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

FDM SYSTEM

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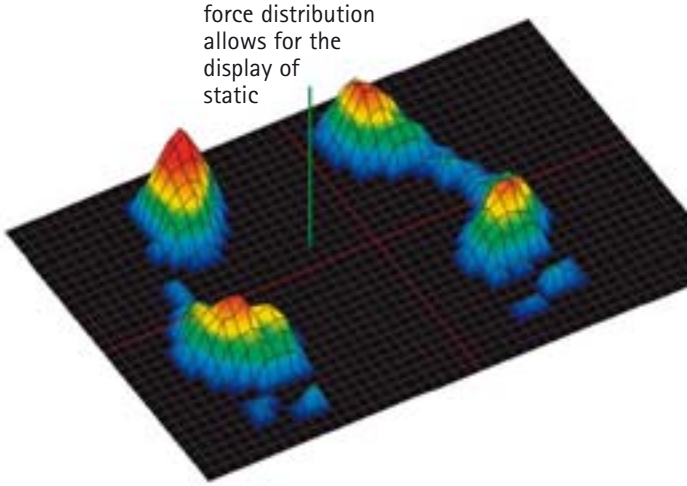
The zebris FDM-System - Easy and Accurate Gait Analysis

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.

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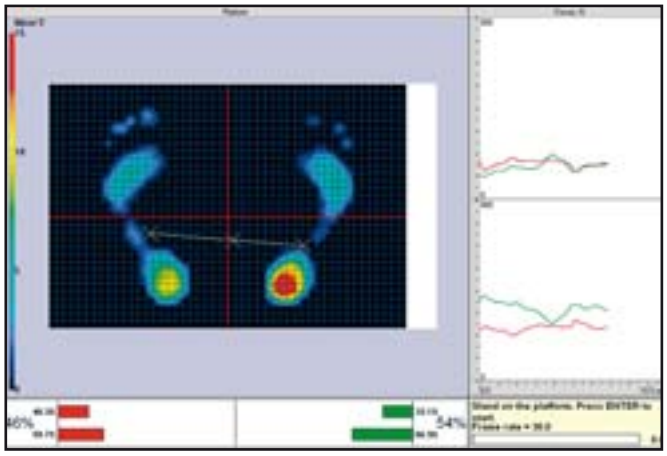
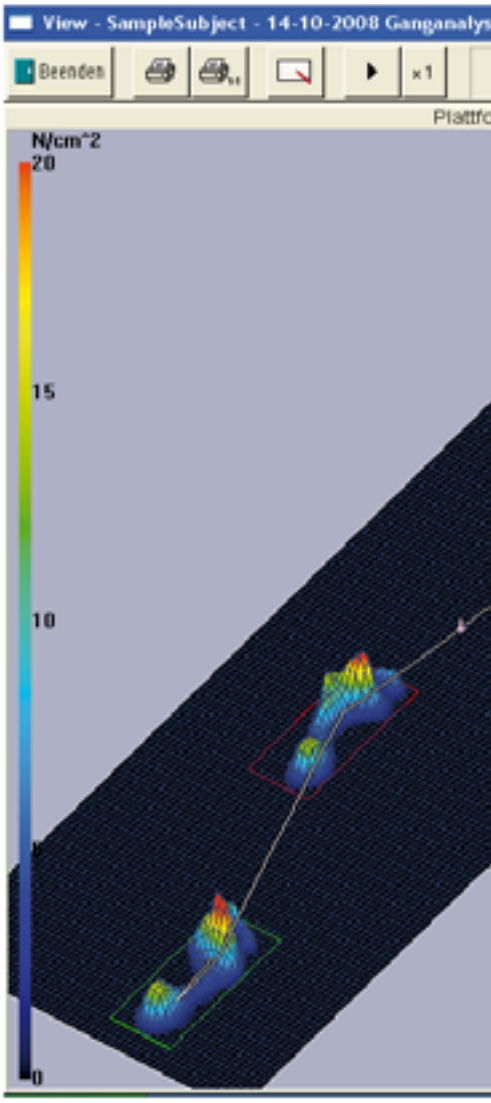
The WinFDM Software - Essential for Clinical Applications

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.



