The zebris FDM System – gait and roll-off analysis in practice

FDM SYSTEM

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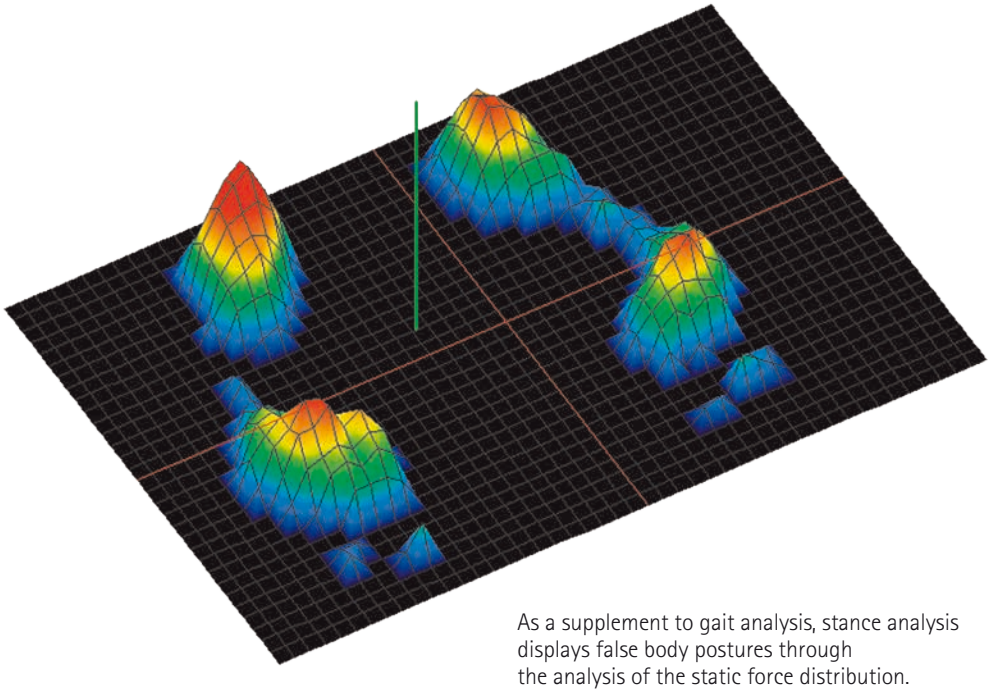
The zebris FDM System – gait analysis made easy

The measuring platform is integrated into a low profile walking surface allowing it to be used for all patient types, including those with walking aids. The intuitive software automatically calculates the standard gait parameters.
Proprietary algorithms make it easy to capture multiple steps through the integration of multiple passes across the measurement surface, resulting in precise and accurate assessments.

In podiatry, physio therapy, rehabilitation, sports or research the FDM pressure distribution measurement platforms provide valuable information on gait disorders and the roll-off behaviour of the feet.
Thanks to the combination of intuitive software and robust hardware the tried and tested zebris FDM measuring system allows for an easy and fast stance, gait and roll-off analysis. Using capacitive pressure sensors, it captures the static and dynamic pressure distribution under the feet while standing or walking.
The capacitive sensor technology ensures increased durability while the sophisticated calibration of every single sensor guarantees an exact measuring result.



As a supplement to gait analysis, stance analysis displays false body postures through the analysis of the static force distribution.

zebris pressure distribution measurement platforms are available in different sizes. Each measurement platform can easily be connected to a PC via USB interface. In combination with a laptop this allows for a mobile stance and roll-off analysis with smaller measuring platforms.
As an option, muscle action can be analysed during a gait analysis and finally be evaluated in the software using the wireless zebris EMG. Up to eight EMG signals are displayed synchronously to the pressure values by bipolar surface electrodes and a radio adapter.

The camera module SYNCLightCam puts the measuring procedure into perspective. Besides the camera with stand, it comprises all necessary connection and synchronisation cables as well as the software extension. For even more light intensity during the analysis, the lighting system SYNCLight is additionally available.

