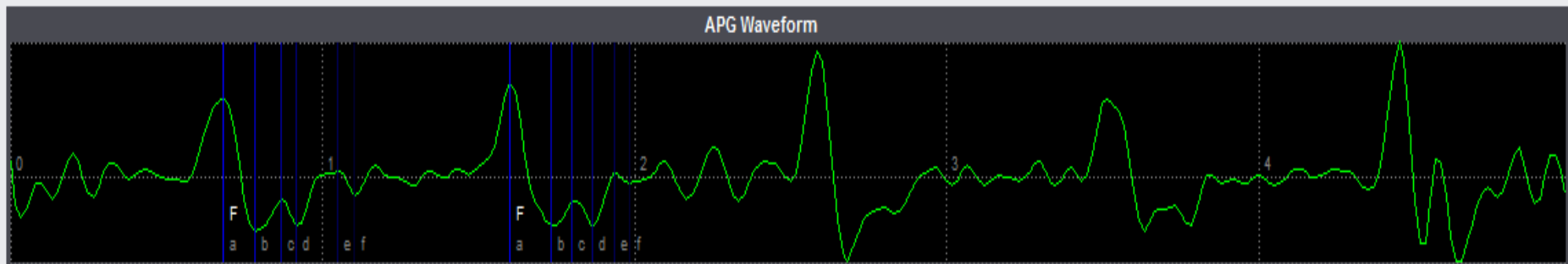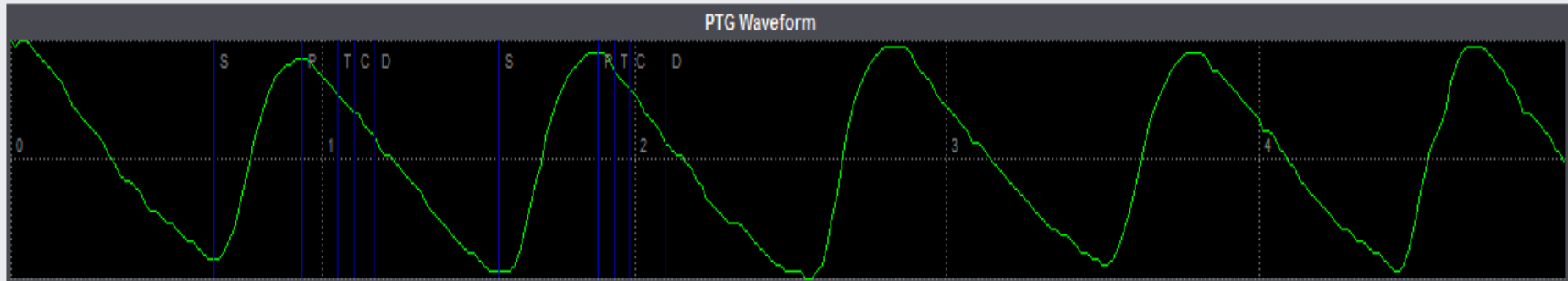Thyroid hormones ; IRS (Fluvoxamine) ;

Electrosomatogram Graph

HRV / Photoelectrical Plethysmograph

Modeling and body systems indicators

Bio impedance analysis

R = 364 Ohm   Xc = 31 Ohm
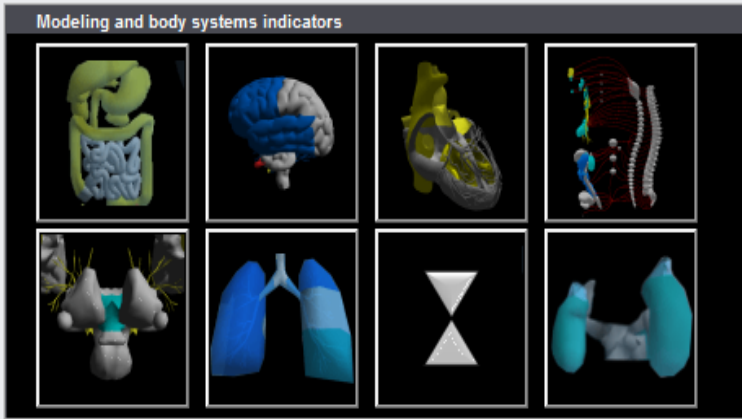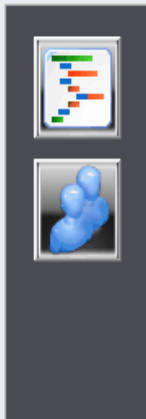
Statistical Cross Analysis

SpO2 RESULTS AND MANAGEMENT OF THE PHOTOELECTRICAL WAVE

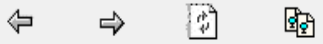| Patient:	1g07
Age:	71
Gender:	Male
Measurements :	1A1 (61) / 3.9.2008 13 : 38 , 1N1 (55) / 3.9.2008 13 : 34

BMI: 29.76 , % Fat mass : 31.3, % Total body water : 51.3
Mitochondrial activity: Value Norm
Symptoms and treatments : Angiotensin conversion enzyme inhibitors (CEI) ; Beta-blocker ; Platelet anti-aggregants ;
Thyroid hormones ; IRS (Fluvoxamine) ;

Indicators	Under	Normal	Over	Values	Norms	Units	Comments	Follow Up
SpO2 Measurement								
SpO2				97.0	94.0 - 96.0	%		
PR (Pulse Rate)				69	68 - 79	bpm		
Signal Strength				10	8 - 12	mm		
Wave Value				76	65 - 95	mm		

