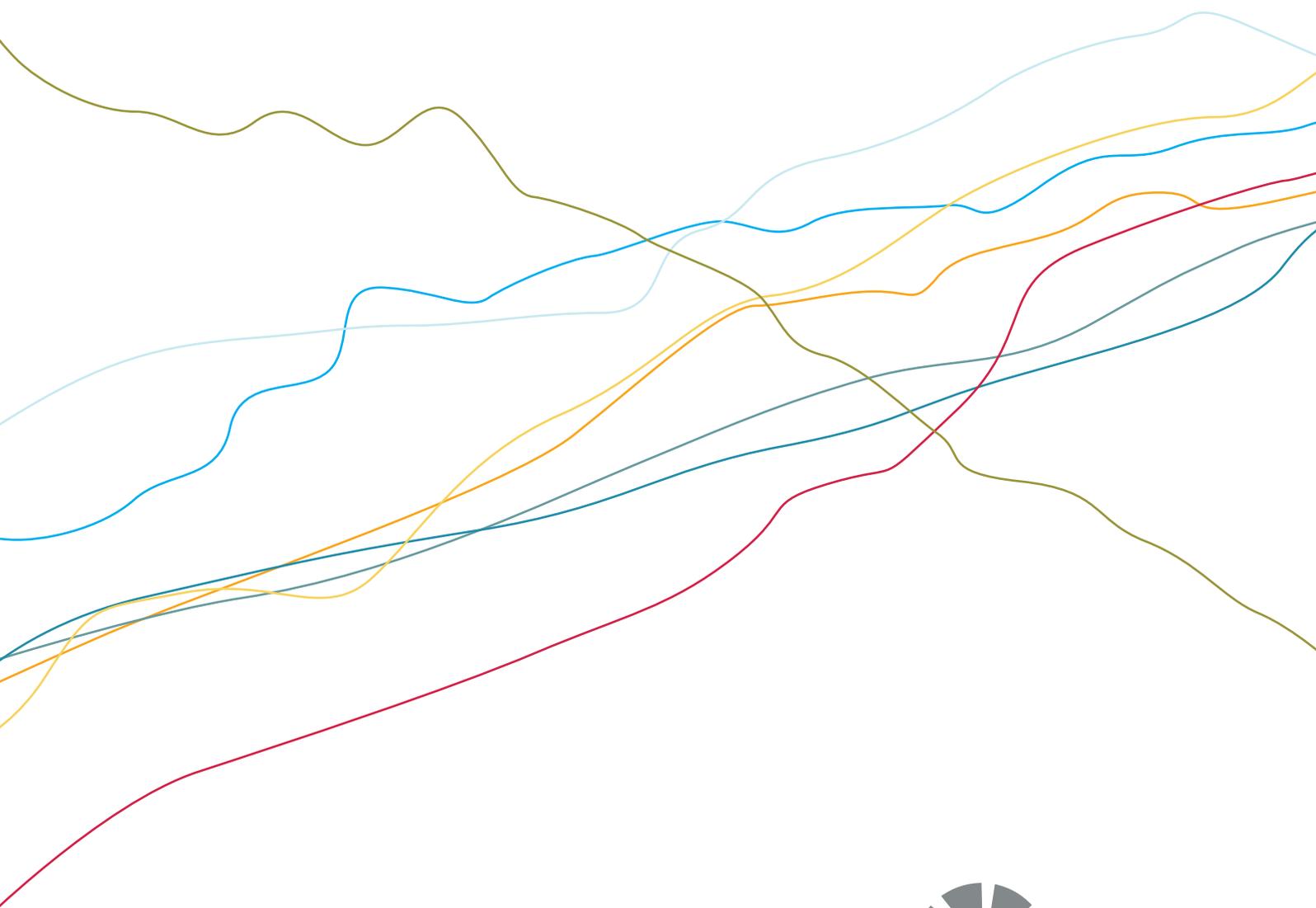


# SPIROERGOMETRY SOLUTIONS



# DEAR READER,

Thank you for your interest in what we do, in our hardware, software and the services we provide. All these components combined result in the excellent solutions that you expect from us. Together with your input, these solutions enable us to extend people's limits.

Your work and our daily work are quite the same: We record and measure a person's physical fitness and performance – as precisely and conveniently as possible. Only if the limits are known, they can be extended in an efficient and quantifiable manner.

This is one of CORTEX's goals. We therefore continuously work at overcoming technical limits. Our company continuously improves the products, implements innovative features and offers an excellent service to ensure smooth operation of the measuring systems.

For almost 25 years now, this is what we stand for. We have already overcome many boundaries and made various improvements. This is what motivates us and makes us continue on this path.

