The first compact metabolic system for assessing functional capacity and risk stratification

"Assess, Measure, Improve my Performance"
Fitmate™ is a small, inexpensive, user friendly, lightweight, battery-powered unit, facilitating accurate metabolic measurements in both the field and in the lab(1)

- Maximal oxygen uptake (VO₂ max) and measured METs
- Classification of Exercise Capacity & Anaerobic Threshold
- Nutritional Assessment and resting energy expenditure
- Full Spirometry (FVC, SVC, MVV, etc.)
- Multiple scores for Cardiovascular and Pulmonary Risk analysis
- Interfaces with conventional stress testing ECG
- Affordable, compact & easy to use

The Fitmate MED is the first portable diagnostic equipment designed to provide a complete picture on cardio pulmonary function. Fitmate MED measures maximal oxygen uptake, the “Gold Standard” for assessing exercise capacity and quantifying aerobic fitness. Fitmate MED 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 MED processes test results and stores all information inside its internal memory, ready for upload to PC software (included).

In combination with traditional stress ECG, the Fitmate MED can assess the patient’s functional capacity, overcoming limits of conventional cardiovascular stress test without the need of expensive equipment. In addition, Fitmate MED also provides multiple scores for cardiovascular risk stratification (Duke Score, Framingham Index, European Heart Score, BODE Index), which are useful for a more effective classification of the cardiac patient. Patient rehabilitation is then managed with exercise prescription and weight management software according to established international guidelines.

Clinical Applications
- Actual measurement (not estimation) of Exercise Capacity and METs
- Pre-operative evaluation for surgical risk
- Classification and prognosis of CHF (Congestive Heart Failure)
- Objective selection criteria and decision tool for heart transplant
- Differentiation between cardiac and pulmonary limitation
- Determination of exercise training intensity as part of cardiac rehabilitation
- Nutritional assessment during recovery from illness and chronic health management
- Obesity treatment and diabetes type II prevention
- Identification of energy requirements for respiratory disorders (COPD, sleep disorders, Cystic Fibrosis)

Cardio Respiratory Fitness (VO₂ max)
Fitmate MED has been validated for measuring VO₂ max and for predicting maximal oxygen consumption with a sub-maximal protocol. VO₂ max and sub max tests can be performed with most of cyclergometers and treadmills available in the market.
- VO₂, ventilation, heart rate and related parameters with a 15 seconds sampling rate
- Pre-defined VO₂ max 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
- Warnings and quality control messages (mask leaks, breathing pattern etc.) are displayed during test.

**Spirometry**

Complete spirometry testing (FVC, SVC, MVV, Pre/Post bronchial dilator response) is available with full compliance to latest ATS/ERS guidelines.

**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 based on Energy Balance equation.
- Complete Lifestyle and Physical activity monitoring up to 60 days (with optional accelerometer Lifecorder).

Real-time screenshot of VO2 max and Spirometry tests as shown on Fitmate MED LCD display.

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

The graph shows VO2, HR, markers and typed BP measurements.

Ventilatory limitation area for easy interpretation.

Peak values

Exercise capacity and exercise intensity for Cardiac Rehabilitation Training.

Sample of a thermal printout (110 mm wide).

Wide range of reports printable on PC (available in A4 or Letter size).
**Technical Specifications**

**Product** | **Description** | **REF**
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Fitmate MED | Clinical desktop metabolic monitor | C09066-03-99

**Standard packaging**
- Unit, Carrying Case
- PC Software, Battery Charger
- USB Cable, Oxygen Sensor
- Roll of thermal paper, Measuring Tape
- RMR Flowmeter ID18, VO2 Flowmeter ID28
- Reusable VO2 mask (Medium size), HR probe and belt
- Head cap for VO2 testing, AB filters (15 pcs.)

**Standard Tests**
- **Cardio Pulmonary Exercise Test (CPET)**
  - VO2max, Sub-max VO2, Thresholds (AT, RCP), Heart Rate with HR belt

**Nutritional Assessment**
- Resting Energy Expenditure (REE, RMR), Indirect Calorimetry with Face Mask or mouthpieces-antibacterial filter
- Weight Management Program (Energy Balance), Diet Planner, Standardized Measurements (WHR, BP, RHR, etc.), Body composition by Skinfold

**Spirometry**
- Forced Vital Capacity (FVC) Pre/Post, Slow Vital Capacity (SVC) Pre/Post, Maximum Voluntary Ventilation (MVV), Bronchochallenge - Bronchial Dilator/Constrictor test

**Fitness Assessment**
- Standardized Measurements (WHR, BP, RHR, etc.), Body composition by Skinfold

**Exercise Prescription**
- VO2/HR Training Zones (based on AT), Recommended Exercise Intensity for Cardiac Rehab

**CV Risk Analysis**
- Framingham Index, Duke Score, Bode Index, European Cardio Score

**Flowmeter**
- VO2max (Turbine Ø-28mm)
- RMR/REE (Turbine Ø-18mm)

**Type**
- 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 cmH2O/l/s @ 14l/s
- <0.7 cmH2O/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% (O2)
  - 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: 100-240V ± 10% 50/60 Hz

**Firmware**
- Available languages: Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Chinese, Korean, Japanese, Finnish, Polish, Russian, Slovenian

**Software**
- Fitmate Suite
  - Available languages: Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Finnish, Russian, Slovenian

**PC Configuration**
- Pentium or faster, Windows XP; VISTA, 7, 8, 10 (32/64 bit), 128 Mb RAM or more, USB, CD-Rom reader, 80 Mb on HD space available.

**Accessories & Options**
- **REE with Canopy Hood**
  - Kit including transparent canopy hood and blower for “gold standard” indirect calorimetry measurements at rest

- **Fitmate cart**
  - Fits Fitmate unit, printer, masks, printouts, carrying case

- **Calibration syringe**
  - 3L syringe for accuracy check of flow volume measurements

- **O2 sensor replacement kit**
  - Includes GFC sensor, sampling line and mounting key

- **Fitmate Lifecorder PLUS**
  - Integrated one-axial, solid state accelerometer

- **Pulse Oximetry**
  - Nonin Oximeter

**Safety & Quality Standards**
- MDD (93/42 EEC); FDA 510(k); EN 60601-1 (safety) / EN 60601-1-2 (EMC)

**Validation articles**
- More scientific studies on [www.cosmed.com/bibliography](http://www.cosmed.com/bibliography)