PTG Waveform

APG Waveform

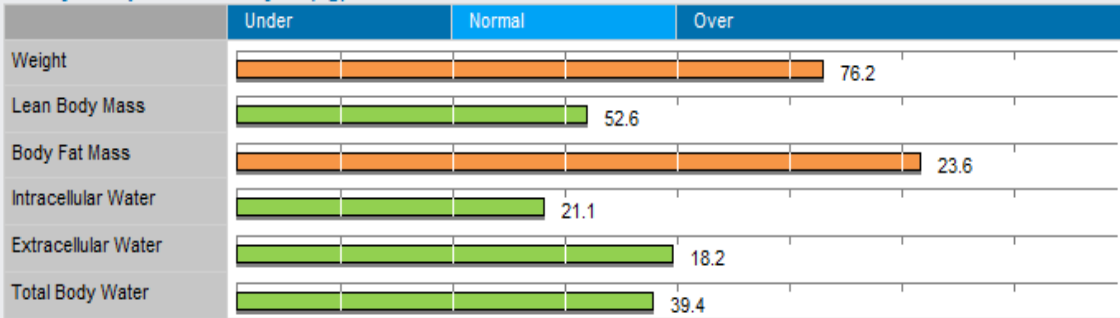# BODY COMPOSITION RESULTS

Body Composition follow up
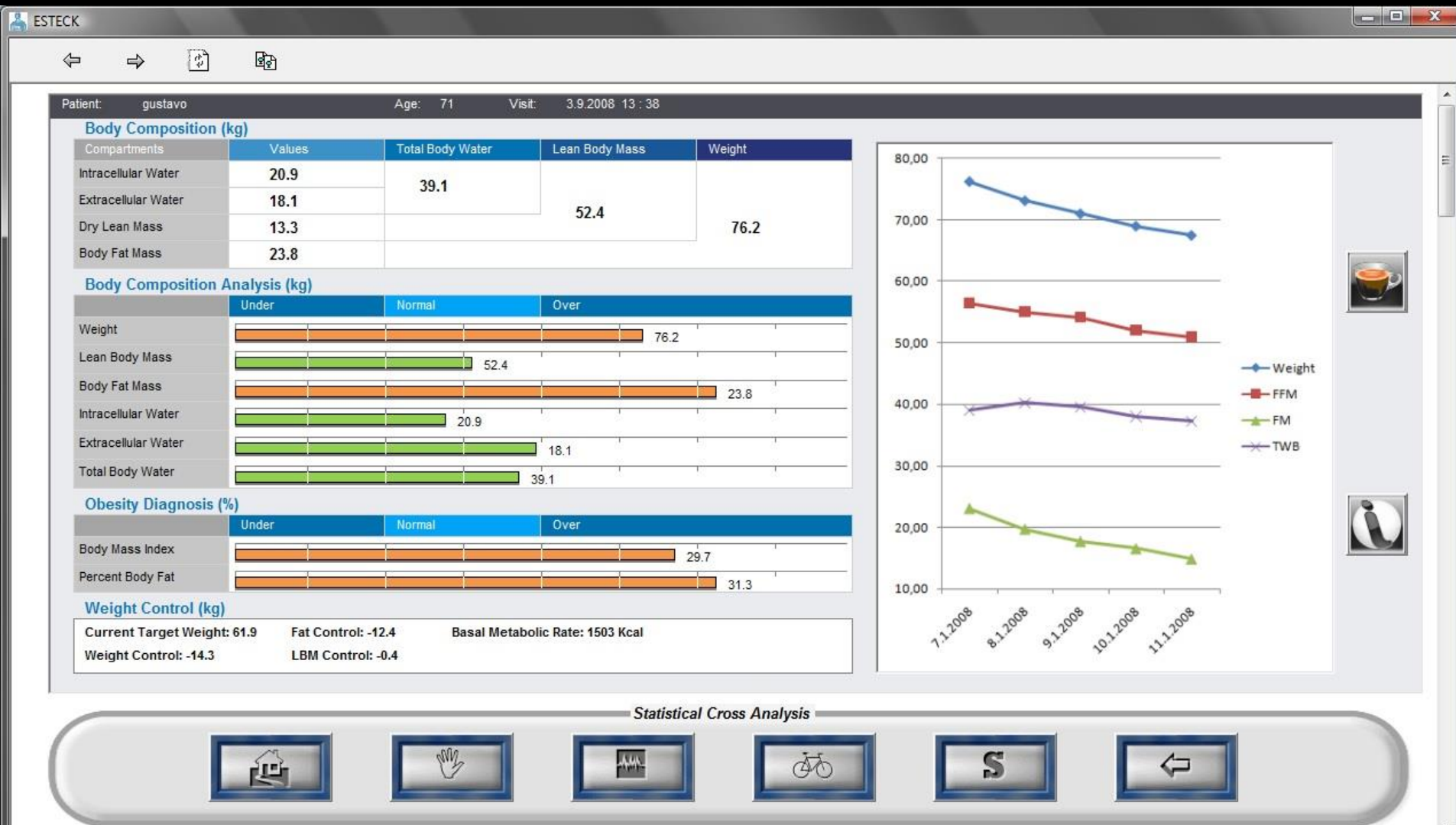
DIGESTIVE SYSTEM INDICATORS
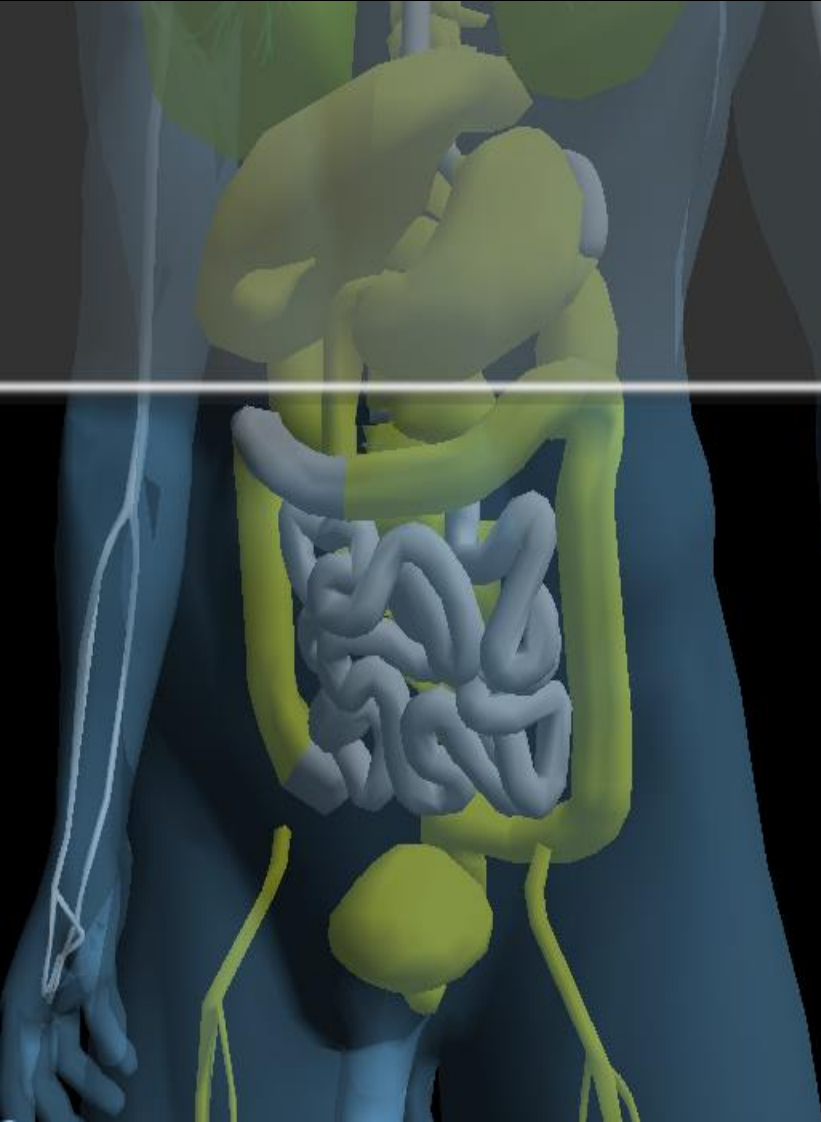
Body System Analysis

