

A new approach to human performance assessment through VO_2 max and resting metabolism

“ Assess, Measure, Improve my Performance ”



“
Fitmate™ is a small, inexpensive, userfriendly, lightweight, battery-powered unit, facilitating accurate metabolic measurements in both the field and in the lab⁽¹⁾
 ”

- **VO₂max, sub-max VO₂ and Anaerobic Threshold (AT)**
- **Nutritional assessment (REE, RMR)**
- **Fitness assessment and risk analysis**
- **Body composition & comprehensive weight management**
- **Colour LCD display and embedded high speed thermal printer**
- **Software for data management, exercise prescription and HR-VO₂ training zones**
- **Accurate, affordable and easy-to-use**



The Fitmate PRO is a desktop metabolic monitor designed to break the mould of traditional Cardio Pulmonary Exercise Testing and proposes a new approach for the measurement of oxygen consumption during exercise testing or at rest. Fitmate PRO measures VO₂max, either directly or through a sub-maximal protocol, and provides additional features like the calculation of the Anaerobic Threshold (AT) and the definition of heart rate training zones.

Fitmate PRO is a compact desktop device with internal rechargeable battery, a large LCD screen and in-built printer that allow testing without a computer or mains power lead. Fitmate PRO processes test results and stores all information inside its internal memory, ready for upload to PC software (included).

Fitmate PRO has been validated for measuring VO₂max and for predicting maximal oxygen consumption with a sub-maximal protocol.

Cardio Respiratory Fitness (VO₂max)

The Fitmate technology allows to execute the VO₂max and sub max test with most of cycle ergometers and treadmills available in the market (h/p/cosmos, Ergoline, Trackmaster, Technogym, Monark etc.).

- VO₂, ventilation, heart rate and related parameters with a 15 seconds sampling rate
- Pre-defined VO₂max and Sub-max exercise protocols and user defined protocols
- Pre-defined or custom exercise protocols (Bruce, cycle, ramp etc.)
- Automatic and adjustable Anaerobic Threshold detection
- Automatic RQ compensation during resting and graded exercise
- Automatic (protocol) or manual ergometer control
- Heart rate measurement with wireless belt (included) or TTL from ECG (optional)
- Calculation of Training Zones based on relationship between VO₂ and HR (both sub max and VO₂max testing)
- Warnings and quality control messages (mask leaks, breathing pattern etc.) are displayed during test.

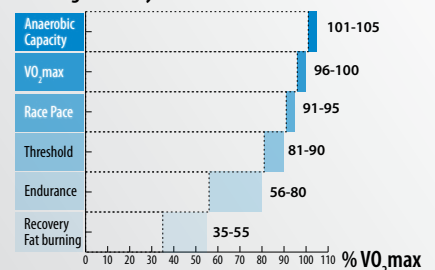


Comfortable silicone masks (5 sizes, both adult and pediatric) are available for exercise testing and for resting measurements



Easy to replace, the O₂ cell comes in a sealed bag, Lifespan is 12-18 months and it is indicated by the device.

Training Intensity



Training Zones based on the relationship between VO₂ and HR

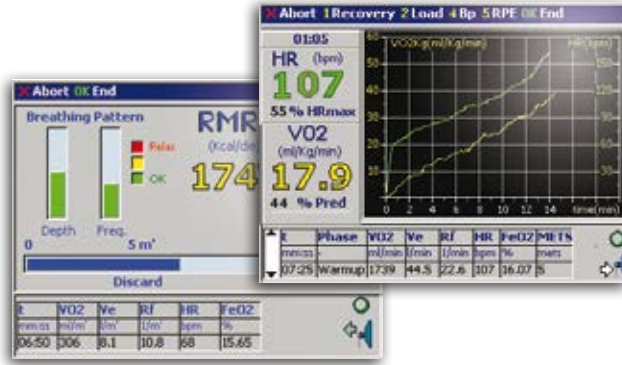
Fitness Assessment

- Muscular fitness, resistance & flexibility
- Body Composition
- Standard Measurements (WHR, blood pressure etc.)
- Comprehensive Exercise Prescription report based on ACSM guidelines with a database of exercises and pictures for didactic purposes
- Cardiovascular Risk Analysis (PC software only)

