

# 19 BODY & MIND

Singing a goodbye: A ‘sentimental journey’ in the cancer clinic

MIKKAEL A SEKERES

I FIRST met my patient, a man in his late 80s, in 2012, when he had been living with myelodysplastic syndromes, a form of bone marrow cancer, for five years — longer than the average survival for those diagnosed with the condition. He was a former high school math teacher who was unerringly precise about his laboratory values. He also had a spark to him that no cancer could extinguish. Over the years, we had tried a variety of therapies to treat him, some of which worked for a while, some not at all. After our most recent failed attempt to solve the complicated equation of his disease, he had said enough was enough, and asked to be placed on hospice at the nursing facility where he now resided. Fortunately for him, it was one of the few hospice programmes that allowed him to continue seeing me to receive the regular blood transfusions that corrected the anaemia brought on by his cancer, which eased his fatigue and made him feel more like himself. When I entered the examination room, he was wearing an outfit typical of what he sported to many of our visits: a red and yellow tattersall shirt; chinos with a broken button, held closed with a black belt; red Ohio State socks; and tan moccasins. His face was framed by square, dark brown glasses that gave him an air of being more serious than he frequently was. His son sat by his side. “I’m honoured to be in the presence of such musical greatness!” I joked with my patient. “I should have brought a Sharpie marker with me to get your autograph.” He smiled and his son started to chuckle. My patient had just sung in a concert at the hospital near his nursing facility, showcasing performances by him and six other patients. He had been participating in a music therapy programme for over a year. I am a firm believer in the ability of music to help people express their emotions, hopes and fears, making their medical conditions more tolerable. In one study, patients undergoing a bone-marrow transplant were randomised to participate in a music therapy programme or receive standard medical care. Those who received music therapy needed fewer narcotic pain medications than those receiving the usual care. “Were you able to see a video of the show?” his son asked as he brought out his phone. I shook my head, and he scrolled through his files until he found the one he was looking for and pressed play. On the screen, my patient sat tall in a black wheelchair with a high back, wearing a blue dress shirt and bow tie. A microphone hovered in front of him, and a music therapist strummed a guitar softly by his side. He started in on *Sentimental Journey*, the song originally sung by Doris Day with Les Brown and His Band of Renown in the mid-1940s, when my patient was entering his teenage years. His voice started out a bit tremulous and unsure, but gathered strength as the song progressed, with some vibrato and huskiness adding depth to the words, as if he were living them in real time. “You sound incredible,” I told him. His eyes danced with delight. “You must have done this before.” “Only in a church choir,” he said. “And in a men’s quartet for a bit when I was younger. But never on my own for an audience.” “Did your family attend the show?” “Oh, they all came. My wife, children and my granddaughter. One son drove all the way from Illinois, he couldn’t believe his dad was actually going to do this.”

Never thought my heart could be so yeamy Why did I decide to roam? Gotta take that sentimental journey Sentimental journey home.

The three of us sat in silence when the song ended, thinking about the end of his journey, his journey home. “All of the care you’ve given me came out in that solo,” he said, his eyes now glistening. “Today, you’re the one who’s cared for me,” I said, shaking my head, as I considered how this man I’ve known for years had just sung his goodbye to all of us.

NYT

## Slim but sedentary? You still face heart risks

A sedentary lifestyle can erode the advantage of a healthy weight and increase cardiovascular risk, say researchers

LISA RAPAPORT

ADULTS WITH a healthy weight but a sedentary lifestyle may have the same risk for heart attacks or strokes as people who are overweight, a recent study suggests. Researchers found that normal-weight people who spent much of the day sitting but still hit minimum recommended weekly exercise targets of 150 minutes of moderate activity had about a 58 per cent lower risk of a heart attack or stroke than overweight people. But when individuals with a normal weight sat around most of the time and got very little exercise, their risk of serious cardiac events wasn’t significantly different from that of overweight people. “Being at normal weight is not sufficient to be healthy,” said lead study author Arch Mainous of the University of Florida in Gainesville. “This matters for patients because they may get a false sense of security by just looking at the number on the scale,” Mainous said by email. “A sedentary lifestyle can erode the advantage of a healthy weight and increase the cardiovascular risk to that of their overweight counterparts.” When people are sedentary — especially in middle age and beyond — they lose lean muscle mass and cardiorespiratory fitness, Mainous said. Participants in the current study were ages 40 to 79, without a history of heart disease. Researchers used the standard American College of Cardiology/American Heart Association risk-factor calculator to assess people’s risk of events like heart attacks and strokes. A high risk was at least a 7.5 per cent chance of this happening over the next decade. A “low risk” was a less than 7.5 per cent chance. Researchers identified people as being at a healthy weight if they had a body mass in-

