

ASU study aims to fight symptoms of Parkinson's

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Although many wouldn't think ski poles could fight the symptoms of Parkinson's disease (PD), a new Arizona State University study is trying to prove just that.

"Exercise training in Parkinson's disease: Neural and functional benefits" aims to see if exercise is a key component in decreasing the symptoms of PD. The study will utilize "polestriding," which is walking with the aid of ski-like poles. Also known as Nordic walking, the poles will help with balance, which many people with PD have trouble with.

"PD is a progressive disease in which the cells in an area of the brain called the substantia nigra that produce the neurotransmitter called dopamine keep dying," said Narayanan Krishnamurthi, principal investigator for the study and assistant professor of research at ASU's Center for Adaptive Neural Systems in the Ira A. Fulton School of Engineering. "So if exercise can protect neurons or it can create new neurons it's a good possibility that the progression of the disease can be stopped or reversed."

Krishnamurthi said that he was motivated to do the study based on previous reports that animals with PD-like symptoms benefited from exercise.

"The animals that participated in the exercise program had less severe symptoms and didn't lose as many neurons as the animals that didn't participate in the exercise," Krishnamurthi said.

Krishnamurthi said that other studies have shown that people with higher cardiac and aerobic fitness have better brain health than those who do not regularly exercise.

"This study investigates the functional benefits with respect to motor and non-motor symptoms before and after the exercise training for 12 weeks," Krishnamurthi said.

This study, which was recently funded by the National Institutes of Health, is a collaborative effort between the Center for Adaptive Neural Systems at ASU, the Muhammad Ali Parkinson Center at the Barrow Neurological Institute, the PET Imaging Center at the Banner Alzheimer's Institute, and the Christopher Center for Parkinson's Research at Sun Health Research Institute.

It will involve sixteen participants with PD between the ages of 50-70, because PD usually has its onset after the age of 50.

Each participant will be involved in a 36-week period in which half of the participants will receive PET scans before and after the exercise period to see if there are any positive changes in their brain glucose consumption. The PET scans will be conducted at the Banner Alzheimer's Institute.

"We'll see if the exercise training produces changes in the brain metabolic activity patterns from abnormal patterns specific to PD towards the patterns of healthy people," Krishnamurthi said. "That will give us an indication whether exercise is capable of improving brain health in PD."

The functional outcome measurements will be completed at the Sun Health Research Institute in Sun City. The exercise sessions will be conducted by Darolyn O'Donnell, recreation therapy coordinator at the Muhammad Ali Parkinson Center at the Barrow Neurological Institute.

"What we aim to do is establish and provide exercise therapy people can do on their own," O'Donnell said.

The initial idea to use poles came from a personal experience. James Abbas, a co-investigator on the study and co-director of the Center for Adaptive Neural Systems at ASU, learned about how the use of poles can increase the intensity of walking exercise and observed how they helped his mother feel more secure while walking. Since previous research results suggested an important role for exercise and clinical experience pointed to the need for some assistance during walking, the team decided to go forward with the study.

O'Donnell also said that the polestriding was chosen because it provides balance, helps work the upper body and targets core muscle. It's also more aerobic than normal walking.

The exercise will last 45 minutes to an hour, three times per week.

Right now, the study is still in its initial phases, setting up software and hardware and recruiting participants for the study. Krishnamurthi said they should begin data collection with the first group of participants either this February or March.

"If it is really beneficial, it will be very helpful to alleviate the symptoms since current treatments do not provide cure and are generally ineffective during advanced stages of the disease," Krishnamurthi said.

If the exercise helps fight against symptoms of PD, he said it will help those with PD everywhere.

“Since exercise can be done in any part of the world, people in underdeveloped countries where medical treatment for diseases like PD is not easily affordable can also benefit significantly.”

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