



The first desktop system for easy and accurate Cardio Pulmonary Exercise Testing

- ▶  $VO_2$ max and sub-max  $VO_2$
- ▶ Anaerobic Threshold & Individual Training Zones
- ▶ Nutritional Assessment (REE, RMR)
- ▶ Fitness Assessment and Risk Analysis
- ▶ Body Composition & Comprehensive Weight Management
- ▶ Software for Data Management, Diet, ACSM Exercise Prescription and more...
- ▶ Accurate, affordable, and easy to use



Fitmate PRO provides a different approach to traditional Cardiopulmonary Exercise Testing. The functionality of the Fitmate PRO allows for the metabolic cart to be utilized in the following areas:

- ▶ University Education
- ▶ Training centers
- ▶ Military Fitness & Research
- ▶ Health Clubs
- ▶ Professional teams
- ▶ Corporate Wellness

## Exclusive New Design

Fitmate PRO design is unique in its own way. The system is compact (desktop size) with a large LCD screen, keypad and built in thermal printer. These features eliminate the need for a computer or printer.

Fitmate PRO design allows the system to store information, manage data, perform tests and print reports quick and easy. Included with the purchase of all Fitmate products is a very powerful PC Software.

## Cardio Respiratory Fitness (VO<sub>2</sub>max)

Fitmate PRO offers many of the features that can be found on conventional system, but at affordable price:

- ▶ Maximal Oxygen Consumption by Dynamic Mixing Chamber (Patent)
- ▶ Automatic and adjustable Anaerobic Threshold detection
- ▶ VO<sub>2</sub>, Ventilation, Heart rate and related parameters with a 15 seconds sampling rate
- ▶ Accurate and reliable at any exercise intensity
- ▶ Pre-defined VO<sub>2</sub>max and Sub-max exercise protocols
- ▶ User defined protocol
- ▶ Automatic regression for extrapolating VO<sub>2</sub>max based on VO<sub>2</sub> and HR response during Sub-Max protocols
- ▶ Automatic RQ compensation during resting and graded exercise
- ▶ Automatic control of ergometers by the integrated serial port (RS-232)
- ▶ Provided with Polar or Garmin HR interface

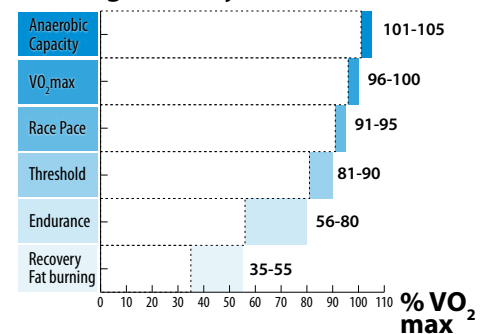
- ▶ HR TTL (from ECG optional)
- ▶ Quality message control during testing (leaks on the mask, HR missing. Non-physiological gas measurements etc.)

## Extra Assessments

- ▶ REE, RMR, Energy Expenditure
- ▶ Activity Caloric Cost, to measure Energy Expenditure during a specific physical activity (working, exercise, etc.)
- ▶ Fitness Assessment (Muscular Strength, resistance and Flexibility)
- ▶ Body Composition
- ▶ Weight Management Program with Weekly Diet plan based on USDA Food Pyramid (editable)
- ▶ Standard Measurements (WHR, Blood Pressure etc.)
- ▶ Cardiovascular Risk Analysis (PC software only)
- ▶ Integrated activity monitor for precise measurement of lifestyle energy expenditure (option)