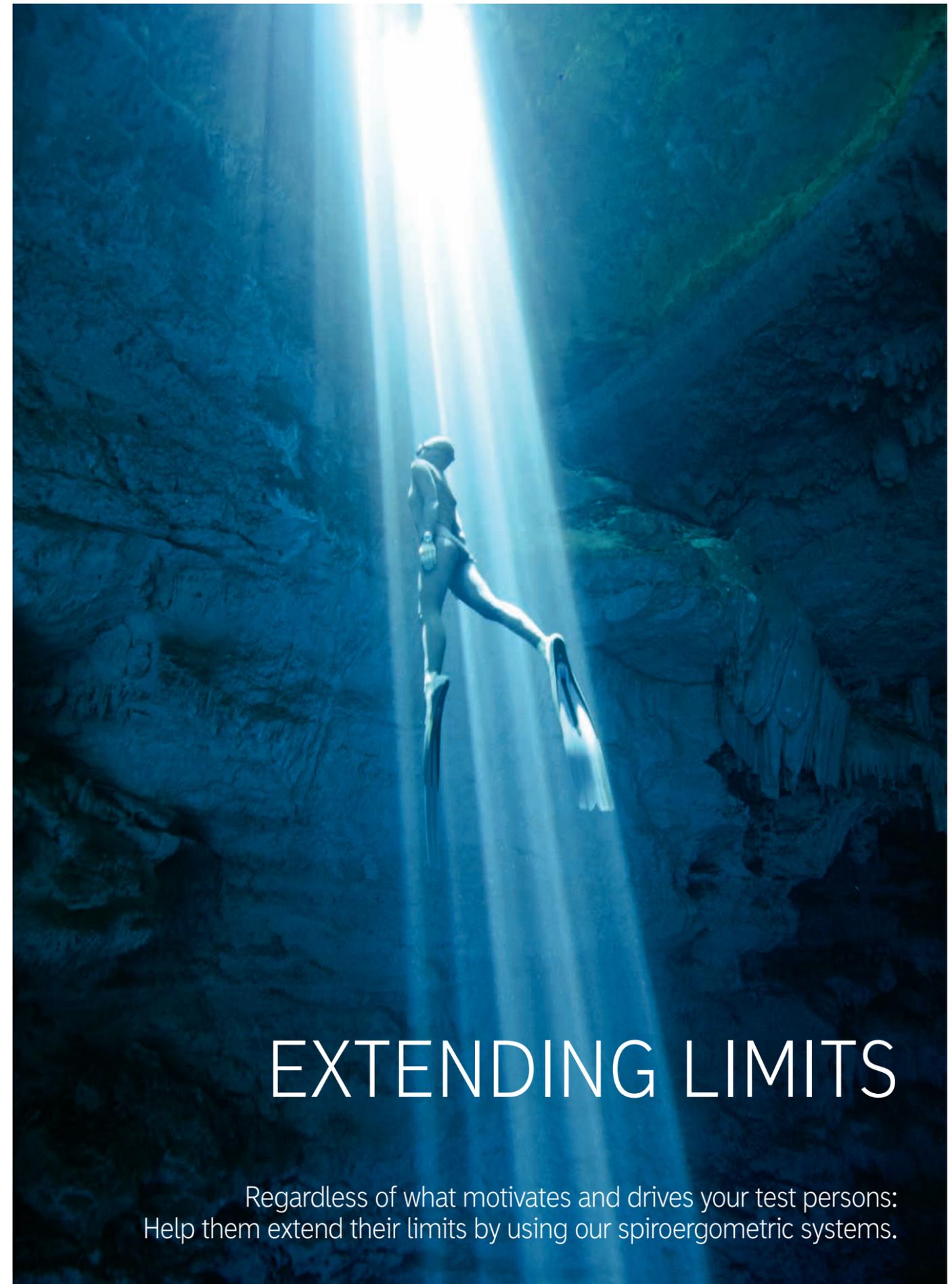
We would like you to go this path with us. A close cooperation will allow us to accompany and support many people who aim at improving their health, performance and fitness.



**Markus Siepmann**  
Managing Director



**Dr. Ralf Henker**  
Managing Director



## EXTENDING LIMITS

Regardless of what motivates and drives your test persons:  
Help them extend their limits by using our spiroergometric systems.

# AT HOME AROUND THE WORLD

Worldwide, the "Made in Germany" label stands for quality and a promise of guarantee. We at CORTEX feel committed to these values and keep this promise every day. Quality management systems, certifications and test seals however do not suffice:

Essential are also the motivation and performance of each individual staff member, short decision-making channels allowing flexible and fast measures that meet your needs and extensive know-how that is available in-house. It also includes brainstorming, product development, manufacturing, sales and dispatch handling. For us, service culture involves even more. We consider after-sales customer service to be equally important, such as installation, instructions, advanced training and service support. We want to have satisfied customers. For 25 years now, this is what we stand for – together with our partners around the world.



MADE IN GERMANY

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MOBILE



USE OF METAMAX® 3B AT AN ALTITUDE OF 7,906 M

# METAMAX® 3B

DESIGNED FOR OUTDOORS



Thanks to numerous features and continuous development, METAMAX® 3B fully and perfectly meets the specific requirements of mobile spiroergometry and those of various other fields of application.

To allow a full functional cardiopulmonary analysis in a field and a laboratory setting, METAMAX® 3B was specifically designed and manufactured for mobile use. Equipped with innovative Bluetooth® transmission technology and long-life batteries, the device offers completely new ways of mobile and professional performance diagnostics.



TELEMETRY: > 1.000 M



APPLICABLE IN EVERY HEIGHT



HUMIDITY: 0 TO 99 %



TEMPERATURE: -10° TO +40°C

# METAMAX<sup>®</sup> 3B

## DESIGNED FOR OUTDOORS

### TELEMETRY AND BLUETOOTH<sup>®</sup>

Further developed by CORTEX, the Long Range Bluetooth<sup>®</sup> module has a range of more than 1,000 meters. Despite its long range, it is subject to only minimal disruption through interferences. If ever the connection is interrupted, measured data are stored safely and permanently in the METAMAX<sup>®</sup> 3B.

In addition, METAMAX<sup>®</sup> 3B is equipped with BT Low Energy. Now and in the future, this BT standard ensures highest compatibility with external sensors, such as those for heart rate, SpO2 and velocity.

### THE REMOTE CONTROL DEVICE

The RemoteControl enables you to display the most important measuring data of METAMAX<sup>®</sup> 3B during a field test such as heart rate, oxygen intake, carbon dioxide output, gas exchange rate, respiratory rate, breathing volume and respiratory minute volume, velocity and performance.

### USING GPS

A fast-working high-performance GPS module is used to measure the velocity and location of a test person in a field test. Based on the calculated data of velocity and altitude change, the spiroergometric results give an objective picture of the person's stress factors in a field test.

### BATTERY AND BATTERY LIFESPAN

Thanks to its energy-efficient modules, the lifespan of the internal battery of METAMAX<sup>®</sup> 3B is six hours. A replacement battery is included in the product set. If in some cases this is not sufficient, an external battery (available on request) allows you to extend the usage by additional eight hours.

### STORAGE AND DATA MANAGEMENT

METAMAX<sup>®</sup> 3B meets the highest requirements of data management and data security that one expects from a medical product. All measured data are permanently stored in an internal memory – regardless of whether or not a data connection exists to the PC or the RemoteControl. The internal memory allows permanent storage of up to 400 tests.

### MEASURING THE HEART RATE

A continuous and valid measurement of the heart rate is extremely important when evaluating the test results. METAMAX<sup>®</sup> 3B makes no compromises in regard to quality of medical products: It uses the certified wireless Polar<sup>®</sup> H7 strap. You also have the option of fixing a comfortable and low-artefact 1- or 3-channel ECG strap.

