



The Only Complete Desktop Solution for Accurate, Quick, and Simple Indirect Calorimetry

- ▶ Accurate measurement of Resting Energy Expenditure
- ▶ Affordable, portable, compact, easy-to-use with built-in printer
- ▶ Energy balance-based Weight Management Plans
- ▶ Includes software for Data Management, Lifestyle Analysis, and full Diet Plans
- ▶ Integration with Activity Monitor (optional)
- ▶ Validated vs. Gold Standard technique



Calories OUT	Calories IN
2900 Kcal	2400 Kcal
Exercise (10%)	Protein
Lifestyle (20%)	Carbohydrates
RMR (70%)	Fat

Energy balance = - 500 Kcal/day

The Fitmate is the first desktop device designed for providing accurate Resting Energy Expenditure (REE, RMR) for all fields dealing with obesity and malnutrition. Prior to the introduction of the Fitmate, accurate nutritional assessment was only available in hospitals and large clinics due to the cost and complexity of the systems. Now, the Fitmate allows affordable, simple, and quick measurement of metabolism, a fundamental component of any individual weight management program. The Fitmate can be used in a variety of settings including:

- ▶ Clinical nutrition, obesity treatment, diabetes, malnutrition, and preventive medicine centers
- ▶ Commercial weight management, weight loss clinics, health clubs, beauty, and spas
- ▶ School and community services
- ▶ Respiratory care, in conjunction with obesity or malnutrition (COPD, sleep disorders, cystic fibrosis, etc.)
- ▶ Sport nutrition, and more

## Accurate Resting Energy Expenditure

The Fitmate has been validated for the measurement of Oxygen Consumption ( $VO_2$ ) and Resting Metabolic Rate (RMR/REE). The Fitmate measures  $VO_2$  and assumes a constant Respiratory Quotient (RQ), set at 0.85 (or user defined). Strong scientific evidence<sup>1</sup> demonstrates that in a steady state, the RQ is always in the range of  $0.84 \pm 0.04$ . This allows the Fitmate to be used either in research or clinically on malnourished and obese patients.

Oxygen uptake ( $VO_2$ ) is measured in real-time by means of a dynamic mixing chamber (patented), and data is sampled with an average of 30 seconds or more. RMR testing is simple, fast, and a report printout is provided in seconds via the built-in thermal printer.

Tests can be performed by using either a face mask (single or multi-use), or optionally, with an integrated canopy hood.

## Energy Balance

The Fitmate helps professionals in developing individualized weight management programs based on the Energy Balance equation.

The Energy Balance is simply the difference between caloric intake (calories IN) and Energy Expenditure (calories OUT). Once REE is measured, the Fitmate provides several tools to estimate or calculate the energy contribution of either lifestyle (physical activity monitors, questionnaires) and the daily exercise. Once the daily Total Energy Expenditure (TEE) is calculated, users can set the desired weight goal and receive a recommended food intake in just few seconds.

## Body Composition

The Fitmate also provides body composition assessment to check if either diet or lifestyle changes have decreased % body fat and increased lean body mass. Body composition data from the BOD POD or other devices can be input and integrated with the Fitmate, providing a consistent reporting.

<sup>1</sup> Comparison of Weight-Loss Diets with Different Compositions of Fat, Protein and Carbohydrates. [Frank M. Sacks, et al. The New England Journal of Medicine, 859-973: 02, 2009]



Resting Energy Expenditure testing with silicone mask



Fitmate uses a disposable face mask (patented) for eliminating the risk of cross contamination



Ability to perform RMR test by using the "Mouthpiece & Nose-Clip" system

**Breathing Pattern**

RMR (Kcal/die) **1742** %Pred (%)

Depth: 0, Freq: 5 m<sup>3</sup>

t	VO <sub>2</sub>	Ve	Rf	HR	FeO <sub>2</sub>
mm:ss	ml/min	l/m	l/m	bpm	%
06:50	306	8.1	10.8	68	15.65

**Body Composition**

#1 #2 #3 Aver.

