

Yoga shows 'most improvement' in restoring brain health in long-term cancer survivors, researcher says

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Can yoga fight "chemo brain" in cancer survivors? New study by Northeastern professor says yes. Credit: Neha Gothe

For too many cancer survivors, life after treatment is fraught with a

decline in cognitive function known as "chemo brain."

A newly published [study](#) by a Northeastern professor says that [yoga](#) might hold the key to restoring brain health in long-term [cancer survivors](#) in a manner unrivaled by [aerobic exercise](#) or stretching and toning exercises.

Associate professor Neha Gothe says the [pilot study](#) published in the open access journal *Frontiers in Cognition* is the first randomized control study to compare yoga with other forms of exercise among people treated for a variety of cancers.

The study randomized 78 people who had survived cancer for an average of eight years into three groups of 26 who did hatha yoga, aerobic exercise or stretching and toning exercises 150 minutes a week for 12 weeks.

Self-reporting from all three groups showed gains in concentration, focus and memory, but the "yoga group showed the most improvement on their perceived cognitive abilities," Gothe says.

A prescription for yoga?

"The fact that we are seeing yoga and exercise have an impact and improve cognitive function for individuals who are eight years out from their diagnosis is a very strong finding," she says.

"It means we can offer exercises, we can prescribe yoga as a form of treatment or therapy for them to really be able to manage their cognitive complaints."

For Gothe, who is co-director of Northeastern's Ph.D. in human movement and rehabilitation sciences program, the project was personal

since she has seen friends and family members struggle with "[brain fog](#)" or "chemo fog" during and after cancer diagnosis and treatment.

What is chemo brain?

Chemo brain, also known as mental fog, is a colloquial term for the cancer-related cognitive decline that affects as many as 75% of people treated for cancer.

Despite its moniker, [chemo brain](#) is not restricted to those receiving chemotherapy.

"We don't know exactly what causes it," Gothe says. "There are similarities in the nature of the cognitive complaints among survivors, and yet the experience appears to be unique to each."

"Maybe it's the stress of being diagnosed and going through treatment," she says.

It could be the side effects of chemotherapy, hormone treatment or radiation combined with genetic predisposition or other factors, Gothe says.

"It's not well understood, but it is something that cancer survivors complain about," she says. "They are just not feeling as mentally sharp as they used to. They forget little things—where did they put their keys? What day of the week is it?"

While some cases of chemo brain resolve quickly, others persist for years, long after treatments have concluded.

Why yoga over other forms of exercise

Participants in the study who did aerobics or were assigned to the stretching and toning group also reported improvement in their ability to concentrate, remember and keep track of activities, Gothe says.

But the gains in perceived [cognitive abilities](#) were more pronounced among the yoga practitioners, 81% of whom reported improvement on such measures as formulating thoughts and concentrating compared to 62% of the aerobic and 48% of the stretching and toning participants.

Gothe says the yoga advantage may have to do with the way the sequential movements of hatha yoga poses involve mindful movement, meditation and relaxation instead of just getting the blood pumping as with aerobic exercise.

"With yoga it seems to be some other mechanism that is at play. We speculate that it is that stress and emotional regulation piece that is really playing a role here," she says.

"There is an overlap with regions of the brain associated with chemo brain and the regions that are associated with yoga practice," Gothe says.

"The regions of the brain that are involved with regular yoga practice, or that show improvement because of regular yoga practice, are regions of the brain that are involved with emotional regulation such as the amygdala, which is the emotional center of the brain, and the insula, which is a very central part of the brain connected with stress and emotional regulation," she says.

"So there seems to be this emotional regulation related mechanism which perhaps helps you focus and think clearly."

At the same time, yoga keeps the brain nimble, Gothe says. "You are keeping track of your poses and body in space. You're keeping track of

your breath and focusing on your breath."

"It's possible that practices that happen on a mat during class are really helping patients off the mat in their everyday life, in managing those cognitive complaints or symptoms that they are experiencing."

A variety of cancers

For safety reasons, the study excluded people who had been diagnosed with brain and neck cancers and might not respond well to the postural changes, Gothe says.

But it included people with a wide range of cancers including breast, cervical, colorectal, uterine, lung, ovarian, prostate, blood and skin cancer, she says.

"That's one of the strengths of our study. In the past, a lot of the studies focused on a certain cancer type," especially breast and prostate cancers, Gothe says. "We didn't really see any reason to restrict this project to a specific cancer type or specific cancer stage."

The survivors also had different combinations of treatment, including chemotherapy and radiation. Most of the study participants were women, and the average age was 55, Gothe says.

What's next

The study relied on self reports of improvement in cognitive function but did not include measures of brain function such as MRIs, which Gothe has used in previous studies on yoga and cognition in older adults.

"We hope this study will kind of set the stage for other researchers,

oncologists and medical professionals to invest in or channel resources to uncover what yoga can do for cancer patients and survivors," she says.

Just as cardiologists recommend that patients with cardiovascular disease walk as part of their rehabilitation, oncologists could "prescribe" yoga to blunt cognitive decline in cancer survivors, Gothe says.

"It's just a matter of time before we have more definitive studies to bring yoga into the mainstream of therapy and care."

More information: Neha P. Gothe et al, Yoga improves self-reported cognitive function among cancer survivors: results from the STAYFit trial, *Frontiers in Cognition* (2024). [DOI: 10.3389/fcogn.2024.1334727](https://doi.org/10.3389/fcogn.2024.1334727)

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