### FLEXIBLE CARRYING SYSTEM

The award-winning METAMAX<sup>®</sup> 3B design was developed taking ergonomic aspects into account. The device's low weight and the option of either wearing it at your chest or on your back make it very comfortable and safe in all situations.



product  
design  
award

2001

# METAMAX<sup>®</sup> 3B

DESIGNED FOR OUTDOORS



## VALID GAS EXCHANGE ANALYSIS

Using an ergonomically formed mask, a small portion of your breathing air is transmitted via the volume flow sensor. To ensure optimal spirometry, it is crucial that the gas mask fits perfectly and is fixed tightly. Therefore the masks are available in various sizes and forms. In addition, the design of the mask offered by us allows you to reliably check the correct fit of the mask before starting the measuring process.

### CONDITIONS OF USE

**Temperature:** -10° to +40° Celsius  
**Pressure:** 500 to 1050 mbar  
**Humidity:** 0 to 99 % (non-condensing)

### TELEMETRY

**Range:** max > 1,000 m  
**PC interface:** USB 2.0 with Long-Range Bluetooth<sup>®</sup> receiver or Bluetooth<sup>®</sup> USB adaptor

### ELECTRICAL DATA

**Power supply:** Akku  
**Battery life:** 6 hours  
**Service life with external battery:** 8.5 hours

### MECHANICAL DATA

**Size (length x width x height):** 2 x (120 x 110 x 45 mm)  
**Weight:** 580 g (without battery)



## HEART RATE AND GPS\*

A fast-working high-performance GPS module is recommended to measure the velocity and location of a test person outdoors. A continuous and valid measurement of the heart rate is extremely important when evaluating the test results. Use the certified wireless Polar<sup>®</sup> H7 strap or fix comfortable low-artifact 1- or 3-channel ECG straps.

## APPLICATION SOFTWARE METASOFT<sup>®</sup> STUDIO

The MetaSoft<sup>®</sup> Studio application software represents the basis of all CORTEX systems and is of prime importance for data acquisition and data analysis. The workflow-based software supports the user while carrying out the tests. The software can be configured and adjusted to individual situations and working environments. Additionally, MetaSoft<sup>®</sup> Studio controls and monitors all spirometric processes and manages the peripheral systems, such as ergometers and heart rate and blood pressure measuring devices. Linked by an interface, spirometric data and ECG data can be displayed synchronically.



## LAPTOP\* AND REMOTE CONTROL

The handy and robust RemoteControl allows you to check the key measuring data at any time. Furthermore you can define markers or give audio instructions to stay in touch with your proband – without needing to take along and to use your sensitive laptop outside.



Product videos are available in our media library:  
[cortex-medical.de/Media-Library.htm](http://cortex-medical.de/Media-Library.htm)

## SOFTWARE FEATURES\*

The various software features of MetaSoft<sup>®</sup> Studio allow you to design daily test routines according to your needs. For example: The Performance Assessment and Exercise Scheduler are two comprehensive options for use in sports medicine. MetaSoft<sup>®</sup> Studio also offers various export functions and interfaces for convenient and secure data transmission to spreadsheet programs, medical practice systems or hospital information systems. Read more about MetaSoft<sup>®</sup> Studio and the options in the chapter called SOFTWARE.

# METALYZER<sup>®</sup> 3B

FOR AN ACTIVE LIFE



METALYZER<sup>®</sup> 3B is a portable high-resolution spiroergometric system with breath-by-breath technology. It allows a complete medical functional analysis of a person's lung, heart and metabolism at rest and under stress. Due to the ECG connection and various hardware and software options, METALYZER<sup>®</sup> 3B is particularly versatile. It can be used either as spiroergometric measuring station for performance diagnostics or as a complete cardiopulmonary testing solution.

## INFORMATION AND ACCURACY



SPIROERGOMETRY

LACTATE TEST

PWC

BORG



# METALYZER® 3B

## USER-FRIENDLY AND FLEXIBLE

### GREATER CONVENIENCE WITH BLUETOOTH® SMART

The integrated Bluetooth® SMART technology allows you to easily and quickly connect METALYZER® 3B to wireless peripheral devices. Measuring the heart rate – for example – using the wireless Polar® H7 strap, gives a completely new dimension to the process as regards range and security of data transmission.

### EASY MAINTENANCE

When speaking about METALYZER® 3B, customers like to call this product the “work-horse”. It runs reliably, not needing much maintenance or calibration. Gas calibration must only take place every four weeks. Small gas cartridges with an automatic gas-on-demand valve ensure correct dosage of the volume and pressure during calibration.

### SERVICE-FRIENDLINESS

You do not need many consumable supplies. Due to the product's service-friendly set-up, the user can exchange them fast and easily. Therefore the device is ready to use at any time.

### PORTABLE DUE TO EXTERNAL BATTERY

With the optional external battery you can perform measurements without needing a power outlet.

### MEASURING AT VARIOUS LOCATIONS

The entire system is portable and of low weight. You can easily use METALYZER® 3B at different places, enabling you to perform measurements for example directly at a customer's or a cooperation partner's site.

#### CONDITIONS OF USE

**Temperature:** +10° to +35° Celsius  
**Pressure:** 500 to 1050 mbar  
**Humidity:** 0 to 99% (non-condensing)

#### ELECTRICAL DATA

**PC interface:** USB (cable or Bluetooth®)  
**Power supply:** Input 100-250 V AC  
50-60 Hz, 12 W  
**Operating time with external battery:**  
8,5 hours

#### MECHANICAL DATA

**Size (length x width x height):**  
235 x 165 x 85 mm  
**Weight:** 940 g

# METALYZER® 3B

## USEFUL LINKAGE

METALYZER® 3B is used in connection with the application software MetaSoft® Studio. The system can be linked to numerous ECG, blood pressure and other peripheral devices of known manufacturers.



## VALID ANALYSIS OF RESPIRATORY GAS

To ensure optimal spiroergometric results, it is important that the mask fits optimally and is fixed tightly. Therefore we offer sets with masks in different sizes and fits for adults and children.



## AUTOMATIC MEASUREMENT OF BLOOD PRESSURE

The SunTech Tango M2 monitor allows automatic blood pressure measurements during spiroergometric tests.