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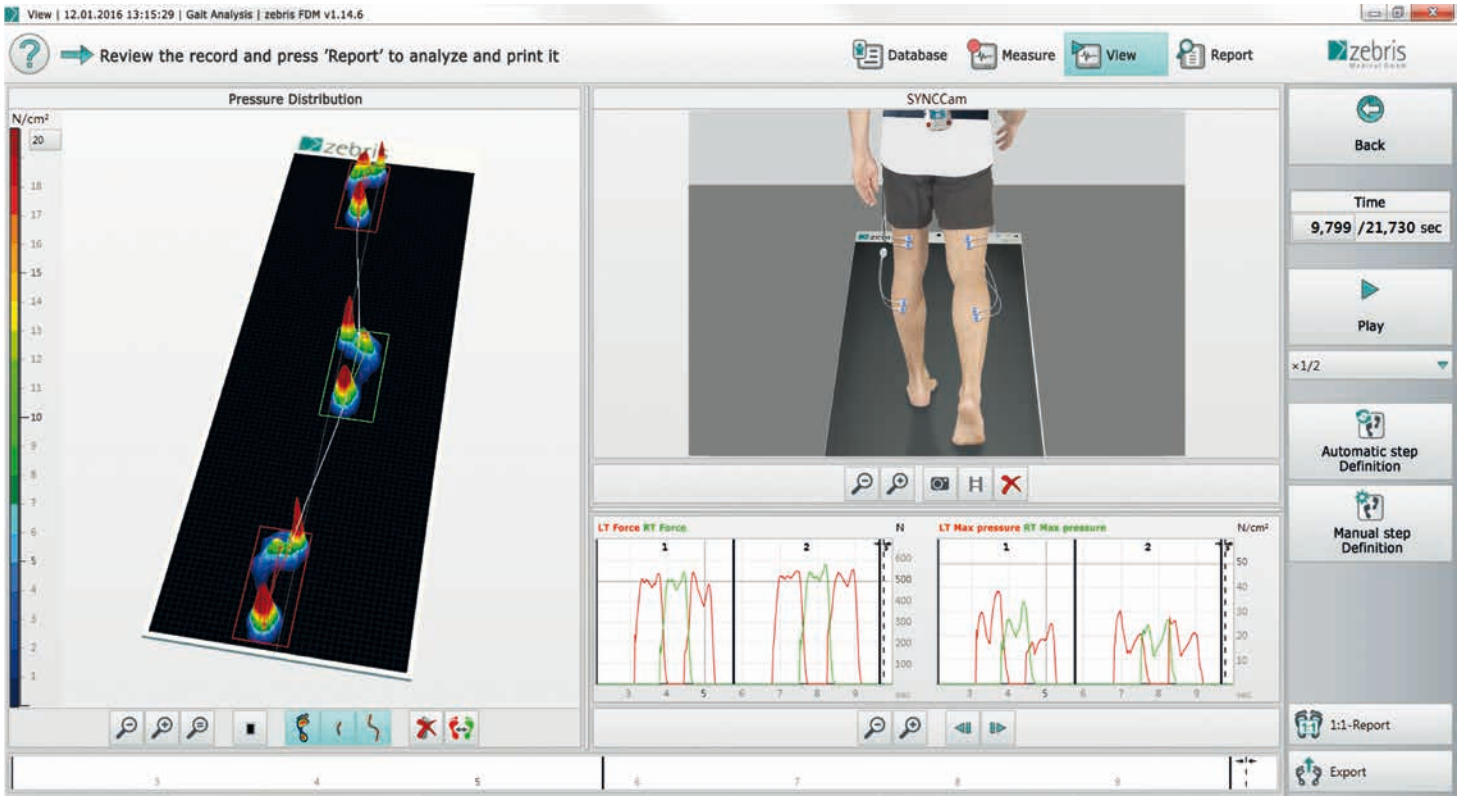
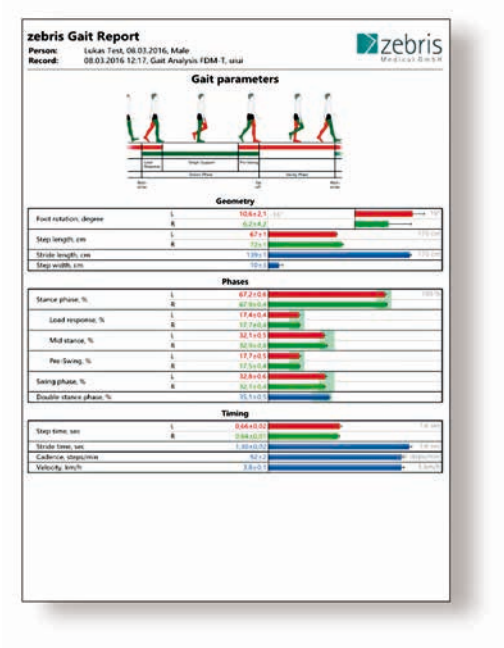
The zebris FDM Software Suite – meaningful in practice

