

What's your risk of dementia? New tool from Mass. General helps assess brain health.

New research suggests a high score on measures of physical health, lifestyle, and social life translates to a lower risk of brain diseases.

By [Felice J. Freyer](#) Globe Staff, Updated December 1, 2023, 12:00 a.m.



A person runs along Quincy Shore Drive in Quincy, MA. BARRY CHIN/GLOBE STAFF

Imagine you could take a test that would reveal your chances of having a stroke or developing dementia. And imagine, once you got the results, you had a way to reduce that risk.

Researchers at Massachusetts General Hospital say they can now offer both. But

neither involves lab work or medication. Instead, their “test” is a “Brain Care Score” that enables you to calculate your odds by reviewing certain aspects of your physical health, lifestyle, and social life.

And the treatment? It’s in your hands. The score offers lots of options, all things you can change. For example, if you lower your blood pressure, you can add three points. Likewise if you quit smoking. The closer you get to the highest possible score of 21, the better care you’re taking of your brain.



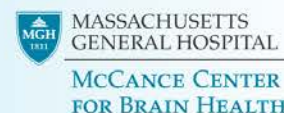
The Brain Care Score was developed by Mass. General’s McCance Center for Brain Health, which is working to deploy the wealth of knowledge about how to prevent brain diseases, including stroke, dementia, and age-related depression. DAVID L. RYAN/GLOBE STAFF

A study published Friday found that a large group of people with high Brain Care Scores — who, for example, exercised regularly, ate fruits and vegetables, and maintained friendships — were significantly less likely to suffer a stroke or develop dementia. The researchers say the finding validates their score.

“It shows for the first time there is a link between a higher score and lower risk of dementia and stroke,” said the study’s senior author, Dr. Jonathan Rosand, a

neurologist and co-founder of the McCance Center for Brain Health at Massachusetts General Hospital.

“Age-related brain diseases — dementia, stroke and age-related depression — are a slow-moving pandemic as the population of this country ages, as the world ages,” Rosand said. “What we wanted to do was come up with a way to put knowledge in the hands of patients, that they could use, that would be theirs.”



Category	Criteria / Description	Rank	Score
Physical	Blood Pressure	Resting blood pressure greater than 140/90, with or without treatment	0
		Resting blood pressure 120-139/80-89, with or without treatment	2
		Resting blood pressure less than 120/80	3
	Blood Sugar	Hemoglobin A1c greater than 6.4	0
		Hemoglobin A1c between 5.7 and 6.4	1
		Hemoglobin A1c less than 5.7	2
	Cholesterol	190 or higher	0
		No treatment required or less than 190 mg/dL	1
		If cardiovascular disease is present, LDL is in accordance to the <u>latest CDC recommendations</u>	1
	BMI	Lower than 18.5 kg/m ²	1
		18.5-25 kg/m ²	2
		25-29.9 kg/m ²	1
Greater than 30 kg/m ²		0	
Lifestyle	Nutrition	Dietary habits: <ul style="list-style-type: none"> 4.5 servings of fruit and vegetables per day; 2 servings of lean protein per day 3 or more servings of whole grains per day Less than 1,500 mg of sodium per day Less than 36 oz of sugar sweet beverages (soda, juice, etc.) per week 	
		Typical weekly diet does not include at least 2 of the recommendations above	0
		Typical weekly diet includes 2 or more of the recommendations above	1
		Typical weekly diet includes 3 or more of the recommendations above	2
	Alcohol	4 or more alcoholic drinks per week	0
		2-3 alcoholic drinks per week	1
		0-1 alcoholic drink per week	2
	Smoking	Current smoker	0
		Never smoked or quit more than a year ago	3
	Aerobic Activities	Less than 150 minutes of moderate or 75 minutes of high intensity physical activity per week	0
		At least 150 minutes of moderate physical activity (ex. walking) or 75 minutes of high intensity physical activity per week	1
	Sleep	Untreated sleep disorder and/or sleeps <7hrs per night	0
Treated sleep disturbances and 7-8 hours of routine sleep per night		1	
Stress	High level of stress that often makes it difficult to function	0	
	Moderate level of stress that occasionally makes it difficult to function	1	
	Manageable level of stress that rarely makes it difficult to function	2	

Dr. Daniel Z. Press, chief of the division of cognitive neurology at Beth Israel Deaconess Medical Center, who was not involved with the study, called the Brain Care

Score helpful. “There’s a vast opportunity for people to improve their brain health by using scales like this, and interventions that they do on their own,” Press said.

