

Singing may reduce stress, improve motor function for people with Parkinson's disease

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Elizabeth Stegemöller leads a singing group for people with Parkinson's disease. Her latest research shows singing can lower stress and improve motor symptoms. Credit: Iowa State University

Singing may provide benefits beyond improving respiratory and swallow control in people with Parkinson's disease, according to new data from Iowa State University researchers.

The results from the pilot study revealed improvements in mood and motor symptoms, as well as reduced physiological indicators of stress.

Elizabeth Stegemöller, an assistant professor of kinesiology, cautions this is preliminary data, but says the improvements among singing participants are similar to benefits of taking medication. She presented the work at the Society for Neuroscience 2018 conference.

"We see the improvement every week when they leave singing group. It's almost like they have a little pep in their step. We know they're feeling better and their mood is elevated," Stegemöller said. "Some of the symptoms that are improving, such as finger tapping and the gait, don't always readily respond to medication, but with singing they're improving."

Stegemöller, Elizabeth "Birdie" Shirtcliff, an associate professor in human development family studies; and Andrew Zaman, a graduate student in kinesiology, measured [heart rate](#), blood pressure and [cortisol levels](#) for 17 participants in a therapeutic singing group. Participants also reported feelings of sadness, anxiety, happiness and anger. Data was collected prior to and following a one-hour singing session.

This is one of the first studies to look at how singing affects heart rate, [blood pressure](#) and cortisol in people with Parkinson's disease. All three levels were reduced, but Stegemöller says with the preliminary data the measures did not reach statistical significance. There were no significant differences in happiness or anger after class. However, participants were less anxious and sad.

Why does singing work?

The results are encouraging, but researchers still have a big question to tackle: what is the mechanism leading to these behavioral changes? They are now analyzing blood samples to measure levels of oxytocin (a hormone related to bonding), changes in inflammation (an indicator of the progression of the disease) and neuroplasticity (the ability of the

brain to compensate for injury or disease) to determine if these factors can explain the benefits of singing.

"Part of the reason cortisol is going down could be because the singing participants feel positive and less stress in the act of singing with others in the group. This suggests we can look at the bonding hormone, oxytocin," Shirtcliff said. "We're also looking at heart rate and [heart rate variability](#), which can tell us how calm and physiologically relaxed the individual is after singing."

The research builds upon the team's previous findings that singing is an effective treatment to improve respiratory control and the muscles used for swallowing in people with Parkinson's disease. The prevalence of Parkinson's disease is expected to double over the next 20 years. ISU researchers say therapeutic singing has the potential to provide an accessible and affordable treatment option to improve [motor symptoms](#), stress and quality of life for people with Parkinson's disease.

In this video from 2017, Stegemöller leads a singing group for people with Parkinson's disease:

Provided by Iowa State University

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