

VO2max Finder ergospirometer



VO2 max Finder ergospirometer is a stationary modularity system for pulmonary function analysis and cardiopulmonary exercise tests allowing for complex analysis of the measurements. Ergospirometer exceeds the accuracy standards of both the American Thoracic Society and the European Respiratory Society and includes features for any discipline requiring metabolic assessment.

Features and advantages of VO2max Finder ergospirometer:

- unending free of charge upgrades
- "breath-by-breath" testing method
- light, low resistance pneumotach headpiece without movable elements
- long life advanced hightech gas sensors
- automatic two points calibration of gas analysers
- automatic ambient conditions measuring system
- display real-time data and graphs in either pre-defined or user formats
- real-time visualization of O₂, CO₂, flow, volume waveforms
- exercise flow-volume loops
- automatic or manual determination of the aerobic, anaerobic thresholds and RCP
- standard and custom exercise protocols design
- add user defined parameters and predicted equations with custom based formulas
- presentation of measured values against standard values
- VO2max determination
- O₂ Kinetics feature automatically provides O₂ debt, O₂ deficit and time constant values
- indirect cardiac output by "Wassermann Algorithm"
- alternative method of pulse measurement in wireless system or with 12 ECG leads
- edition of test report
- ready-to-print pre-defined reports
- 9-plot Wasserman report with a single page report containing the 9 graphs
- summary report provides data for a simple and easy interpretation
- advanced data elaboration with evaluation algorithm
- test report transmission to standard statistic programs
- software compatible with Microsoft Windows
- numerous upgrading options:
 - pulsoximetry, minute heart stroke with non-invasive method, diffusion, cold air and Metacholine provocation, nutrition assessment, a stable and highly mobile carts etc.
 - automatic treadmill or ergometer control
 - wide selection of treadmills and bikes for both clinical and performance applications
 - low maintenance costs and easy servicing

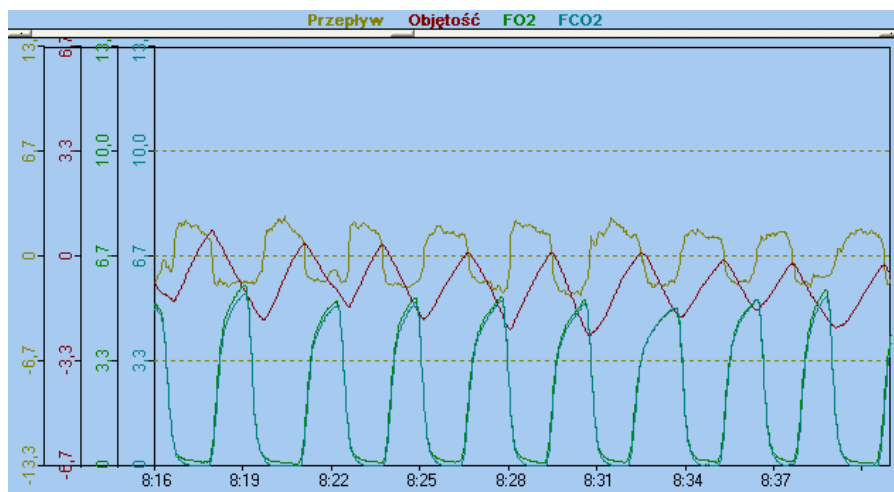


LUNGTEST VO2max Finder ergospirometer

Superior technology with the unique headpiece guarantee accuracy and sureness

VO2 max Finder measurement system contains a pneumotach headpiece patented by MES and fast analysers of carbon dioxide and oxygen fit for applying "breath-by-breath" method to each exhalatory phase.

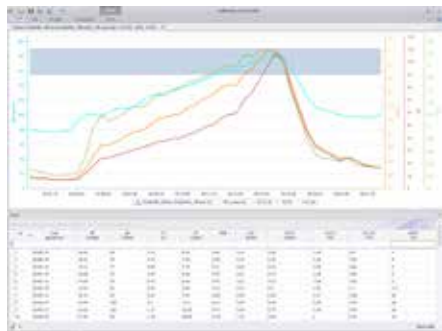
Thanks to application of a modern pneumotach headpiece, the measuring system does not require inhalation-exhalation valve and tube type connections. A test is held in comfortable environment because a subject breathes in natural conditions, without any additional air flow resistance. The built-in spirometric module with unique software controlling reliability of tests as recommended by ERS ensures determination of FEV1, MEF50, and VC, which are the basis for automatic determination of HR, VO2, and VE standard values measured during an exercise test.



