

# Pitch and/or Sway add-on for M-Gait

Add dynamic pitch and/or sway to increase the functionality of the M-Gait system. The flexible D-Flow software platform can be configured to control fast pitch and/or sway of the walking surface. Treadmill perturbations can be used to study pathology specific responses, allowing for a more functional gait analysis.



## Set Both Timing And Intensity

The M-Gait can be mounted in a frame with actuators, offering the walking surface up to 2 degrees of freedom (pitch and/or sway). This mechanism is fully integrated in the M-Gait and both timing and intensity of the pitch and sway can be set in the D-Flow control software in response to any other parameter in the system.

## Create Challenging Conditions

This unique feature allows a functional gait analysis to be carried out by taking patients out of their comfort zones. Walking under mechanically challenging conditions offers more insight into the pathological gait pattern. Mimic walking either uphill or downhill for more functional walking tasks and challenging conditions. Work on dynamic stability by applying medio-lateral perturbations while the patient is walking.

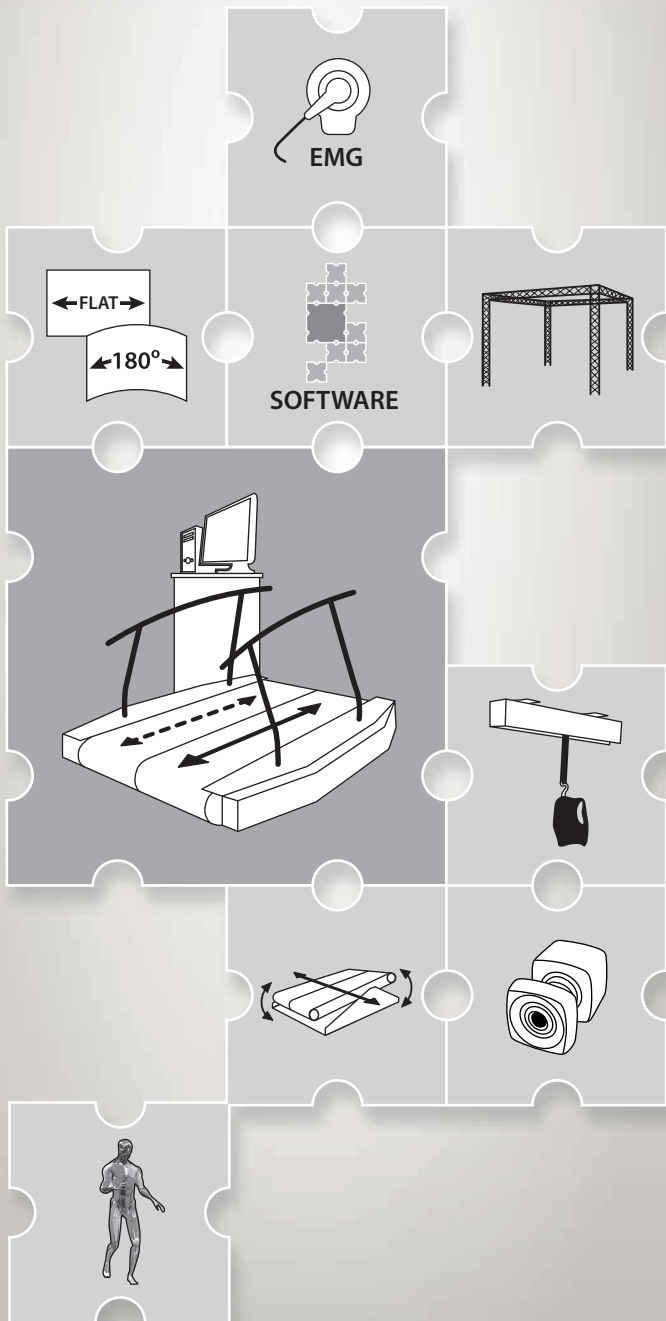
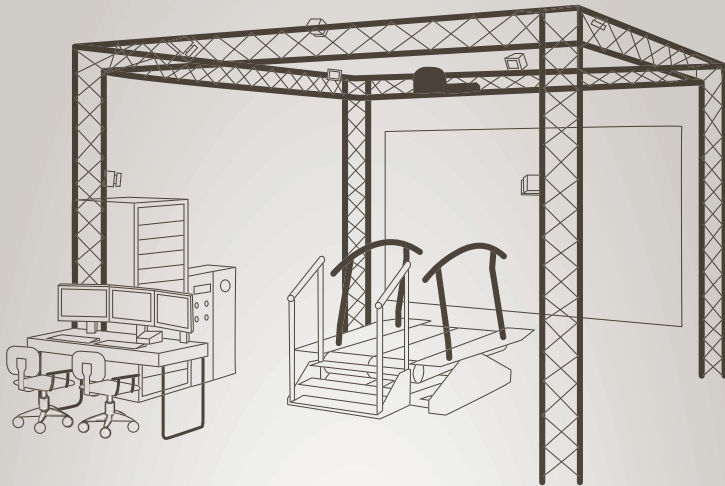
## Apply Controlled Perturbations

The option to apply controlled perturbations of the walking surface offers an entirely new field of gait research. Various timing options and intensities can be set, while D-Flow can measure pathology specific responses. The perturbation can be triggered by real-time measured gait events (initial contact or mid-stance).

### Key Features

- Fast pitch of the walking surface ( $\pm 10^\circ/\pm 17\%$ ) at  $0.1^\circ$  resolution; min to max in  $< 2$ sec.
- Sideways (sway) perturbations ( $\pm 50$ mm); min to max in  $< 1$  sec.
- Functional gait analysis for more insight into the pathological behavior of your patient.
- Modular system, allowing for enhancements and integration with, for example, Virtual Reality and dynamic weight support.

# Modular system

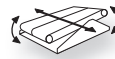


Various system enhancements are possible to increase both the clinical and research possibilities of the M-Gait.



## Treadmill

An instrumented dual-belt treadmill with individually controllable belts measuring 3D ground reaction forces of each leg independently.



## Pitch and/or sway

A pitch and/or sway unit can be added to the treadmill for walking uphill & downhill or to apply medial-lateral perturbations of the walking surface.



## SOFTWARE

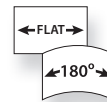
## Software

The D-Flow software provides real-time system control and a VR application development environment using visual programming. Add different modules to the D-Flow software to extend the functionality up to full gait analysis and training, including an offline analysis tool for intuitive data analysis.



## Motion Capture

Integrate a 3D motion capture system to collect motion data for movement analysis or to control real-time feedback applications for training.



## Virtual Reality Environment

Create a high-end Virtual Reality environment with a large flat screen or a truly immersive experience with the 180° projection screen and the surround sound audio system. Enhance even further with a 3D stereoscopic projection.



## Truss

A custom build truss facilitates optimal flexibility for motion capture camera mounting and provides a fully integrated solution for the other system components and cabling.



## Body Weight Support

The light version provides continuous dynamic support. The pro version allows computer guided active support in response to e.g. the phase of the gait cycle or the level of weight distribution.



## EMG

## Electromyography

Add low latency wireless electromyography (EMG) to measure muscle activation for movement analysis or use it to control a real-time biofeedback application for training.



## Human Body Model

Use the musculoskeletal Human Body Model for advanced real-time biomechanical analysis and to visualize joint rotations, joint moments and muscle forces for training.

## Miscellaneous

Various other hardware sensors and systems can be integrated, for example video cameras, accelerometers, electroencephalography (EEG) or functional electro stimulation (FES).