## ERGOMETER AND TREADMILLS\*

With the „bike M“ product, CORTEX offers its own ergometer for medical use and specifically for use in sports medicine. On request, we also offer and deliver other products. Thanks to various software interfaces, all CORTEX systems can be combined and connected to more than 40 ergometers and treadmills manufactured by well-known companies. On request, we also offer individual connection to other devices.

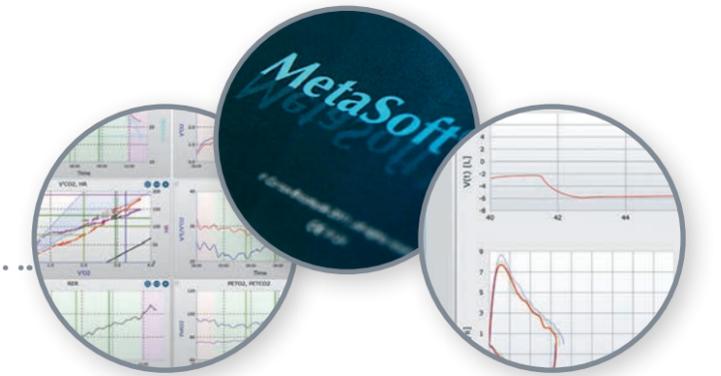
## MONITORING THE HEART FUNCTION\*

The spiroergometry system can be linked to various ECG and heart rate measuring devices. CORTEX recommends – for example – the following ECG systems:

- Polar® Heart Rate Sender Set H7
- Polar® Heart Rate Sender Set T34
- Polar® Heart Rate Receiver incl. Cable
- Custo cardio 200 BT (HRV)
- Custo cardio 100 BT/ERG (HRV)
- 1-channel ECG set for METAMAX® 3B
- 3-channel ECG set for METAMAX® 3B

## SOFTWARE FEATURES\*

The various software features of MetaSoft® Studio allow you to design daily test routines according to your needs. For example: If you wish to analyze medical data quickly and safely, the Interpretation Assistant by Wasserman and the Pre-operative Risk Assessment are useful features.



Equipment recommendation:  
complete solution meta control 3000

MetaSoft® Studio also offers various export functions and interfaces for convenient and secure data transmission to spreadsheet programs, medical practice systems or hospital information systems. Read more about MetaSoft® Studio and the options in the chapter called SOFTWARE.

## SECURE SYSTEM CALIBRATION\*

CORTEX offers matching calibration sets for optimal and long operability of its spiroergometric systems. The user can do the regular calibration of the gas, volume and pressure sensors himself.



Product videos are available in our media library:  
[cortex-medical.de/Media-Library.htm](http://cortex-medical.de/Media-Library.htm)

## EFFICIENT HANDLING

The rolling cart CORTEX mobile PLUS offers sufficient storage space for all test and computer equipment. You can place two TFT monitors, computers and all peripherals next to the spiroergometric system.

## TWO STRONG COMPANIES. ONE SYSTEM.

### meta control 3000

The meta control 3000 product represents an optimally aligned system consisting of CORTEX's METALYZER® 3B and custo med's 12-channel ECG. This complete solution allows easy, bidirectional and intuitive cardiopulmonary diagnostics. The set delivered includes – aside from the measuring systems – the bicycle ergometer CORTEX bike M\*, a powerful computer\* with peripherals and the application programs MetaSoft® Studio and custo diagnostic. And on top: All devices can be optimally placed on the rolling cart CORTEX mobile PLUS.

# CUSTOMER SOLUTIONS

FULFILLING YOUR GOALS



**Whatever it is that drives your test persons:  
Extend their limits using our spiroergometric solutions.**

As is true for any technical application, limits to medical measuring technology will arise again and again. The challenges might be special environmental conditions such as extreme temperature, dust or humidity. Special locations such as ice deserts, outer space stations and maybe also sitting in a Formula 1 racing car may set limits to standard solutions.

But why stop here? It is exactly these challenges that motivate us, CORTEX, to overcome technical limits. Universities, research institutions and scientists need individual solutions that function well even under exceptional environmental conditions. New fields of research often require adjustment and upgrading of research equipment.



CUSTOMER SOLUTIONS



In the past, initial contacts and the cooperation with customers have led to the development of specific products. One example is the spiroergometric solution that we offer for swimming.

### The Element of Water

METASWIM was developed in close cooperation with research and sports training centers, for example the Institute for Applied Training Sciences in Leipzig (Germany). In this case one of the challenges was to design specific snorkels for freestyle and backstroke in order to regulate saliva and splash water accumulation in the snorkel and to avoid any distorting measuring effects due to high humidity in indoor swimming halls. The goal was to measure the swimmer's performance exactly where the latter is in his element: in the flow channel, in the pool or in open waters.

The proven CORTEX telemetry system wirelessly transmits precise data during the performance test to the MetaSoft® Studio software and ensures precise analysis of the physiological parameters. Even from water, the transmission of heart rate data functions optimally and reliably.

### METASWIM at a glance

- breath-by-breath spiroergometric system
- almost unlimited test times
- snorkels with special design and active saliva suction
- battery-run measuring unit with a service time of up to 8 hours without need to replace the battery
- wireless data transmission to the measuring PC
- reliable heart rate measurement
- easy cleaning and disinfection of the snorkels and measuring device



METASWIM video taken at the pool – available in our media library:  
[cortex-medical.de/Media-Library.htm](http://cortex-medical.de/Media-Library.htm)

# CUSTOMER SOLUTIONS

## FULFILLING YOUR GOALS

### The Element of Fire

Another element examined during R & D work performed by CORTEX is fire. It is indeed difficult to simulate the stress of fire-fighters when they are on duty. In situations of heat and stress, with respiratory protection, heavy equipment and many other factors, it is particularly important to measure their effect on the probands when all these factors occur parallel and combined. For this purpose, the mobile METAMAX® 3B was adjusted in close cooperation with the customer. As a result, it is now possible to precisely determine the metabolic load and physical fitness of fire-fighters under realistic conditions.

