

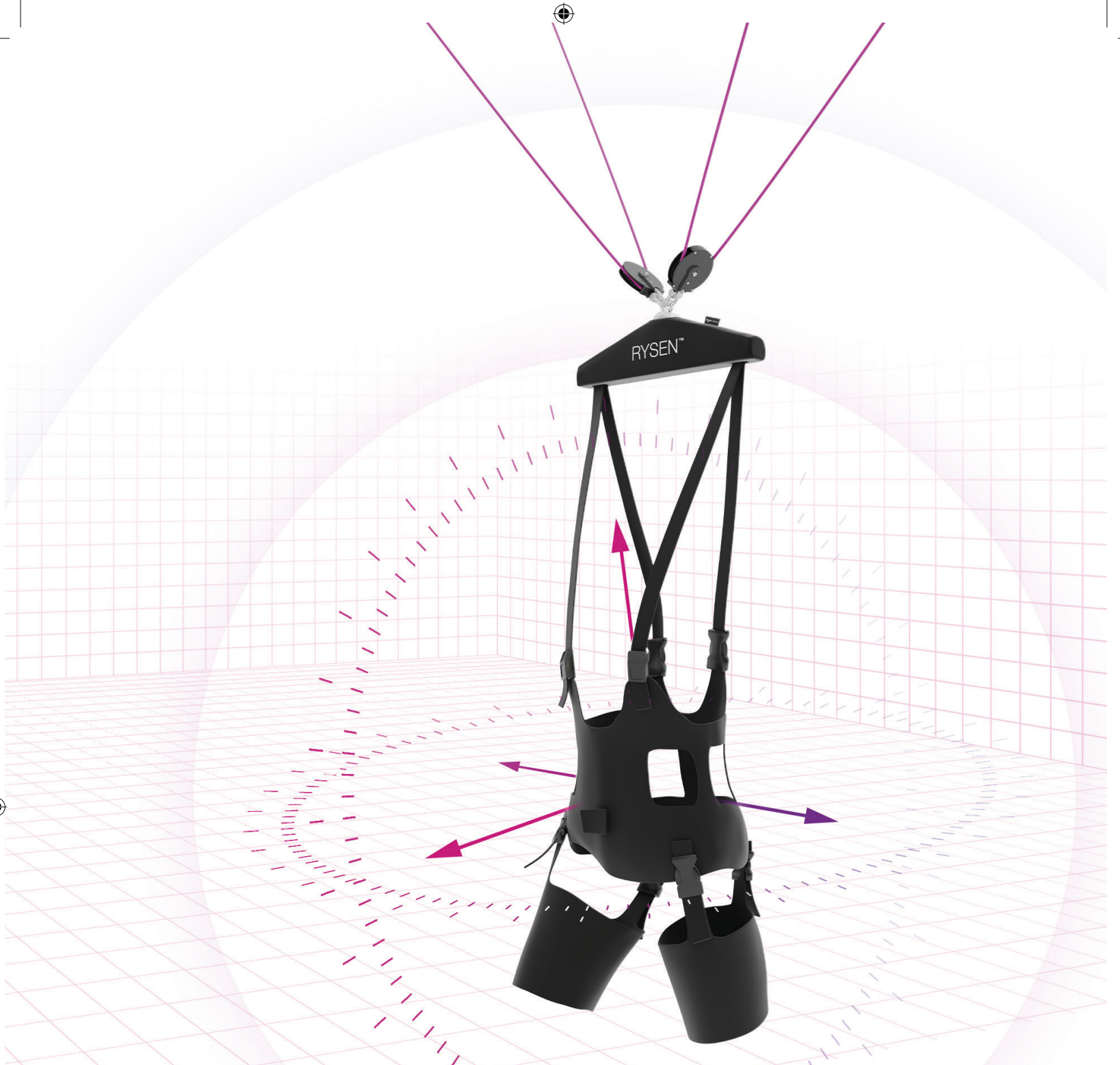
IMPROVE HUMAN PERFORMANCE



RYSENT™

# NEXT-GENERATION 3D BODYWEIGHT SUPPORT





“ RYSEN has solved many of the technical issues that limited the functionality of previous systems. The user interface is intuitive and the possibility to adjust the forces in multiple directions provides unprecedented opportunities for gait rehabilitation and research. ”

**Grégoire Courtine, PhD**

Neuroscientist, Swiss Federal Institute of Technology,  
Switzerland

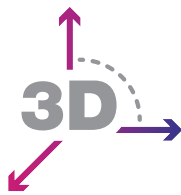
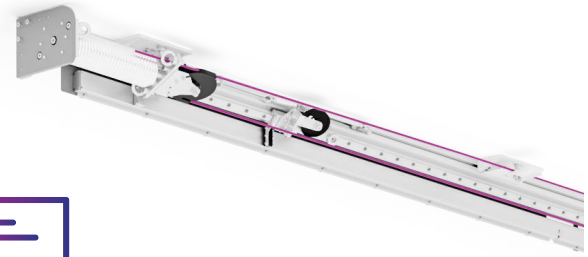
# A NEW FREEDOM OF MOVEMENT

