

World-first virtual reality study to trial new Parkinson's treatment

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Over half of Parkinson's disease patients experience a walking problem known as 'freezing of gait'.

In a world-first study, researchers at the Brain and Mind Research Institute (BMRI) at the University of Sydney may have found a new way to help the Parkinson's disease patients who experience walking problems.

Researchers are hoping to use a simulated [virtual reality environment](#) to help patients suffering from the phenomenon known as 'freezing of gait' (FOG). FOG affects over half of all Parkinson's patients, and is

commonly triggered by having to walk through narrow doorways.

"Patients experiencing FOG suddenly feel like their feet have been glued to floor as they try to walk, often causing them to fall," Dr. Simon Lewis, Director of the BMRI PD Research Clinic, said.

Using a new magnetic resonance (MR) scanner, the BMRI team collaborated with Southern Radiology to devise a realistic [virtual reality](#) (VR) environment with a series of corridors and doorways, which patients navigate using foot pedals.

"Our preliminary results show that patients with FOG have a delay in their stepping pattern when passing through doorways in the VR. We didn't see this in patients without FOG or in healthy [control subjects](#)," Dr. Lewis said.

"Furthermore, we have been able to correlate the amount of freezing experienced in VR with that observed during physical assessment in the clinic," he said.

"Finally, as VR allows patients to walk whilst lying down we have even been able to use our novel brain scanning technique to see what is going on in the brain during freezing episodes.

"What is truly exciting about these findings is their potential application to therapy. Currently, FOG does not respond well to available treatments. However, it is possible that exercising in VR may offer a potential way of improving symptoms without the need for medications or surgery," he concluded.

According to Dr. Lynette Masters, Clinical Director of MRI at BMRI, diseases of the brain and mind, including Parkinson's disease, dementia, substance abuse and [clinical depression](#), now account for a significant

number of all illnesses.

"MRI uses magnetic fields and radio waves to produce high quality two- or three-dimensional images of brain structures without the use of ionizing radiation (X-rays) or radioactive tracers.

"In research, MRI can be used in the development of novel biomarkers and non-invasive imaging technologies that help improve our understanding of disease and, ultimately, lead to better diagnosis and treatment of debilitating illnesses," Dr. Masters said.

Parkinson's disease affects 80,000 Australians costing the nation more than \$6 billion every year. Dr. Lewis and his team are now recruiting patients for a trial investigating whether there are benefits from exercising in VR for [Parkinson's disease](#) patients who experience FOG.

Provided by University of Sydney

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