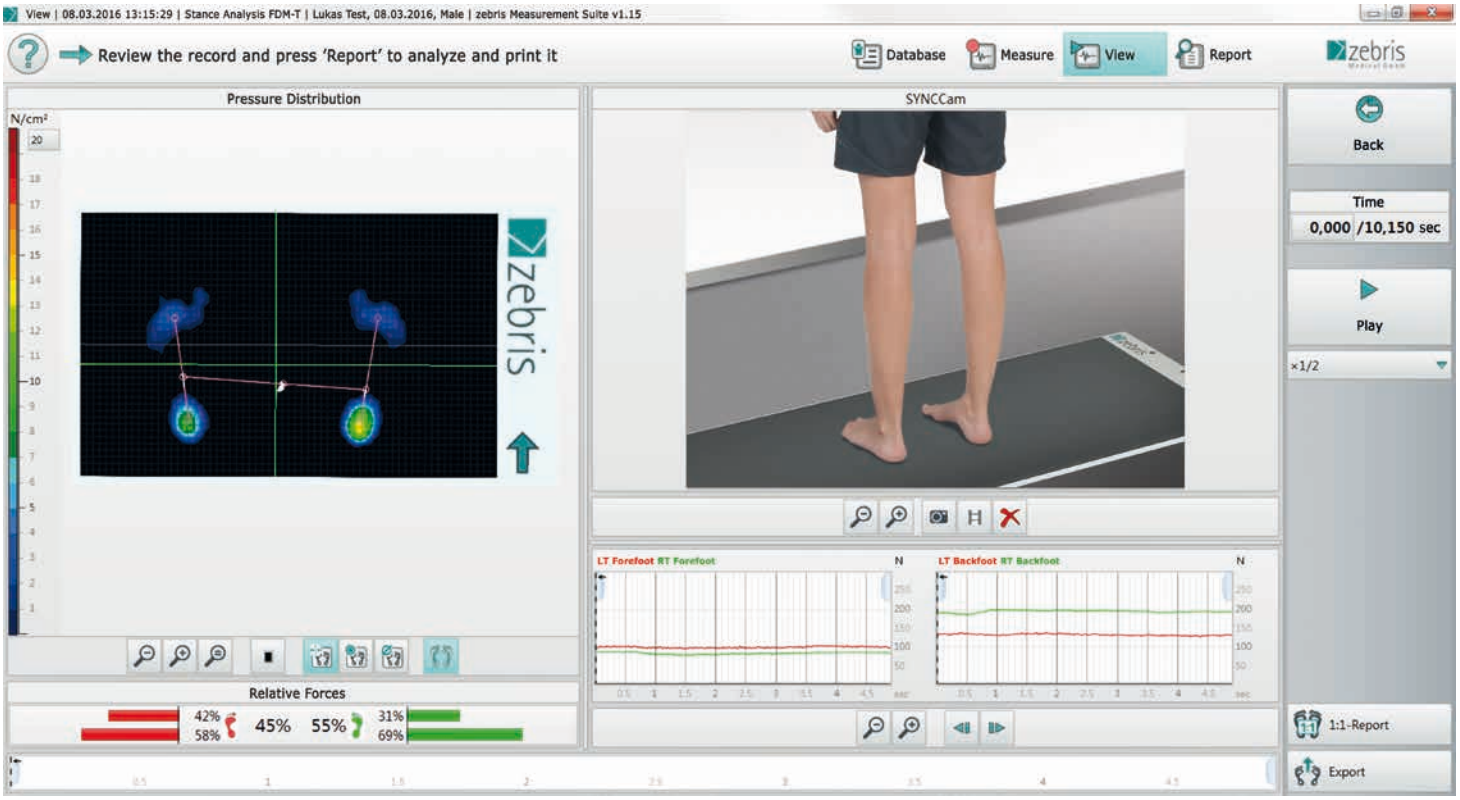


On the measuring screen and in the viewer the measuring platform can be rotated three-dimensionally. The image size can be reduced or enlarged as required. In addition, forces, video images as well as EMG data are displayed.

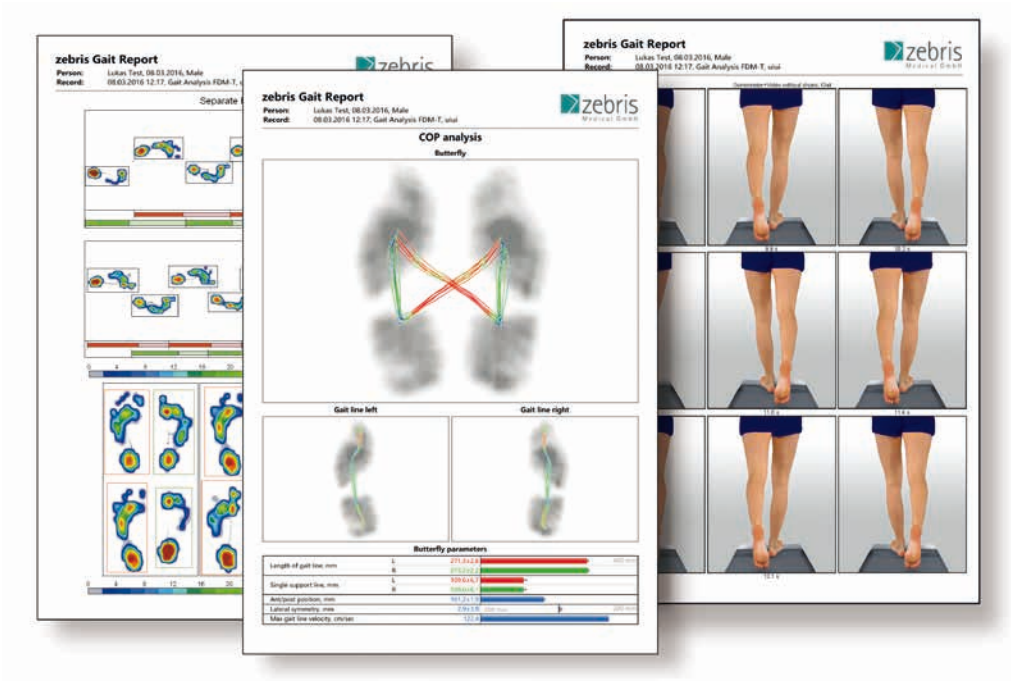
The main gait parameters are displayed in the evaluation report. These include amongst others the step length and step width, the stance, swing and double stance phase as well as the cadence. The variability of the gait velocity is calculated as a measure for postural instability.



Measurement and evaluation can be done comfortably on the computer using the intuitive and clearly structured zebris FDM Software Suite.
It synchronously evaluates the measuring data of the ground reaction forces, the video camera and if necessary the EMG data. The measurement procedure may be observed in the "viewer" and if necessary be played back in slow motion. Individual time segments can be selected from the "Report" for further analysis. After defining the left and right ground contacts the analysis of the measuring cycles is automatically done in the success report that clearly displays the measuring results. Up to two measurements can be compared for optimal measuring control.



