CARDIOVIT CS-200 ergospirometry

Cardiopulmonary exercise tests (CPET) by SCHILLER – it's the experience that counts

SCHILLER
The Art of Diagnostics

30 years of experience in ergospirometry – compact

Ergospirometry has become an indispensable tool for cardio-pulmonary function diagnostics.

The CS-200 ergospirometry platform enables accurate and reliable cardiopulmonary diagnosis in the case of cardiac failure, for the evaluation of surgical interventions or ventilatory impairment.

Volume sensor: accurate and extremely light

- The flow sensor is the centrepiece of an ergospirometry system. Thanks to the integrated variable orifice flow sensor technology, the CS-200 ergospirometry system offers accurate respiration measurements that are not affected by vapour, saliva or vibrations. The flow sensor is therefore drift-free and humidity-insensitive.
- Moreover, the flow sensor can be used for all purposes – it is suitable for measurements with children as well as seriously ill patients or high-performance athletes.
- Thanks to its special construction, the sensor is extremely light (29 g) and has a minimal resistance. The sensor can be used with a mask or mouthpiece; your patient or athlete will find both very comfortable.
- The flow sensor is validated according to ERS/ATS criteria

Simple operation, easy to learn

- Even the best system is only as good as its operator. Therefore, the operation must be as simple as possible so that you are in control of the system and not the other way around.
- Simply concentrate on the patient during the measurement, the program will do the rest. The ergospirometry measurement is controlled with only one button – it really couldn't be any easier.
- The same accounts for the volume and gas analysis calibration. The gas analysis calibration is performed fully automatically and the volume calibration is done by means of a calibration pump.

and concise

Features of the Power Cube gas analyser:

- Gas analysis with quick rise time and high sampling frequency - the best prerequisites for real "breath-by-breath" measurements
- SCHILLER gas analysers provide accurate values, even at high flow rates that may for example be too high for the measuring principle of the mixing chamber. The measurement accuracy is not affected, not even by vibrations next to a treadmill.
- The two-point gas calibration with economical gas consumption not only performs a fully automated calibration of the analysers but additionally calibrates the entire gas leading system

Low follow-up costs and maximum profitability

The CS-200 ergospirometry platform is a paramount example for economic efficiency.

- The CS-200 ergospirometry system can be installed as an upgrade of your existing CS-200 system; it is therefore an inexpensive solution to additionally use cardiopulmonary diagnostics.
- The gas sensors are maintenance-free. Moreover, thanks to the low gas consumption during automatic calibration, the gas bottle needs to be replaced much less frequently.
- The flow sensor is easy to clean and does not require drying time, therefore allowing for high patient throughput.

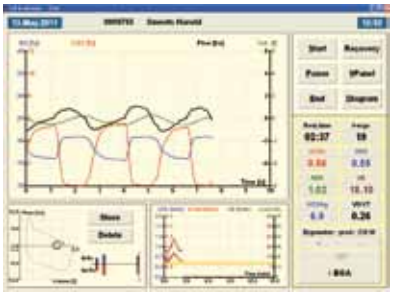
The main focus in on the patient – not on the computer

- Overview of 9-panel diagram according to Wasserman – even online during the measurement
- High-resolution full-screen presentation of the individual Wasserman diagrams to accurately determine the anaerobic threshold
- Large-scale diagrams for the monitoring of selectable parameters, including alarm function
- Automatic determination of the anaerobic threshold via preset method (V slope, CO_2 excess, EQO_2 minimum, RQ=1) or manually

Measurement

You have a direct overview (breath-by-breath), already during the measurement. It just takes one mouse click to toggle between the different display presentations:

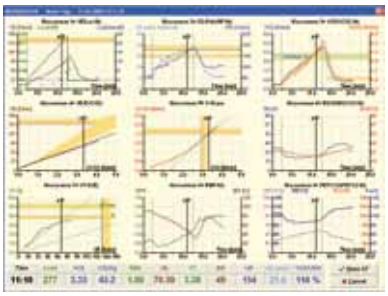
LF8 print screen



Breath-by-breath and intrabreath

Ergospirometry and dynamic flow-volume curves during exercise tests.

LF8 print screen



9-panel diagrams

9-panel diagram according to Wasserman during the measurement. The scaling of the axis is automatically adjusted for an optimal presentation at all times.

LF8 print screen

The art of presentation

Are you especially interested in one particular diagram? No problem at all. Compile your individual graph during the measurement.