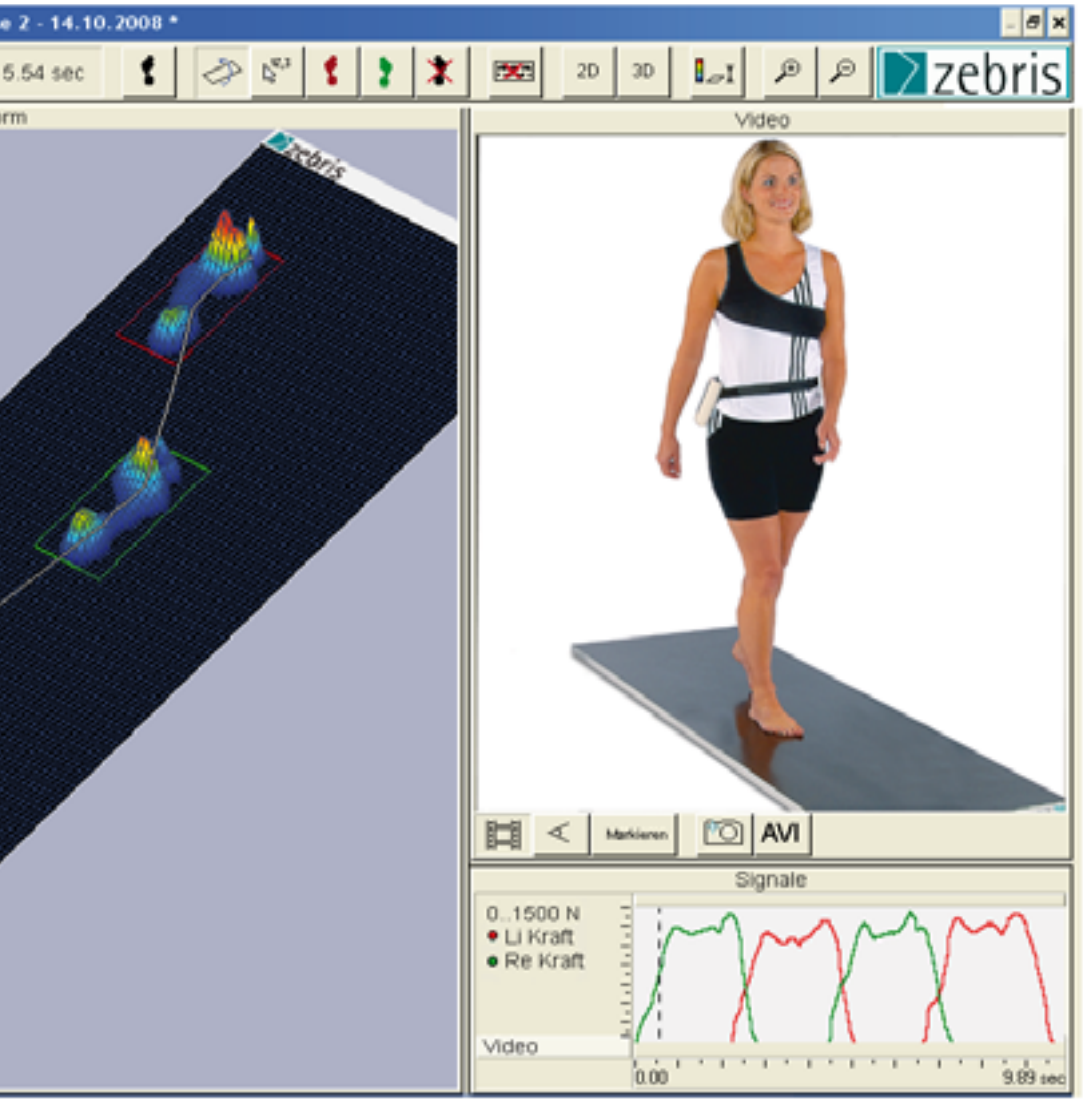
The measurements and the evaluation are processed on the computer using the WinFDM program. For this procedure, the measuring data of the floor reaction forces, the video camera and, if applicable, the EMG and angle data are evaluated synchronously. The measurements may be observed in the "Viewer" and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