The score card is divided into three sections: physical, which includes blood pressure, blood sugar, cholesterol and body-mass index; lifestyle, encompassing nutrition, alcohol, smoking, aerobic activities and sleep; and social/emotional, including stress, social relationships, and meaning in life. It assigns a score to each measure, with the most health-promoting steps getting the most points.

For example, you get three points if your blood pressure is less than 120/80, but no points if it’s greater than 140/90, and two if it’s in between. One item in the “lifestyle” section gives you one point if you sleep seven or eight hours a night but none if not. And in the “social/emotional” category, you garner one point if you feel that your life “has meaning and/or purpose” and none if you “often struggle to find value or purpose” in your life.

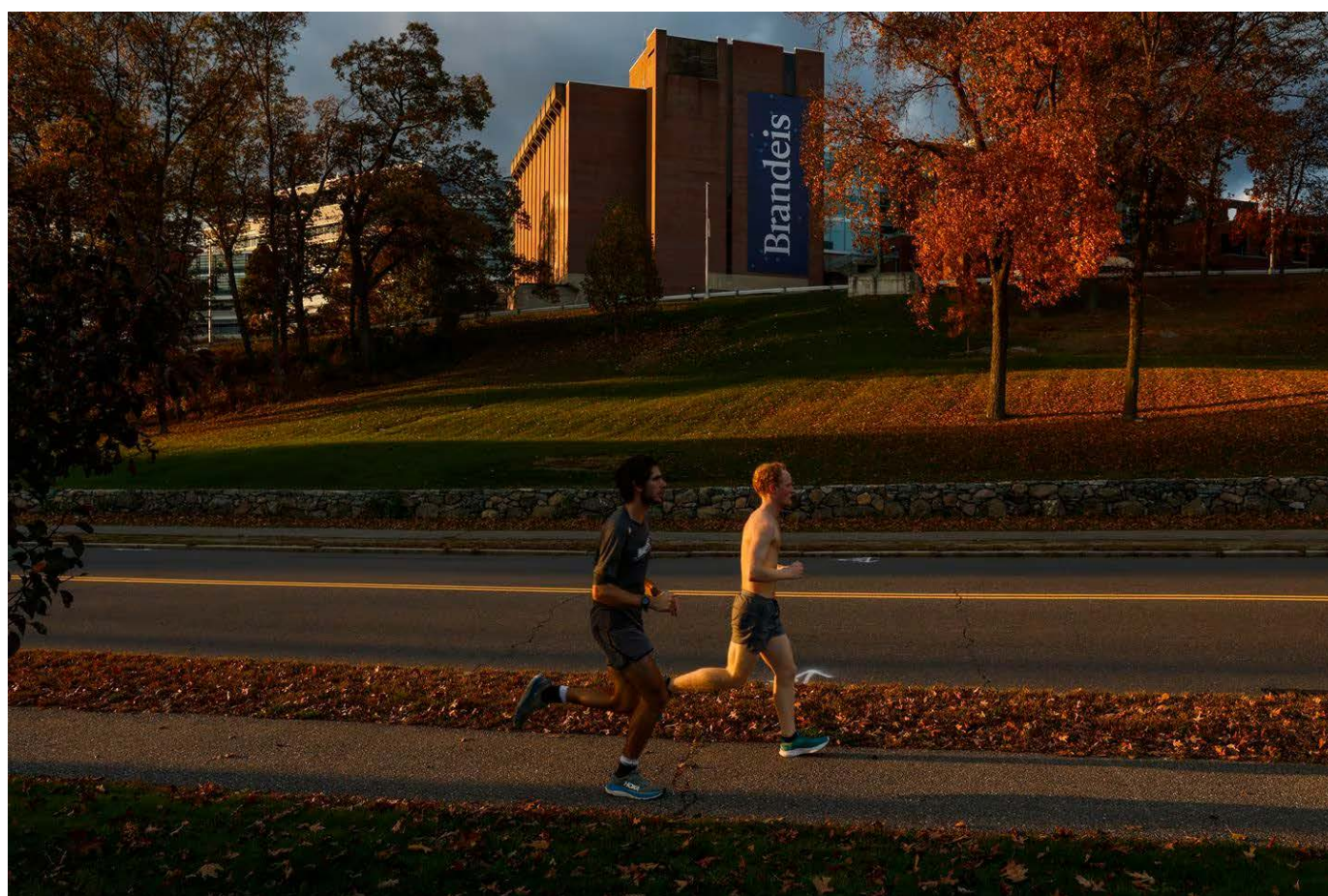
If you’re doing a perfect job caring for your brain, it will add up to 21 points, the highest score. But probably few people have achieved that. Instead, as you look over your score, you can identify areas you want to tackle that will raise that number as close to 21 as you can get it.

