

# Research add-on for C-Mill

Since the technical validation performed by Roerdink et al. in 2008 numerous studies showed possibilities to use the C-Mill for the assessment and clinical validation of various patient populations. The C-Mill not only offers a unique walking environment, it also offers unique data analysis functionalities; all data is available both filtered and unfiltered, available in live mode and offline and can also be exported for external processing. The C-Mill can be extended with typical research functionalities, expanding the versatility of the C-Mill even more. Gait and Balance researchers will benefit from the C-Mill which is accurate, programmable, flexible and dependable.



## Create customized visual context

Tailoring the C-Mill to your research protocol, the research add-on comes with so-called 'manual control mode.' This mode allows you to define your own visual stimuli projected on the treadmill. Either customize a default training, or develop your own training from scratch. For example, project objects based on a patient's gait and set object dimensions to your desires.

## Synchronize to external systems

To fully integrate the C-Mill in your research environment, the research add-on offers you a sync-pulse, offering the opportunity to synchronize the C-Mill to various other devices. This for example allows you to synchronize the C-Mill with an external motion capture systems to obtain kinematic data of numerous steps, to record EMG or to obtain energy expenditure data.

## Live data feed

All data is live available within CueFors 2, but can also be exported in various formats for further live analysis in 3rd party software.

## Perturbations

To assess subject's balance and gait control, perturbing the subject can give valuable insights. Applying a forward-backward perturbation using a rapid belt speed change can give unique insights in the subject's strategies. Perturbations up to 6 m/s<sup>2</sup> can be obtained by a servomotor and can be set in various ways:

- The number of steps before a perturbation is activated
- The number of seconds that pass either during walking or from a standing position until the perturbation is activated
- The distance covered until a perturbation is activated
- The duration and magnitude of the perturbation
- Trigger a perturbation at a chosen gait event