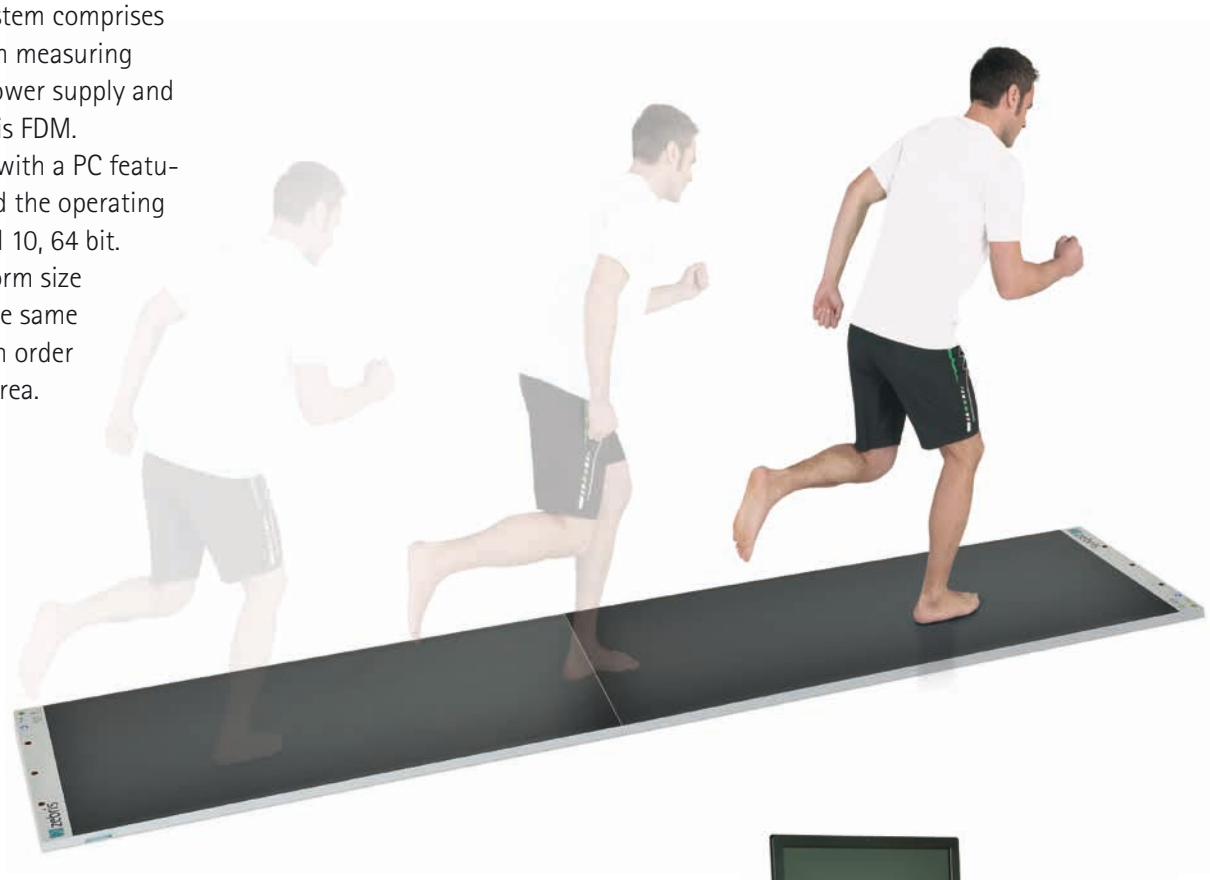
When analysing stance, the left/right load as well as the fore and back foot are displayed as a numeric value and in a bar chart. The line connecting the main points of the body provides immediate information on an asymmetrical load distribution. The measuring data is recorded over a defined period, in which the results are averaged.



