

## **20-minute bout of yoga stimulates brain function immediately after**

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University of Illinois graduate student Neha Gothe and her colleagues found that 20 minutes of yoga significantly improved participants' reaction time and accuracy in tests of cognitive function. Gothe is now a professor of kinesiology at Wayne State University in Detroit. Credit: L. Brian Stauffer

Researchers report that a single, 20-minute session of Hatha yoga significantly improved participants' speed and accuracy on tests of working memory and inhibitory control, two measures of brain function



associated with the ability to maintain focus and take in, retain and use new information. Participants performed significantly better immediately after the yoga practice than after moderate to vigorous aerobic exercise for the same amount of time.

The 30 study subjects were young, female, undergraduate students. The new findings appear in the *Journal of Physical Activity and Health*.

"Yoga is an ancient Indian science and way of life that includes not only physical movements and postures but also regulated breathing and meditation," said Neha Gothe, who led the study while a graduate student at the University of Illinois at Urbana-Champaign. Gothe now is a professor of kinesiology, health and sport studies at Wayne State University in Detroit. "The practice involves an active attentional or mindfulness component but its potential benefits have not been thoroughly explored."

"Yoga is becoming an increasingly popular form of exercise in the U.S. and it is imperative to systematically examine its health benefits, especially the mental health benefits that this unique mind-body form of activity may offer," said Illinois kinesiology and community health professor Edward McAuley, who directs the Exercise Psychology Laboratory where the study was conducted.

The yoga intervention involved a 20-minute progression of seated, standing and supine yoga postures that included isometric contraction and relaxation of different <u>muscle groups</u> and regulated breathing. The session concluded with a meditative posture and deep breathing. Participants also completed an aerobic exercise session where they walked or jogged on a treadmill for 20 minutes. Each subject worked out at a suitable speed and incline of the treadmill, with the goal of maintaining 60 to 70 percent of her maximum heart rate throughout the exercise session.



"This range was chosen to replicate previous findings that have shown improved cognitive performance in response to this intensity," the researchers reported.

Gothe and her colleagues were surprised to see that participants showed more improvement in their reaction times and accuracy on cognitive tasks after <u>yoga practice</u> than after the aerobic <u>exercise session</u>, which showed no significant improvements on the <u>working memory</u> and <u>inhibitory control</u> scores.

"It appears that following yoga practice, the participants were better able to focus their mental resources, process information quickly, more accurately and also learn, hold and update pieces of information more effectively than after performing an aerobic exercise bout," Gothe said. "The breathing and meditative exercises aim at calming the mind and body and keeping distracting thoughts away while you focus on your body, posture or breath. Maybe these processes translate beyond yoga practice when you try to perform mental tasks or day-to-day activities."

Many factors could explain the results, Gothe said. "Enhanced selfawareness that comes with meditational exercises is just one of the possible mechanisms. Besides, meditation and breathing exercises are known to reduce anxiety and stress, which in turn can improve scores on some cognitive tests," she said.

"We only examined the effects of a 20-minute bout of yoga and <u>aerobic</u> <u>exercise</u> in this study among female undergraduates," McAuley said. "However, this study is extremely timely and the results will enable yoga researchers to power and design their <u>interventions in the future</u>. We see similar promising findings among older adults as well. <u>Yoga</u> research is in its nascent stages and with its increasing popularity across the globe, researchers need to adopt rigorous systematic approaches to examine not only its cognitive but also physical health benefits across the lifespan."



The research team included U. of I. kinesiology and community health professor Charles Hillman and Michigan State University kinesiology professor Matthew Pontifex (a U. of I. alumnus).

**More information:** The paper, "The Acute Effects of Yoga on Executive Function," is available online. www.academia.edu/3145421/The A ... n Executive Function

Provided by University of Illinois at Urbana-Champaign

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