



## HEALTH &amp; WELLBEING

# Assistive MRBA robot is designed to detect and prevent falls

By Ben Coxworth

September 08, 2022



*There are three versions of the MRBA robot – one for people weighing up to 80 kg (176 lb), one for people weighing up to 120 kg (265 lb) and one that "supports more dextrous movements" Nanyang Technological University*

As their sense of balance deteriorates, seniors are at an increased risk of potentially debilitating falls. A new wearable assistive robot could help, by detecting and preventing such falls before they actually occur.

Developed by scientists at Singapore's Nanyang Technological University (NTU) and Tan Tock Seng Hospital, the prototype device is known as the Mobile Robotic Balance

Assistant, or MRBA (pronounced "Mister Bah"). It consists of a wheeled battery-powered base, which is connected to a padded harness worn around the user's hips.

As that person walks around their home or other settings, MRBA follows along behind them. Utilizing a depth-sensing camera and other sensors, it's reportedly capable of detecting the telltale movements which indicate a sudden loss of balance on the part of the user. When it does so, it responds by stopping and holding the harness in place, keeping the wearer from falling down.

The robot can also identify deliberate movements such as those associated with sitting down, getting up and standing on the spot. In all cases, it assists accordingly. And along with helping out in users' day-to-day lives, the robot could also be utilized in rehabilitative medicine, holding wearers up as they learn to walk again.

In a test of the technology, MRBA was used over a three-day period by 29 volunteers who suffered from stroke, traumatic brain injuries, and spinal cord injuries. The device proved to be helpful in daily activities, and no falls were recorded by any of the participants throughout the testing period.

A larger-scale study is now being planned. It is hoped that the technology will be commercialized within the next year.

"MRBA could prove to be an invaluable resource for older adult users, and help promote independent living and aging," said the project leader, Assoc. Prof. Ang Wei Tech.

It can be seen in use, in the following video.

**Singapore's latest robot helps the elderly to exercise and can prevent falls**

