

'Resilience in dark times': At-home yoga reduces anxiety, improves short-term memory

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Sean Mullen wants more adults to go with the flow. The yoga flow, that is.

Mullen, an associate professor in the Department of Kinesiology and Community Health at the University of Illinois Urbana-Champaign, collaborated with fellow Beckman Institute for Advanced Science and Technology researchers Madhura Phansikar, Neha Gothe, and Rosalba Hernandez to design a virtual eight-week moderate-intensity yoga program geared specifically toward full-time working adults experiencing symptoms of stress.

The trial, which appeared in the *Journal of Behavioral Medicine*, led participants through three self-paced remote workouts each week, assessed levels of stress and anxiety in addition to [executive functioning](#). The results showed overall decreases in stress and anxiety.

"There is some literature that has directly compared yoga to [aerobic exercise](#), and we've known for quite a long time that aerobic exercise has benefits for the brain," Mullen said. "Our research investigates complex movements—not just riding a bicycle or walking in a [straight line](#), but multi-planar movements that require navigating one's space a little differently and being conscious of movement, technique, and breathing."

Enter the sun salutation, a progression of yoga poses which emulates the rising and setting of the sun.

Self-paced instructional videos guided participants through sun salutations in the comfort of their own homes. Gradually, participants were encouraged to become more self-sufficient by completing the exercises independently.

"Our philosophy is to improve everyone's confidence about the exercise in which they're engaging," Mullen said. "We start slow and incrementally progress."

Researchers wanted to know if learning new chains of yoga sequences

could improve working memory, similar to the brain benefits of learning a new dance.

"Having to move through multiple active postures, as opposed to static holds, should theoretically improve attentional abilities or inhibition control," Mullen said. "Going through the flow could potentially improve spatial memory."

The benefits to executive functioning observed in the study are reinforced by the literature, according to the researchers.

The study also aimed to investigate individuals' adherence to a virtual exercise program. While the study was initially designed for remote execution, its coincidental timing with the onset of the COVID-19 pandemic provided additional insight.

"The reductions in anxiety and improvements in short-term working memory suggest that it is possible to practice moderate-intensity yoga at home and still reap the benefits of reducing stress and anxiety without compromising safety," Mullen said. "[The study] really became about promoting resilience in dark times."

Another encouraging outcome was participants' overwhelmingly positive response.

"When participants are willing to recommend the program to friends and family, that's great," Mullen said. "To me, that suggests we were successful and that everyone involved had a good time."

Mullen's lab will continue to test mind-body interventions and promote adherence to exercise by developing more technologies to gamify activities like yoga, kickboxing, and other movements that are more cognitively challenging than standard aerobic exercise. Their

interventions are influenced by Mullen's personal experience with flow-based training in spinning poi and martial arts like Filipino Kali and Brazilian Jiu Jitsu.

"We always try to keep it fun, keep it interesting, incorporate variety, and ensure our programs are as inclusive as possible," Mullen said. "We tailor our programming so more people can take advantage, such as older adults or those with mobility limitations."

Phansikar, a doctoral student at the time of the research who participates in the aerial yoga sport of Mallakhamba at a national level, was especially encouraged by the results.

"Given my own personal background as a yoga practitioner and teacher, it was exciting to assess the efficacy of yoga interventions for promoting cognitive and psychological well-being," she said.

Phansikar's primary research interest lies in the neurological effects of mind-body interventions like [yoga](#), and she will continue to develop scalable programs that can be deployed to large numbers of participants.

More information: Madhura Phansikar et al, Feasibility and impact of a remote moderate-intensity yoga intervention on stress and executive functioning in working adults: a randomized controlled trial, *Journal of Behavioral Medicine* (2023). [DOI: 10.1007/s10865-022-00385-4](https://doi.org/10.1007/s10865-022-00385-4)

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