

IMPROVE HUMAN PERFORMANCE



C-Mill

**EVALUATION AND  
TRAINING OF IMPAIRED  
GAIT AND BALANCE USING  
AUGMENTED AND VIRTUAL  
REALITY**



# TOMORROW'S REHABILITATION TODAY

It is difficult to prepare your patient for real-life situations again after a trauma. Having them cope safely and confidently again with uneven pavements, doorsteps and slippery snow patches is demanding. There is no other device which assists you with meeting these treatment goals like the C-Mill. The C-Mill excels in training your patient to cope with these daily challenges.

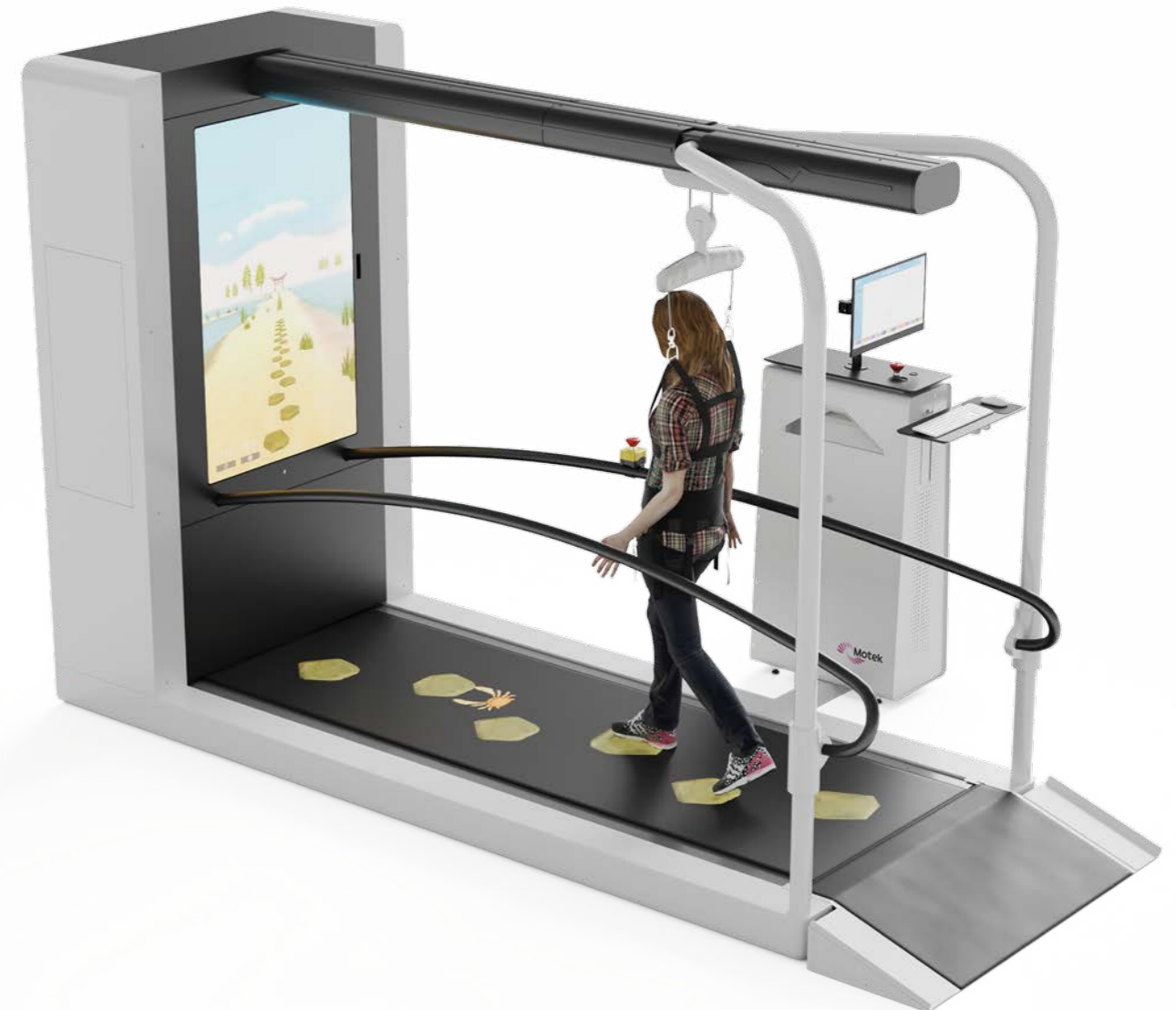


## BEST PRACTICE REHABILITATION

Many elderly patients or those that suffer from orthopaedic problems, Parkinson's Disease, or have suffered a stroke, struggle with everyday life due to their decreased walking ability. Walking is an important skill in determining whether or not a person can live independently. To walk successfully, it is necessary to continuously adjust to the surroundings. Included in the clinical guidelines for rehabilitation of impaired gait or balance, are five important recommendations. Start early, train often, train with variety, practice day to day tasks and monitor progress.

C-Mill training uniquely excels in each of these areas.

- Due to the positive and encouraging training environments, high training intensities can be achieved.
- Varying the augmented and virtual reality environments allow for variability in the training exercises.
- Training a patient's capacity to vary their walking pattern, prepares them for normal day-to-day demands.
- All results are stored by default. Reports can be generated and progress can be monitored.





### **UNIQUE REHABILITATION ENVIRONMENT**

The C-Mill is a powerful tool that may contribute to a fast and effective rehabilitation. After measuring and analyzing a patient's unique walking pattern, the C-Mill provides a safe and comfortable environment for walking and balance training. Clear visual objects are projected on the belt by a high-resolution projector. A patient tailored treatment can be offered using dozens of fun and challenging visual cues. Different augmented environments can be switched on or off with the push of a button.