Digestive system analysis

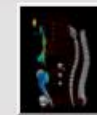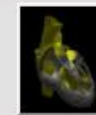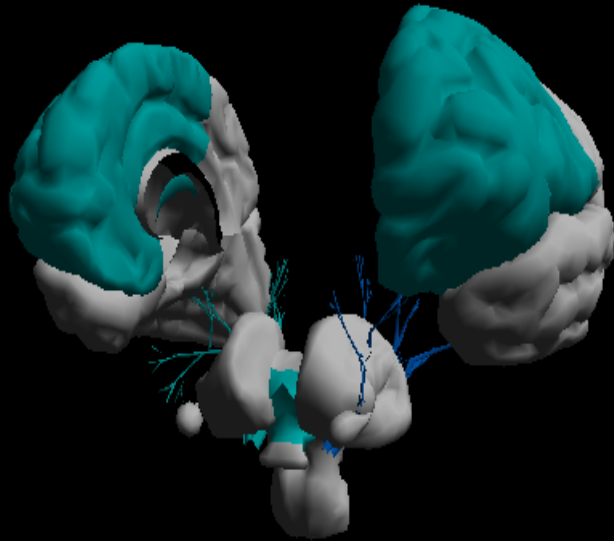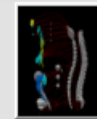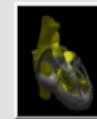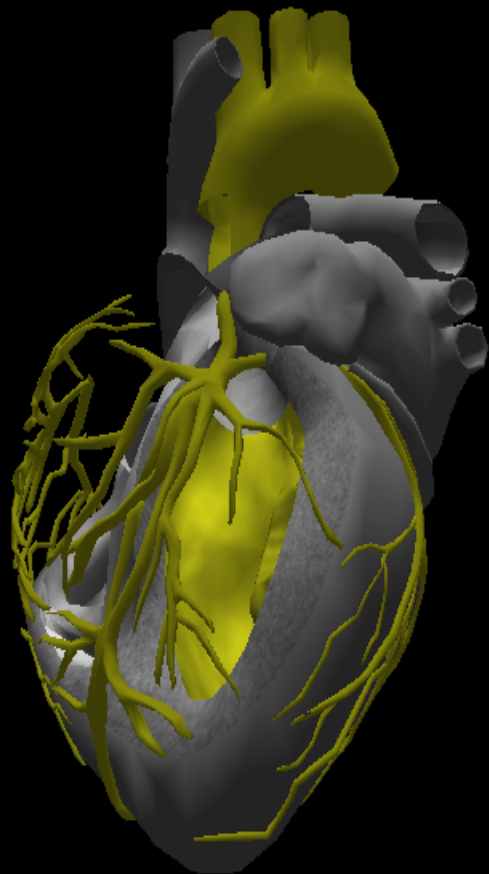| Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Descending Large intestine conductivity				30.12	7.69 - 17.24	10-6 S.m-1
Ascending large intestine conductivity				28.74	7.69 - 17.24	10-6 S.m-1
Stomach and duodenum conductivity				18.87	7.69 - 17.24	10-6 S.m-1
Liver and gallbladder conductivity				17.24	7.69 - 17.24	10-6 S.m-1
Pancreas conductivity				18.02	7.69 - 17.24	10-6 S.m-1
HRV Indicators						
Gall bladder : Biliary ducts				0.46	0.50 - 2.00	I.U
Intestine : Peristalsis and tonus				0.46	0.50 - 2.00	I.U
Intestine : Sphincter (rectum)				0.46	0.50 - 2.00	I.U
Stomach : Gastric and pancreatic secretions				0.46	0.50 - 2.00	I.U
Stomach : Digestion				0.46	0.50 - 2.00	I.U
Stomach : Sphincter (duodenum)				0.46	0.50 - 2.00	I.U
Liver : Glycolysis				0.46	0.50 - 2.00	I.U

