

The quality in-shoe dynamic pressure mapping system

The pedar[®]-x system is an accurate and reliable pressure distribution measuring system for monitoring local loads between the foot and the shoe. The pedar[®]-x offers the ultimate versatility with its multiple standard features and operating modes. The pedar[®]-x can be tethered to a PC via a fiber optic/USB cable. It can also function in a mobile capacity with its built-in Bluetooth™ technology or, as yet another alternative, the pedar[®]-x system's built-in flash memory storage allowing data to be collected anywhere and later downloaded to the computer. The pedar[®]-x can also be used for long-term monitoring. For that application novel has developed the pedoport[®] software which links perfectly with the system.

pedar[®]-x system

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All systems from novel operate with high quality, calibrated sensors and provide reliable and reproducible long term measurements. pedograph[®], emed[®], pedar[®], pliance[®], tribli[®] and the novel logo (colored foot) are the registered trademarks of novel[®]germ ©1992-2000



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Pedography as a Tool for the Functional Diagnosis of the Foot

A standing or walking body generates ground reaction forces under the feet. These ground reaction forces are caused by gravitation and the velocity of the body.

Under dynamic conditions both vertical and horizontal (shear) ground reaction forces occur.

The vertical force provides the largest contribution of the foot-ground's total force.

When a patient stands on both feet without moving, all forces should be vertical and distributed over the two feet. The distribution is typically heterogeneous and dependent on the posture and foot structure of the patient.

During walking or running the ground reaction forces are higher due to the acceleration and deceleration of the body mass.

By measuring the local pressure distribution under the feet, the distribution of the ground reaction force can be calculated by using the surface area of the local region on interest. When collecting this data throughout gait, the dynamic pressure distribution is obtained and this measurement is called pedography.

pedography can be performed either when a patient walks barefoot across a platform which has been placed on the floor, or with sensor devices which are placed within the shoes of the patient and allow free movement of the patient.

The Foremost Parameters for Pedography

- the applied local force
- the applied local pressure
- the pressure-time integral
- the total force in an anatomical foot area
- the force-time integral in an anatomical area
- the timing of the foot loading processes
- the deformation of the foot during loading

The dynamic load distribution under the feet provides information about the foot structure and function. Therefore, foot deformities and malfunction can easily be detected during analysis of the pressure data.

During analysis the foot is divided into anatomical areas and landmarks of interest. Comparisons can be performed, either intra-individually, pre and post treatment, or inter-individually with matched control groups. Comprehensive pedographic reports based on these comparisons are generated by the novel software for easy information exchange between the foot care specialists.

The novel pedography systems, emed and pedar provide not only accurate pressure measurements, but also a complete analysis of the foot function and the foot shape under load during stance and dynamic gait

emed[®]-x platform

The emed[®]-x system is the premier version of the novel pedography measurement platforms. This system functions like all emed[®] platforms with calibrated capacitive sensors. It works with notebook or desktop PC and connects directly to the USB interface of the PC.

The system can be used either in a high-speed mode with a sensor resolution of 1 sensor/cm² and a frame rate of 400 Hz or in a high sensor resolution mode with a sensor resolution of 4 sensors/cm² and a frame rate of 100 Hz.

With a user-defined reduced sensor area, the platform can be scanned with frequencies greater than 400 Hz.

The emed[®]-x supplies frame-by-frame input and output signals for synchronization with motion analysis, digital video and EMG.

The emed[®]-x pedography takes only 8 minutes for a full analysis of both feet and includes a digital clinical report in HTML or as a printout.