### **THE C-MILL: FOR COMPLETE, ADVANCED ANALYSIS AND TRAINING**

Training and evaluation of impaired gait and balance is efficient, transparent and more enjoyable with the C-Mill. Challenging and motivating exercises and protocols allow patients to practice walking and balance in a safe environment. Goals for therapy can be set and evaluated with ease.

“ My life has changed beyond anything I thought possible. Lying in my hospital bed, bandaged and bruised, it would have been inconceivable to think of where I am now. The C-Mill made this miracle happen for me. ”

**Mike Jones**  
Amputee Patient, Morello Clinic

“ Traditional treadmills are not representative of real-world settings. The C-Mill picks up where these leave off, allowing patients to engage in variable step training in a simulated, rapidly changing environment, practicing complex skills necessary to navigate the real world. ”

**T. George Hornby, PhD**  
Research Scientist, Shirley Ryan AbilityLab

# C-Mill FEATURES

## TRAINING

The C-Mill is intended to train and evaluate a patient's balance and walking ability. You can use one of our predefined training sessions or create your own custom training session.

## TRAIN FOOT PLACEMENT

C-Mill applications are projected onto the belt's surface, allowing a wide variety of treatment goals to be achieved. Train a patient's foot placement and gait symmetry with step targets, show obstacles to teach a patient to avoid them safely or train gait stability with slalom or tandem applications. In order to provide your patient with an enjoyable functional and motivating training, various tracks are available.

## TRAIN AUTOMATED MOVEMENT AND DUAL TASKING

Train patients across a broader range of the rehabilitation process by triggering them to look forward. Automated movements and dual tasking can be trained using the various applications on the optional front display in combination with objects projected on the treadmill. For example, walk while performing the cognitive stroop task or walk while looking at a nature environment

## FEEDBACK

While the patient is training, direct visual and auditory feedback is given on performance. Videos can be used during and after a training to give the patient and therapist insight into the patient's movements and performance.

## RESULTS

At the end of a training session or assessment, results are stored automatically and reports can be generated. The progression over time can be viewed to monitor a patient's performance.