## **ALL-DIRECTIONAL – NATURAL – ASSIST-AS-NEEDED**

The RYSEN's highly innovative technical design combines vertical and horizontal assistive forces, offering an intuitive therapy setup with 3D overground body weight support. Following the motor learning principles, the RYSEN covers critical ground for clinical and research purposes, allowing patients to transition into daily life activities by safely exercising at their optimal challenge point.

The RYSEN system is intended for patients with disorders affecting balance and locomotion, and in particular patients needing help to support their own body weight. These disorders may be the result of various clinical conditions, including but not limited to stroke, spinal cord injury or amputations.

# WHAT MAKES THE RYSEN SO SPECIAL?



## 3D OVERGROUND BODYWEIGHT SUPPORT

The RYSEN's all-directional adjustable support forces and bodyweight support provide 3D movement, allowing patients to perform overground gait, balance and transfer training in a natural, upright and hands-free manner, throughout all stages of therapy.



## SAFE

The mechanical design provides an intrinsically safe interaction through uncoupled degrees of freedom. The software offers automatic fall detection, safety stops and soft virtual walls to safeguard against involuntary movement.



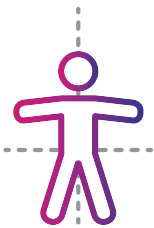
## BROAD VARIETY OF FUNCTIONAL LOCOMOTOR ACTIVITIES

The vertical unloading and horizontal assistive forces can be personalized to each patient's needs, increasing their range of trainable activities on one device. Control the RYSEN with its intuitive handheld device, and exercise a broad variety of functional locomotor activities without interrupting therapy, like: sit-to-stand, balance, walking, turning and obstacle avoidance.



## 3D MOVEMENT TRAINING CONDITIONS

The RYSEN's exclusive overhead system removes any sideways limitations and minimizes interference with the patient's voluntary movement. Uncoupled degrees of freedom provide same-system performance within the entire workspace, and the calibrated horizontal and vertical assistive forces match the desired bodyweight support. As a result, the RYSEN offers walking and gravity dependent interaction to patients.



## **VERSATILE OVERGROUND GAIT AND BALANCE RESEARCH**

When conducting research, your gait lab will also hugely benefit from the RYSEN's dynamic and adaptive force control in order to create unique interactive environments.

# TAKE A CLOSER LOOK



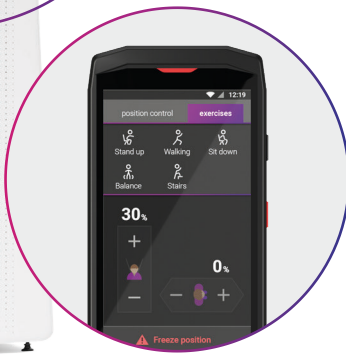
## 3D BODYWEIGHT SUPPORT

The advanced design provides adjustable upward, forward and backwards forces. Technical innovations ensure the split of velocities and forces as much as possible between different motors: slow/high-torque motors for vertical motion and fast/low-torque motors for horizontal motion.



## OPERATOR CONSOLE

The stationary operator console offers general system control, a graphical user interface for patient data management and a safety stop.



## REMOTE CONTROL

The system-dedicated remote control allows the operator to position close to, or at a distance from the patient while selecting exercises, increasing or decreasing the unloading forces, or safely stopping a session. This means the therapist can adjust the training to the patient's needs – without interrupting the therapy.

### EXTENSIVE WORKSPACE

This spacious area, defined by a high-quality rail system, is fully accessible by both the RYSEN's operator and the patient.