The research team, which included scientists in the United States, Canada and Europe, delved into the United Kingdom Biobank, an ongoing study that tracks the health of more than 500,000 people in the UK ages 40 to 69. When people enrolled in the biobank between 2006 and 2010, they filled out lengthy questionnaires that included most of the components of the Brain Care Score.

Researchers then checked to see what had happened to 400,000 of the biobank participants years later, a median of 12.5 years after enrollment. More than 5,000 were diagnosed with dementia and more than 7,000 had suffered a stroke.

According to their [report](#), published in *Frontiers in Neurology*, among people who were younger than 50 when they enrolled, a five-point higher score was associated with a 59 percent lower risk of dementia and a 48 percent lower risk of stroke. Among those ages 50 to 59, a five-point difference led to a 32 percent lower risk of dementia and a 52 percent lower risk of stroke. And for those 60 and older, the figure was 8 percent lower for dementia and 33 percent lower for stroke.

The researchers believe the lower results for the older groups reflect their more advanced ages at enrollment, as well as a failure to detect slowly progressing dementia.



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The Brain Care Score was developed by Mass. General's McCance Center for Brain Health, which is working to deploy a wealth of knowledge about preventing brain diseases, including stroke, dementia, and age-related depression. "We launched it to

achieve for common diseases of the brain what is currently being achieved for heart disease,” Rosand said. “We want to see a 10 percent reduction in dementia in 10 years.”

The score is based on years of research into prevention. “There’s no radical knowledge in the Brain Care Score,” Rosand said. “All the items are well established as modifiable risk factors for stroke and dementia.”

These are also the same risk factors that promote cancer and heart disease, he noted.

Rosand suggests patients use the scorecard as a menu. Choose which item to tackle first. “Experience the success and take on something else,” he said. Strive to get to 21, but remember, he said, “There’s no perfection here. There’s no failure. You take the knowledge and do the best you can.”

The team is developing a new version of the score that won’t require patients to consult their medical records for information such as blood sugar and cholesterol levels. They’re also looking to eliminate stigma, such as in the question about body-mass index, and to recognize that “not all of us can get our stress down to a manageable level,” Rosand said.

“We want to decrease the barriers to patients engaging with their own brain care,” Rosand said.

Press, the Beth Israel Deaconess neurologist, noted that another score already exists, known as CAIDE, which overlaps with some of the items in the Brain Care Score. But the Mass. General score is helpful because it includes other elements, he said, such as nutrition and social connectivity.

“The other thing I like,” he said, is “it gives a lot of actionable suggestions for patients. Here are things you can actually do. You can’t change your genes but you can change your diet, you can emphasize social activity.”

The authors note in their article “there is ongoing debate” about the causal relationship between certain items in the score and dementia. And Press criticized the section on alcohol, saying the health effects of one drink a day remain unknown.

Still, most of the recommendations will strike people as familiar: Don't smoke, get some exercise, eat your fruits and veggies, lower your blood pressure, cholesterol and blood sugar.

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we probably all know that these are important,” said Stephanie Hooker, a clinical health psychologist who studies behavior change. But changing behavior is notoriously difficult to accomplish.

“Behavior change takes a lot more effort than just giving people more information,” said Hooker, a research investigator with the Health Partners Institute in Minneapolis. People tend to be absorbed in the immediate demands of family and work and find it hard to focus on long-term benefits, she said.

But she sees the Brain Care Score as potentially helpful because it gives people targets to aim for, specific ways to raise their score by a few points. “It would be a starting point, to increase motivation,” she said.

“If this is going to be a behavior change tool,” Hooker added, “the next study for them would be to test that — show this to people, see if it helps them prioritize and make behavior changes.”

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