

New robots help patients walk, touch, feel

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CHICAGO, June 29 (AFP) - A 500-pound (225-kilogram) robot that follows a stroke patient down a hallway and catches him when he falls. A machine that suspends a gunshot wound victim over a treadmill and teaches her legs how to walk again.

A virtual reality game that helps people with Parkinson's disease grasp coffee cups.

These were just some of the new medical tools on display at a conference on rehabilitation robotics in Chicago this week.

"We're still learning how and discovering how to use these robots," conference chairman James Patton of the Rehabilitation Institute of Chicago said Tuesday.

Robots can help people with limited mobility become more independent by feeding them and carrying out other household tasks. They can also help physicians diagnose and treat patients through teleconferencing or by collecting home therapy session data. And they are helping people with severe injuries or illnesses gain greater control over their movements.

People like Gernard Fulton, who was shot in the shoulder in October 2004. With a damaged spine and no feeling in her legs, doctors were worried the 35-year-old mother of two wouldn't walk again.

Afraid of falling, Fulton was nervous performing muscle-strengthening exercises with the physical therapists who would hold her up and move

her legs to teach them how to walk.

Then she was taken to the Lokomat, a Swiss-designed machine that suspended her in a harness while straps moved her legs in a normal walking pattern.

At first, the machine did all the work. But as Fulton recovered she pushed herself to move with the machine while a monitor showed her how well she was doing.

"I knew I'd recover one day, but I didn't expect to recover so quickly," she said as she stepped shakily across a conference room.

Aside from reducing the number of clinicians needed to treat a patient, the machine also allows patients to exercise for longer periods. Traditional treatment sessions generally last no more than 10 minutes because they make such intense physical demands on therapists.

Another new machine that is helping patients learn to walk again is the KineAssist exercise and balancing system which will begin clinical trials soon.

Developed by a private company associated with the Rehabilitation Institute of Chicago, the KineAssist allows clinicians to focus on the patient's progress without the fear that they will fall.

The 500-pound (225-kilo) robot on wheels follows patients as they walk while a harness protects them from falling if they stumble and allows for a greater range of motion.

In traditional treatments, "someone would have been holding on to him and the very act of holding onto him restricts his movement," David Brown, co-founder of ChicagoPT, which developed the device, said as a

65-year-old stroke victim demonstrated the device.

Patients supported by the KineAssist can explore the limits of their stability by balancing on foam cushions, reaching forward to catch balls or even walking a tightrope.

"It pulls people around (in a way) similar to what happens in daily life when you get on a bus or a subway," Brown said.

Brown said he hopes to get the device to market in the next few years at a price tag of between 50,000 and 100,000 dollars (41,000 to 83,000 euros).

Another device which will soon undergo clinical trials is a virtual reality robotic system that is aimed at helping people with brain injuries such as strokes develop new neural pathways.

"This is really a game," said Patton, who is developing the technology at the Rehabilitation Institute of Chicago. "The patient wants to come back because it's fun. It's very flashy."

Patton and his team uploaded a popular computer game, Doom, into the virtual reality machine and had patients play in order to practice grasping objects.

They found in early studies that the repetitive motions used in virtual reality therapies allowed patients to more easily adapt to life after a stroke.

One important discovery was that patients learned faster when they played games that distorted reality and made them reach farther for an object that it looked like they would have to.

More than 300 researchers and clinicians from over 20 countries are expected to attend the International Conference on Rehabilitation Robotics which will run through July 1.

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