### The Element of Air

CORTEX systems can also be used up in the air. Pilots of combat jets have an extremely challenging job and must be able to cope with various types of stress. To get valid data for these scenarios, METAMAX® 3B was redesigned in such a way that the system tolerates extreme conditions and is integrated into the pilot's cloth.



### YOUR IDEAS ARE WELCOME

If you reach your limits and have special wishes and ideas, we would be happy to help you find a solution. Together we will work at extending your limits.



# SOFTWARE

## ONE SOFTWARE FOR ALL PROCESSES

The application software MetaSoft® Studio is the basis of all CORTEX systems and of prime importance for data acquisition and data analysis. The software manages and monitors all spiroergometric processes and controls the peripheral systems, such as the ergometers and the heart rate and blood pressure measuring devices.



Intuitive workflows are used to lead the users through the programs. The user goes through all spiroergometric phases – step by step. Based on a modular system, MetaSoft® Studio allows you to combine individual test and analytic processes. Each user can thus define typical test series, making them to his or her standard series.

Graphical displays facilitate the evaluation of test results. The user has different display formats to choose from or can configure the display of the test results according to his or her preferences. Reporting functions allow the user to display test results in a clearly structured form. A mouse, keyboard or touch screen is used to run the software.

# SOFTWARE

## ADDITIONAL SOFTWARE FEATURES

Comprehensive software features are available for MetaSoft® Studio. The software offers a broad range of specialized application programs. The features include: modules for meta control 3000, connection to third-party ECG, the Performance Assessment and the Exercise Scheduler, Energy metabolism under stress tests, measuring of basic and resting metabolic rates, Interpretation Assistant by Wasserman, Pre-operative Risk Assessment, Spirometry and HL7 Interface. On the following pages some of these software features are explained in more detail.

## PERFORMANCE ASSESSMENT

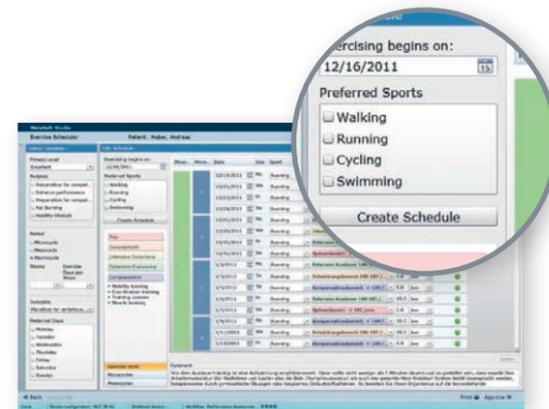
The optional CORTEX MSS Performance Assessment determines optimal training zones based on respiratory thresholds and a person's maximum oxygen uptake. It defines individualized heart rate training zones for different stress phases and training goals. Progress made during training sessions is precisely documented, thus motivating the user over the long term.



## EXERCISE SCHEDULER

The CORTEX MSS Exercise Scheduler transfers the results determined by the Performance Assessment and displays them in well-structured overviews. Based on the performance status determined before and on defined framework conditions (such as training goals, stress increase, frequency and type of sport), training plans are set up in the form of micro, meso and macro-cycles. The user can create own templates and then further customize them in the Exercise Scheduler or use pre-installed templates for a quick start.

Instead of "just" presenting the results to the users, concrete implementation and handling instructions are offered to the test persons.



Video product demonstration MetaSoft® Studio:  
[cortex-medical.de/MetaSoft-Studio-en.htm](http://cortex-medical.de/MetaSoft-Studio-en.htm)



## SPIROMETRY AT REST

All CORTEX products for spiroergometry can be used as spirometers. The software feature CORTEX MSS Spirometry is part of the basic program MetaSoft® Studio. It offers vital capacity (VC), forced vital capacity (FVC) and maximum ventilator volume (MVV) tests as well as numerous other measuring, calculation and comparing options.

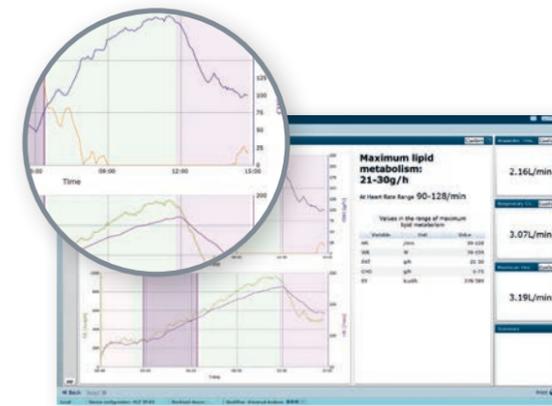
## ENERGY METABOLISM

### Basic and Resting Metabolic Rate

The resting metabolic rate informs you about the proband's individual energy balance. To determine the rate, the energy metabolism at rest is measured and compared with anticipated values. The parameter is used as reliable basis for controlled caloric intake, for example in the context of individual nutrition plans.

### Energy Metabolism under Stress

A well-functioning energy metabolism is the prerequisite for any type of performance. A person's metabolism can easily be improved by well-balanced training units. This requires an individual measurement of the energy balance and of fat and carbohydrate burning at increasing stress levels. Using the resulting data, MetaSoft® Studio determines the optimal heart rate zones for improving the relevant person's metabolic efficiency.



<b>BICYCLE AND ARM ERGOMETERS</b> <ul style="list-style-type: none"> <li>over 40 devices of leading manufacturers, e.g. Ergoline, Cycclus2, Lode</li> <li>individual connection to other devices on request</li> </ul>	<b>META CONTROL 3000</b> <ul style="list-style-type: none"> <li>bidirectional connection to the cardiologic solution custo diagnostic produced by custo med</li> </ul>	<b>OXYMETERS</b> <ul style="list-style-type: none"> <li>Nonin 4100 Bluetooth®</li> </ul>
<b>TREADMILLS</b> <ul style="list-style-type: none"> <li>over 40 devices of leading manufacturers, e.g. h/p/cosmos, Lode, Technogym</li> <li>individual connection to other devices on request</li> </ul>	<b>12-CHANNEL ECG SYSTEMS</b> <ul style="list-style-type: none"> <li>AmedTec ECG Pro</li> <li>Dr. Schmidt Smartsoft</li> <li>Fukuda Stress ECG</li> <li>GE CardioSoft, CASE</li> <li>Medset PADSy</li> <li>Micromed Elite</li> <li>Mortara, XScribe M12A-USB</li> <li>Norav PC ECG</li> <li>Schiller SDS-104</li> <li>Spacelabs Sentinel</li> <li>Welch Allyn Cardio Perfect</li> </ul>	<b>KIS / PRACTICE SOFTWARE</b> <ul style="list-style-type: none"> <li>HL7 (ADT, ORM, ORU, MDM)</li> <li>GDT</li> </ul>
		<b>BLOOD PRESSURE MEASURING DEVICES</b> <ul style="list-style-type: none"> <li>SunTech Tango, Tango+, Tango M2</li> </ul>
		<b>MICROSOFT EXCEL EXPORT</b> <ul style="list-style-type: none"> <li>Excel (unlimited number of freely definable templates)</li> </ul>