VO2 max Finder allows for continuous recording in time function of the following signals: respiratory volume, flow rate, O₂ and CO₂ concentration in exhaled gas and 1-12 ECG leads. The system always stores the full course of a test and each exhalation may be reproduced. Presentation of the course of a test and printout of measured changes and calculated values are defined by an operator.

Application fields of VO2max Finder

- Cardiopulmonary Exercise Testing Lab
- Pulmonology
- Exercise Physiology
- Sports Medicine
- Cardiac Rehabilitation
- Occupational Medicine
- Intensive Care
- Nutrition assessment



STANDARD SOFTWARE RANGE

- Exercise test of respiratory system measured values: t, VE, BF, TV(VT), FeO₂, FeCO₂, FetCO₂, FetO₂, VO₂, VCO₂, RER(RQ), VO₂/kg, VO₂/kg/HR, VD/VT, VE/VO₂(EQO₂), VE/VCO₂(EQCO₂), HR, TI, TE, MET, TTOT, TI/TE, TI/TTOT, WATT(Work), PEF, PIF, PEO₂, PETO₂, PECO₂, PETCO₂, BR, VET, SUM, TV/TE, O₂ Kinetics, oxygen debt, oxygen deficit parameters and indirect calorimetry.

- Wireless pulse recording system

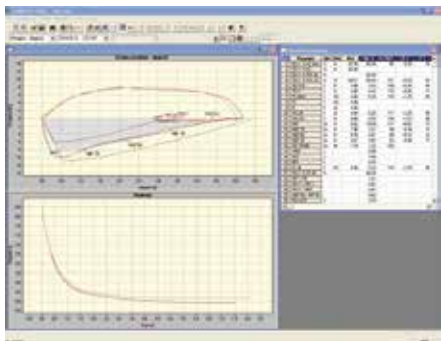
- Cardiac output parameters estimated noninvasively from oxygen uptake during exercise (by Wassermann Algorithm): C(a-v)O₂, CO, SV, HI, SVI, CI

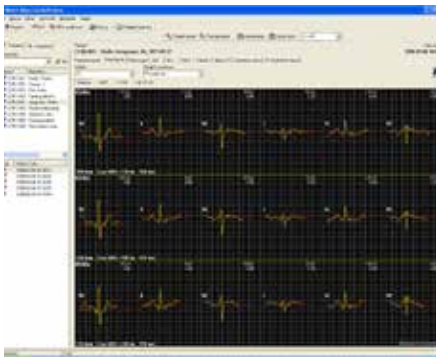
Cardiac output and stroke volume can be estimated during progressive work rate exercise testing from measured VO₂ (in normal subjects and patients with congestive heart failure), and the resultant linear regression.

Optional software:

- Full spirometric test (slow spirometry, flow/volume loop, MVV) measured values: VC, IC, ERV, TV, IRV, MV, BF, FEV0.5, FEV1, FEV2, FEV3, FEV6, FVC EX, VPEF, PEF, MEF 75, MEF 50, MEF 25, FEF 75/85, MEF 50% FVC EX, FEV 1% FVC EX, TC 25/50, MTT, TPEF, FET, AEX, FVC IN, VPIF, PIF, MIF 50, FIV 1, FEV 1% FVC IN, FEV 1% VC, VCmax, FEV 1% VCmax, MVV, BF, BR.