BRAIN INDICATORS

Body System Analysis

Brain system analysis

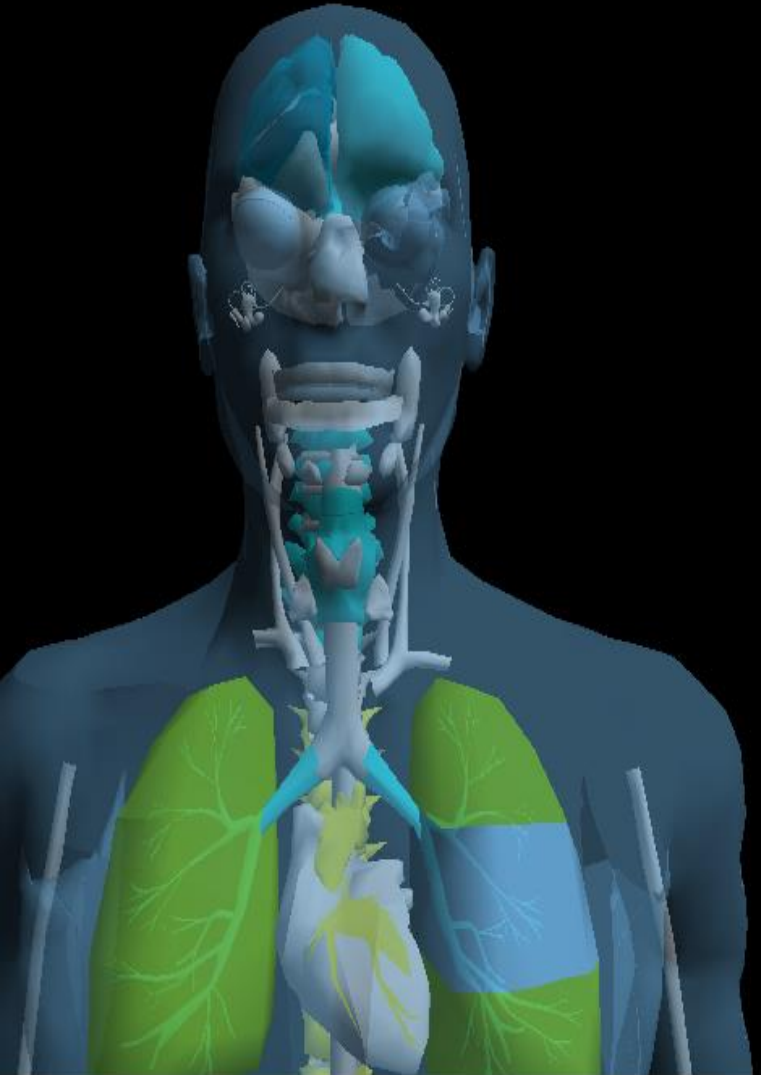| Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Neuronal excitability				5.400	2.000 - 5.000	ms
Cerebral Oxygen level				76	82 - 86	mm Hg
Interstitial cerebral pH				7.25	7.31 - 7.35	I.U
EIS Interstitial Cerebral Neurotransmitters						
Interstitial cerebral Serotonin				2.51	3.66 - 7.14	µA
Interstitial cerebral Dopamine				2.11	3.66 - 7.14	µA
Interstitial cerebral Catecholamine				2.28	4.76 - 11.90	10-6 S.m-
HRV Indicators						
Psycho emotional tension				30	25 - 50	%
Acetylcholine				47	22 - 34	%

CARDIOVASCULAR INDICATORS

Body System Analysis

Cardiovascular analysis

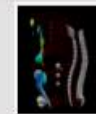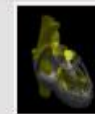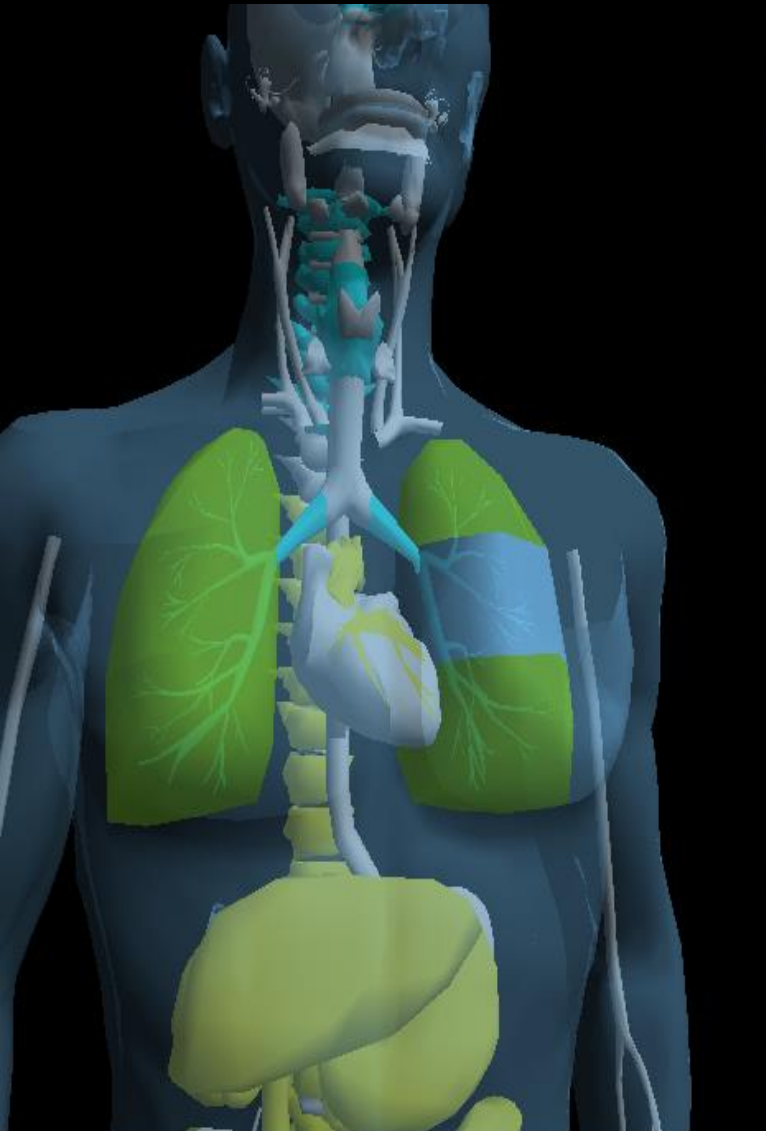| Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Blood flow				33.10	10.21 - 23.20	µA
Triglycerides				2.31-5.64	1.7 - 2.3	mmol/l
LDL Cholesterol				3.3.-4.1	< 2.6 - 3.3	mmol/l
C Reactive Protein				1 - 3	< 1	mg/L
HRV Indicators						
HR Heart Rate				69	68 - 84	bpm
SI Stress Index				631.87	50.00 - 200.00	IU
VLF Very Low Frequency				30.70	25.00 - 50.00	%
LF Low Frequency Baroreceptor reflex activity				21.86	22.00 - 46.00	%
HF High Frequency Parasympathetic system				47.71	22.00 - 34.00	%
MxDMn Ratio				80.00	150.00 - 300.00	ms
PP Indicators						
EEI (Ejection Elastic Index)				0.25	0.40 - 0.80	I.U
DDI (Dicrotic Dilation Index)				0.10	0.20 - 0.40	I.U
DEI (Dicrotic Elastic Index)				0.15	0.10 - 0.30	I.U
BIA Indicators						
Fat mass				21.3	10.0 - 20.0	%