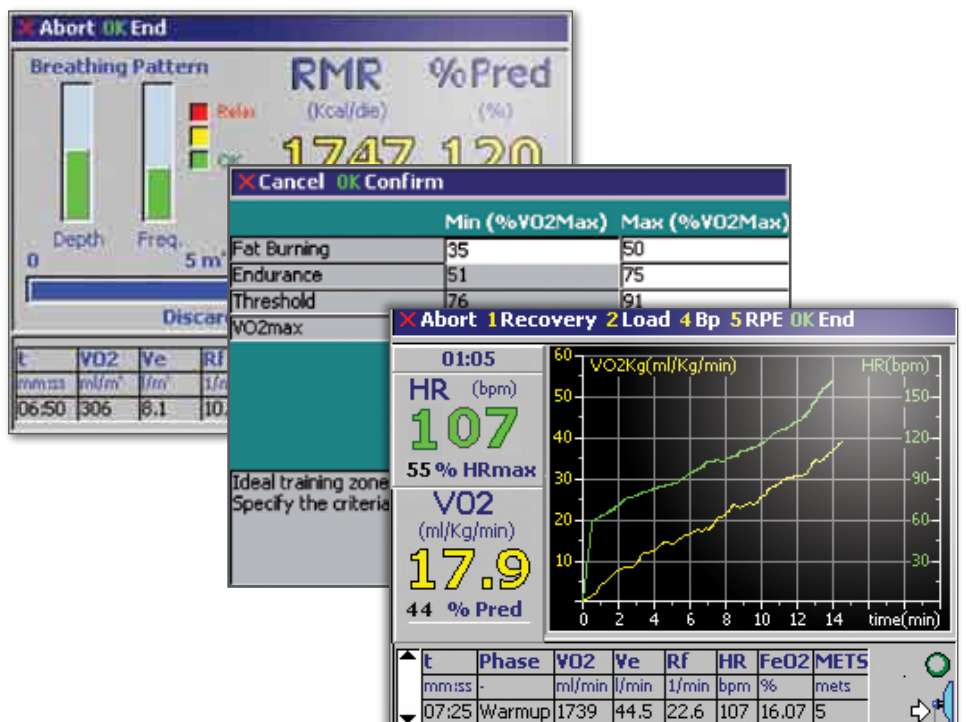


## Training Intensity



## Individual Training Zones

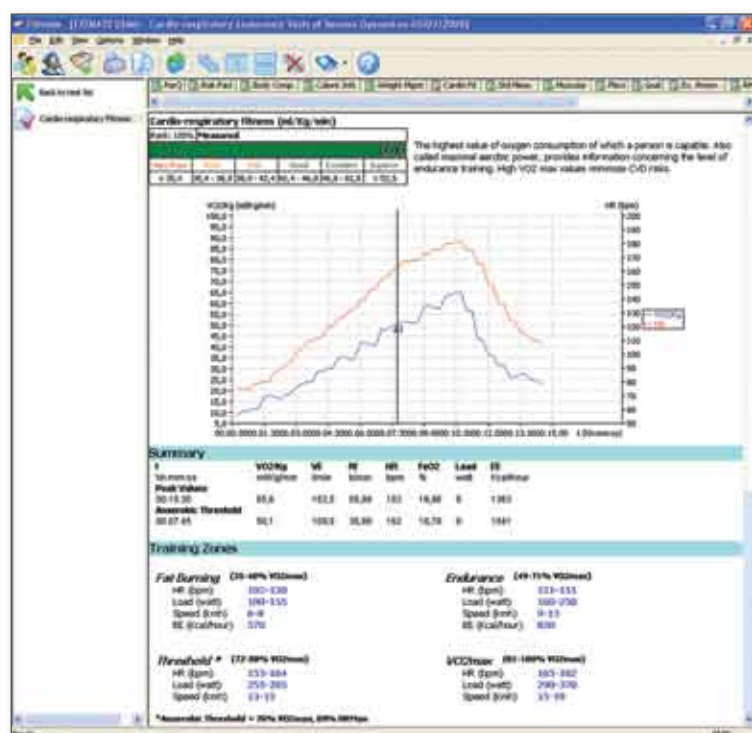
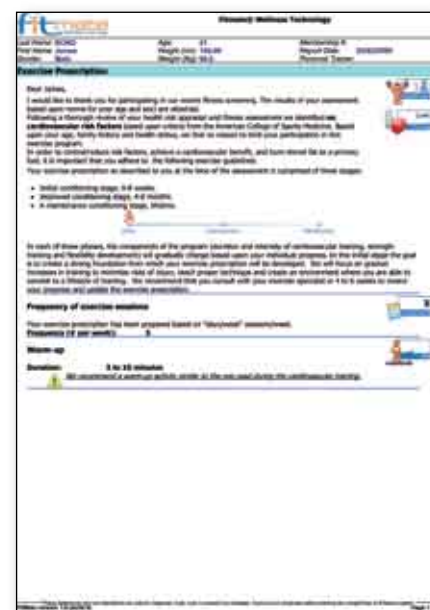
An important feature of the Fitmate PRO is the calculation of **Training Zones** which are all based on a VO<sub>2</sub> and HR relationship. The calculation of the Training Zones is functional in both sub max and VO<sub>2</sub>max testing.