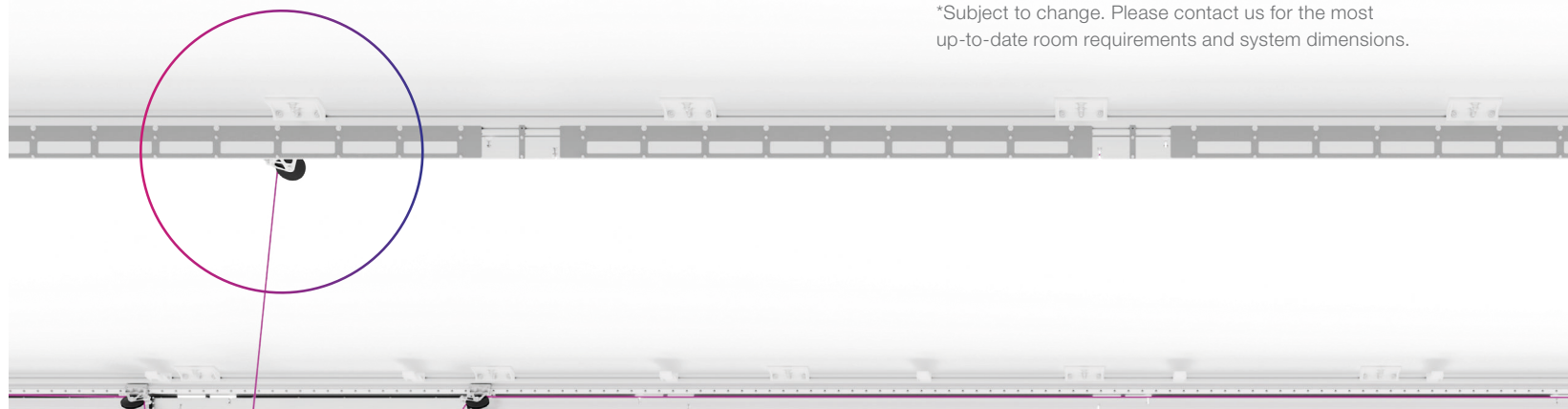
Required room dimensions\*:

**Ceiling height:** 3m-5m (118.1"-196.9")

**Room length:** 5m-13.5m (196.9"-531.5")

**Room width:** 2.4m-3.5m (94.5"-137.8")

\*Subject to change. Please contact us for the most up-to-date room requirements and system dimensions.



### RELIABLE SAFETY FEATURES

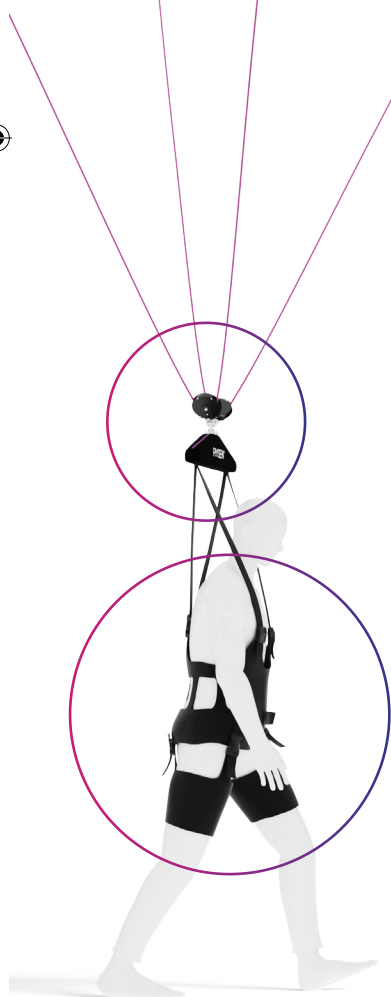
The RYSEN safeguards patients through:

- Automatic fall detection
- Virtual walls to restrict involuntary movement
- Manual stops

### DEPENDABLE SAFETY HARNESS

A high-quality safety harness available in three different sizes provides optimal support. Two versions of leg straps are available:

- Leg straps (35cm/13.8" and 50cm/19.7") often preferred by women
- Leg loops which ensure close fitting to the upper leg often preferred by men



# WHO BENEFITS FROM THE RYSEN?

## THERAPISTS

You are a physical therapist or gait specialist looking to advance patient treatment outcomes, through discovering and applying the latest diagnosis and therapy tools for gait and balance. But this isn't so simple. Conventional therapy equipment can restrict you and your patient – hindering freedom of movement, causing strain, and opening up a greater risk of further injury.

### HOW THE RYSEN HELPS YOU:

The RYSEN minimizes interference with the patient's voluntary movement and provides 3D movement training conditions in a controlled environment.

- **An early start with supported rehabilitation:** set up a therapy program quickly and easily with the RYSEN's intuitive interface
- **Patient-tailored functional therapy:** adjust assistive forces via the RYSEN based on the patient's movement proficiency
- **Improved patient safety and outcome:** allow the patient to perform natural overground gait, balance and transfer training hands-free with a remote device and integrated fall prevention

## PATIENTS

You are seeking a solution for functional mobility support due to a condition or injury, and your top priority is to regain your quality of life as fast and fully as you can. But often, great physical demands are put on both you and the therapist, which, together with repetitive training can lead to psychological exhaustion and physical strain.

### HOW THE RYSEN HELPS YOU:

Greatly influence your training experience, and transition towards daily life activities. This is why you should always ask for rehabilitation centers that offer the RYSEN as your therapy system.