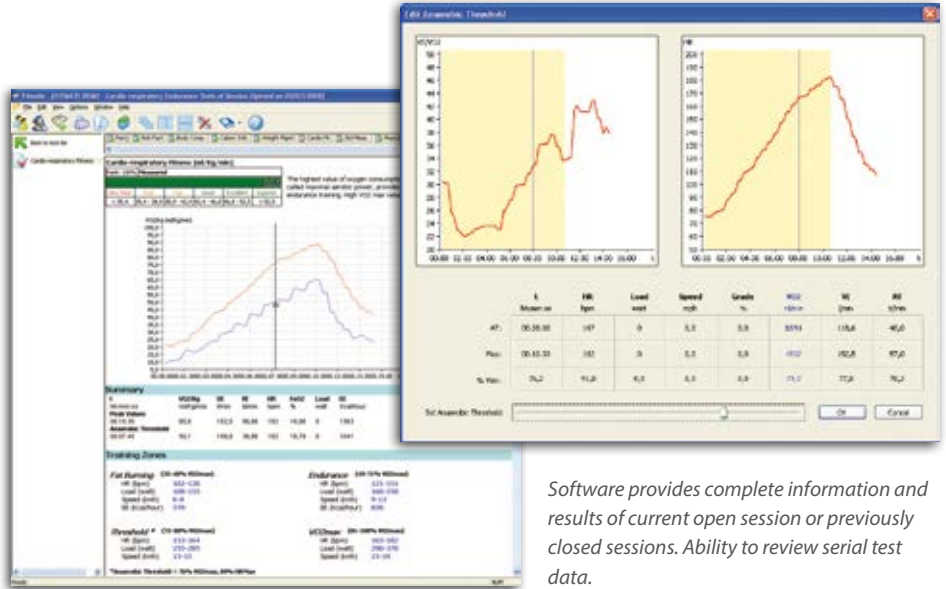
(1) Nieman DC, et al. Validation of Cosmed's FitMate in measuring exercise metabolism. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med.* 2007 Jan-Mar;15(1):67-75

Nutritional Assessment

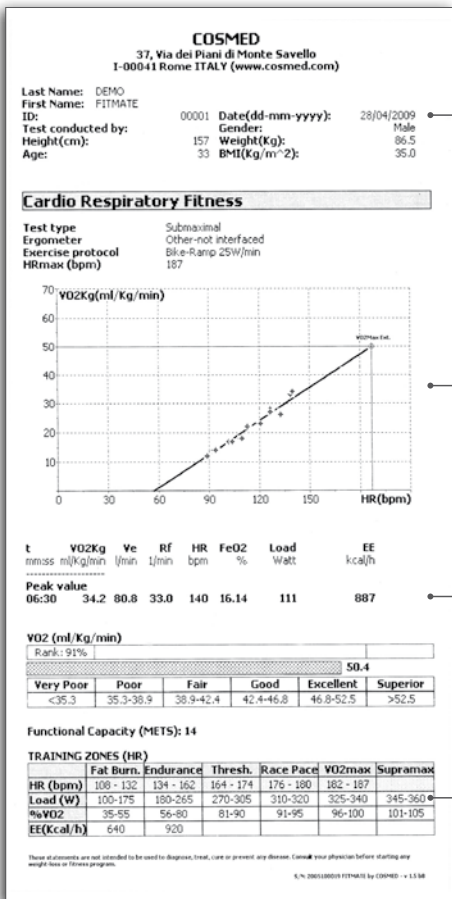
- Fitmate measures accurate oxygen consumption at rest (REE, RMR), comparable with conventional metabolic carts. Tests can be executed either with face masks (multi-use), with mouthpiece and antibacterial filter or, optionally, with an integrated canopy hood
- Individual weight management programs based on Energy Balance equation
- Weekly Dietary plan and software (w/ USDA Database);
- Complete Lifestyle and Physical activity monitoring up to 60 days (with optional monitor, Lifecorder)



Real-time screenshot of V0₂max and RMR tests as shown on Fitmate PRO LCD display



Software provides complete information and results of current open session or previously closed sessions. Ability to review serial test data.