HORMONAL INDICATORS

Body System Analysis

Hormonal system analysis

Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Interstitial TSH				0.3 - 2	0 - 3	mIU /L
interstitial DHEA				10.21	10.21 - 23.20	µA
Interstitial PTH				15.80	10.21 - 23.20	µA
Interstitial Testosterone				8 - 15	8 - 38	pmol/L
HRV Indicators						
Adrenomedullary hormone production				21	22 - 46	%
interstitial Cortisol				160	110 - 390	nmol/L
interstitial ACTH				12.0	3.0 - 15.0	nmol/L
Leptin				12.0	10.0 - 15.0	ng/ml
BIA Indicators						
interstitial ADH				15.80	10.21 - 23.20	µA
Interstitial aldosterone				15.20	10.21 - 23.20	µA

RESPIRATORY SYSTEM INDICATORS

Body System Analysis

Respiratory system analysis

Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Bronchi Conductivity				7.14	7.69 - 17.24	10-6 S.m-1
Lung conductivity				18.87	7.69 - 17.24	10-6 S.m-1
SpO2 Indicators						
SpO2				97.00	94.50 - 96.50	%
PaCO2				30.00	35.00 - 45.00	mmHg
HRV Indicators						
Respiratory rate				13.20	12.00 - 20.00	breaths per r

