

INNOVATIONS

This robot catches grandma before she falls

The mobile robot balance assistant, called “Mr. Bah,” can sense when elderly people lose balance

By [Pranshu Verma](#)

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Researchers this week unveiled a new robot that can predict and catch seniors before they fall — a potentially major development in caring for the world’s rapidly aging population.

The new device, which looks like a motorized wheelchair, has guard rails that come up to a person’s hip and are outfitted with sensors to judge when a person begins to go off balance. Users strap into a harness, and when they are starting to tip, the robot engages it to keep them from falling.

The machine’s inventors, from the Nanyang Technological University (NTU) in Singapore, affectionately call the machine “Mr. Bah,” a stand-in for its actual name: the mobile robot balance assistant. The device still needs regulatory approval in major markets like the United States, and faces significant funding challenges for getting to market, but it is targeted to be available in two years, researchers said.

“Mr. Bah” joins a growing number of technological advances for elderly care, including robots that clean homes and provide companionship and wearable devices that track key health metrics. The robot’s inventors say their fall prevention robot is a crucial advance, especially since falls can often lead to serious injuries or deadly outcomes.

“[Falls] are a big problem worldwide,” said Wei Tech Ang, a lead researcher for the project and executive director of the Rehabilitation Research Institute of Singapore (RRIS). “The ... intention was to help people walk around at home without the fear of falling down.”

Globally, falls are the second leading cause of unintentional injury deaths worldwide, according to the [World Health Organization](#). In the United States, falls remain the leading cause of injury-related deaths among adults ages 65 and older, the Centers for Disease Control and Prevention [data shows](#).

Ang became aware of that problem from personal experience. “My 85-year-old mother, she’s a frequent faller,” he said. “After she fell for the first time about 10 years ago, I started having this idea of creating a robot.”

Ang partnered with researchers at NTU Singapore and Tan Tock Seng Hospital to create and pilot the robot. So far, the device has been only tested on 29 participants. They were patients who suffered from strokes, traumatic brain injuries and spinal cord injuries.

During testing, which spanned three days per participant, the robot aided seniors with sitting, standing and walking. No falls were recorded during the trials, researchers said. (The results were announced this week.)

The team's goal is to get regulatory approval for the device in major markets across the world, including the United States. They envision releasing two versions of the robot. One is a hospital version, outfitted with many high-end sensors and cameras that track an elderly person's movements, and could cost around \$20,000. The other is an at-home version, which would either have fewer sensors and cameras in it or use lower-quality ones, and could go for \$3,000 to \$4,000, Ang said.

But the team faces a steep challenge. They need around \$4 million in initial funding just to get device approval from regulatory agencies in places like the United States, Europe, China and Singapore, Ang said. From there, they would need an additional \$10 million to \$20 million to get the device into market. "That is awfully difficult here," he said.

Should that happen, researchers said, the effects could be significant and represent a way for robots to improve the lives of elderly people by giving them the feeling of independence.

"One of [the] key strategies is to empower patients," Karen Chua, a co-developer of the mobility robot at NTU's medical school said in a statement. "We want to make robotics therapies more sustainable and accessible in the community where our patients can lead healthier and happier lives."