Chest (mm) 21  
Abdomen (mm) 22  
Thigh (mm) 18

FAT%

**Weight Loss**

RMR 1678  
Lifestyle 871 Food  
Exercise 198 1996

Balance -551

Time (weeks)	Weight (kg)
Today	56
Next check	54
Goal	51

Vertical fold; on the posterior midline of the upper arm, between the acromion and olecranon process, freely to the side of the body.



REE tests can be also performed (optionally) with a comfortable canopy hood

## Integrated Physical Activity Monitor (optional)

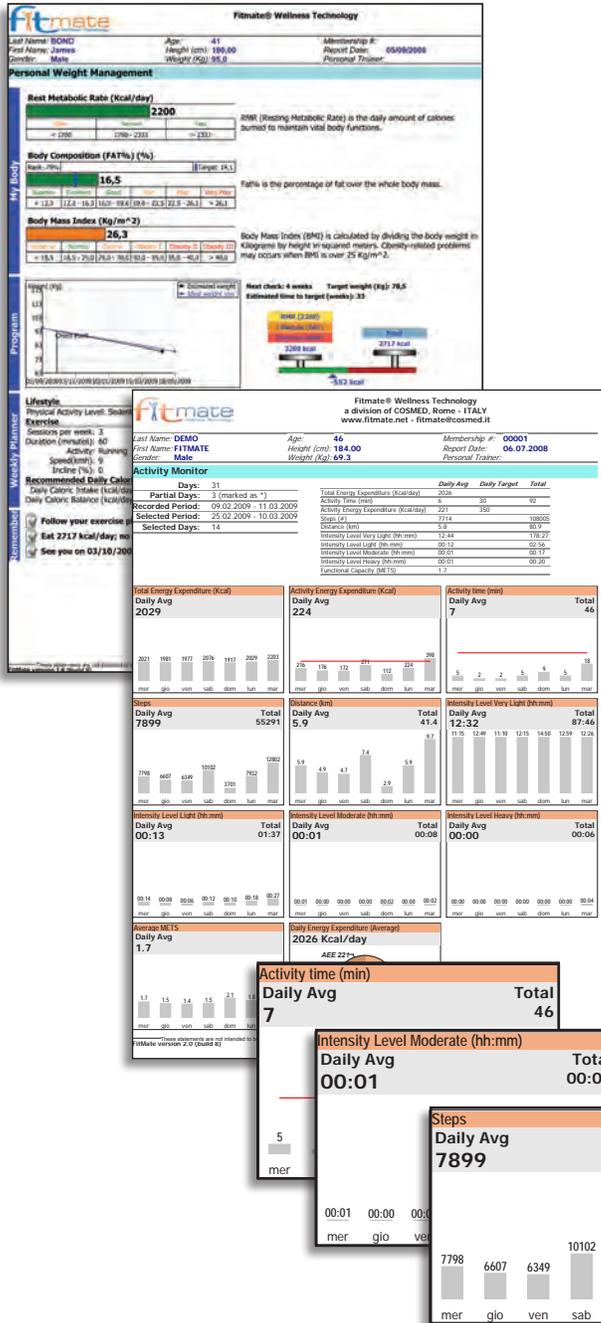
The Fitmate can become a complete solution for monitoring lifestyle and a patient's compliance. The Fitmate Lifecorder is a mono-axial, solid-state accelerometer that records five physical activity levels (PAL), steps, distance and many other parameters. The Fitmate Lifecorder has an internal memory (up to 60 days), and a mini USB port allows recorded data to be saved to Fitmate software. A detailed and comprehensive report is available in just a few steps.

