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Can You Prevent Alzheimer's Disease?

By Christine Gorman

Laura Pizzuto, 78, of Seattle admits she loses her words every now and then. An avid gardener, she will sometimes forget the name of a familiar plant. "But I know how to look things up," she says. "Or I can go to the library or call a friend." Occasional memory lapses are not going to slow down this professional artist. "I want to keep myself going so I can work and enjoy my grandchildren," she says.

To that end, Pizzuto is doing everything she can to keep her brain, as well as the rest of her body, in top shape. The odds are decidedly in her favor. For one thing, she's blessed with good genes. But she also finds fulfillment in her painting, is active in her community, eats lots of vegetables and exercises regularly. According to the latest research on aging, those are exactly the sorts of things we all should be doing to help maintain our ability to remember, reason, make decisions and learn.

There are even tantalizing hints that those healthful habits may also prevent or delay Alzheimer's disease and other forms of dementia—although that conclusion is controversial. "I would phrase it differently," says Marilyn Albert, director of the division of cognitive neuroscience at Johns Hopkins University. "What the studies have done is to take people who are middle-aged and elderly and look at what maintains good brain health."

No one is suggesting that a crossword puzzle a day will keep senility at bay or that somehow it's your fault if your mental capacity fails. But given how quickly the average age of Americans is rising and how much the risk of dementia leaps with advancing years, finding anything that delays cognitive decline even a little would be of enormous value.

No wonder research looking for links between lifestyle and a healthier brain has been booming in recent years. Later this month the journal *Alzheimer's & Dementia* will publish a long-awaited report prepared for the National Institutes of Health that summarizes what scientists know and don't know about improving cognitive and emotional health in the elderly. And the fourth major study on the role of exercise will be

published in the *Annals of Internal Medicine* by the Center for Health Studies in Seattle (Pizzuto is one of the 1,740 participants).

Along the way, neurologists have discovered that the brain is much more adaptable as it ages than they realized. They have determined that the so-called plasticity of the brain, which allows the formation of new neurons as well as new connections between those neurons, can last a lifetime. "As far as our brains are concerned, learning something new or even retrieving something from memory is a plasticity response," says Molly Wagster of the National Institute on Aging. It may get harder as you age, but if you can teach an old brain new tricks, you might, just might, also be able to keep it functioning well into the 90s.

One of the top ways to take care of your mind, it turns out, is to make sure your heart is performing at its best. And there's nothing like physical activity to promote cardiac fitness. For some people, that will mean participating in an aerobics class three or more times a week. For others, walking as fast as they can half an hour a day most days of the week will do the trick. In fact, all other things being equal, people who engage in a wide variety of physical activities—like walking and biking and dancing and swimming—seem to be better protected against cognitive decline than those who don't.

The research linking heart and brain health is so strong that as you continue reading this article, you may get the feeling that you've stumbled into a story about how to prevent cardiac disease. But if fear of a heart attack isn't enough to get you to pamper your ticker, fear of senility just might. So think about doing your heart and your head a favor. If you smoke, quit. Get your cholesterol levels and blood pressure checked, and if they are high, get them treated. If you have diabetes, do everything you can to keep it under control. Eat at least five servings of fruits and vegetables a day, consume fish once or twice a week and cut down on the amount of trans and saturated fat in your diet. The effects appear to be cumulative. A study published in August found that folks with three or more major cardiovascular risk factors—for example, hypertension, diabetes and current smoking—were more likely to develop Alzheimer's disease as well.

Why is cardiovascular fitness so important to cognitive health? Researchers used to think it was all about making sure that plenty of oxygen-rich blood made it to the brain. Now they are starting to suspect there may be more to it. In laboratory animals, at least, exercise also seems to stimulate the body's production of certain molecules called growth factors, which help nerves stay healthy and keep functioning. "We don't understand a lot about why this happens," says Arthur Kramer, a researcher at the University of Illinois who uses brain scans to study the effects of exercise. "But we're learning more about that."

A healthy cardiovascular system may even, to some extent, compensate for tiny defects in the brain. Doctors have long known that suffering one or more strokes, which interrupt the flow of blood to the brain, increases the likelihood of dementia. They assumed that Alzheimer's disease was a completely unrelated problem. In fact, a long-running study of a group of nuns who agreed to donate their brains when they died has found that isn't necessarily the case. About a third of the nuns whose brains at autopsy showed clear signs of the plaques and tangles associated with Alzheimer's disease had exhibited normal memory and cognitive function until the day

they died. The difference: the blood vessels in their brains were in great shape.

That doesn't mean those women wouldn't eventually have developed dementia had they lived long enough. But the study suggested to a lot of physicians that good vascular health may make it easier for a brain with incipient Alzheimer's to work around the plaques and tangles in its midst.

Now that you've got your body running along smoothly, are there any mental gymnastics you can do to keep dementia at bay? The evidence is provocative but not terribly compelling. There's no question that you can improve your ability to remember names or other bits of information by practicing memory tasks, just as practice will help you learn a new instrument or another language. A number of researchers have proposed that a lifetime of such efforts could allow you to build up a healthy cognitive reserve to offset the declines of old age, though the idea remains theoretical.

Several studies have found that folks who regularly engage in mentally challenging activities—like reading, doing crossword puzzles or playing chess—seem less likely to develop dementia later in life. The difficulty comes in figuring out whether their good fortune is a direct result of their leisure activities or whether their continuing pursuit of those pleasures merely reflects good genes for cognitive function.

A 20-year survey of 469 elderly people living in the Bronx, N.Y., tried to get to the bottom of this chicken-or-egg question by following subjects who had no signs of dementia in the first seven years of the study. The results, which were published in 2003, showed that reading and playing board games or a musical instrument was associated with a decreased risk of Alzheimer's disease or other forms of dementia. Intriguingly, those with the strongest habits demonstrated the greatest benefits. Participants who solved crossword puzzles four days a week, for instance, had a 47% lower risk of dementia than those who do the puzzles once a week.

By the same token, several studies have suggested that older folks who are socially active—who, for example, do volunteer work or attend religious services—have a reduced risk of dementia. There are, of course, plenty of caveats that go along with those observations, including the same old chicken-or-egg problem that haunts all observational studies: In this case, is withdrawal from society a cause or result of Alzheimer's disease?

So where does this leave us? "I use a thermostat analogy with my patients," says Dr. Laurel Coleman, a geriatrician who sits on the board of the Alzheimer's Association. "Let's say you're dialed in to get Alzheimer's disease at 82. You may be able to push that back until maybe you're 92." Depending on where their personal thermostat is set, some people will do everything right and still develop dementia in their 50s. Others will do everything wrong and be perfectly lucid at 101. Most of the rest of us will fall somewhere between those two extremes. For now, at least, preventing dementia is still a numbers game, but one in which we're starting to grasp the variables.

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