Walk through neurorehabilitation

Ekso Bionics is redefining rehabilitation.

The Ekso GT™ robotic exoskeleton for over ground gait training and exercise has enabled thousands of individuals suffering from paralysis due to neurological conditions such as stroke or spinal cord injury to stand and walk again.
What is Ekso

Ekso GT™ is a wearable bionic suit that helps individuals with any amount of lower extremity weakness or paralysis, including those with complete spinal cord injury, to stand up and walk with a natural, fully weight bearing gait. The Ekso GT robotic exoskeleton helps patients re-learn correct step patterns while enabling correct weight shift when walking.

The Ekso mimics as close as possible a normal physiological and biomechanical gait pattern. Walking is achieved by user’s weight shift or the push of a button to activate sensors in the device that initiate the steps. Battery-powered motors drive the legs, replacing deficient neuromuscular function.

The Ekso is designed to be flexible and dynamic, adapting to the patient as they progress in their rehabilitation goals. Innovative variable assist technology can accurately tailor programmes to individual needs in real-time.

“The Ekso has been very easy to integrate in our clinic, giving us the possibility to provide a wide range of patients with the opportunity to achieve a natural gait early in their rehabilitation process. It gives us the possibility to walk many patients in a day as well as customising the device to their needs and abilities, and therefore improving both the quantity and the quality in our provided gait training and exercise regime.”

Prof. Dr. Jörg Wissel, MD, FRCP
Neurological Rehabilitation and Physical Therapy
Department of Neurology with Stroke Units, Humboldt, and Spandau Hospital, Vivantes North, Berlin, Germany
EKSO GT: Suitable for a wide range of patients...

The Ekso is a rehabilitation tool intended for supervised use by therapists for individuals with various levels of paralysis or hemiparesis due to neurological conditions such as stroke, spinal cord injury or disease, traumatic brain injury and more (see back cover for more details). Ekso can be used in both acute and chronic gait rehabilitation, in both an inpatient and outpatient setting.

... and adjustable to their needs.

The Ekso GT comes with several step programmes, supportive equipment and a unique Variable Assist function that gives the possibility to tailor the rehabilitation programme to the patients’ needs.

These pictures are for illustration purpose only. The intention is to showcase the range of patients that the Ekso might be suitable for but each patient has their own individual rehabilitation possibilities depending on medical condition and health. Ekso Bionics makes no medical claims of the benefits of using the Ekso. Furthermore the Ekso should always be used under clinical supervision with a certified spotter.
Flexible innovative technology optimised for clinical use

**Easily customised for patients**
The Ekso, which is fully adjustable to each patient’s needs, is equipped with an extensive soft goods package that can be fitted into the Ekso to help overcome leg discrepancy, provide extra back support etc. Walking aids to support the arms such as crutches, walking frame, arm slings and a walking cane are also included, and depending on patient progression these are used in different stages of the rehabilitation process.

In addition, the Ekso is equipped with different walking programmes which the clinical team can easily choose in the settings menu:

- **FirstStep™**
  A trained therapist initiates steps with the push of a button.

- **ActiveStep™**
  The patient takes control of initiating their own steps via the interface on the crutches or walker.

- **ProStep™**
  The patient independently achieves the next step by weight shifting laterally and forward.

- **ProStep Plus™**
  Steps are triggered by the patient’s shifting weight laterally. The steps will be initiated when Ekso detects the correct weight shift.

**Increased patient safety:**
The Step Generator Software helps patients to get up and walk fast. Ekso calculates and adjusts the path of each step through its swing phase at a rate of 500 times per second. This helps patients avoid stumbling in the early phase of their recovery as they re-learn to stabilise their posture. This also allows Ekso to more effectively mimic an unimpaired gait.
**Variable Assist: a new way in gait rehabilitation**

Variable Assist technology has transformed the progress patients are able to achieve. Instead of being a passive device, with Variable Assist, individuals can use their own leg power to walk the device.

Therapists have the option to either assign a specific amount of power contribution from Ekso to help patients’ walking efforts, or to dynamically adjust to the patients’ needs in real-time dependent on the clinician’s therapeutic goals.