# ACCESSORIES

## ADDITIONAL DEVICES FOR YOUR SPIROERGOMETRY



### CORTEX SERVICE PACK

When purchasing a spiroergometer, we offer an extended manufacturer's warranty and a broad range of consumable supplies and replacement material.

#### Included:

- extension of warranty to 3 years
- replacement sensors
- other spare parts
- calibration gas bottle



**Various Types of Heart Function Monitoring 1-/3-/12-channel ECG**  
Spiroergometry – connectable to the following ECG systems:

- Polar® Heart Rate Sender Set H7
- Polar® Heart Rate Sender T34
- Polar® Heart Rate Receiver with cable
- Custo cardio 200 BT (HRV)
- Custo cardio 100 BT/ERG (HRV)
- 1-channel ECG Set for METAmax® 3B
- 3-channel ECG Set for METAmax® 3B

#### For Laboratory Use

##### Stationary Kit for METAmax® 3B

This optional kit allows you to enhance METAmax® 3B to become a stationary system. The kit includes a prolonged suction section, a medical power supply pack and an extension for the volume sensor cable.



#### Equipment Cart CORTEX mobile PLUS

How about using a cart with an integrated isolating transformer for your entire test and computer accessories? In addition to the spiroergometric system, two TFT monitors, computers and all accessories can be installed on the cart to save space.



#### Measuring Oxygen Saturation Nonin BT

The Nonin Xpod-BT Finger Clip monitors the oxygen saturation (SpO2) of the proband. The wireless Bluetooth® connection makes the device particularly convenient and easy-to-use.



#### Ergonomic in all Situations Back Carrying System for METAmax® 3B

You have the choice: CORTEX offers a chest strap or optionally a back strap to fix the METAmax® 3B device on your back.



#### Determining the Exact Position GPS Kit for METAmax® 3B

The GPS Kit allows you to determine a proband's current position and the altitude during a field test. Based on these data, the device calculates the person's speed and changing levels of altitude, giving you an objective assessment of the results and stress factors in field tests.



#### Wireless 3-Channel ECG custo guard

The custo guard product allows a user-friendly 3-channel ECG measurement using a chest strap. The advantage: The hardly visible electrodes are integrated into the strap and ensure secure data transmission via telemetry.

#### More Independent Energy

##### External battery for METAmax® 3B

Extend the service time of your METAmax® 3B using an additional external battery.

##### Battery Option METALYZER® 3B

METALYZER® 3B runs independently from a power supply system if you install a battery.



#### Secure Calibration Professional Calibration Kit

The calibration set has all the accessories needed for an independent calibration of the systems. In addition to the calibration pump, the kit contains a user-friendly, automatic gas valve and a gas cartridge. If needed, you can also order a practical storage and transportation case.

#### For Special Use

##### Special Sample Line with Dry Granulate

Best fit for particularly humid test environments: the special suction sections with drying tube or dry granulate.



#### Blood Pressure Module SunTech Tango M2

The Tango M2 monitor allows secure and automated measuring of blood pressure in a stress setting. Due to the connection to the ECG, the system can recognize and overcome noise that might be caused by the ergometer.

# AT A GLANCE

• included ○ available as option - not available

	METAMAX 3B	METAMAX 3B sport edition	METALYZER 3B	meta control 3000 with METALYZER 3B and cardio 200	meta control 3000 with METALYZER 3B and cardio 100	meta control 3000 with METAMAX 3B and cardio 200	meta control 3000 with METAMAX 3B and cardio 100	METASWIM
RemoteControl	•	•	-	-	-	•	•	-
Face Masks (S, M, L) with adaptor	1/1/○	2/2/2	1/1/○	1/1/○	1/1/○	1/1/○	1/1/○	1/1/○
Volume Transducer	•	•	•	•	•	•	•	•
Sample Line, 0.60 m/2 m/3 m	•/○/-	•/•/-	-/•/-	-/•/-	-/•/-	•/•/-	•/•/-	-/•/•
Special Sample Line (Dryer)	○	○	○	○	○	○	○	•
Heart rate sender set POLAR® H7/T34	•/-	•/-	•/-	•/-	•/-	•/-	•/-	-/•
Long Range Bluetooth® receiver	•	•	-	-	-	•	•	-
MaxSport jacket set, incl. 2 jackets (S, L)	•	•	-	-	-	•	•	-
Back carrying system	○	•	-	-	-	○	○	-
Calibration kit professional	○	•	○	•	•	•	•	•
METAMAX® 3B tray for CORTEX mobile PLUS	○	•	-	-	-	•	•	-
External battery	○	•	○	○	○	○	○	•
GPS kit	○	•	○	○	○	○	○	-
1-channel ECG	○	○	○	○	○	○	○	-
3-channel ECG	○	○	○	○	○	○	○	-
12-channel ECG custo cardio 200 BT	○	○	○	•	○	•	○	-
12-channel ECG custo cardio 100 BT	○	○	○	○	•	○	•	-
Oximeter SpO2 module	○	○	○	○	○	○	○	-
Blood pressure module Tango M2	○	○	○	○	○	○	○	-
Stationary kit (incl. Power supply, 2m-sample line, extension cable)	○	•	-	-	-	•	•	-
Ergometer CORTEX bike M	○	○	○	○	○	○	○	○
Cart CORTEX mobile Plus	○	○	○	•	•	•	•	-
Snorkel for METASWIM	-	-	-	-	-	-	-	•
Hygiene set for METASWIM	-	-	-	-	-	-	-	•
METASWIM heartrate kit	-	-	-	-	-	-	-	•
METASWIM, trolley	-	-	-	-	-	-	-	○
Spirometry with mouthpiece, nose clip and filter	○	○	○	○	○	○	○	○
PC workstation, incl. 2x19" screens, holders	○	○	○	○	○	○	○	-
CORTEX Service Package*	○	○	○	○	○	○	○	○
MetaSoft® Studio basic license	•	•	•	•	•	•	•	•
Performance Assessment	○	•	○	○	○	○	○	○
Exercise Scheduler	○	•	○	○	○	○	○	○
meta control 3000	○	○	○	•	•	•	•	-
ECG interface	○	○	○	○	○	○	○	-
Integrated 3-channel ECG	○	○	○	○	○	○	○	○
Spirometry	○	○	○	○	○	○	○	-
Metabolism for CPET	○	•	○	○	○	○	○	○
Basal Resting Metabolic Rate	○	○	○	○	○	○	○	○
Pre-operative Risk Assessment	○	○	○	○	○	○	○	-
HL7 Interface	○	○	○	○	○	○	○	○
Network License	○	○	○	○	○	○	○	○