GENERAL METABOLIC INDICATORS

Body System Analysis

General metabolic functions analysis

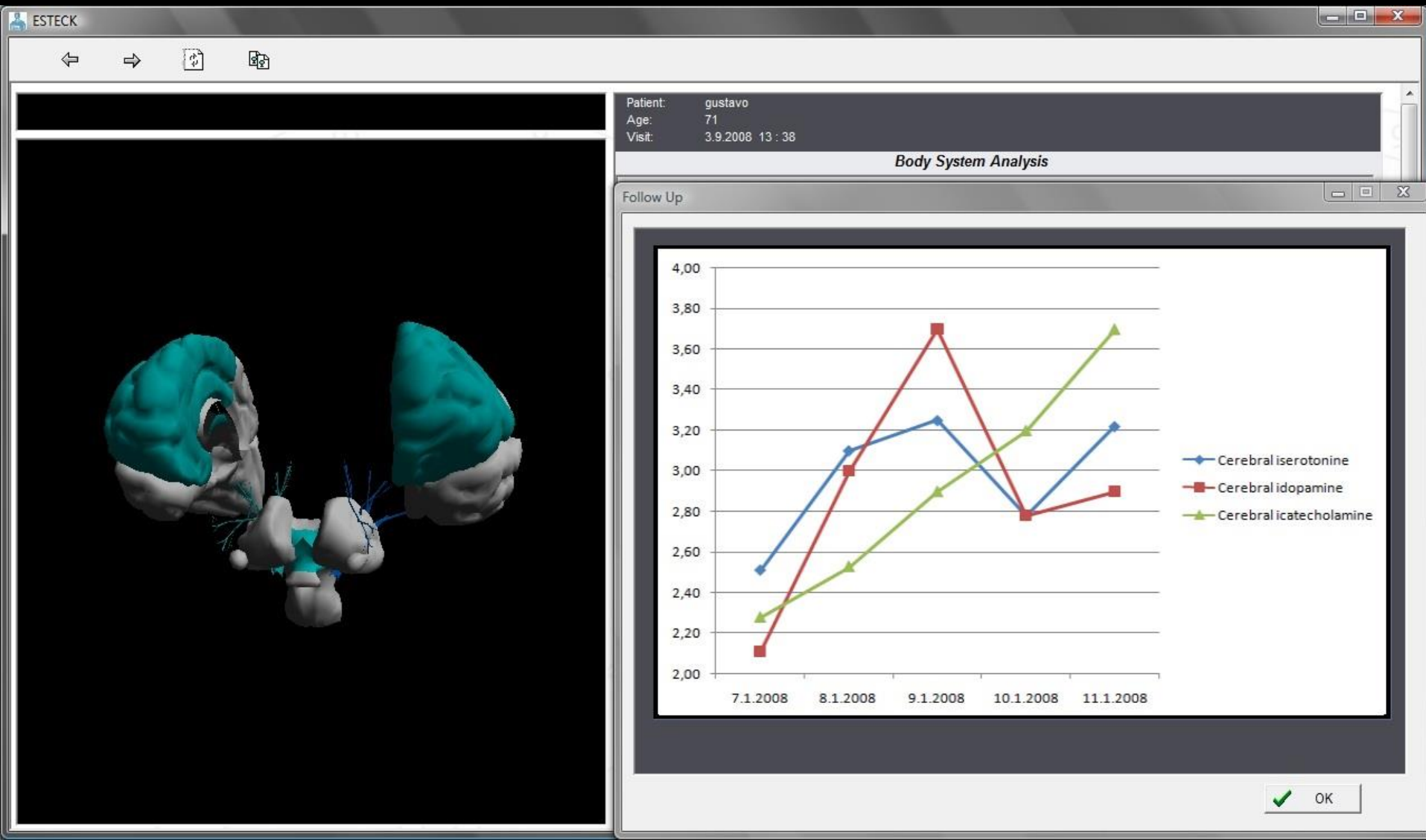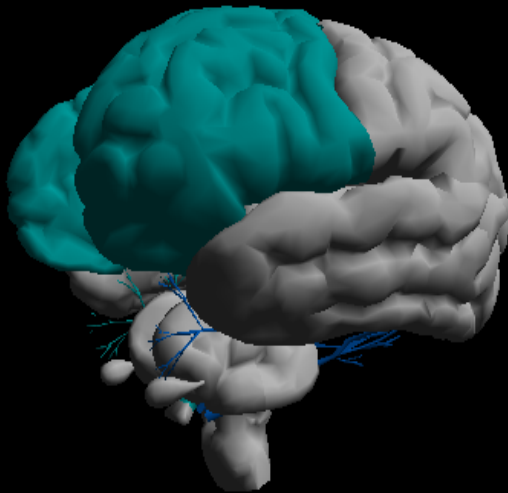| Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Ionograms						
interstitial Na+				133.0	121.6 - 129.0	mmol/L
interstitial K+				2.90	3.00 - 3.40	mmol/L
interstitial Cl-				106.0	107.5 - 115.0	mmol/L
intertitial Ph				1.35	1.60 - 2.70	mmol/L
interstitial Ca++				1.42	1.45 - 1.63	mmol/L
interstitial Mg				0.65	0.40 - 0.56	mmol/L
interstitial H+				37.26	42.60 - 51.30	mmol/L
Immunity						
Thymus conductivity				4.27	7.69 - 17.24	10-6 S.m-1
Interstitial Acid Base Balance						
ipH				7.43	7.29 - 7.37	I.U
iHCO3-				31.41	22.00 - 26.00	mEq/L
iPCO2				48.76	41.00 - 51.00	mmHg
i[H+]				37.26	42.60 - 51.30	nM/L
iSBE				7.00	-2.00 - 2.00	
Lipid balance						

UROGENITAL AND RENAL INDICATORS
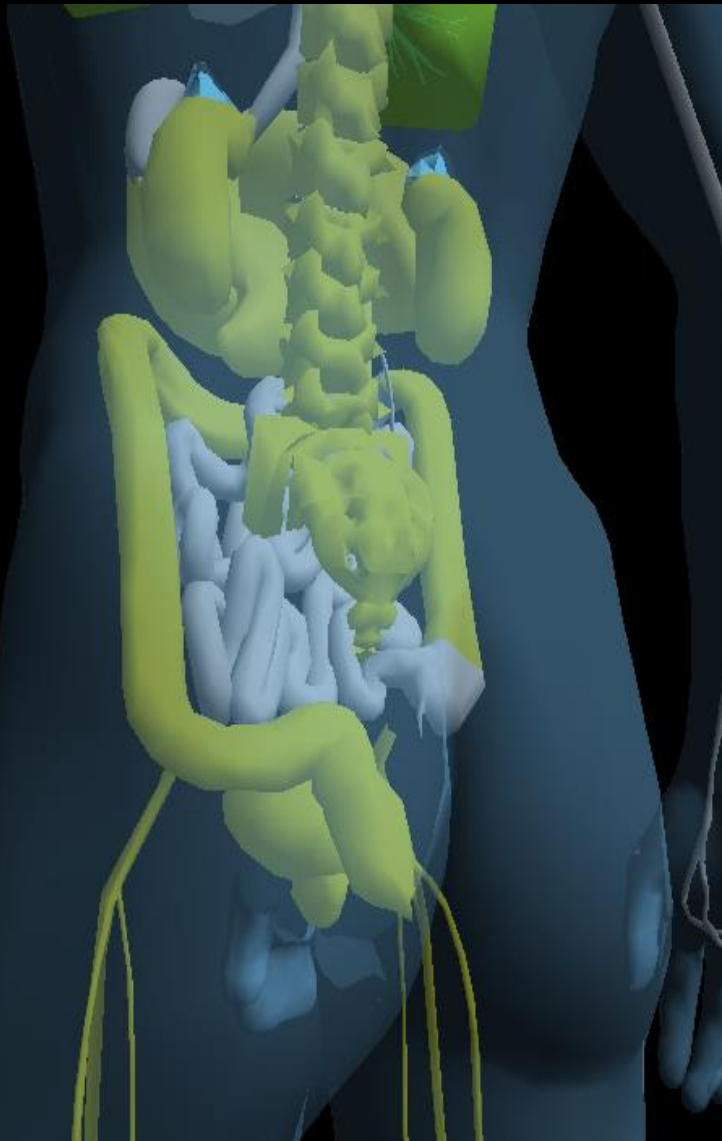
Body System Analysis