- Exercise test of circulatory system based on 12 lead ECG module





Additional options:

- Single Breath Diffusion Module
- Inhalation system for allergological provocations
- Cold air bronchial provocation
- Eucapnic Voluntary Hyperpnoea provocation
- Pulsoximetry with SpO2 analysis
- Nutrition assessment either with face mask or conopy hood
- Module SBP/DBP for noninvasive measurement
- Non-invasive determination of cardiac output (Indirect Fick Method)

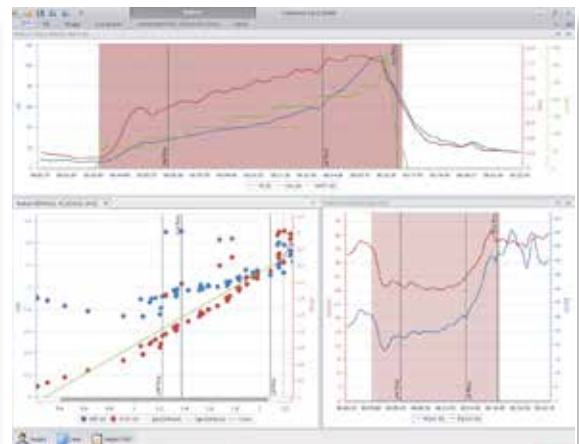
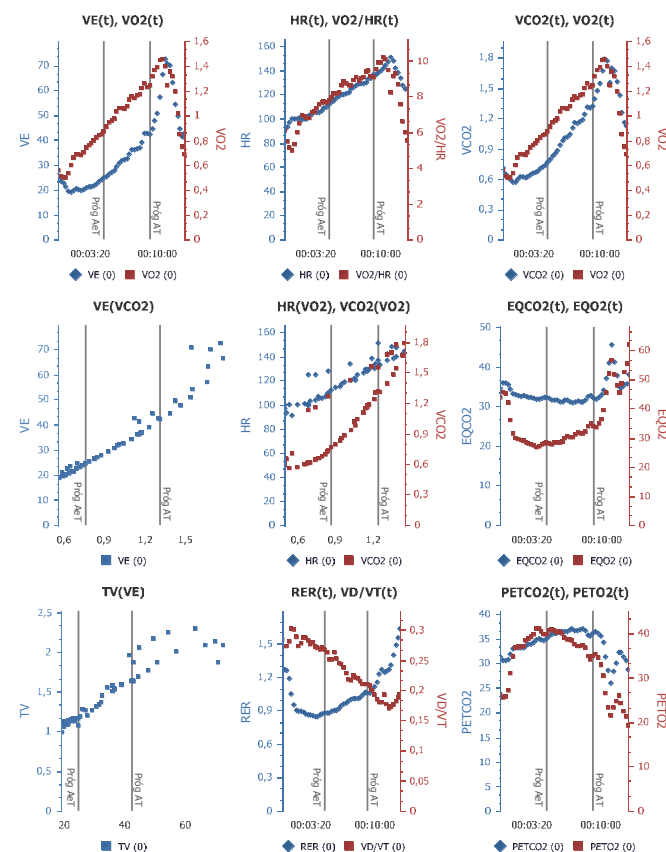
Measured values of cardiac output in CO₂ Rebreathing test:

Fet CO₂, FeCO₂, VCO₂, RQ, HR, PaCO₂, PaO₂, Hb, pH_a, Btemp, FvCO₂, PvCO₂, SaO₂, CaO₂, C(v-a)CO₂, C(a-v)O₂, CvCO₂, CaCO₂, Qa, SV, HI, SVI, CI, VE, VA, Vd_f/VE, VA/Qa, Load

Powerfull evaluation software with report generator

- summary report provides data for a simple and easy interpretation
- ready-to-print pre-defined reports
- 9-plot Wasserman report with a single page report containing the 9 graphs and additional test results for an easy clinical interpretation

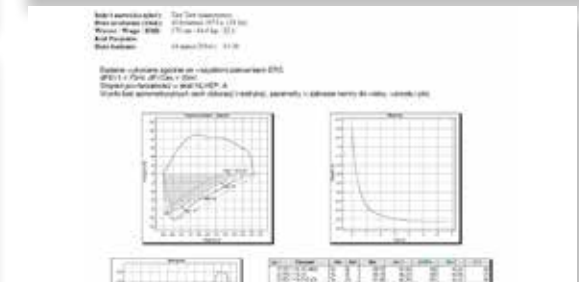
Imię i nazwisko: George Smith
Data urodzenia: 1961-12-02
Wzrost: 176
Waga: 58
Data badania:



