

Lokomat[®] Pro



**Enhanced Functional Locomotion Therapy
with Augmented Performance Feedback**

We move you

Lokomat® – Many small steps may trigger great improvements

The concept of “task-specific learning” based on neuroplasticity suggests that activities of daily living may be trained and improved through continuous repetition in neurological patients.

Robotic Lokomat therapy meets this demand and enables intensive functional locomotion therapy with Augmented Performance Feedback.

Why introducing robotic locomotion therapy?

- Functional movement and sensory stimulation play an important role in the rehabilitation of neurological patients following stroke, spinal cord injury, traumatic brain injury, as well as in patients with multiple sclerosis, cerebral palsy or other neurological disorders.
- Administering intensive functional locomotion therapy with manual training requires sufficient staff, is labor intensive and allows only relatively short training sessions.
- Furthermore manually assisted gait therapy can be challenging, especially in obese patients or in patients who are spastic.

The Lokomat therapy enables single therapist administration of intensive functional locomotion therapy especially for challenging patients.



Anterior spinal syndrome patient during LokomatPro training.
Courtesy of SRH Fachkrankenhaus Neckargemünd, Germany.

Intensive functional locomotion therapy

The Lokomat consists of the robotic gait orthosis and an advanced body weight support system, combined with a treadmill.

- Patients on a wheelchair can be escorted over a ramp onto the treadmill and are easily fitted into the Lokomat.
- Computer-controlled motors, precisely synchronized with the speed of the treadmill, move the patient's legs through trajectories that mimic physiological gait patterns.
- A convenient user interface allows the therapist to easily operate the Lokomat and adjust training parameters to suit the individual needs of the patient.

The automated operation relieves physical strain of therapists and enables longer and more efficient therapy sessions.



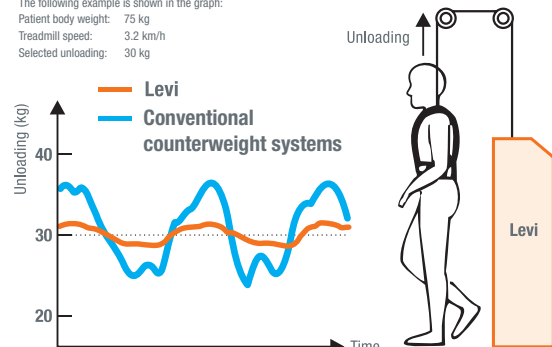
Precise dynamic body weight support optimizes physiological gait training

- The dynamic low inertia suspension system allows a precise unloading of the patient and promotes a more physiological gait for optimized sensory stimulation.
- Continuously adjustable body weight support facilitates training for children and lightweight patients.
- Automated patient lifting and unloading facilitates training and allows real time adjustments during therapy sessions.

The body weight support can be adjusted precisely to the patient's needs, assuring an optimal training environment.

Effective unloading during gait training

The following example is shown in the graph:
Patient body weight: 75 kg
Treadmill speed: 3.2 km/h
Selected unloading: 30 kg



Enhanced functional locomotion therapy, programmable to the patient's needs

The Lokomat assists walking movements of gait-impaired patients on a treadmill and combines intensive functional locomotion therapy with patient assessment and feedback tools.



Benefits of the Lokomat based therapy

- A driven robotic gait orthosis guides the patient's legs on a treadmill offering a wide range of training possibilities
- Faster progress through longer and more intensive functional training sessions compared to manual treadmill training
- Physical strain on therapists is relieved
- Single therapist operation
- Patient walking activity is easily supervised and assessed
- Gait pattern and guidance force are individually adjustable to the patient's needs to optimize the functional training
- Improved patient motivation through visualized performance feedback
- Assessment tools allow easy and reproducible measurements of the patient's progress
- If needed – easily switch from automated to manual therapy

Lokomat®Pro – Patient assessment, enhanced motivation and advanced control strategies

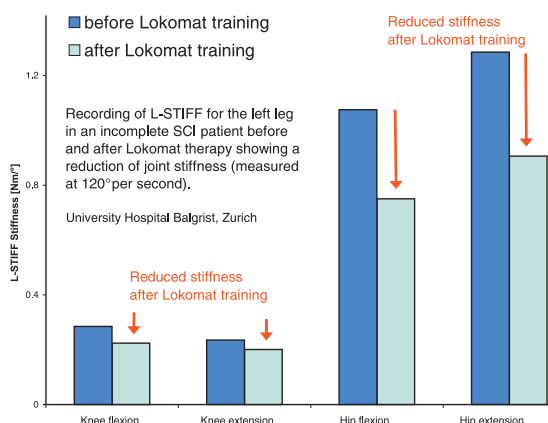
Augmented Performance Feedback and additional functionalities support your locomotion therapy programs to serve your patients' individual needs.



Anterior spinal syndrome patient during LokomatPro training.
Courtesy of SRH Fachkrankenhaus Neckargemünd, Germany.

L-STIFF Recording

As indicator for muscle tone



Enhanced motivation through patient specific guidance force control

- The LokomatPro adds the ability to measure the patient's activity by way of force transducers fitted directly on the drives and offers the possibility to adjust the level of gait assistance for each leg between full and zero guidance force.
- The continuously adjustable guidance force for each leg, allows to encourage patients to work harder by reducing the guidance force in advanced stages of rehabilitation or to specifically train unilaterally paralysed patients.
- An integrated biofeedback system monitors the patient's gait and provides real-time visual performance feedback to motivate the patient for active participation.