**C-Mill**  
Train foot placement



**C-Mill VR**  
Train automated movement and dual tasking



**C-Mill VR+**  
Early to late rehabilitation with balance and body weight support

# BALANCE SUITE

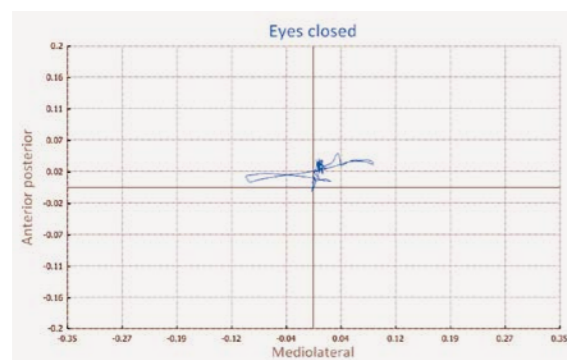
Next to gait interventions the C-Mill offers multiple balance assessments and training exercises. The purpose of the balance assessments is to determine the baseline balance level and evaluate the effect of the training.

## BALANCE ON THE C-MILL

Balance is vital to everyday activities such as getting out of a chair and walking. Just about everything we do in our daily life, whether for work or leisure, requires balance control. For an optimal recovery of impaired balance, an early start of the rehabilitation is essential. With the balance suite on the C-Mill balance can be assessed and trained early on, facilitating transition into gait training.

## ASSESSMENTS

- Limits of Stability: assesses the patient's direction-specific limits of stability and total sway.
- Postural stability: assesses the ability to maintain static postural control during four, increasingly difficult, conditions.



## TRAINING

Multiple treatment goals can be reached. Visual stimuli and the intensity of the training can be build up gradually in order to customize the training to your patients' needs. Start with creating awareness for body weight distribution and increase training intensity by training medio-lateral weight shifting, step stability and step initiation.

5 training applications are available. With these applications a patient is triggered to look forward at different Virtual Reality environments. Environments of different visual intensities and difficulty levels are created in order to challenge your patient optimally. Available applications: Weight distribution, Catch 2.0, Soccer 2.0, Arkanoid 2.0 and Traffic Jam.

## KEY FEATURES

- Early rehabilitation of your patient with balance assessments and training optionally with Body Weight Support.
- Determine a baseline level with objective outcomes and evaluate the effect of the training.
- Balance training to improve your patient's rehabilitation and transition into gait.
- Balance suite contains 2 assessments and 5 trainings applications.