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Report CPET

Parametr CPET	Spocz.	AT	Max	Najniższe	%Spocz./Naj.	%AT/Naj.	%Max/Naj.
WATT (W)	40,00	160,00	190,00				
VO2/kg (mL/min/kg)	9,80	21,47	25,11				
VO2 (L/min)	0,57	1,25	1,46	5,13	11,08	24,28	28,39
VE/VO2	37,95	34,01	61,96				
VE/VCO2	34,41	32,14	45,55				
VE max BTPS	0,00	0,00	0,00				
VE (L/min)	21,16	42,36	72,45				
VD/VT	0,28	0,21	0,30				
VCO2 (L/min)	0,61	1,32	1,79	3,00	20,48	43,94	59,56
TV (L)	1,07	1,63	2,29				
SVI (mL/m ²)	19,07	19,97	19,20	63,20	30,17	31,99	30,38
SV (l/min/m ²)	59,06	61,85	59,46	162,60	36,32	38,04	36,57
SpO2 (O2 Sat - Pulse Ox)(%)	0,00	0,00	0,00				
SBP (mmHg)	0,00	0,00	0,00				
RER	1,10	1,06	1,63				
PETCO2 (mmHg)	23,82	25,68	31,09				
PETCO2 (mmHg)	25,12	26,85	27,96				
HR	122,38	83,00	129,00				
HR (L/min)	0,00	0,00	151,00	200,00	0,00		75,50
HI	31,52	44,23	48,75				
DBP (mmHg)	0,00	0,00	0,00				
CI (L/min)	5,79	8,47	8,98	14,50	39,92	58,44	61,93
CI (L/min/m ²)	1,87	2,74	2,90	5,45	34,29	50,19	53,19
C(a-v)O2 (mL/100mL)	9,82	14,70	16,22				



VO2max^{Finder} ergospirometer

*Mobility and wide selection
of treadmills and bikes*



Technical specification:

Flow rate measurement:

- measuring headpiece	MES DV40 (or DV40e)
- deadspace	38ml (or 20 ml)
- flow range	+/- 20 l/s
- flow resolution	2,4 ml/sec
- usable flow resolution	10 ml/s
- volume measurement range	0 +/- 10 l (0-20 l)
- accuracy	< 2 %
- headpiece resistance	< 0,9 cmH2O/l/s (at 12 l/s flow rate)
- the measured ventilation	300 l/min

Carbon dioxide

analyzer:

- measurement range	0 - 10 % (0-15 %)
- response time	t90 < 90 ms
- accuracy	+/- 0,02 %
- resolution	0,01 %

Oxygen analyzer:

- measurement range	0- 25 % (0-100 %)
- response time	t90 < 100 ms
- accuracy	+/- 0,02 %
- resolution:	0.01 %

NDIR

(infrared absorbtion)

0 - 10 % (0-15 %)

t90 < 90 ms

+/- 0,02 %

0,01 %

conductance

0- 25 % (0-100 %)

t90 < 100 ms

+/- 0,02 %

0.01 %

Power supply:

230 V ±10 %, 50/60 Hz, 40 VA

Dimensions:

330 x 320 x 95 mm

Weight:

2,9 kg

Ambient conditions

20 ÷ 100% humidity,
-20 ÷ 50°C, 650 ÷ 1150 hPa

Standard packaging includes: measurement module with 3 tubes cable and coupler for pneumotach, USB cable for PC, pneumotach (10 pcs), small face mask with cap and coupler, medium face mask with cap and coupler, large face mask with cap nad coupler, 3 liter calibration syringe, POLAR or BMI receiver and sender belt, software for ergospirometry (needs Windows 7/8), manual

Advantages of our headpiece:

- parameters do not change in the course of a test
 - pre-test calibration is not required
 - high accuracy and resolution
 - sterile for each patient
 - easily sterilizable
 - no moving elements
 - small dead space
- low resistance to flow
- no heating system

Manufacturer



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Distributor:



MES has got the certificates of ISO 9001 and ISO 13485