dex (BMI, a ratio of height to weight) of 18.5 to 24.9 and overweight if their BMI was from 25 to 29.9. Overall, 35 per cent study participants had a high risk of events like heart attacks or strokes when risk factors other than BMI were also taken into consideration, researchers report in the *American Journal of Cardiology*. Among individuals with a normal-range BMI, about 30 per cent had a high risk of cardiac events. For example, when researchers looked at fat in the gut region (or “sagittal abdominal diameter”), they found normal-weight participants with too much of this fat were more than twice as likely to be at a high risk of cardiac events as participants with a normal BMI and without much of this fat. And, adults with a normal BMI who got short of breath during exercise were 35 per cent more likely to have a high risk of heart attacks and strokes than normal-weight individuals who didn’t have breathing issues with exertion. One limitation of the study is that researchers measured respiratory fitness based on how often participants reported shortness of breath, and not with objective breathing or exercise tests. Even so, the results underscore the importance of staying active even with a healthy BMI, said Dr Michael Hall, a researcher at the University of Mississippi Medical Center in Jackson who wasn’t involved in the study. “While being in the normal-weight BMI category is good, reducing sedentariness and increasing physical activity still has important benefits,” Hall said by email. “Unfortunately, many people have sedentary jobs, so it is important to work in time for moderate to vigorous exercise,” Hall added. “Small things like taking the stairs, adding in a few brief walks in the day or other intermittent activities may help attenuate some of the risks associated with sedentary behaviour.”

