

# Parkinson's disease clinical trial tests exercise regimen to improve movement

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Linda Cherney demonstrates an OHSU training protocol designed to improve the ability to turn for people with Parkinson's disease. An OHSU clinical trial is using wearable sensors to test whether the training improves mobility and quality of life. Credit: OHSU/Christine Torres Hicks

Tethered to a ceiling-mounted mobile harness to hold her steady, Linda

Cherney moved deliberately around a small obstacle course in a laboratory on Oregon Health & Science University's Marquam Hill campus.

Look. Turn. Step.

Cherney, a 71-year-old retiree who lives in Battle Ground, Washington, is part of an ongoing clinical trial at OHSU to test a [training](#) protocol designed to help people with Parkinson's disease.

For many people with Parkinson's, the simple act of navigating around a room is no longer intuitive. Research has shown the neurodegenerative disease can [impair walking and their ability to turn safely](#), resulting in people being especially susceptible to injuries associated with falls.

"Now I have to think about everything I do," Cherney said.

The OHSU study is testing the proposition that a focused, exercise-based approach can retrain the brain and improve the lives of people with Parkinson's disease. Traditional rehabilitation focuses on straight-ahead walking, while this study is specifically designed to improve quality of turning while walking; researchers are focused on enrolling participants who have had a fall already, and would be most likely to benefit from the training protocol.

## **Complexities of turning**

For most of us, turning requires almost no conscious thought.

Yet it's a surprisingly complex skill. [Previous OHSU research](#) has documented how the simple act of walking and turning involves bringing together senses of pressure, balance and vision to maintain equilibrium without tumbling over.

"It's a pretty complicated task, actually," said Fay Horak, Ph.D., P.T., professor of neurology in the OHSU School of Medicine who founded OHSU's Balance Disorder Laboratory and now serves as its scientific adviser. "You first have to look at something, then turn your head, then turn your shoulders, then turn your hips and then finally your feet. It's hard to separate all those parts of the body and integrate sensory information to control the turn."

More than half of people diagnosed with Parkinson's experience a temporary, involuntary inability to move known as freezing.

During those episodes, turning can be especially treacherous.

"When they fall, they can fall on their hip and break it," Horak said. "We really want to avoid falls and improve the quality of turning in daily life."

## **Innovative study**

The first-of-its-kind trial is currently recruiting 60 participants.

Half of the participants are placed in the exercise intervention group, where they undergo training in a specific exercise regimen three times a week for six weeks.

A week before and a week after the exercise training, participants in the experimental group wear sensors that measure every turn they make in a week—roughly 1,000 turns a day. The sensor tracks how many turns a person makes, the size of their turns, speed and how many steps they take in making each turn. The idea is to see whether, and by how much, the training improves their mobility in daily life.

The other group of participants—the [control group](#) in the [randomized](#)

[controlled trial](#)—also wear the sensors at home and are asked to continue their existing exercise routine.

Researchers will follow each participant for a year after finishing their exercise period to see if falls can be prevented with the experimental training protocol to improve turning quality.

## **Training the brain**

Cherney completed her six-week training protocol in March. Although OHSU researchers have yet to analyze the immense trove of data extracted from the sensors she wore as socks for a week before and a week after her training, Cherney already knows it's made a major difference for her.

"I can walk without a cane, and I have confidence now," she said. "I'm more 'me' now than I was before."

After a fall that caused her to break her hand, she says she retreated into her home. Now she feels much more confident about moving around, playing with her grandchildren, going to the theater and traveling.

"I'm training my brain again to do what it did before without having to think about it. Now I have to think about everything I do, but it's OK," she said. "I got my life back. I'm not afraid anymore, and that's the best part."

Eligible participants must have had a fall in the previous 12 months, be between 55 and 85 years of age and be taking a stable dose of Levodopa, a common medication to treat Parkinson's. They must be able to walk for two minutes without the use of a cane or other assistive device.

Provided by Oregon Health & Science University

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