## Weekly Diet Plan

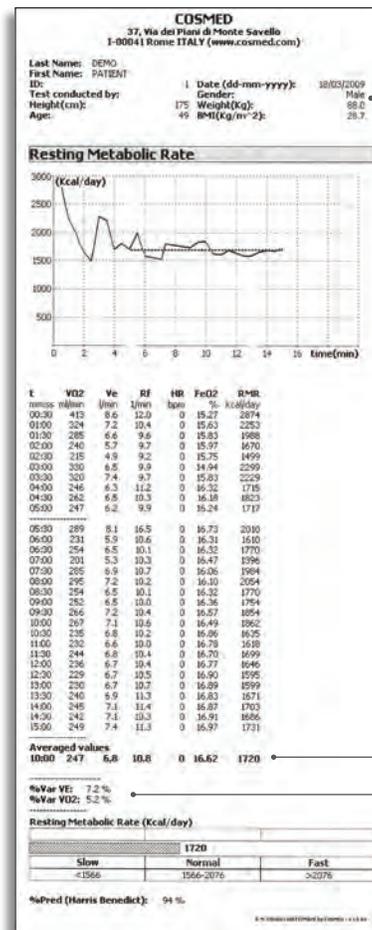
The Fitmate software provides a fully customizable dietary management program with an editable database based on the USDA pyramid. You can save the diet plans as templates, add new foods, and much more. Daily or weekly plans are provided in a simple, easy-to-read report, including Daily Nutrition Facts.



The easy-to-replace O<sub>2</sub> cell has a lifespan of 12-18 months. Cell efficiency can be checked on the device.



The Fitmate Physical Activity Monitor (Lifecorder Plus)



Patient data

REE Graph Kcal/day vs. time

Measurement interval

Averaged values

Quality control Indexes

Actual results compared with predicted values

Software printout samples (available in A4 or Letter size): Weight Management and Activity Monitor

Thermal printout sample (original size 110mm wide): RMR measurement



\*option

## Technical Specifications

Tests	w/Unit	w/Software
<b>Nutritional Assessment</b>		
Resting Energy Expenditure (REE, RMR) with Face Mask	●	
Resting Energy Expenditure (REE, RMR) with Canopy Hood	○	
Weight Management Program (Energy Balance)	●	●
Physical Activity Monitoring (integration with Accelerometer)		○
Diet Software w/Weekly Meal Planner		●
<b>Other Measurements</b>		
Standard Measurements (Blood Pressure, WHR, Resting Heart Rate, BMI)	●	
Framingham Index		●
Body Composition (Skinfold)	●	

### Oxygen Consumption Measurement

Sensor Type	GFC (Galvanic Fuel Cell)
O <sub>2</sub> Measurement Range	0-25%
Sampling Type	Dynamic Mixing Chamber (international patent)
Sampling Rate	30 sec / 60 sec
Calibration	Automatic on room air
Warm-Up Time	10 sec
REE Accuracy	± 2%
O <sub>2</sub> Accuracy	±0.02%
O <sub>2</sub> Sensor Lifespan	12-18 months

### Flowmeter

Type	Bidirectional digital turbine Ø 18mm
Ventilation Range	0-50l/min
Flow Resistance	<0.7 cmH <sub>2</sub> O/l/s @ 3l/s
Accuracy Flow/Volume	±2%

### Hardware

Dimensions & Weight	9.4 x 7.8 x 3.1 in (24 x 20 x 8 cm) / 3.3 lb (1.5 kg)
Display	Color LCD 320 x 240 pixel
Printer	High speed thermal printer (4.7 in/12 cm)

### Standard Packaging Includes

Fitmate unit, RMR - flowmeter, RMR masks (10 ea), AC/DC adapter, USB cable, Fitmate PC software (CD-Rom), body meter, oxygen sensor

### Available Languages

Firmware	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Chinese, Korean, Japanese, Finnish, Polish, Russian, Slovenian
Software	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Finnish, Russian, Slovenian

### PC Configuration Required

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

### Safety & Quality Standards

Equipment complies with MDD (93/42 EEC); EN 60601-1 (safety) / EN 60601-1-2 (EMC) FDA 510(k) cleared. COSMED is an organisation whose quality management system is certified by CERMET according to UNI EN ISO 9001:2008 and UNI EN ISO 13485:2004.

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