

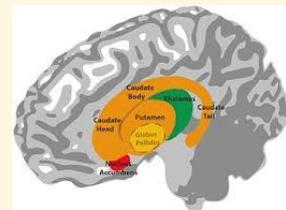
# The Neuroscience of Parkinson's disease

Newsletter by the CognAc Lab

The Cognition and Action Lab at UC Berkeley hopes that you are staying safe and taking care of yourself during these difficult times. Since you have participated in our experiments in the past or expressed interest, we thought you would be interested in learning about some recent studies that have been conducted on Parkinson's disease. We appreciate your help in assisting with our research and thought an e-newsletter would be a nice way to provide a sample of recent findings in the scientific literature. We provide a short overview of each to summarize the key findings.

## What's new in Parkinson's research?

- In the past, research has focused on the basal ganglia's (BG) role in **overt motor** behavior. More recently, the role of the BG in **covert cognitive** processes is being explored. Understanding the cognitive changes seen in Parkinson's disease might assist in the development of disease-specific treatments. ([link](#))
- It is common for people with Parkinson's disease to experience freezing of gait, especially when trying to hurry or when anxious. A recent study looked at this, making participants walk across planks that were located high above the ground in a virtual 3-D environment. This study found that anxiety is a large contributor to freezing of the gait and suggests that the limbic system, a part of the brain's emotional system, may have a profound contribution to movement problems associated with Parkinson's. ([link](#))
- Early mild cognitive impairment (MCI) in Parkinson's disease is predictive of more severe cognitive changes. A longitudinal study of MCI in Parkinson's disease revealed that about a third of the participants developed serious cognitive problems after five years. ([link](#))



## Ongoing Parkinson's Disease research at the CognAc Lab

William Saban, a post-doc in the lab, has developed a new platform for online neuropsychological testing (PONT), providing an opportunity for people from around the country to participate in our studies of how Parkinson's disease affects both motor and mental fluidity. PONT allows us to test many more participants than is typical in such studies, while making it convenient for the participants to complete the study from home. One of our first studies looked at a form of mental gymnastics, arithmetic. Here we asked if the mental operations required to solve addition problems was slowed in people with Parkinson's disease, as well as how their performance changed with practice. The results indicate that the Parkinson's group performed similarly to the control participants; hence, arithmetic skills do not appear to be affected by Parkinson's disease.

$$9+3+5=17$$



**Rich Ivry, Principal Investigator**  
Professor of Psychology and Neuroscience.



**William Saban, Editor-in-Chief**  
Ph.D. in Clinical Neuropsychology.

Thank you for your continued interest in the lab's work!  
For more information about the Cognition and Action lab at UC Berkeley and  
how to get involved, visit <http://ivrylab.berkeley.edu/>.

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