

A Giant Step for Stroke Patients

Every 40 seconds, someone in the United States suffers a stroke. It's a devastating condition that can have a lasting impact, causing serious, long-term disability that requires months—or even years—of rehabilitation.

According to the Centers for Disease Control and Prevention, more than half of stroke survivors age 65 and older have difficulty walking following the stroke, and face an arduous rehabilitation process with mixed results. However, one Corridor-based research team is working to change that with a revolutionary device—a shoe.

Although the concept may sound simplistic, it's anything but. The shoe, which was developed by Tampa-based Moterum and a team of researchers at the University of South Florida, is designed to teach stroke patients to walk symmetrically again, but in a shorter period of time and at a more affordable cost.

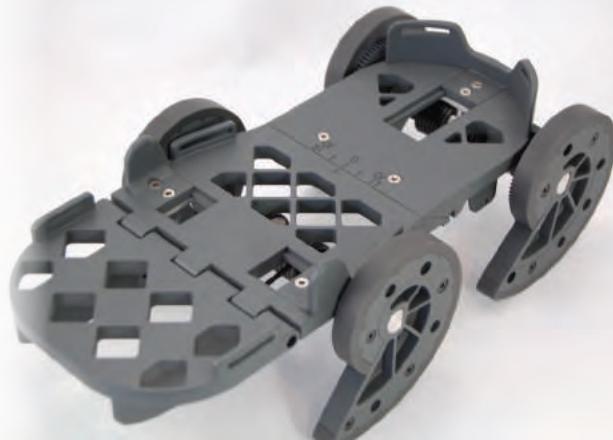
Current rehabilitation methods often include walking on a split-belt treadmill, among other forms of treatment. While this method of rehab can be successful, many patients can revert back to an asymmetrical gait once they step off the treadmill and leave the controlled rehabilitation environment.

That's where Moterum's shoe comes in.

Designed to simulate the sensation of the split-belt treadmill, the shoe could be worn anywhere, allowing patients to undergo rehabilitation in a natural setting on a more consistent basis. Ultimately, this process could help permanently retrain the brain and teach patients how to walk symmetrically.

"This technology has the potential to positively impact 100,000 to 200,000 stroke patients a year," said Dr. David Huizenga, CEO of Tao Life Sciences, the company that oversees Moterum. "If you're able to help stroke patients walk better and become independent faster, it would have a major impact on their health and our economy."

Dr. Kyle Reed, the lead researcher on the project and assistant



professor in USF's Mechanical Engineering Department, is taking the next step toward commercialization of the product by conducting a clinical trial—thanks to funding from the Florida High Tech Corridor's Matching Grants Research Program.

"This money is allowing the shoe to go from a working prototype to a device that we can actually test on stroke patients," said Reed.

Pending the results of the first clinical trial, Reed and his former Ph.D. student, Dr. Ismet Handzic, hope to conduct a large-scale clinical trial to optimize the effectiveness of the shoe. As Moterum's first full-time hire, Handzic will play a key role in bringing the technology to market.

"Seeing this idea come to the point where it might help people is a realization of a dream we had a long time ago," said Reed. "It's very exciting to see the project moving forward and impacting society."