SDS-200 print screen

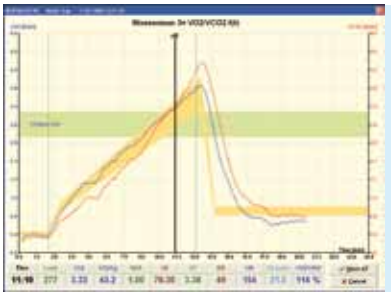
ECG and ergospirometry

Combined graph: ergospirometry and ECG – "ECG with automatic ST measurement"

Analysis

The correct analysis is crucial because a large amount of data is obtained during cardiopulmonary exercise tests.

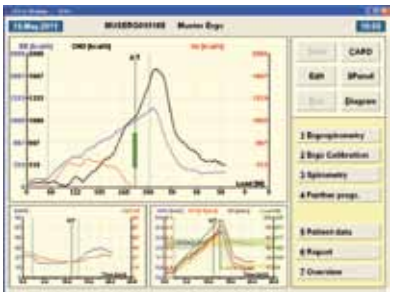
LF8 print screen



Anaerobic threshold

The analysis can be performed directly after the measurement or whenever you like, thanks to the possibility to re-open a saved measurement. The analysis focuses on the determination of the anaerobic threshold (AT). Various methods such as V-slope, ventilatory equivalent, RER=1 and CO_2 excess are available. The AT measurements are displayed and therefore serve as plausibility check.

LF8 print screen



Calorimetry: optimal diet

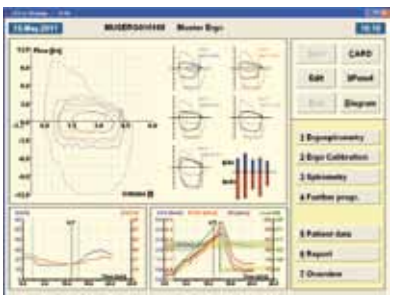
Determination of the resting metabolic rate and the exercise-dependent energy expenditure (EE), differentiating between carbohydrates, fat and proteins, is required to optimally control training and efficiently reduce weight. Energy expenditure is calculated based on the values for VCO_2, VO_2 and urea nitrogen.

LF8 print screen

ErgoCheck

The software assistant ErgoCheck conducts a plausibility check at the touch of a button, since maximum load is an important factor for the analysis and comparison of measurements. ErgoCheck also offers the possibility to determine the ventilatory threshold by combining different threshold models.

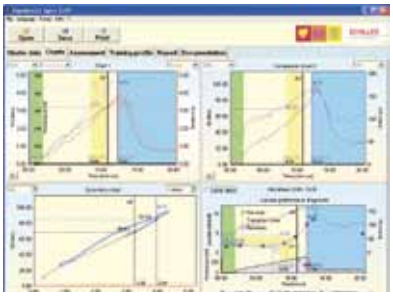
LF8 print screen



Intrabreath: measurement during exercise

Patients that display a significantly smaller flow-volume curve can only cope with a much lower load. The Intrabreath program superimposes recorded flow-volume curves and flow-volume curves obtained during recovery. This graph provides information on any limitations or overinflation during measurement. EELV and IC are determined very accurately.

Analysis



LFSport

The ideal supplement to LF8 ergospirometry. The LFSport software (option) combines ergospirometry analysis with lactate diagnostics and training schedules – the ideal tool for performance diagnostics

Networking options

The SEMA-200 database offers numerous networking options. Whether you network only the CS-200 ergospirometry system or several SCHILLER systems – you only have a single central database on a single server. Patient data therefore only needs to be entered once or it is directly adopted via GDT interface from the practice information system or via HL7 interface from the hospital information system (HIS). Measurement results can of course be sent back via GDT or HL7. At your working place, you can select to only view the reports or the printouts (PDF Reader), or to edit the measurement, e.g. the anaerobic threshold.

LF8-Software

The LF8 software features the following parameters:

- **Spirometry**
  (e.g. IVC - highest inspiratory vital capacity, EVC – highest expiratory slow vital capacity, MV – minute ventilation, MVV – maximum voluntary ventilation)
- **Flow/volume**
  (e.g. FVCex – forced expiratory vital capacity, FVCin – forced inspiratory vital capacity, FEV1 – forced expiratory volume after one second)
- **Ergospirometry**
  (e.g. VO2 – inhaled oxygen, VCO2 – exhaled carbondioxide, RER – respiratory exchange ratio, VE – expiratory volume)
- **Flow/volume during exercise ("Intra-breath")**
  (e.g. VT – tidal volume, IC – inspiratory capacity)

Option

- SpO_2
- Cardiac output (CO2 rebreathing)
- LFSport (evaluation software)
- SAECG (signal averaged ECG)
- Vector ECG
- BP-200 plus
- Polar interface

Peripheral devices
Combination of:

- Bicycles: ERG 910S, ERG 911S, ERG 911 BP, ERG 911 HK, SCHILLER Ergo-Couch
- Treadmills: MTM 1500 and Intertrack 8100T

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