Professor develops robotic wheelchair for infants, toddlers

By Chelsea Caltuna

Published: Tuesday, April 27, 2010
Updated: Tuesday, April 27, 2010 02:04

Cole Galloway, director of the university's Infant Motor Behavior Laboratory, spends time with children with cerebral palsy and other life-altering disabilities almost daily. He gives disabled infants something they are often missing — the chance to just be kids — by creating powerchairs for them.

Cole Galloway
Professor Cole Galloway designed a power chair for young children.

Galloway started his career as a physical therapist, working with adult patients who had suffered head and spinal cord injuries. After receiving his doctorate degree in physiological sciences, he said he realized he could be more effective with infants, rather than adults, with disabilities that prevented them from walking.

"I was looking for a different avenue," Galloway said. "I realized, 'Oh, okay, I'm a baby guy.'"

A few years later, Galloway, a professor in the department of physical therapy, heard about an experimental robotics project at the Infant Motor Behavior Laboratory and was immediately excited about what he saw, which also gave him an innovative idea, he said.

"A graduate student was driving a 'mommy robot' around leading these three other duckling-like robots," he said. "And, the robots were following the mom independently. If the other students shoved something in between the little guys and mom, the little guys would automatically go around and still stay near."

Galloway decided to combine his knowledge of physical therapy with the robots to create motorized chairs for disabled infants. The chairs were meant to allow children to explore on their own just like regular infants do, he said.

The power chairs are designed for babies as young as six months old and are controlled with a simple joystick that steers the robot. The chairs have infrared and bump sensors, which allow them to automatically steer around potentially dangerous objects, Galloway said.

"Small as a baby. Light as a baby. Goes everywhere a baby goes," he said. "That's sort of our mantra."

This month, Galloway won the Research Award from the Section on Pediatrics from the American Physical Therapy Association (APTA) for his work with infant power chairs.

The robots also collect data, which Galloway hopes will show how children are using the chairs. His goal is to send the robots all over the world and collect data from them over a period of a few years.

Most disabled children do not receive power chairs until age five or six, when they have already missed out on the vast amount of knowledge that babies receive through exploration, Galloway said.

He hopes that giving infants a chance to develop normally will make the effects of their disability less severe.

"Immobility, potentially, could be worse for you than your brain injury," Galloway said. "So if we took the immobility away, and you're left with what the injury leaves you, we don't know, that actually might be relatively minor."

Galloway said the robots have been shown to improve brain function, motor skills and language ability in infants. He said the chair could also benefit children who have mental disabilities.

"This could be for any kid that needs a boost in language or cognition," he said. "There are plenty of disability

Most Popular | Most Commented

Del. student named America's hottest college girl
Cheeburger Cheeburger opens on Main Street
Chipotle to open after numerous setbacks
Too many people imitating the Jersey Shore these days
Hookah health effect myths go up in smoke
Computer glitch causes admissions snafu

types, like Down syndrome, where kids will walk, but parents are realizing that this could still benefit them."

Typical power chairs require ramps to be installed and walls to be knocked down in the child's home, Galloway said. His goal is to make the chairs smaller and more efficient so they can function better in the real world.

"The ultimate goal of the whole project is to make the devices and send them home with you and your baby, and let life be the trainer," Galloway said.

He said a development of a business plan aimed at creating the first commercial power chair for children under the age of three will begin this year. Unlike scientific research that never leaves the lab, Galloway said, his research has very practical applications for infants with disabilities.

"We want to publish and we want to get grants," he said. "But ultimately, we want to publish and, get grants to impact people that are waiting on us."

Galloway said although the power chair industry has been hesitant to accept power chairs as a resource for disabled children, he believes the chairs could change the lives of those children and their families.

"That's actually a big push," he said. "I'm very lucky, because that push is there all the time."

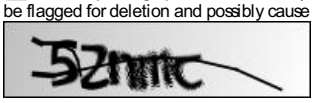
Facebook Comments | Site Comments

Be the first to comment on this article!

Add comment

Anonymous

I am not posting spam. I understand posting spam or other comments that are unrelated to this article will cause my comment to be flagged for deletion and possibly cause my IP address to be permanently banned from this server.



Enter the characters in the image above:

Submit

log out