

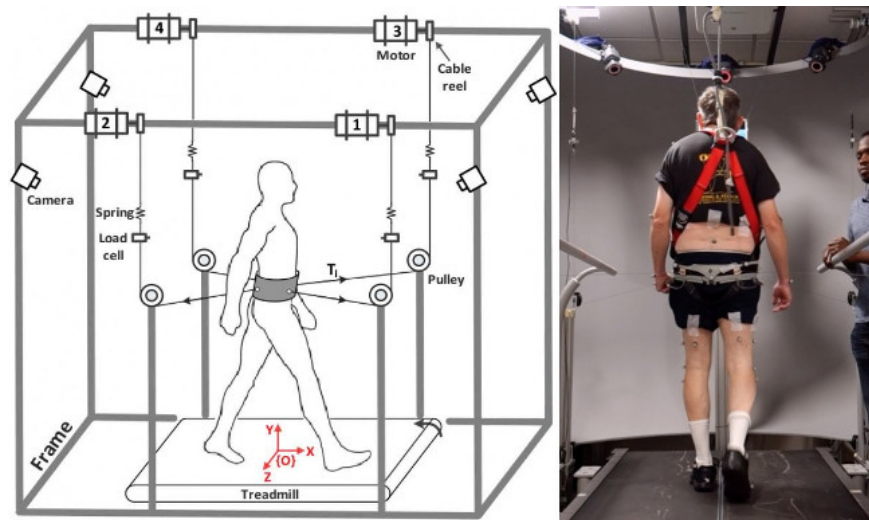
# Robot equipment to improve balance and walking for Parkinson patients

Agrawal's team, rehabilitation robotics experts, used a robotic system - Rectal Assist Device (TPAD) at the Robotics and Rehabilitation Laboratory (ROAR) to conduct research.

About 50,000 people in the United States are diagnosed with Parkinson's disease (PD) each year. The American Institute of Neurology estimates that one million people are affected by this myocardial degenerative disorder, with an average age of onset of 60. Collateral injuries are a big problem for people with the disease. Parkinson.

So, Agrawal's team, experts in rehabilitation robots, used a robotic system - the Cartilage Support Device (TPAD) at the Robotics and Rehabilitation Laboratory (ROAR) to do the research. assist.

TPAD is a lightweight, wearable robot that can be programmed to deliver force on the pelvis in a desired direction when an object walks on a treadmill. In an earlier study, Agrawal team successfully used TPAD to improve posture and walking for children with cerebral palsy.



Agrawal is also a member of the Data Science Institute, saying: *"Most of the falls in Parkinson's patients have been reported during walking, and deviant disorders are one of the highlights of Parkinson's disease, but previous studies of PD subjects focused on reactions to balance when standing."*

*"Our TPAD robot has allowed us to study for the first time how subjects respond to pelvic disorders during walking, and to describe reactions and adaptations to these disorders in number of young, elderly Parkinson's patients and kidney disease."*

Nine patients with Parkinson's disease and 9 subjects treated in combination participated in the study. Researchers have assessed stability with people with and without running cables on a treadmill. The participants were then connected to the cable from the TPAD robot and examined cross-ups for a short time to assess their response. Each group is then trained with 72 random pressure disturbances that change in direction (front / rear / horizontal), intensity (low / medium / high) and specific leg (right / left) when exposed to the ground. After this training period, they walk freely without robot cables anymore and undergo cross-disturbances like they were given before training. Later sessions were conducted to assess the impact of training on patient balance and stability.

The team found that Parkinson's patients had a forward, pre-and post-exercise equilibrium decline compared to other healthy people and were unable to create proactive adjustments. When all subjects have completed the exercise, both groups can improve the reaction to the disorder, and enhance stability when moving.

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