Uro genital and renal system analysis

Indicators	Under	Normal	Over	Values	Norms	Units
EIS Indicators						
Prostate conductivity				34.97	7.69 - 17.24	10-6 S.m-1
Bladder conductivity				30.12	7.69 - 17.24	10-6 S.m-1
Kidney conductivity				30.12	7.69 - 17.24	10-6 S.m-1
Urea				> 6.5	< 6.4	mmol/l
Creatinine				> 116	< 115	mmol/l
PSA				> 6	< 1.69	mg/l
HRV Indicators						
Angiotensin renin system activity				30.70	25.00 - 50.00	%
BIA Indicators						
Total Body Water				51.3	42.6 - 52.6	%
Extracellular Water				23.8	14.0 - 24.0	%
Intracellular Water				27.5	23.6 - 33.6	%

Follow up of the Cerebral neurotransmitters

Medications monitoring indicators

Medications monitoring indicators

**Monitoring of the Beta blockers treatment**

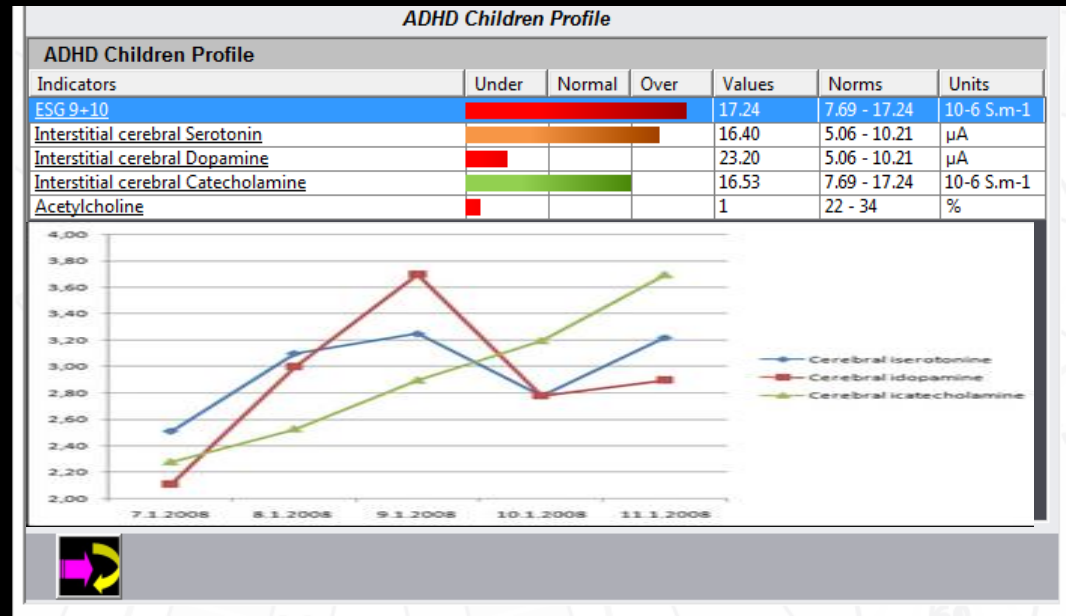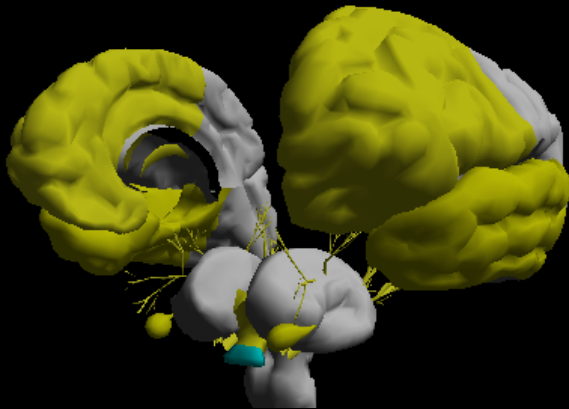| Indicators	Under	Normal	Over	Values	Norms	Units
ESG 2+4+15+17	▮			2.73	7.69 - 17.24	10-6 S.m-1
EEI (Ejection Elastic Index)	▮			0.25	0.40 - 0.80	I.U
HR Heart Rate	▮			69	68 - 84	bpm
Adrenomedullary hormone production	▮			21	22 - 46	%
LF Low Frequency Baroreceptor reflex activity	▮			21.86	22.00 - 46.00	%

ES Teck MT Drug's monitoring
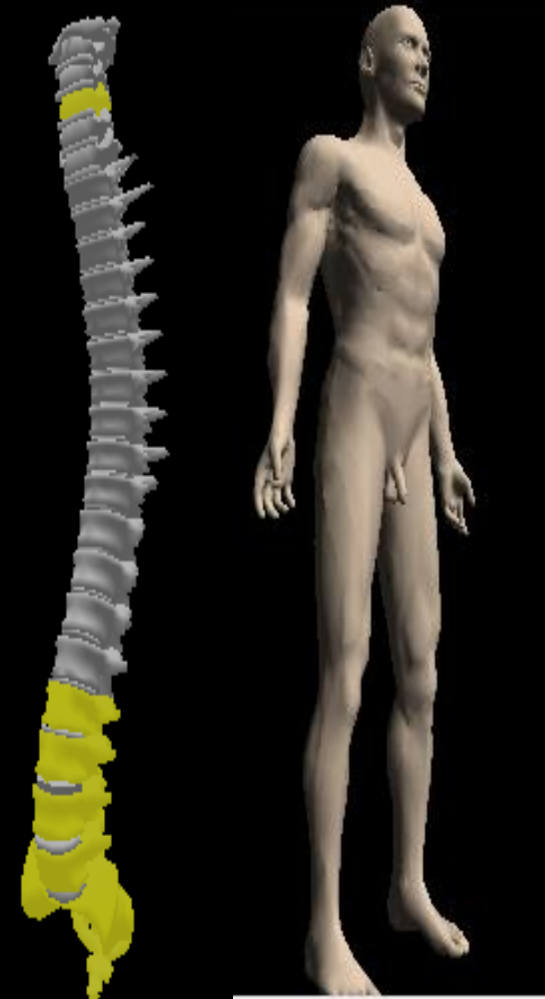
Monitoring of CEI treatment