The comprehensive reports analyse the gait lines as well as the standardised and average force progression curves. Gait symmetry and load distribution can also be assessed for each of the foot zones.

The complete FDM System with numerous extension possibilities

The basic measuring system comprises the pressure distribution measuring platform, an external power supply and the Software Suite zebris FDM.
The system is operated with a PC featuring a USB interface and the operating systems Windows 7 and 10, 64 bit.
Starting from the platform size 1.5, two platforms of the same type can be combined in order to increase the sensor area.



EMG

The fully synchronized zebris myography system registers the muscle action potentials using bipolar electrodes placed on the skin surface. The wireless radio adapter features eight analog and four digital measuring channels, one infrared interface as well as one direct connection to USB. Thus, up to eight EMG amplifier cables can be connected.

Camera, lighting

The new zebris high-speed SYNCLightCam featuring a total of 100 Hz combines powerful LEDs with a high-performance camera in one compact unit. Thus, the generated image data of treadmill or pressure distribution measurement platform can be synchronized with single frame precision. The integrated power LEDs are infinitely adjustable in light intensity.

Stand Systems

A completely aligned stand system is available for optimal operation of the evaluation computer as well as for mounting the camera and lighting unit.
Depending on the application, stands can be supplied in various versions with a solid base plate or with a mobile lower part as well as with electrical connections.

Technical Specifications

Measuring principle	Capacity	Measuring range	1-120 N/cm²	Interface	Video module syncronisation
PC interface	USB	Accuracy	± 5 % (FS)		Infrared transmission (opt)
		Hysteresis	< 3% (FS)		Sync. in /Sync. out

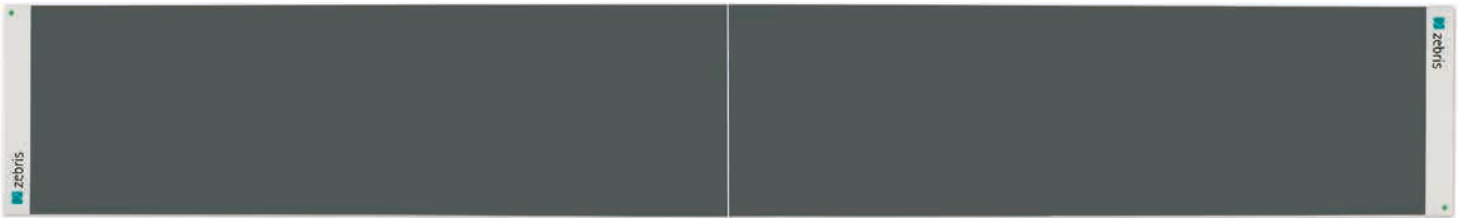
Type: FDM SX
Dimensions: 55 x 40 x 2.1 cm (L x W x H)
Sensor surface: 40 x 30 cm (L x W)
Number of sensors: 1,920
Sampling rate: 120 Hz

Type: FDM S
Dimensions: 69 x 40 x 2.1 cm (L x W x H)
Sensor surface: 54 x 33 cm (L x W)
Number of sensors: 2,560
Sampling rate: 120 Hz, optional 240 Hz

Type: FDM 1.5
Dimensions: 158 x 60.5 x 2.1 cm (L x W x H)
Sensor area: 149 x 54.2 cm (L x W)
Number of sensors: 11,264
Sampling rate: 100 Hz, optional 200 Hz / 300 Hz

Type: FDM 2
Dimensions: 212 x 60.5 x 2.1 cm (L x W x H)
Sensor area: 203 x 54.2 cm (L x W)
Number of sensors: 15,360
Sampling rate: 100 Hz, optional 200 Hz

Type: FDM 3
Dimensions: 307 x 60.5 x 2.1 cm (L x W x H)
Sensor area: 298 x 54.2 cm (L x W)
Number of sensors: 22,528
Sampling rate: 100 Hz



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

Discover further zebris measuring systems

FDM-T treadmill system for gait and running analysis

Rehawalk® gait analysis and gait training for rehabilitation

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