REUTERS

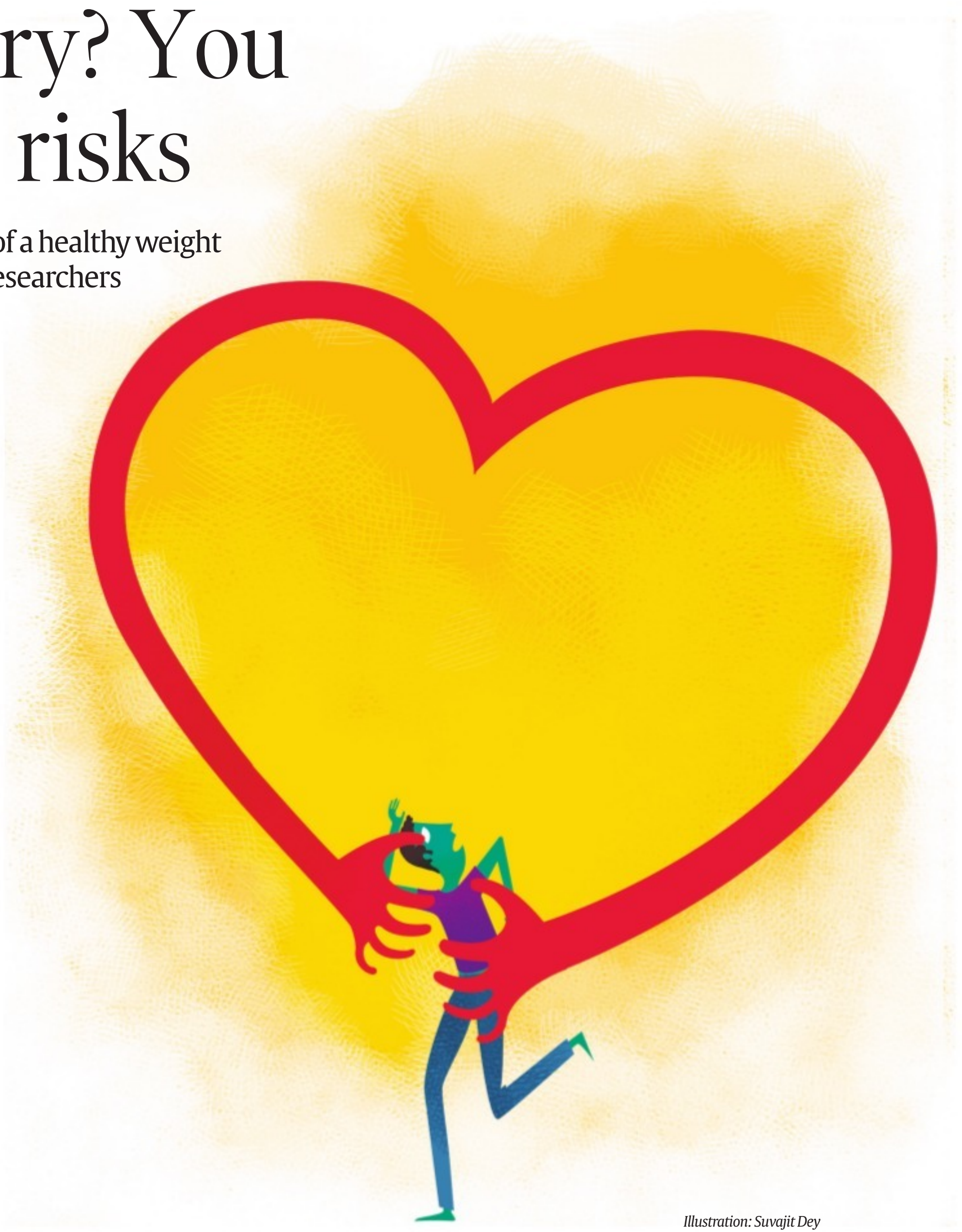


Illustration: Suvajit Dey

## Exercise may help keep memory sharp

Experiments suggest that exercise protects against dementia by triggering an increase in the amount of irisin in brain

GRETCHEN REYNOLDS

A HORMONE that is released during exercise may improve brain health and lessen the damage and memory loss that occur during dementia, a new study finds. The study, which was published this month in *Nature Medicine*, involved mice, but its findings could help to explain how, at a molecular level, exercise protects our brains and possibly preserves memory and thinking skills, even in people whose pasts are fading. Considerable scientific evidence already demonstrates that exercise remodels brains and affects thinking. Researchers have shown in rats and mice that running ramps up the creation of new brain cells in the hippocampus, a portion of the brain devoted to memory formation and storage. Exercise also can improve the health and function of the synapses between neurons there, allowing brain cells to better communicate. In people, epidemiological research indicates that being physically active reduces the risk for Alzheimer’s disease and other dementias and may also slow disease progression. But many questions remain about just how exercise alters the inner workings of the brain and whether the effects are a result of changes elsewhere in the body that also happen to be good for the brain or whether the changes actually occur within the brain itself. Those issues attracted the attention of an international consortium of scientists — some of them neuroscientists, others cell biologists — all of whom were focused on preventing, treating and understanding Alzheimer’s disease.

Irisin, named for Iris, the gods’ messenger in Greek mythology, is produced by muscles during exercise. The hormone jump-starts multiple biochemical reactions

Those concerns had brought a hormone called irisin into their sphere of interest. Irisin, first identified in 2012 and named for Iris, the gods’ messenger in Greek mythology, is produced by muscles during exercise. The hormone jump-starts multiple biochemical reactions throughout the body, most of them related to energy metabolism. Because Alzheimer’s disease is believed to involve, in part, changes in how brain cells use energy, the scientists reasoned that exercise might be helping to protect brains by increasing levels of irisin there. But if so, they realised, irisin would have to exist in human brains. To see if it did, they gathered tissues from brain banks and, using sophisticated testing, found irisin there. Gene expression patterns in those tissues also suggested that much of this irisin had been created in the brain itself. Levels of the hormone were especially high in the brains of people who were free of dementia when they died, but were barely detectable in the brains of people who had

died with Alzheimer’s. Those tests, however, though interesting, could not tell scientists what role irisin might be playing in brains. So the researchers now turned to mice, some healthy and others bred to develop a rodent form of Alzheimer’s. They infused the brains of the animals bred to have dementia with a concentrated dose of irisin. Those mice soon began to perform better on memory tests and show signs of improved synaptic health. At the same time, they soaked the brains of the healthy animals with a substance that inhibits production of irisin and then pumped



in a form of beta amyloid, a protein that clumps together to form plaques in the brains of those with Alzheimer’s. In effect, they gave the mice dementia. And, without any irisin in their brains, the once-healthy mice soon showed signs of worsening memory and poor function in the synapses between neurons in their hip-

