

# Can exercise play a role in the link between the gut and the brain?

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Until about 10 years ago, most clinicians only looked at the brain when finding ways to treat patients with Parkinson's Disease.

"Neurologists and researchers try to improve [brain function](#) and use treatment strategies that target the [brain](#)," said Kaylie Zapanta MS '17 Ph.D. '23. "As an [exercise physiologist](#), I'm coming at it from more of a bottom-up approach."

Zapanta's research explores the connection between the gut and the brain, how this could impact those with Parkinson's [disease](#), and the role exercise could play on improving gut health. Her article, developed under the guidance of Professor of Clinical Physical Therapy Beth Fisher MS '80, Ph.D. '00, "Re-Thinking Parkinson's Disease: Exploring Gut-Brain Interactions and the Potential Role of Exercise" is slated to appear in *PTJ: Physical Therapy & Rehabilitation Journal* this fall.

"Dr. Fisher and I are really excited because it's a hot topic in Parkinson's disease research right now," Zapanta said. "It's been really amazing to share it with Parkinson's disease researchers and clinicians."

## But it's a brain disease

Clinicians are continuing to explore the idea that Parkinson's disease goes beyond the brain and central nervous system. Along with some of the more well-known symptoms, such as tremors and motor issues, people with Parkinson's disease also have gastrointestinal issues, including constipation and bloating.

"When we speak with other researchers and clinicians in the field of Parkinson's disease, they are perplexed at first, saying, "You want to treat the [gut microbiome](#)? But it's a brain disease,'" said Zapanta, who's also researched muscle physiology and exercise in cancer. "Dr. Fisher and I are coming at this from an alternative perspective. Yes, there are brain deficits, but there are also a lot of gut dysregulations that should be looked at further."

Fisher and Zapanta stumbled upon gut research in Parkinson's disease by happenstance. In discussing Zapanta's line of research in [exercise physiology](#) and gut health—and given Fisher's expertise in Parkinson's disease research—they discovered their respective research fields overlapped, and there was the potential and need to explore the gut and brain in Parkinson's disease further.

By understanding the mechanisms and the pathology of these deficits, Zapanta hopes to find a way to treat individuals with Parkinson's Disease more effectively with exercise.

"It doesn't seem to make sense until you realize the gut and the brain are highly connected," Zapanta explained. "For instance, the gut microbiome actually produces neurotransmitters, like dopamine and serotonin, and is able to send those to the brain."

## **Exercise to the rescue**

Newer research shows that people with Parkinson's might experience these gastrointestinal symptoms and others because the gut microbiome isn't functioning properly. "The argument is that patients might have these brain and cognitive issues in part because their gut is dysregulated," she said.

Fisher and her team have long been pioneers in identifying how exercise can reduce some of the cognitive and motor symptoms in patients with Parkinson's disease.

"With this paper, we're proposing this audacious idea that some of these benefits might be because of the restoration we see in the gut microbiome," Zapanta said.

At this point in her research, Zapanta has come up with more questions

than answers.

"This [article] is more of a perspective—there's no data, yet," she said. "Essentially, we've compiled a lot of past research to explain how the gut is involved in Parkinson's disease, including research in other, non-Parkinson disease populations, showing that exercise can help restore the gut microbiome."

As a next step, Zapanta would like to perform a long-term study looking at how different exercise modalities, such as strength training and aerobic [exercise](#), could restore the microbiome and potentially ease symptoms in patients with Parkinson's.

"I've been discussing this research area with physical therapists at USC and students studying to become physical therapists," she said. "They always get really excited about this research because a lot of their patients suffer from these symptoms. It's very complex, but if we can understand at a basic level—what's going on in the gut microbiome—then we can treat patients with Parkinson's disease more effectively and potentially see restorative benefits."

Provided by University of Southern California

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