Parkinson’s disease often starts gently, its tremors and stiff muscles the only sign of illness. This incurable movement disorder worsens over time, though, and can rob the physical independence of those living with it.

In the future, technology from video games could keep an eye on people with Parkinson’s in their own homes, noticing important physical changes and alerting caregivers about them. That could protect patients’ health—and self-sufficiency.

The new system, under development by USC computer scientists, neurologists, kinesiologists and public health experts, is called iHealth Mobility Monitoring.

Here’s how it works. Video game consoles with 3-D sensors, such as Microsoft Kinect, would track a patient’s movements around the house. Smartphone apps and body sensors could capture additional information.

Algorithms developed by the iHealth team would analyze the massive amounts of data to uncover significant changes in movement as they happen.

“Our system will allow patients and their caregivers to monitor disease progression and the effectiveness of treatments in real time,” says Cesar Blanco, project leader and head of research and development for the Alfred E. Mann Institute for Biomedical Engineering.

If a patient just loses a little flexibility or range in movement, iHealth might simply alert the patient and his or her caregivers about exercises that could better manage symptoms. With major mobility changes, the system would immediately contact physicians, who could change drug dosages, prescribe new medications or take other action. Currently, doctors have no way to effectively monitor patients between office visits other than asking them to check in if symptoms worsen.

The system might help prevent accidents, as well. Parkinson’s patients are at greater risk for hip fractures because of the disease’s impact on balance, and iHealth’s increased surveillance could decrease the number of such injuries. In the process, it could reduce pain, suffering and medical costs among the up to 1 million Americans with Parkinson’s—which is more than the combined number of people diagnosed with muscular dystrophy, Lou Gehrig’s disease and multiple sclerosis, according to the Parkinson’s Disease Foundation.

Possible applications extend beyond Parkinson’s to encompass strokes and other mobility disorders. iHealth could even monitor the posture of weight lifters and factory workers to prevent repetitive motion injuries, including carpal tunnel syndrome.

“These mobility monitoring technologies could be used by the general public to minimize the potential for physical injuries from various activities of daily life, including walking, lifting objects and carrying groceries,” Blanco says. “Our goal is to develop monitoring technologies that empower people.”