Flowmeters	Provided with two flowmeters (rest & exercise) for accurate measurement of ventilation during rest (0-10 l/min) and exercise (> 250 l/min)
Ergometer Interface	RS-232 port for direct interface with most of bikes and treadmills available in the market (HP COSMOS, Ergoline, Trackmaster, Technogym, Monark etc.)
Hardware	Compact (2 kg - 5 lbs), Large LCD screen, easy-to-access keyboard, thermal printer, both battery and main operating
Self-Calibrating	Calibrate in less than 20 seconds, eliminating the need for complex calibration procedures
Face Masks (Exercise)	Durable and easy-to-clean silicone face masks available in different sizes for adults (small medium and large) and children (small and large)
Disposable Face Masks (Rest)	Comfortable single-use face masks provided with high efficiency antibacterial filter to eliminate the risk of cross-contamination
Maintenance	Yearly Oxygen sensor replacement is the only required maintenance. Simple operation done by the user as replacing a battery
PC Software	Windows XP/Vista compatible, has full features for data management and professional reporting.

## ACSM Exercise Prescription

The software package provides a comprehensive Exercise Prescription report based on ACSM guidelines. Also included is a database of exercises and pictures that can be utilized by the trainer in educating the customer.



Software Printout Report of ACSM Exercise Prescription (A4 or Letter size)



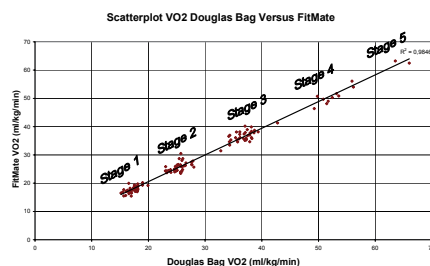
## Proven Accuracy, Fitmate Validated vs. Douglas Bag

1) Validation of COSMED's Fitmate™ in measuring exercise metabolism.  
[David C. Nieman, at al. Research in Sports Medicine, 15: 1-9, 2007.]

2) Validation of Fitmate in measuring REE  
[David C. Nieman, at al. Research in Sports Medicine, 14: 1-8, 2006]

In conclusion, the Fitmate metabolic system accurately measures oxygen consumption during graded treadmill exercise as well as during Resting when compared with the Douglas bag system in male and female adults.

Both validation shows a great correlation ( $R^2 > 0.98$ )



## Technical Specification

Tests	w/Unit	w/Software
Cardiorespiratory Fitness ( $VO_{2max}$ , Anaerobic Threshold)	•	•
$VO_2$ /HR Training Zones (based on AT)	•	•
Automatic Control of Ergometers (Bikes or Treadmills)		
ACSM Exercise Prescription		•
Fitness Assessment (muscular endurance/strength, flexibility, goals)	•	•
Energy expenditure during exercise	•	
Resting Energy Expenditure (REE, RMR)	•	
Weight Management Program (Energy Balance)	•	•
Body Composition (skin-fold)	•	
Standard Measurements (blood pressure, WHR, resting heart rate, BML)	•	
Physical Activity Monitoring (integration with accelerometer)		○
Diet Software w/ Weekly Meal Planner		•
HR interface w/ external ECG (TTL)	•	

### Oxygen Consumption Measurements

Sensor Type	GFC (Galvanic Fuel Cell)
$O_2$ Measurement range	0-22%
Sampling Type	Dynamic Mixing Chamber (international patent)
Sampling Rate	30 sec / 60 sec
Calibration	Automatic on room air
Warm-up time	10 seconds
REE Accuracy	± 2%
$O_2$ Accuracy	±0.02%
$O_2$ Sensor Lifespan	12-18 months