SOFTWARE APPLICATION WITH OPTIONS

	METAMAX 3B®	METALYZER 3B®	METASWIM
MEASURING METHOD / SENSORS	Heart Rate	Polar® H7   3-channel ECG (optional)   12-channel ECG (optional)	
TELEMETRY	Range	max > 1,000 m	100 m
	PC Interface	USB 2.0 with Long Range Bluetooth receiver or Bluetooth USB adaptor	RS232
OPERATING CONDITIONS	Temperature	-10° to +40°C	+10° to +35°C
	Ambient Pressure	500 to 1,050 mbar	
	Relative Humidity	0 to 99 % (non-condensing)	
PHYSICAL SPECIFICATIONS	Dimensions (LxWxH)	2x (120 x 110 x 45 mm)	560 x 340 x 210 mm
	Weight	580 g (without battery)	940 g
ELECTRICAL SPECIFICATIONS	PC Interface	Bluetooth® 2.1	USB (cable or Bluetooth®)
	Power Supply	Battery with 6 hours operating time	Input 100-250 VAC. 50-60 Hz, 12 W
	External battery	8,5 h operating time	8,5 h operating time
			Lithium-Ionen-battery 5200 mAh   7,2 V nominal, sufficient for approx. 5-6 h measurement
QUALITY MANAGEMENT	DIN EN ISO 9001, DIN EN ISO 13485		
CONFORMITY	Guideline 93/42/EEGx2007/47/EG DIN EN ISO 60601-1, DIN EN ISO 60601-1-2 DIN EN ISO 10993-1, DIN EN ISO 980, DIN EN ISO 1041 DIN EN ISO 1041, DIN EN ISO 62304, DIN EN ISO 62366		
SYSTEM REQUIREMENT	Notebook/PC	Processor Intel Core 2 Duo/2 GHz, AMD Athlon 64 X2/2 GHz or higher Graphics DX9 compatible, with 128 MB RAM or higher Screen: 1280*1024* (4:3), 1280*800 (16:9) Hard disk: ≥ 20 GB RAM: ≥ GB	
	Operating System	MS Windows® 7,8 (32, 64 Bit) MS Windows® Server 2003, 2008, 2012 (32, 64 Bit)	
	Interfaces	LAN min. 2 x USB Bluetooth® 2.1 or higher	
	Optional	Sound Card, CD / DVD writer	
SYSTEM REQUIREMENT	Bicycle and Arm Ergometers	More than 40 devices of leading manufacturers, e.g. Ergoline, Cycclus2, Lode Individual connection to other devices on request	
	Treadmills	More than 40 devices of leading manufacturers, e.g. h/p/cosmos, Lode, Technogym Individual connection to other devices on request	
	meta control 3000	Bidirectional connection to custo diagnostic by custo med	
	12-channel ECG	AmedTec ECG Pro/Dr. Schmidt Smartsoft/Fukuda stress ECG/GE CardioSoft, CASE/Medset PADS/Micromed Elite/Mortara, Xscribe M12A-USB/Norav PC ECG/Schiller SDS-104/Spacelabs Sentinel/Welch Allyn Cardio Perfect	
	Oxymeters	Nonin 4100 Bluetooth®	
	KIS/Doctor's Practices Software	HL7 (ADT, ORM, ORU, MDM)/GDT	
	Blood Pressure Measuring	SunTech Tango/Tango'/Tango M2	
	MS Office	Excel (variable quantity of free definably patterns)	