- Early rehabilitation, true-to-life training conditions
- Rely on safe technology
- Stay motivated, and enjoy therapy



# WHO DEVELOPED THE RYSEN?

Our pioneering partners contribute to the RYSEN's industry-leading success in rehabilitation robotics.



Due to extensive know-how in rehabilitation robotics and medical device development, GTX led the project of the RYSEN's development.

[www.gtxmedical.com](http://www.gtxmedical.com)



The research group at TU Delft contributed to the sensing, control, and technical evaluation of the system and played a valuable role in bridging the gap between academia and industry.

[www.tudelft.nl](http://www.tudelft.nl)



As field partner, the CRR was the proud sponsor of the feasibility study, performed in order to obtain the CE certification of the RYSEN.

[www.crr-suva.ch](http://www.crr-suva.ch)



The Swiss institution contributed in-depth robotic knowledge and scientific input to the RYSEN progression from the first prototype to CE certification.

[www.epfl.ch](http://www.epfl.ch)



Motek played a fundamental role in co-developing the RYSEN, and now builds, distributes and services the product to maximize its benefits to researchers, clinicians, and patients.

[www.motekmedical.com](http://www.motekmedical.com)

For more information and what our partners have to say about the RYSEN, please visit:  
**[WWW.MOTEKMEDICAL.COM](http://WWW.MOTEKMEDICAL.COM)**

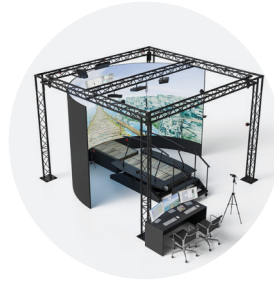
# DISCOVER OUR PORTFOLIO



## CAREN

The Computer Assisted Rehabilitation ENvironment (CAREN) targets all aspects of balance and locomotion in both research and clinical treatment. The use of virtual reality enables researchers to assess the subject's behavior and includes sensory inputs like visual, auditory, vestibular and tactile.

Join a unique worldwide group of some of the top universities and clinical centers. Investigate new research paradigms with our CAREN High-End. Full 360° spherical immersion!



## GRAIL

As the total package solution for gait analysis and training, the Gait Real-time Analysis Interactive Lab (GRAIL) employs an instrumented dual-belt treadmill, a motion capture system combined with virtual reality and video cameras. GRAIL provides analysis and therapy in challenging conditions to improve gait, while real-time feedback enables analysis and training during the same session.



## M-GAIT

The M-Gait enables multiple system enhancements to improve the functionality of your research set-up. Upgrade the 3D-instrumented treadmill with pitch and sway, motion capture, virtual reality, body weight support and many other features. Each add-on extends your research possibilities.



## C-MILL

The C-Mill product line consists of cutting-edge balance and gait treadmills. Designed to stimulate every-day scenarios through augmented and virtual reality, for interactive, dynamic and dual tasking exercises.



## Powered by

### D-FLOW

The D-Flow software is our inhouse visual programming tool designed for the development of interactive and immersive virtual reality applications. Combine its modules to create complex and interactive VR applications.

### HUMAN BODY MODEL

The HBM is a computer model of the complete human body, representing a total of 46 kinematic degrees of freedom. It is designed for real-time biomechanical analysis of joint kinematics and kinetics, as well as estimation and visualization of muscle function.

# HOW CAN WE ASSIST YOU?

Are you curious how we can advance your patient treatment or scientific project? We're always on the lookout for the best way to facilitate your human movement therapy or research. Challenge us with your dreams: we'll find a solution to fit your needs.

We're based in the Netherlands, but act globally through our extensive international partnerships and sales network. Visit our website for more information and feel free to get in touch with us.

Get your live demo appointment today!

## CONTACT US

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www.motekmedical.com

## ABOUT US

We are the global leader in virtual reality and robotics research and rehabilitation, combining almost 20 years of experience in high-quality technologies. We excel in building the most versatile devices, integrating the latest technologies while ensuring data quality and synchronization. Together with leading clinics and scientists, we are continuously challenged to improve human performance.

Motek is a proud partner of DIH International and Hocoma.

### DIH

DIH is committed to bringing the world's most advanced rehabilitation technology and solutions and innovations to those that need them most, changing the lives of hundreds of millions of people in the process.



### HOCOMA

Hocoma is the global market leader in robotic and sensor-based rehabilitation solutions for functional movement therapy.



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For more information, contact us at motek.info@dih.com

## MAKE A DIFFERENCE

While conventional bodyweight support systems typically only allow limited movement capabilities and vertical unloading support, the RYSEN provides 3D overground body weight support in any desired direction, combined with both vertical and horizontal assistive forces.

Together with its high adaptability, it will allow patients to progress through all stages of functional gait, balance, and transfer training supported therapy conditions available.