Soccer 2.0



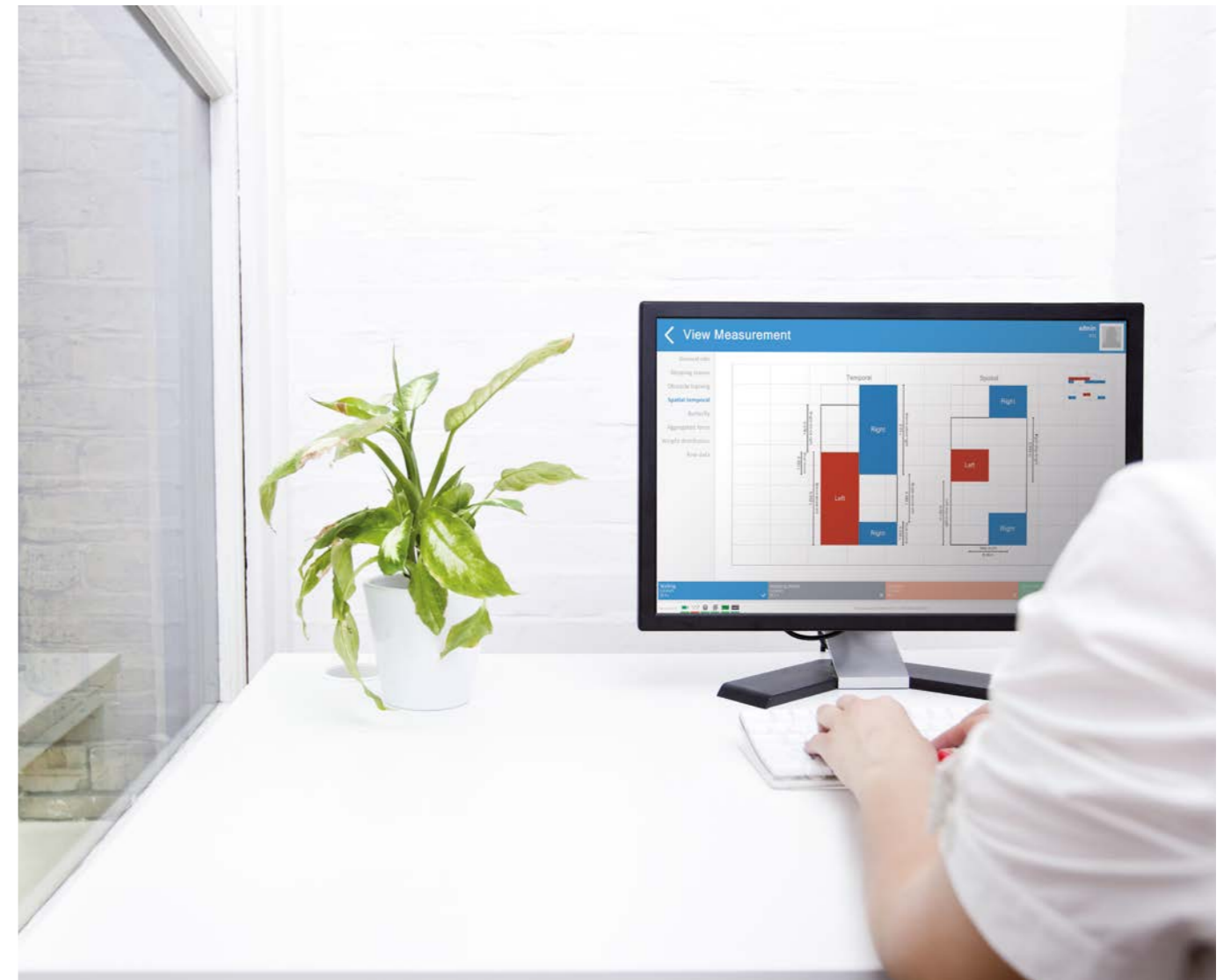
Catch 2.0



Traffic Jam

# WHY CHOOSE THE C-Mill

1. It's task specific: by projecting virtual objects on to the treadmill surface, gait adaptability can be trained optimally.
2. It's effective and efficient: with task specific training, variety in training content and repeatable exercises.
3. It's motivating: patients and therapist engagement and motivation improves by the obvious joy and progression of the patients.
4. It's easy to use: with only one click you can start individualized protocols.
5. It's safe: with adjustable handrails, safety frame and small incremental treadmill speed of 0.1 km/h, a safe environment is created.
6. It's communicative: the C-Mill makes patients aware of their movements through immediate feedback projected on the treadmill, auditory feedback, video recordings and clear reports..
7. It's for a variety of patients: ranging from neurological, orthopaedic, to fall prone patients.
8. It's unique: the C-Mill truly sets your rehabilitation centre apart from other centres with regard to treatment possibilities.



“ C-Mill’s major strengths are 1) enhanced task-specificity by augmenting the walking surface with visual context, 2) implicit training of balance and visuo-locomotor control and 3) objective registration of gait and gait-environment interactions in walking evaluation and training. ”

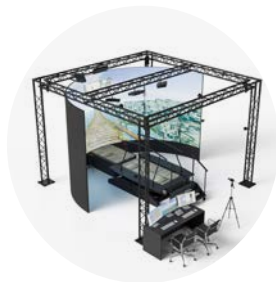
**Melvyn Roerdink**

Dr. and Assistant professor at the Department of Human Movement Sciences, Vrije Universiteit Amsterdam, the Netherlands

Sometimes in our lives a setback in movement and mobility, due to disease, trauma, or aging, adversely affects our quality of life. To regain mobility, restore and improve human performance, Motek Medical draws on 20 years of experience in rehabilitation technology and virtual reality.



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