### Flowmeter: Bidirectional digital turbine Ø 18mm

Type	Bidirectional digital turbine Ø 18mm
Ventilation range	0-50 l/m
Flow resistance	<0.7cm H <sub>2</sub> O/l/s@3l/s
Accuracy Flow/Volume	±2%

### Flowmeter: Bidirectional digital turbine Ø 28mm

Type	Bidirectional digital turbine Ø 28mm
Ventilation range	5-300 l/m
Flow resistance	<0.6cm H <sub>2</sub> O/l/s@14l/s
Accuracy Flow/Volume	±2%

### Hardware

Dimensions & Weight	24 x 20 x 8 cm / 1.5kg
Display	Color LCD 320 x 240 pixel
Printer	High speed thermal printer 12 cm (4,7 in)

### Standard Packaging Includes

Fitmate PRO unit, RMR - Flowmeter, RMR masks (10 pcs),  $VO_{2max}$  - flowmeter, Silicone face mask, (M-size), Head cap for silicone mask, AC/DC Adapter, USB cable, Fitmate PC Software (CD-Rom), Body meter, Oxygen sensor, POLAR® HR belt and probe.

### Available languages

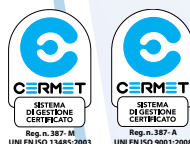
Firmware	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Japanese
Software	Italian, English

### PC configuration required

Pentium or faster, Windows XP, VISTA 32, 128 Mb RAM or more, USB, CD-Rom reader, 80 Mb on HD space available.

### Safety & Quality Standards

Equipment complies with MDD (93/42 EEC); EN 60601-1 (safety) / EN 60601-1-2 (EMC) FDA 510(k) cleared.



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*Fitmate and all the accessories are provided together with a nice and practical carrying case.*



*Fitmate uses two kind of mask: Comfortable Silicon mask for long testing session and RMR disposable Face Mask (patent)*



*To ensure accuracy at any workload Fitmate provides two flowmeters: One for exercise testing and a small one for resting metabolic rate.*



*The O<sub>2</sub> sensor replacement kit*

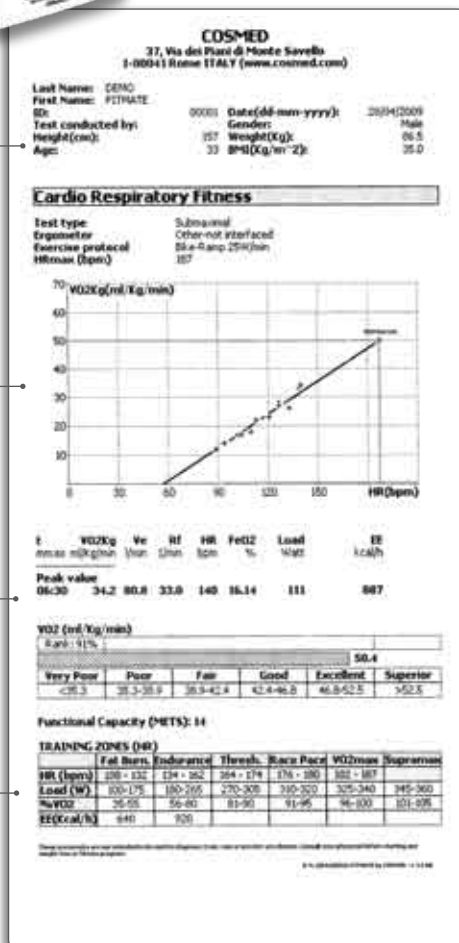


Subject data & Test Information

The Graph shows  $\text{VO}_2/\text{Kg}$ , Heart Rate

Gas Exchange Data ( $\text{VO}_2$ , VE, HR etc.) at peak, average, or each 15 secs interval

Individual HR Training Zones based on calculated Anaerobic Threshold



Patient data

REE Graph  
Kcal/day vs. time)

Averaged values

Quality control Index

Actual results  
compared with  
predicts