**Adaptive Assist**

This mode assists patients with any amount of lower extremity function to walk. Ekso dynamically adjusts motor output to produce a smooth, consistent gait. Real time feedback is obtained via the user interface that enables the therapist to visualise the level of machine/patient interaction.

**Fixed Assist**

In this mode, either leg of the Ekso contributes a fixed maximum amount of power to assist the patient to complete a step. Values are established using information gained while walking in Adaptive Assist or assigned by the therapist, allowing the clinician to explore the impact of various interventions on rehabilitation goals.

Tune the amount of power contributed to either, or both legs, to support the walking effort, or let the Ekso GT do it for you.

**“With the Ekso we can get the patient standing and walking early in the rehabilitation process with an intelligent supported gait. As the patient progresses the Ekso will adjust to their development and the clinical team have the possibility to easily customise the device after each patient to improve patient outcomes.”**

Professor Franco Molteni, Villa Beretta Rehabilitation Centre, Valduce Hospital, Costa Masnaga, Lecco, Italy

**EXAMPLES OF EKSO CENTRES:**
- Glostrup Hospital, Denmark • Centre Mutualiste de Kerpape, France • Schön Klinik Bad Aibling, Germany • BG Kliniken Bergmannstrost, Germany • Vivantes Klinikum Spandau, Germany • RKU – Universitäts und Rehabilitationskliniken ULM, Germany • Vivantes Humboldt-Klinikum, Germany • YouWalk – Personal Bionic Training, Germany • BG Klinik Tübingen, Germany • BG Unfallklinik Duisburg, Germany • Moritz Klinik Gmbh & Co. Kg, Germany • Istituto Prosperius, Italy • Ospedale Santa Corona – Unità Spinale, Italy • Centro Riabilitazione “Villa Beretta”, Italy • Fondazione Centri di Riabilitazione Padre Pio Onlus, Italy • Heliomare, Netherlands • Sunnaas Hospital, Norway • FLM Fundacion del Lesionado Medular, Spain • Step by Step Foundation, Spain • Hospital Aspeyo Coslada, Spain • Institut Guttmann, Spain • Uppsala University Hospital, Sweden • Linköping University Hospital, Sweden • Swiss Paraplegic Centre (SPZ) Nottwil, Switzerland • Sheffield Teaching Hospital, UK • The Royal Buckinghamshire Hospital, UK • More Centres on Eksobionics.com
The benefits of the EKSO GT are far reaching

For Patients
The range of benefits to patients include:

- Improved individual patient progression: with ‘variable assist’ technology settings can be easily modified to adjust to a patient’s current ability to move the patient forward more precisely towards their rehabilitation goals.
- Improved quality of gait training, Ekso encourages a more natural gait pattern: temporal components such as speed and angle excursions of the hip and knee joint can be adjusted within the software to compensate for deficits in range of movement and other factors that may affect the patient’s gait pattern.
- Patients are able to stand and walk earlier in the rehabilitation process in a wide range of conditions: individuals with any amount of lower extremity function contribute their own leg power to walk the device and the Ekso supplements the deficit. This is adjusted as the patient progresses.

For Therapists
Provides therapists and patients with increased access to over ground gait training.

- An effective tool for assisting patients to relearn correct gait patterns, weight shifts, and discouraging compensatory ambulation strategies.
- Ekso supports the weight of the patient whilst reducing the physical burden on the clinicians.
- Provides real time patient performance data throughout each session – data monitoring of the motor activity at the hip and knee joint in each leg can be accessed through the software, providing the clinician with valuable data to analyse the patient’s volitional motor performance.
- Easy to attune to patients’ needs by adjusting the walk programme, balance support tools, step length, step height and swing time.
- Real time audible feedback to patient to optimise their gait.
- Accommodates spasticity (up to Modified Ashworth Scale 3) by modifying speed of sit, stand, and swing-time.
- Eases the risk of pressure sores through intelligently designed soft goods.

