

Motion Capture add-on for M-Gait

Enhance clinical gait analysis and research options by adding a 3D motion capture system to the M-Gait system. The flexible D-Flow software platform can be configured to integrate motion capture data acquisition and synchronize real-time processing, in combination with any parameter in the M-Gait set-up.



Collect 3D Motion Data

Any motion capture system can be installed and integrated with your M-Gait system to collect 3D motion data from your subject. Data is fully synchronized with the force data from the treadmill by the D-Flow software. All data streams are available for application development with the unique D-Flow editor.

Calculate Gait Parameters

3D motion capture data can be used for clinical gait analysis and gait research. Joint kinematics- and kinetics can be calculated in real-time using the optional musculoskeletal Human Body Model (HBM) software by combining the 3D motion capture data with the force data from the instrumented treadmill.¹ HBM can also be used to estimate and visualize muscle activation in real-time. All parameters are available in real-time for application development and interaction with other data streams.

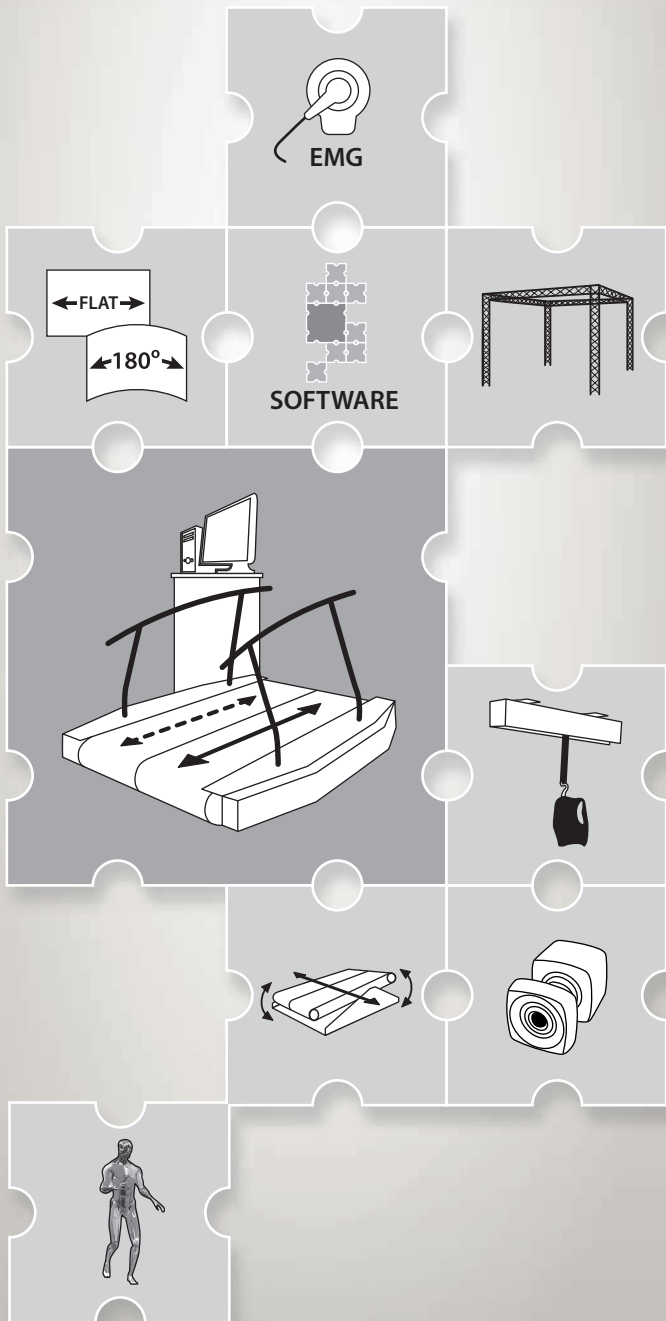
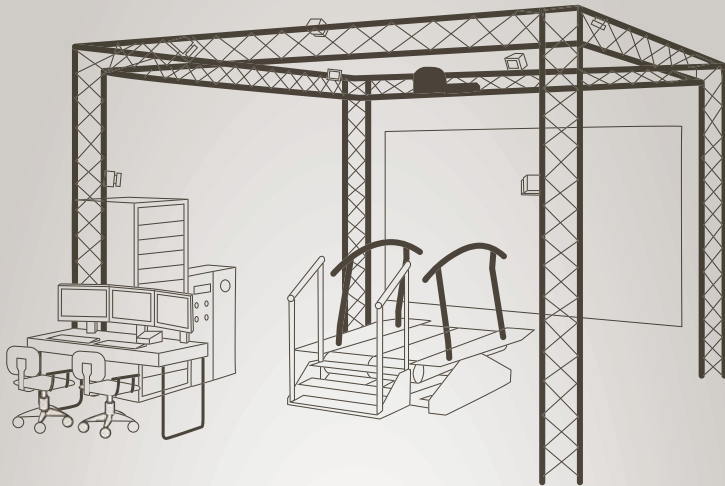
Calculated gait parameters can be related to the different gait phases for advanced research protocols. Pathology specific responses to (for example) treadmill perturbations can be recorded.

Key Features

- Full 3D motion capture data.
- All data synchronized with other data streams and available in real-time for application development.
- Optional real-time musculoskeletal Human Body Model software.
- Modular system, allowing for enhancements and integration with, for example, treadmill pitch/sway and Virtual Reality.

¹ van den Bogert et al. (2013). A real-time system for biomechanical analysis of human movement and muscle function. *Medical & biological engineering & computing* 51 (10), 1069-1077

Modular system

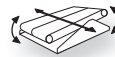


Various system enhancements are possible to increase both the clinical and research possibilities of the M-Gait.



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

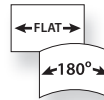
Software

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).