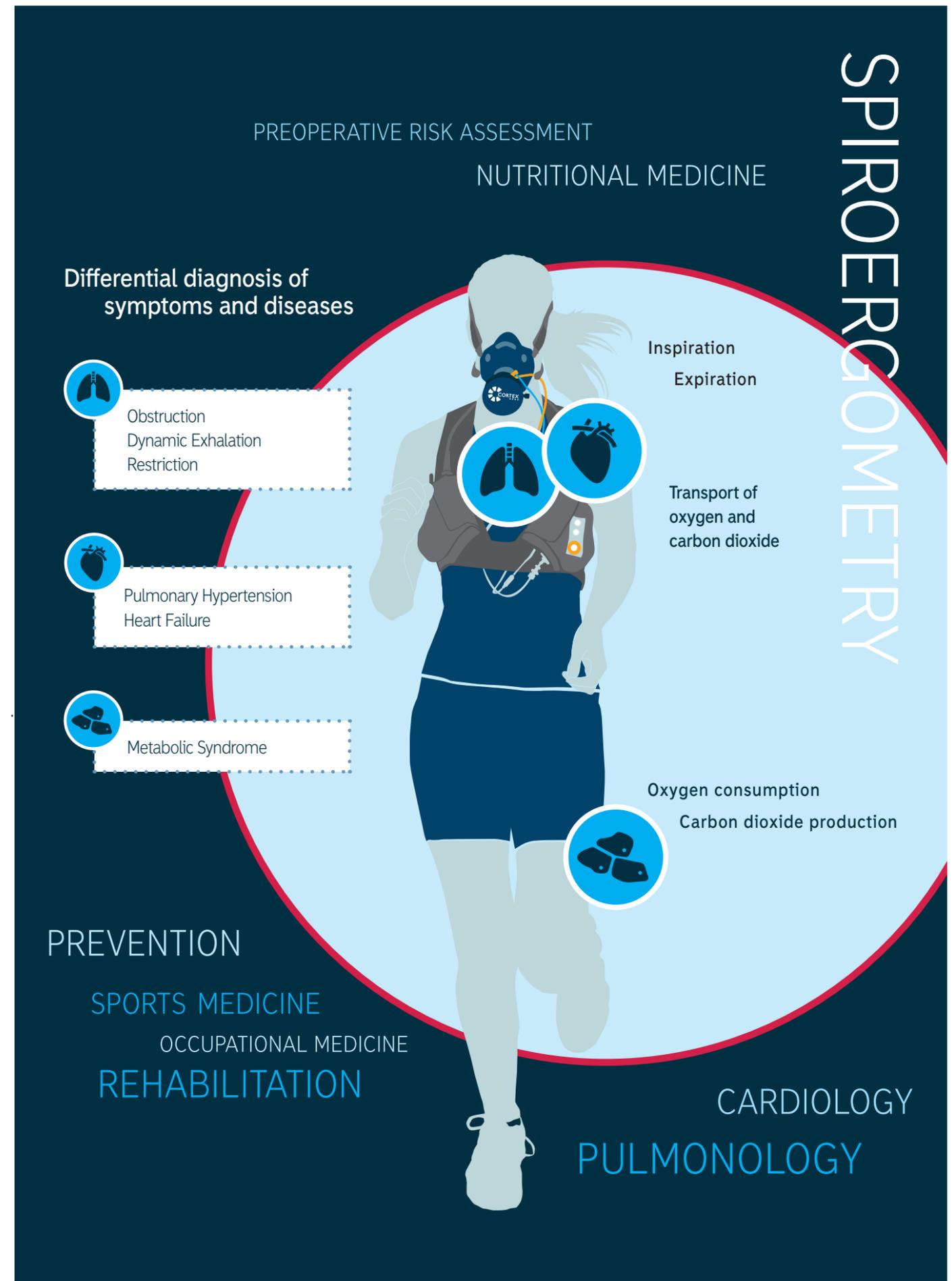
# SPIROERGOMETRY

## WHY SPIROERGOMETRY IS SO VALUABLE

Spiroergometry (also called ergospirometry) is defined as simultaneous examination of a person's reactions of its heart, lung, circulatory system and metabolism to physical stress. Using a mask or a mouthpiece, the respiratory gas is led through a volume sensor that records all physical breathing characteristics. A suction section connected to it is used to continuously take samples from the respiratory gas flow. The system analyzes their oxygen and carbon dioxide concentration.

The main values measured and recorded for spiroergometric tests are breathing volume, breathing frequency, oxygen uptake, carbon dioxide output and heart rate. Additional parameters can be derived from these, such as respiratory minute volume, gas exchange rate and ventilatory equivalents for oxygen and carbon dioxide.

Only spiroergometric diagnostics allow a differentiated assessment of how well a person's single organ functions and how these organs interact with each other.



# OUR COMPANY

CORTEX was founded in 1991. The company is THE expert in spiroergometry and in mobile respiratory gas analyses. Our portable and mobile systems allow our customers to acquire exact measuring results in the areas of medical diagnostics, therapy, rehabilitation, performance diagnostics and prevention. The company has its main business site in Leipzig (Germany) and a wide network of local distributors and service partners all over the world.

## **Quality Guarantee**

For CORTEX, the quality of its products and services is of ultimate importance. Since the company's founding, its philosophy is: "Fast implementation of innovative ideas supported by excellent service". The CORTEX products are CE-certified and meet European quality and safety standards. All CORTEX distributors and service partners have been quality-checked.

## **Active Input from our Customers**

This means for CORTEX: considering customer requests in the development process, constant improvement of the company's products and regular quality control of all corporate processes. Excellent service can only be guaranteed this way.

## **Located in Germany**

Development, manufacture and customer support: All this takes place "under one roof" at our business site in Leipzig. Our committed staff and our international business partners stand for top quality and customer orientation – now and in the future.

## **Our Success Factors**

The success of our company is due to various factors. We have strongly motivated and highly skilled employees who responsibly do their complex work in an open and trustful working environment. They always try to find the best possible solution.

CORTEX has a worldwide network of distributors, service and business partners. Our cooperation is characterized by confidence and mutual respect. On a continuous basis, we improve and enhance our products and services. We see our customers as partners and deal with them accordingly. Each individual is important for our company's success. The success motivates us in our daily work. Our goal is to strengthen our leading position in mobile performance diagnostics and to remain our customers' preferred partner for spiroergometry.



# IMPRINT

## **Publisher**

CORTEX Biophysik GmbH  
Walter-Köhn-Straße 2 d | 04356 Leipzig, Germany  
Telephone: +49 341 487 49-0  
Fax: +49 341 487 49-50  
E-Mail: [info@cortex-medical.com](mailto:info@cortex-medical.com)  
[www.cortex-medical.com](http://www.cortex-medical.com)

## **Creation / Editorial Office**

BRANDWAND Agentur für Marketing und Kreation  
Maik Marten  
[www.agentur-brandwand.de](http://www.agentur-brandwand.de)

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Dr. Markus DeMareés – Institut für Trainingswissenschaften und  
Sportinformatik, DSHS Köln | Universität Chemnitz Sportwissen-  
schaftliche Fakultät | Universität Leipzig – Institut für  
Bewegungs- und Trainingswissenschaft der Sportarten II  
Team Xtreme Everest | Zentrum für Sportmedizin Münster  
Gregor Eisele | Michele Falzone | Dr. Frank Hebllich



**CORTEX Biophysik GmbH**

Walter-Köhn-Straße 2 d | 04356 Leipzig, Germany | Telephone: +49 341 487 49-0 | Fax: +49 341 487 49-50

E-Mail: [info@cortex-medical.com](mailto:info@cortex-medical.com) | [www.cortex-medical.com](http://www.cortex-medical.com)