Motivating individually adjusted therapy for faster progress.

Patient assessment and documentation of therapy progress

The LokomatPro incorporates the following measurement tools for convenient patient assessment:

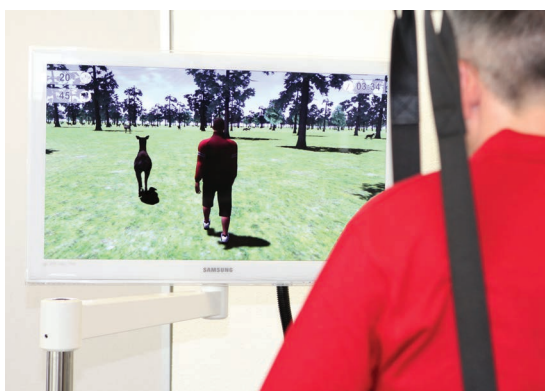
- L-WALK: Records the patient's gait performance for every step and stores the data for analysis and documentation.
- L-STIFF: Measures the stiffness of the patient's hip and knee joints while moving the patient's legs through a specific movement pattern and recording torque values.
- L-FORCE: Measures the isometric force generated by the patient while in a static position.
- L-ROM: Accurately measures the patient's hip and knee passive range of motion without support of the Lokomat drives.

Supports and records patient assessments through a set of standard measurement tools while the patient is in the Lokomat.

Augmented Performance Feedback

The Augmented Performance Feedback provides motivating and instructive functional feedback in virtual environments. Functionalities:

- Physiological gait induced by relevant functional feedback.
- The functional feedback encourages patients' involvement in their therapy.
- Engaging virtual environments to motivate the patients.
- Intensity and level of difficulty are adjustable to the cognitive abilities and the specific needs of each patient.
- Various virtual environments are included.
- Movements required by the patient are based on physiological and biomechanical principles.



Lokomat®Pro with Pediatric Orthoses

The LokomatPro with Pediatric Orthoses allows functional locomotion therapy now also for small children with cerebral palsy, traumatic brain injury or other neurological disorders.



Stroke patient during training on the LokomatPro with Pediatric Orthoses. Courtesy of SRH Fachkrankenhaus Neckargemünd, Germany.



Traumatic brain injury patient during training on the LokomatPro with Pediatric Orthoses. Courtesy of University Children's Hospital Zurich, Switzerland.



Enhanced functional locomotion therapy for children

The LokomatPro with Pediatric Orthoses is the first driven gait orthosis that automates intensive gait therapy for children on a treadmill.

- The LokomatPro with Pediatric Orthoses ensures optimal fit and patient comfort for children and offers the same benefits as the adult version.
- Special harness and cuff sets provide precise fit for small patients.

Successfully applied in leading pediatric rehabilitation clinics

The Lokomat is easily integrated in clinical settings and is successfully used for the rehabilitation of gait impaired children starting at the age of about 4 years.

Dr. med. Beat Knecht, Head of Rehabilitation Center Affoltern, University Children's Hospital Zurich, Switzerland:

"We never thought that locomotion therapy could be elevated to such a level – our clinical experiences are very positive."

Versatile and easy to use – one Lokomat fits all

The Lokomat can be fitted with the pediatric or the standard orthoses. Existing systems can be upgraded to accommodate both types of orthoses.

After the upgrade, the two sets of orthoses can be exchanged by the therapists within a few minutes.

- The LokomatPro is designed to accommodate adult patients with femur length of about 350-470 mm and pelvic width of 290-510 mm.
- The LokomatPro with Pediatric Orthoses is designed to accommodate small patients with the body height from about 86 cm (femur length of 210-350 mm and pelvic width of 170-280 mm).

The easily interchangeable and adjustable Lokomat orthoses offer optimized locomotion therapy for adults and for children.

Easily integrated in clinical settings

The Lokomat is an ideal addition to in- or out-patient rehabilitation programs and for long term care facilities. It helps to leverage your therapy offerings for the benefit of your patients.



Traumatic brain injury patient during training on the LokomatPro.
Courtesy of High Hopes Head Injury Program, Tustin, CA, USA.



Successfully applied in leading rehabilitation centers

The Lokomat has established itself as an effective intervention for improving over-ground walking function in neurological patients.

Lokomat systems have been installed and applied successfully in renowned rehabilitation clinics and research institutes worldwide.

Mark J. Desmond, M.A., Director/Instructor, High Hopes Head Injury Program, Tustin, CA, USA:

“Repetition is critical to retraining people with traumatic brain injuries to walk again. Of everything that we are doing the Lokomat pulls our entire program together – and that’s exactly what we were hoping for.”

Hocoma – global support and clinical application network

- Focused on improving functional rehabilitation therapy.
- Clinical application support and trainings with certified instructors allow a smooth introduction of robotic Lokomat therapy.
- Worldwide service support and maintenance options.
- International Lokomat Interest Groups offer networking for specialized therapists, clinicians and research scientists to share findings and recommendations for clinical practice.

Professional installation, training and maintenance options support your clinical needs and help with the successful implementation of enhanced functional locomotion therapy in your clinic.

Product Disclaimer

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