

NEW

The zebris FDM - System - Gait Analysis for Research and Clinical Applications



FDM
SYSTEM

zebris

The zebris FDM - System - Easy and Accurate Gait Analysis

The new zebris FDM measuring system functions using high-quality capacitive force sensors that are arranged in matrix form in three different platform sizes.

As a result, each sensor produces its own calibration curve.

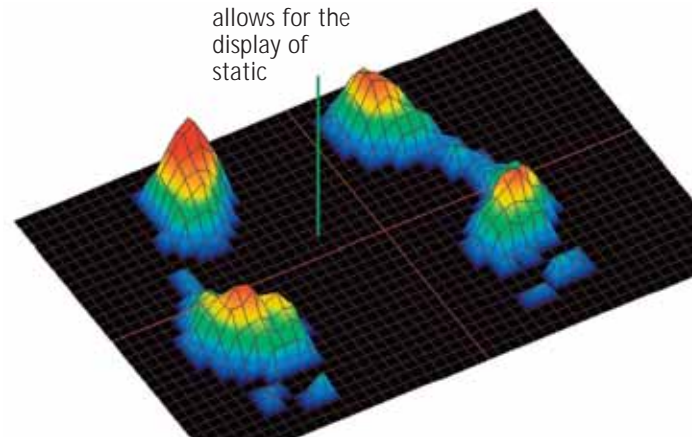
The measuring plates enable the static and dynamic force distribution to be analyzed under the feet while standing and walking.

The system is connected directly to a commercially available PC via a USB interface and requires no additional electronics. Due to the measuring options provided, the FDM-System can be expanded to meet your analysis needs.



Through use of the optional Bluetooth telemetry EMG, muscle function can be analyzed parallel to the floor reaction forces. By connecting goniometers it is also possible to record the angles of the joints. Up to eight analog signals can be synchronized to the force values and displayed in the evaluation software.

As a supplement to the gait analysis, analysis of static force distribution allows for the display of static posture during a standard examination.





The measuring plate is integrated in a level walking area and can also be used with walking aids. The measuring cycle can be repeated up to four times. The measuring parameters are automatically calculated in the software program.

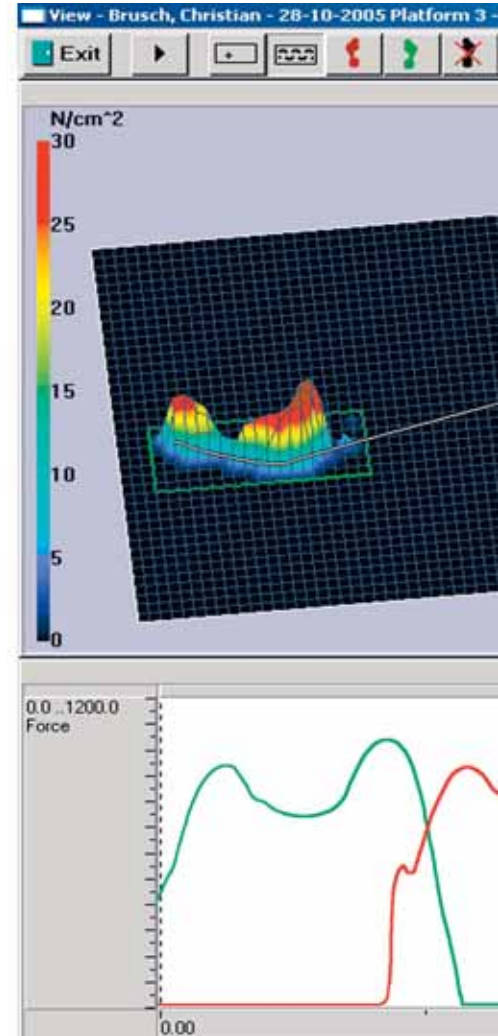
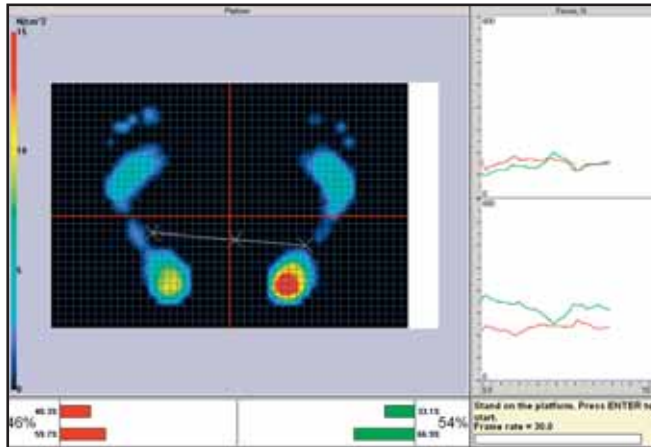


The optional video module is running with commercially available digital video cameras. The time synchronization is guaranteed via an external plate output. The recording and display of the images takes place at a measuring rate of 50/60 images per second.