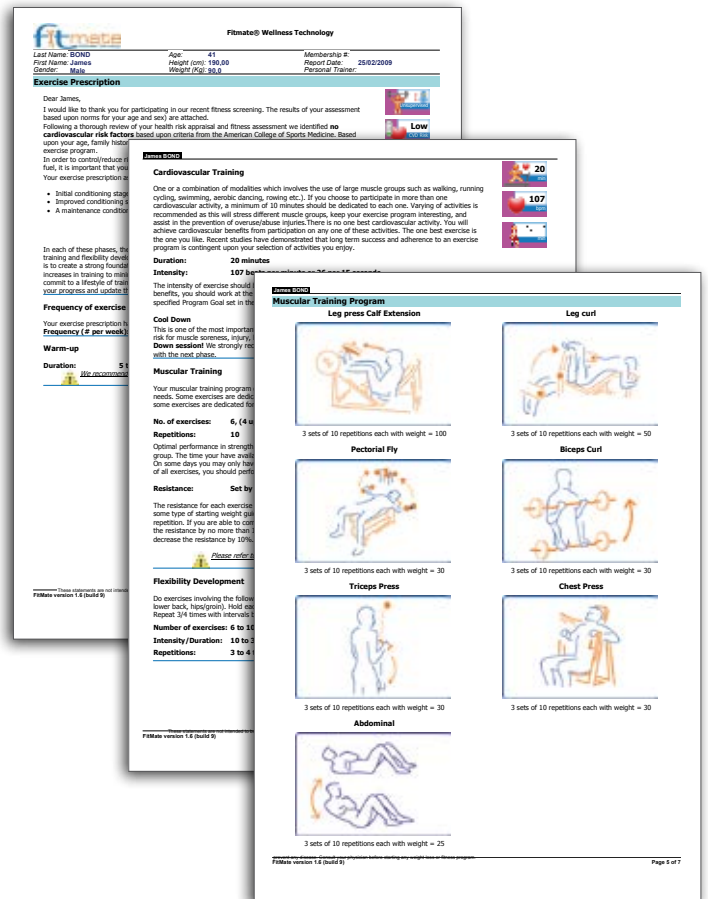
Subject data & Test Information

The Graph shows V0₂/Kg, Heart Rate

Gas Exchange Data (V0₂, VE, HR etc.) at peak, average, or each 15 secs interval

Individual HR Training Zones based on calculated Anaerobic Threshold

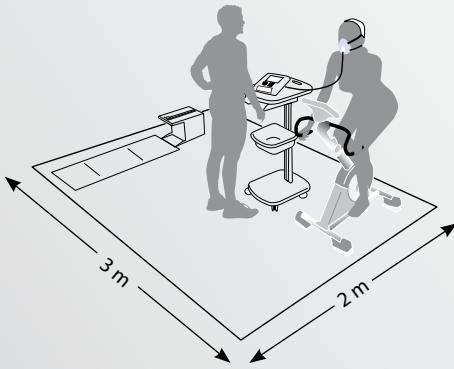
Thermal printout sample (original size 110mm wide): Sub-Maximal Exercise Test



Software printout sample (available in A4 or Letter size): ACSM Exercise Rx

Validation articles

- Vandarakis D, et al. A comparison of COSMED metabolic systems for the determination of RMR. *Res Sports Med* 2013;21(2):187
- Lee J et al. Validation Of The Cosmed Fitmate For Predicting Maximal Oxygen Consumption Medicine & Science in Sports & Exercise: May 2009 - Volume 41 - Issue 5 - p 260
- Nieman DC, et al. Validation of Cosmed's FitMate in measuring exercise metabolism. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med* 2007 Jan-Mar;15(1):67-75
- Nieman DC, et al. Validation of Cosmed's FitMate in measuring oxygen consumption and estimating resting metabolic rate. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med*. 2006 Apr-Jun;14(2):89-96
- More scientific studies on www.cosmed.com/bibliography