Indicators	Under	Normal	Over	Values	Norms	Units
ESG 6+8+19+21	▮	▮	▮	28.74	7.69 - 17.24	10-6 S.m-1
EEI (Ejection Elastic Index)	▮			0.25	0.40 - 0.80	I.U
HR Heart Rate	▮			69	68 - 84	bpm
VLF Very Low Frequency	▮	▮		30.70	25.00 - 50.00	%
LF Low Frequency Baroreceptor reflex activity	▮			21.86	22.00 - 46.00	%
HF High Frequency Parasympathetic system	▮	▮		47.71	22.00 - 34.00	%
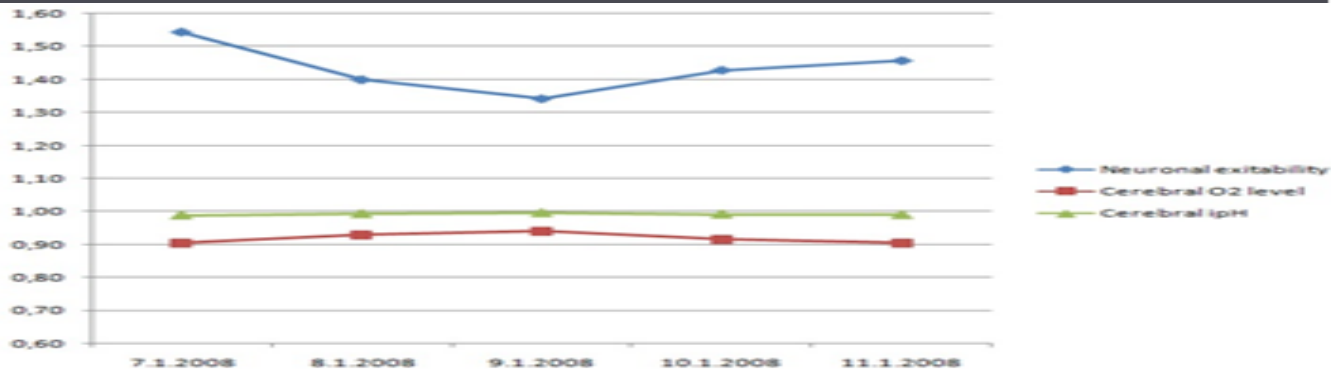
ADHD Children profile and diagnosis in adjunct with the clinical context

Chiropractor Indicators and monitoring treatment

Advices for Lifestyle and exercises and monitoring

Advices for Lifestyle and exercises and monitoring

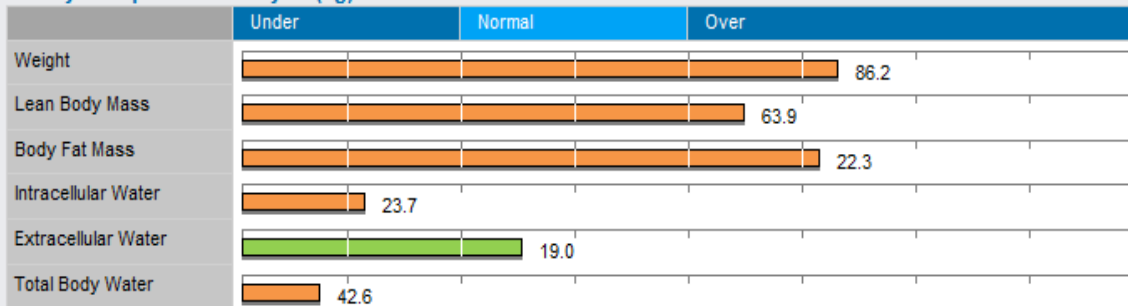| NOT RECOMMENDED FOODS	RECOMMENDED FOODS
Vegetables Egg Plant, Avocado **Animal protein** Salami , Frankfurters, Well-hung game, Marinated herring, Beef liver, Brain, Lard, Sausages, Bacon, Goose **Dairy products** Mozzarella, Margarine, Fresh cream, Cheese **Carbohydrates** Brewer's yeast, Sodium glutamate (often used in Chinese cooking), Chocolate, Ice-cream, Honey, Jam, Cocoa, Jam tart **Fats** Fried food, Mayonnaise **Drinks** Sweetened Cola Drinks **Oily foods** Almonds, Pistachios, Hazel nuts, Walnuts, Pine nuts **Fruit** Bananas, Pineapple, Dates , Fruit in syrup, Candied fruit, Dried fruit, Fruit jelly, Coconut	**Vegetables** Artichokes, String beans, Celery root, Leeks, Fennel, Dandelion **Drinks** Chicory **Fruit** 2 fruits per day max **Herbs** Parsley
MICRONUTRITION	**COOKING METHODS**
Trace elements Magnesium **Plant therapy** Poppy ,Passion flower ,Aubeline ,Hawthorn ,Garlic ,Cypress ,Chestnut tree ,Horsetail	· Steaming is to be preferred to all other methods. · For cooking food: olive, peanut or palm oil, without ever allowing it to smoke. · For improved carotenoid digestion, cook: carrots, tomatoes, broccoli, spinach then add olive or colza oil after cooking. · To prepare fish, marinate in lemon juice, wine or oil, then steam or poach in stock · Do not burn or carbonize meat and throw away the gravy.

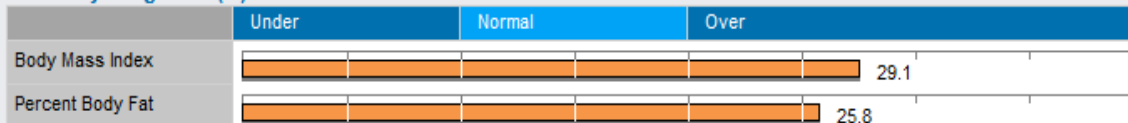# Advices for Lifestyle and exercises and monitoring