The WinFDM Software - Essential for Clinical Applications

When analyzing the standing position, the load exerted by the left/right sides of the body and at the front and back of the foot is displayed in the bar chart and also as a numeric value. The line connecting the main points of the body supplies immediate information regarding asymmetrical load distribution. The measuring data is recorded over a defined period and the results are averaged.



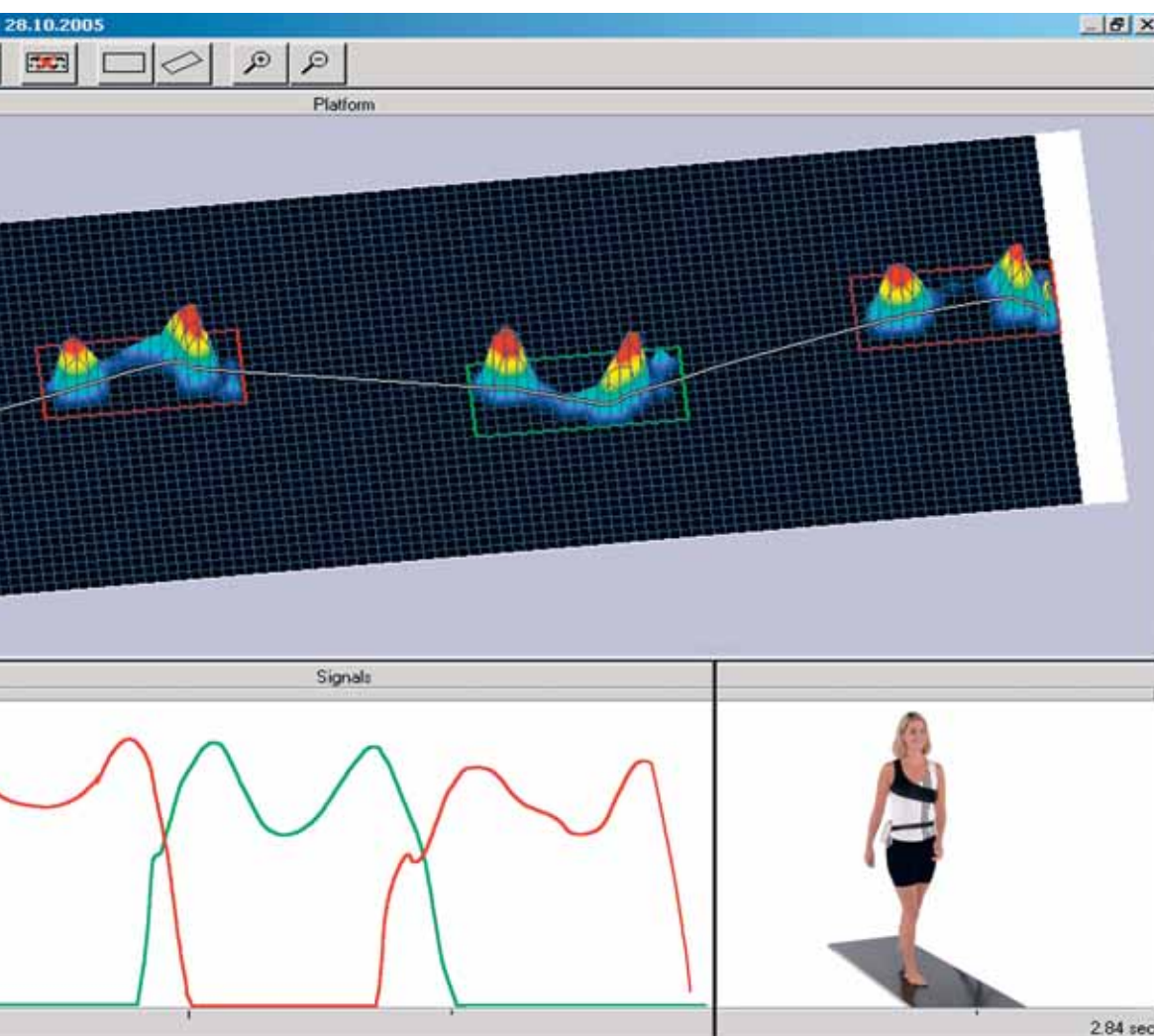
The measurements and the evaluation are processed on the computer using the WinFDM program. For this procedure, the measuring data of the floor reaction forces, the video camera and, if applicable, the EMG and angle data are evaluated synchronously. The measurements may be observed in the "Viewer" and rate of playback may be adjusted.

Individual time segments can be selected from the "Report" for further analysis. After defining the left and right floor contacts, analysis of the measuring cycles is produced automatically in the Results Report. Screen contents can be printed out as an instantaneous record.