For Clinics
- Provides optimal gait training to a wide range of patients in a single day.
- Optimises your clinic and therapists’ time and resources with quick set-up and minimal space requirements.
- Comprehensive training and 24 hour support.
- Be a part of the network of leading Ekso rehabilitation clinics.
- Strengthen your clinical teams’ skills through acclaimed hands-on, therapist-to-therapist training and certification, as well as supporting them with a tool to decrease physical burden and work injury related costs.

“(It) adds another dimension to rehabilitation by simulating a normal walking pattern. We’ve seen that repetitive motion retrains the nervous system so that individuals, in some cases, redevelop walking patterns, but regular movement also prevents secondary complications of paralysis, including cardiac and lung weakness, poor bone density and pressure ulcers. Quality of life drastically improves.”

Gail Forrest, PhD, Director of Human Performance and Movement Analysis Research at Kessler Foundation
Why choose EKSO?
In addition to the wealth of benefits to patient rehabilitation and ease of use by therapists, Ekso yields a significant return on investment: therapists are able to walk more patients in a day; Ekso improves the image of your facility and increases the catchment area for new patients; there is less fatigue in physiotherapist injuries and their associated costs.

By choosing Ekso you will benefit from an extensive customer care experience including a comprehensive package of service, support and knowledge sharing.

Support: EKSO Care
Ekso Bionics offers customers an extensive service package that can be tailored to their specific needs. The comprehensive support programme includes:

- Regularly scheduled maintenance.
- Support from our Field Service Engineers.
- Access to the Ekso Clinical Team.
- Loaner Units when needed.
- Technical Service Call Centre, available 9.00-17.00 GMT.

Training: EKSO Academy
Your Ekso delivery and installation process includes a comprehensive training and certification programme for up to four physiotherapists. It covers patient selection, screening, measuring, fitting and the operation of Ekso, as well as clinical tips to encourage the full utilisation of your device. This valuable programme strengthens your clinical teams’ skills, confidence, and optimises your facility’s investment over time.

Knowledge sharing
The EKSO Clinician Network

Certified therapists will have access to the Ekso Clinician Network. The group provides a valuable and exclusive forum for industry professionals to share and learn from certified physiotherapists across the network. Events and ongoing training enhance the opportunities for networking and peer connection.

The EKSO Research Network

A growing number of leading scientists are initiating studies on a variety of research topics related to spinal cord injuries, CVA, and other neurological conditions affecting gait. Participating in the Ekso Research Network open up valuable networking and collaboration with research groups and scientists who are actively engaged in leading edge research.
EKSO is intended for:
People with lower extremity weakness, paralysis or hemiparesis due to neurological disease or injury such as: Stroke, Spinal cord injury, Multiple Sclerosis, Guillain-Barré Syndrome

Height range: 150-190 cm    Maximum weight: 100 kg    Maximum hip width: 46 cm

Other User Requirements:
• Functional upper limb strength to use assistive devices.
• Ability to manage weight transfers and sitting balance.
• Ability to understand simple instructions and commands.
• Functional hand and grip strength to utilise the crutch interface.
• Complete evaluation and screening by a medical provider before using the Ekso.

Contraindications:
• Significant osteoporosis that prevents safe standing or may increase the risk of fractures caused by standing or walking.
• Uncontrolled spasticity.
• Uncontrolled Autonomic Dysreflexia (AD).
• Skin integrity issues on contact surfaces with the device or that would prohibit sitting.
• Cognitive impairments resulting in motor planning or impulsivity concerns.
• Pregnancy.

Contact us
For more information on acquiring Ekso and our support programmes visit us at eksobionics.com or follow us at:

Ekso Bionics Headquarters
1414 Harbour Way South, Suite 1201
Richmond, California 94804
United States
Phone: 510.984.1761
CustomerRelations@eksobionics.com

Europe
1 Canada Square, 29th Floor
Canary Wharf, London E14 5DY
United Kingdom
Phone UK: +44 (0) 207 060 3568
Phone DE: +49 (0) 895 506 7774
Enquiries@eksobionics.com

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