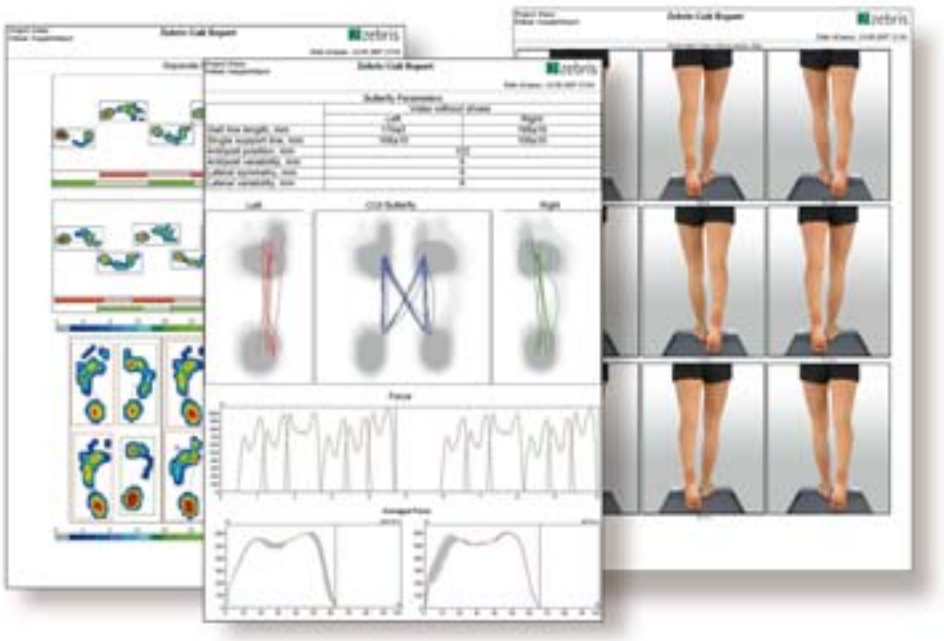


The main gait parameters are shown in the Evaluation Report. These include, for instance, the stride length and step width, the stance-, swing- and double-support phase, and also the cadence. The variability of the gait velocity is calculated as a measure for postural instability.

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. Besides of maximum pressure plots complete videosequences can be displayed.

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The Complete FDM-System - Countless Expansion Possibilities

The basic measuring system comprises a measuring plate FDM 1.5, FDM 2 or FDM 3, an external power pack and the WinFDM software package. The system operates using a PC with USB interface and the Windows XP / Vista operating system.
Two platforms of the same type can be combined to increase the size of the sensor area.

Specifications

Measuring principle	capacitive	Hysteresis	< 3% (FS)
PC interface	USB	Interface	Video Modul Syncronisation
Measuring range	1 - 120 N/cm²		Infrared transmitting
Accuracy	± 5 % (FS)		Sync. in/Sync. out

Type: FDM 1.5
Dimensions: 158.0 x 60.5 x 2.5 cm (L x W x H)
Sensor area: 149.0 x 54.2 cm (L x W)
Number of sensors: 11264
Sampling rate: 100 Hz, optional 200 Hz / 300 Hz

Type: FDM 2
Dimensions: 212.2 x 60.5 x 2.5 cm (L x W x H)
Sensor area: 203.2 x 54.2 cm (L x W)
Number of sensors: 15360
Sampling rate: 100 Hz, optional 200 Hz

Type: FDM 3
Dimensions: 307.0 x 60.5 x 2.5 cm (L x W x H)
Sensor area: 298.1 x 54.2 cm (L x W)
Number of sensors: 22528
Sampling rate: 100 Hz

Additional extensions: 2 x FDM 1.5, 2 x FDM 2 or 2 x FDM 3

Options

Radio adapter
The cordless radio adapter for measuring the EMG or for connecting goniometers, is fitted with eight analog inputs, four digital inputs, an infrared interface and an output for direct connection to an USB via a special cable.

Video module
The video module contains a high-quality video camera with a stand, a wide-angle lens, all the connection and synchronization cables necessary for operation, and also the software extension.

Additional zebris systems for gait analysis

FDM-T System for stance and gait analysis and FDM-S System for stance and roll-off analysis

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zebris Medical GmbH · Germany · P.O. Box 1143 · D-88305 Isny im Allgäu · Max-Eyth-Weg 42 · D-88316 Isny im Allgäu
Telephone +49-7562-97260 · Telefax +49-7562-972650 · zebris@zebris.de · Internet: www.zebris.de