

Bionic suit helps paralyzed patients stand and walk again

April 25 2018, by Deb Song



Credit: Rush University Medical Center

Patients undergoing physical rehabilitation at Rush for paralyzing injuries are being aided by a robotic suit designed to help raise people to full height and walk.

Rush is the only medical center in Chicago and one of only 98 facilities in the world offering the EksoGT robotic exoskeleton device for clinical [therapy](#) for both inpatients and outpatients.

"Being upright is an important aid to rehabilitation and eventual return to a better life for patients who have suffered [spinal cord injuries](#), stroke and other traumatic brain injuries and are unable to walk," said Diane Genaze, director of physical therapy at Rush.

The EksoGT is a ready-to-wear, battery-powered bionic suit that is strapped over the user's clothing helping patients to stand upright and to walk.

It is powered by two high-capacity lithium batteries, which drive motors located in the hip and knee of the exoskeleton.

The patient provides the balance and proper body positioning, and the device allows patients to walk while a physical therapist uses the EksoGT's control pad to program the desired walking parameters.

The parameters include step length and speed as well as control of when the EksoGT stands, sits and takes a step. This allows the patient to initiate steps independently as they are able to balance more comfortably.

The therapist also has the ability to modify the EksoGT's walking progression as the patient improves with each clinical therapy session.

The EksoGT can be adjusted to fit most people between 5 feet 2 inches and 6 feet, 2 inches who weigh 220 pounds or less. The user must have arm function and adequate upper extremity strength to manage crutches or a walker. An experienced user can transfer to and from their wheelchair and put on or take off the EksoGT in less than five minutes.

The torso and leg straps are designed to enable the patient to easily get in and out of the device with minimal or no assistance. The learning curve is user specific.

After therapy with the exoskeleton device, individuals usually begin using a walker and then progress to using crutches.

Developed by Ekso Bionics, a technology company based in Richmond, California, the wearable robot was named a Top 10 invention by CNN and one of the best inventions by Time magazine.

"This technology is a great addition to our [physical therapy](#) and rehabilitation program," said Dr. Sheila Dugan, acting chief of Rush's division of physical medicine and rehabilitation. "We provide patients with a multidisciplinary team of experts in the field of neurorecovery."

"We also conduct research and provide education with the aim of improving the quality of life for [patients](#) in our region," Dugan said.

Provided by Rush University Medical Center

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