pocampus. The scientists also looked inside individual neurons from healthy mice and found that, when they added irisin to the cells, gene expression changed in ways that would be expected to lessen damage from beta amyloid. Finally and perhaps most important, the

scientists had healthy mice work out, swimming for an hour almost every day for five weeks. Beforehand, some of the animals also were treated with the substance that blocks irisin production. In the untreated animals, irisin levels in the brain blossomed during the exercise training and later, after the animals’ brains were exposed to beta amyloid, they seemed to fight off its effects, performing significantly better on memory tests than sedentary control mice that likewise had been exposed. But the animals that had been unable to create irisin did not benefit much from exercise. After exposure to beta amyloid, they performed about as poorly on memory tests as sedentary animals with beta amyloid in their brains. Taken as a whole, these experiments suggest that exercise may protect against dementia in part by triggering an increase in the amount of irisin in the brain, says Ottavio Arancio, a professor of pathology and cell biology at Columbia University, who conducted the research along with two dozen colleagues from the Federal University of Rio de Janeiro in Brazil, Queen’s University in Canada and other institutions. But the experiments, although elaborate and multipronged, used mice, and so cannot tell us if exercise and irisin will work similarly in people, or how much and what types of exercise might be best for brain health. The results also do not show whether exercise and irisin can prevent Alzheimer’s, but only that they seem to allay some of the effects of the disease in mice once it begins. The scientists involved in the study hope soon to test a pharmaceutical form of irisin as a treatment for dementia in animals and eventually people, especially those who have lost the ability to exercise, Arancio says. But for now, he says, the overarching lesson of the study would seem to be that “if you can, go for a walk.”

NYT

### SHORT COURSE

[0-10 YEARS]

#### Reducing pain linked to needles can lead to better healthcare

HOW DO you eliminate, or at least reduce, the pain of vaccination? Parents should make sure that their children’s pediatrician or hospital always offers the four elements of the Comfort Promise, said a researcher. These elements are numb the skin, let infants breast-feed, don’t pin a child down and provide distraction. Research has shown that what parents may intend as reassuring statements about how it will be over soon, or it won’t hurt too much, are perceived as a signal of anxiety and can actually make kids feel worse and increase pain. Instead, parents should “use distracting statements, or give suggestions about how kids can cope, like taking a deep breath,” said a researcher.

NYT

[10-20 YEARS]

#### Even small amount of cannabis can alter teen brain: Study

USING EVEN a small amount of cannabis may cause changes in the brain volume of teenagers. The study is the first to find evidence that an increase in grey matter volume in certain parts of the adolescent brain is a likely consequence of low-level marijuana use. These new findings identify an important area of focus. “Consuming just one or two joints seems to change grey matter volumes in these young adolescents,” Garavan said. The study included 46 children who reported having used cannabis once or twice by age 14. Their brains showed more grey matter volume in areas where cannabis binds, known as cannabinoid receptors, compared to the children who did not use the drug.

PTI

[20-50 YEARS]

#### Less than six hours of night sleep may up heart disease risk

PEOPLE WHO sleep less than six hours a night may be at an increased risk of cardiovascular diseases compared to those who sleep for seven to eight hours. A study found that poor quality sleep increases the risk of atherosclerosis — plaque buildup in the arteries throughout the body. “Cardiovascular disease is a major global problem, and we are preventing and treating it using several approaches, including pharmaceuticals, physical activity and diet,” said a researcher. “But this study emphasises we have to include sleep as one of the weapons we use to fight heart disease — a factor we are compromising every day.”

PTI

[50+ YEARS]

#### Study: Fasting may help keep age-related diseases at bay

FASTING CAN boost the body’s metabolism and help protect against age-related diseases, a study has found. The research, published in the journal *Cell Reports*, was conducted using mice, which were subjected to 24-hour periods of fasting. Researchers noted the mice exhibited a reduction in oxygen consumption, respiratory exchange ratio, and energy expenditure, all of which were completely abolished by refeeding, which parallels results observed in humans. “... Fasting is able to reprogramme a variety of cellular responses. Optimal fasting in a timed manner would be strategic to positively affect cellular functions and ultimately benefit health and protect against age-associated diseases,” they said.

PTI