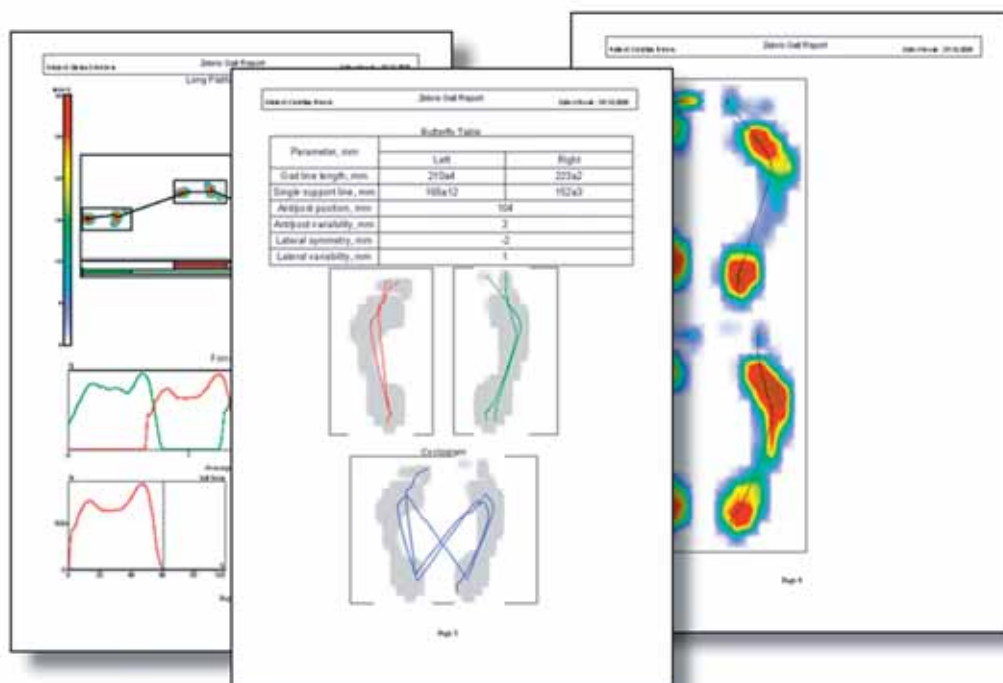
Gait Parameters Table			
	left	right	
Step time, sec	0.65	0.64	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Swing time, %	39.53	37.21	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Stance time, %	60.47	62.79	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Pre swing double support, %	13.95	12.80	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Single support, %	46.51	49.99	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Step length, m	0.61	0.64	<div style="display: inline-block; width: 10px; height: 10px; background-color: red;"></div> <div style="display: inline-block; width: 10px; height: 10px; background-color: green;"></div>
Stride length, m	1.06		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>
Stride time, sec	1.29		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>
Step width, m	0.25		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>
Cadence, steps/min	97.6		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>
Velocity, m/sec	0.83		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>
Variability of velocity, %	2.13		<div style="display: inline-block; width: 10px; height: 10px; background-color: blue;"></div>

The main gait parameters are shown in the Evaluation Report. These include, for instance, the stride length and stride width, the standing stance, swing and double-limb support phase, and also the cadence. The variability of the gait velocity is calculated as a measure for postural instability.

The measuring results are presented in an easy to understand format in the Result Report and can be printed out in color using a commercially available printer. Up to three measurements can be compared directly with each other as a procedural control. Size and position of the individual evaluation windows can be changed in the report allowing for customized configurations.



On the measuring screen and viewer the image of the measuring plate can be altered three dimensionally. Also the image size can be reduced or enlarged as required. Force variations, video images, EMG and angle data may also be displayed simultaneously.



In other analyses, gait symmetry is assessed in addition to gait lines, standardized and averaged force variation curves, and, the force distribution is analyzed in the foot areas.

The Complete FDM - System - Countless Expansion Possibilities



The basic measuring system is comprised of a measuring plate FDM 1.5 m, 2 m or 3 m for the force distribution, an external power pack and the WinFDM software package. The optional video module contains the WinFDM-Video software extension, and the synchronization interface lead to the video camera. A digital video camera with PC and synchronization interface is required. The system operates using the minimum computer equipment, i.e. a PC and a USB interface and the Windows XP operating system



Specifications

When combining a video camera with an (8) channel radio adapter (EMG or Angle), two platforms of the same model can be combined to increase the size of the sensor area.

Measuring principle: Capacitive sensors, each sensor is calibrated

PC interface: USB

Measuring range: 1 - 120 N/cm²

Accuracy: $\pm 7\%$ (0 - 80 N/cm²)

Interface: Synchronization output



Type: FDM 1.5

Dimensions: 154 x 62 x 2.5 cm (L x W x H)

Sensor area: 144 x 56 cm (L x W)

Number of sensors: 8064

Sampling rate: 120 Hz optional 240 Hz / 360 Hz



Type: FDM 2

Dimensions: 218 x 62 x 2.5 cm (L x W x H)

Sensor area: 208 x 56 cm (L x W)

Number of sensors: 11648

Sampling rate: 120 Hz optional 240 Hz



Type: FDM 3

Dimensions: 314 x 62 x 2.5 cm (L x W x H)

Sensor area: 304 x 56 cm (L x W)

Number of sensors: 17024

Sampling rate: 60 Hz optional 120 Hz

