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Bionic legs help some patients to walk again

Exoskeleton like a wearable robot

By Jessica Belasco STAFF WRITER

The bionic suit that helps Pedro Lozano walk doesn't turn him into the Six Million Dollar Man.

But the Ekso robotic exoskeleton, which resembles a wearable robot, is aiding Lozano to regain the mobility he lost two days after Christmas, when he suffered a stroke that left him paralyzed on the left side of his body.

Strapped into mechanical leg braces, Lozano rose from his wheelchair and walked with the help of a walker and two physical therapists on Thursday, giving a joyful laugh as his son looked on.

As Lozano shifted his weight from leg to leg, sensors triggered battery-powered motors to initiate each step.

After several laps up and down the floor of the University Health System's Reeves Rehabilitation Center, Lozano traded his walker for a cane and took more slow, laborious steps.

"It wasn't difficult," Lozano, 56, said in Spanish after his hour-long physical therapy session, during which he walked nearly 500 steps.

Reeves Rehabilitation Center, which received the machine two months ago, is the only San Antonio facility to offer it and one of only three in Texas.

The first Ekso was shipped in 2012; about two-dozen rehabilitative and medical facilities in North American now use them.

The Ekso costs about \$100,000 and was purchased with a grant from Baptist Health Foundation. Chara Rodriguez, a physical therapist and neurologic clinical specialist at University Health System, called the machine "the Maserati of the rehab world."

Ekso's gait training can help patient relearn proper step patterns and weight shifts. It can help people with varying amounts of weakness in their lower bodies, including people with complete spinal cord injuries, to stand and walk, according to manufacturer Ekso Bionics. Other patients who may benefit include people with traumatic brain injuries, multiple sclerosis and cerebral palsy.

Rodriguez said the machine can offer major benefits to patients.

"The machine guides him in the correct gait," Rodriguez said. "It tells him, 'This is how much you move the hips. This is how much you move the knee.'"

Not all patients can benefit from the suit. They need a certain amount of range of movement in the hips and the ability to completely straighten their legs, for example.

Patients need a doctor's referral and an evaluation to undergo therapy with the Ekso.

Operators of the device can adjust the settings depended on the patient's abilities.

"If you have some muscle strength, then we can set it so the machine will give you whatever you're not giving to take that step," said Julietta Douglas, one of the University Health System physical therapists that has trained on the device.

"If not, the machine will give you the whole motion. Some people didn't think they were ever going to walk again, and this isn't necessarily how they thought they were going to walk, but it is walking."

Omar Lozano, Pedro Lozano's son, said using the machine has helped his dad regain his balance and, perhaps more importantly, has given him confidence in his recovery.

"It's a very exciting thing," Omar Lozano said. jbelasco@express-news.net



Photos by Edward A. Ornelas / San Antonio Express-News

Physical therapists Chara Rodriguez (left) and Julietta Douglas (right) work with Pedro Lozano, 56, while he wears an Ekso exoskeleton suit. A stroke left him paralyzed on the left side.

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Julietta Douglas (left) and Chara Rodriguez get Pedro Lozano ready for therapy. After his hour-long physical therapy session in which he walked almost 500 steps, Lozano said the Ekso exoskeleton is not difficult to use.