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Technical Specifications

Product	Description	REF
Fitmate PRO	Desktop metabolic monitor	C09066-02-99
Standard packaging	Unit, Carrying Case, PC Software, Battery Charger, USB Cable, Oxygen Sensor, Roll of thermal paper, Measuring Tape, RMR Flowmeter ID18, VO ₂ Flowmeter ID28, Reusable V2 mask (Medium size), HR probe and belt, Head cap for V2 mask, Antibacterial filters (15 pcs).	
Standard Tests		
Cardio Pulmonary Exercise Test (CPET)	VO ₂ max, Sub-max VO ₂ , Thresholds (AT, RCP), Heart Rate with HR belt	
Nutritional Assessment	Resting Energy Expenditure (REE, RMR). Indirect Calorimetry (w/ Face Mask or w/ mouthpieces-antibacterial filter), Weight Management Program (Energy Balance), Diet Planner, Standardized Measurements (WHR, BP, RHR, etc), Body composition by Skinfold	
Fitness Assessment	Muscular Endurance/Strength/Flexibility, Standardized Measurements (WHR, BP, RHR, etc), Body composition by Skinfold	
Exercise Prescription	ACSM Exercise Prescription, VO ₂ /HR Training Zones (based on AT)	
Flowmeter	VO₂max (Turbine Ø-28mm)	RMR/REE (Turbine Ø-18mm)
Type	Bidirectional Digital Turbine	Bidirectional Digital Turbine
Flow Range	0-16 l/s	0-8 l/s
Accuracy	± 2% or 20 ml/s (flow) ± 2% or 200 ml/min (ventil.)	± 2% or 20 ml/s (flow) ± 2% or 100 ml/min (ventil.)
Resistance	<0.6 cmH ₂ O /l/s @ 14l/s	<0.7 cmH ₂ O/l/s @ 3l/s
Ventilation range	0-300 l/min	0-50 l/min
Gas Analyzers	O₂	
Type	GFC	
Range	0-25%	
Accuracy	±2% (REE) ±0.02% (O ₂)	
Warm-up time	10 seconds	
Hardware		
Dimensions & Weight	24 x 20 x 8 cm / 1.5kg	
Interface ports	USB A-B, RS-232, HR-TTL, Flowmeter	
Display	Colour LCD 320 x 240 pixel	
Printer	High speed thermal printer 12 cm	
Battery	Rechargeable Li-ion batteries (autonomy 6h; charging time 2h10)	
Electrical Requirements	220V ± 10 %;50/60Hz 110V ± 10%; 50/60Hz	
Firmware		
Available languages	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Chinese, Korean, Japanese, Finnish, Polish, Russian, Slovenian	
Software		
Available languages	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Finnish, Russian, Slovenian	
PC Configuration	Pentium or faster, Windows XP, VISTA (32/64 bit), Windows 7 (32/64 bit) 128 Mb RAM or more, USB, CD-Rom reader, 80 Mb on HD space available.	
Accessories & Options	Description	REF
REE with Canopy Hood	Kit including transparent canopy hood and blower for "gold standard" indirect calorimetry measurements at rest	C03950-01-11
Fitmate cart	Fits Fitmate unit, printer, masks, printouts, carrying case	C02950-01-11
Calibration syringe	3L syringe for accuracy check of flow volume measurements	C00600-01-11
O ₂ sensor replacement kit	Includes GFC sensor, sampling line and mounting key	C02748-01-11
Activity Monitor Fitmate Lifecorder PLUS	Integrated one-axial, solid state accelerometer.	C03580-01-04
Flexibility tester Sit & Reach box	Box for the indirect measurement of lower back and hamstring flexibility	A-662-160-001
Safety & Quality Standards		
MDD (93/42 EEC); FDA 510(k); EN 60601-1 (safety) / EN 60601-1-2 (EMC)		



To know more:

