

Exercise to boost brain functions, fight dementia

People who lead active lifestyles in their 40s to 60s have a better chance of fighting brain diseases



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Want to stay sharp even as you enter your 40s and beyond? It involves more than just training your mind with Sudoku – keeping fit with an active lifestyle can also stop your brain from shrinking as you age.

Cognitive fitness is a growing field worldwide in the fight against dementia, Alzheimer's disease and other neurodegenerative conditions.

A recent report shows there is now evidence that the earlier people start on a long-term exercise programme, the better armed their brains will be against illnesses such as dementia and Alzheimer's disease.

The Special Health Report titled Improving Cognitive Fitness, published by Harvard Medical School in Boston, in the United States, sums up the findings of a medical team led by Professor Alvaro Pascual-Leone, a neurologist, after decades of research.

Physical fitness is seen to slow down the normal age-related shrinkage of the brain. Studies have found that active seniors have more brain volume and less age-related brain changes than those who do not exercise and are less fit. This could not be proven before the 1980s, and doctors also mistakenly thought that about 10,000 brain cells die every day as people get older.

Major strides in the understand-

ing of how the brain works were possible only after the discovery and mass production of medical scanners with magnetic resonance imaging (MRI) in the 1980s.

All that changed when MRIs documented in real time how certain actions – such as memory recall and learning – activated different parts of the brain.

MRI scans and studies on volunteers since the late 1980s have also revealed that exercise may boost the size of the hippocampus, a part of the brain that governs long-term memory and memory recall. The hippocampus shrinks as one ages.

Scientists say that these effects may be the result of increased levels of a compound called brain-derived neurotrophic factor, which promotes the growth of neurons and strengthens vital connections between brain cells.

WORKOUTS AS MEMORY BOOSTER

Mr Paul Kuck, founder of home-grown gym Fitness Tutor in Commonwealth Lane, can attest to the effects of regular exercise on cognitive fitness.

The 51-year-old certified medical personal trainer's practice is focused on helping older clients attain a level of fitness centred on improving "health spans", which refer to healthy, disease-free senior years, rather than "life spans", which account for only the number of years lived.

"My mind became foggy, I had trouble concentrating during conversations and my mind would space out unknowingly. As a parent of a pre-teen, I also had trouble compartmentalising my thoughts about work while trying to focus on quality time with my son," says Ms Lim, whose only child is 11.

"But after training with Paul and having time for self-care, I had more clarity and improved concentration with a higher level of

"Those aged 50 and above make up about half my roster of clients, and I come up with a personalised workout plan for each of them, focusing on improving their fitness levels so that they have more energy and flexibility regardless of their chronological age," says Mr Kuck, who holds a master's in exercise and nutrition science from the University of Chester in Britain and has more than 25 years of physiotherapy experience.

"Most of my clients are given memory tests before and after a session. Their test performances improved after a workout session, with some saying that they found their memory being clearer and sharper," he says.

Mr Kuck advises at least two sessions in the gym, where he can help correct bad posture and prevent injury.

"Exercising at home without having a certified personal trainer is not advisable in the long run because there is no proper supervision and a greater risk of injury," he says.

One of his clients, Ms Jamie Lim, 40, who works in the insurance industry, says she experienced brain fog in 2022 after contracting Covid-19.

"In Singapore, Dr Tu Tian Ming, a neurologist at Mount Elizabeth Hospital, says there is strong scientific evidence from studies that tracked healthy individuals over long periods of time which showed that older adults with normal cognition are less likely to develop memory decline if they maintained long-term physical activity.

The scientific evidence is weaker in patients who already have mild cognitive impairment or dementia.

In 2019, the World Health Organisation recommended 150 minutes of moderate intensity aerobic physical activity a week, based on available scientific

evidence, says Dr Tu, whose specialities include stroke and general neurology.

Preferably half of that time should be devoted to vigorous intensity aerobics and physical activity must be at least 10 minutes continuously.

In addition, the world health body recommends muscle-strengthening activities twice a week to improve balance training and to prevent falls.

Dr Tu advises seeing a cardiologist before trying out any form of vigorous exercise.

Moderate-intensity aerobics means that a person is working hard to raise his heart rate and to perspire. A simple way to gauge moderate-intensity aerobics: You can talk comfortably but not sing the words of a song. Examples include walking fast or hiking and even doing housework such as vacuuming the floor, says Dr Tu.

Vigorous-intensity aerobics is when one is breathing hard and fast with a rapid heart rate, such as when running, swimming or jogging. When one is active at a vigorous level, it is difficult to

more than a few words without pausing for a breath.

"For time-starved busy individuals, it is always best to multitask and incorporate exercise into daily routines, such as brisk walking from home to train stations," adds Dr Tu.

"Exercise is not just good for the brain, but it also helps improve our physical looks by enhancing our body's muscle mass."

According to Dr Lin Xuling, senior consultant at the Department of Neurology at the National Neuroscience Institute, adults aged 18 to 64 are encouraged to aim for at least 150 to 300 minutes of moderate-intensity aerobics a week. Every minute of vigorous-intensity activity counts as almost two minutes' worth of moderate-intensity activity.

She cites the Singapore Physical Activity Guidelines (Spag), an online free resource (bit.ly/46wtuM4) by the Health Promotion Board that focuses on encouraging people to do a variety of activities and avoid sedentary lifestyles.

"The Spag exercise does not need to be completed in one stretch," says Dr Lin. "For instance, 150 minutes of moderate-intensity aerobic activity can be broken into 30 minutes a day, five days a week."

Over at the Memory Ageing and Cognition Centre, which is part of the National University Health System, Associate Professor Christopher Chen has been at the helm of an exciting new study.

The Singapore Geriatric (Singer) study to reduce cognitive decline and physical frailty, which was announced in 2022, is designed to examine the effectiveness of multiple lifestyle interventions. These include physical exercise, cognitive training, nutritional advice and managing vascular risk factors in older adults.

This approach was shown to be effective by a similar study in Finland known as Finger, or the Finnish Geriatric Intervention Study To Pre-

Mr Paul Kuck, founder of home-grown gym Fitness Tutor, training Ms Eliza Chee (left) and Ms Jamie Lim (right). ST PHOTOS: HESTER TAN



Mr Ivan Ho doing dumbbell squats.



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Since April, Ms Eliza Chee has been working out at Fitness Tutor. ST PHOTO: HESTER TAN



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Get started with basic home workouts

Medical personal trainer Paul Kuck says those who are desk-bound and lack exercise can try three basic exercises at home which require no gym equipment or extensive warming up. "According to the latest research, moderate exercises that last 20 minutes in total and which challenge the muscles, as well as the heart, are best for a brain-boosting effect," says Mr Kuck, who holds a gold certification from the American Council on Exercise. The council is a global certification body that promotes physical activity and protects the public against unqualified fitness professionals and unsafe products, programmes or trends.

CHAIR SQUATS

Squats help strengthen the legs and the core, which makes everyday movements easier, says Mr Kuck. Starting with a chair as a prop will help one to master the proper form to avoid injury. This move is a must for working out at home.

1. Stand in front of a chair with your feet shoulder-width apart, toes pointed slightly outwards.
2. Inhale and push your hips back slightly while bending your knees. Look straight ahead and keep your chin up, shoulders upright and back straight.
3. Begin to squat as low as is comfortably possible with the bottom lightly touching the chair. Engage your core to push upwards quickly using your heels as support. Try not to sit on the chair, aiming for your hips to go below the knees. Hold this position. Over time, get rid of the chair.
4. Repeat 10 times.



INCH WORM

This unusual exercise is a good way to engage the whole body in movement and can be added to other routines as well because it strengthens and stretches different muscle groups at the same time.

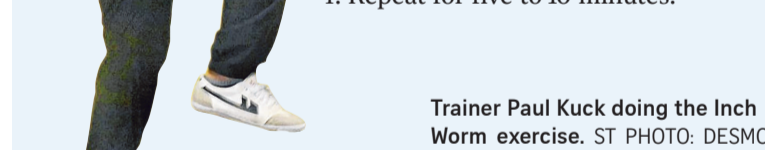
1. Stand with your legs straight and your hands on the floor. Your body is in an inverted V shape.
2. Slowly inch forward using your hands while keeping your legs straight.
3. "Walk" forward with your hands until your body is parallel to the floor and your hands are in front of your head.
4. Next, walk your hands back towards your legs and stand up. This completes the exercise.
5. Repeat five to 10 times.



JOGGING ON THE SPOT

This is an aerobic exercise that is typically used as a warm-up or to cool down in workouts that promote agility. It is also an ideal exercise on its own.

1. Stand straight with feet shoulder-width apart. Keep your spine neutral and look towards the horizon.
2. Pull your left knee up to your hip level and slowly land on the ball of your foot.
3. As soon as your foot touches the ground, lift the other leg.
4. Repeat for five to 10 minutes.



Trainer Paul Kuck doing the Inch Worm exercise. ST PHOTO: DESMOND

Cognitive fitness workouts for those in their 40s, 50s, 60s

The link between exercise and cognitive fitness has been proven by science, but how much time should those in their 40s, 50s and 60s set aside for exercise?

Mr Paul Kuck, founder of Fitness Tutor gym, says that each age group has its own set of strengths and physical limitations and a customised workout programme is advised to avoid injury as well to help each individual meet fitness goals at his or her own pace.

His charges start at \$85 a session for small groups of up to six people. For details on personalised fitness plans, go to fitness-tutor.com

Here are three people who tell The Sunday Times how they ditched a sedentary lifestyle in favour of adding more zest to their lives.



Ms Jamie Lim doing the One-Legged Pose to train balance.

IN YOUR 40S: CARDIO AND STRENGTH TRAINING; FOUR HOURS A WEEK

Ms Jamie Lim, a financial adviser in the insurance industry, makes time during her hectic work week for regular workouts which take up about four hours weekly, at both Fitness Tutor and at home.

The 40-year-old, who is married to a surgeon and has an 11-year-old son, has been going to Mr Kuck about once a week since November 2022 and keeps to a regular workout routine of exercising twice a week on her own.

Ms Lim, who has a slim build, told Mr Kuck she wanted to build her strength as she gets older as she had read that building muscles and doing strengthening exercises are beneficial for her joints.

She says: "Paul designed exercises that helped me build strength for my joints and this has improved my overall well-being."

Mr Kuck crafted an exercise regimen for Ms Lim that takes up two hours a week and includes 30 minutes of cardio exercise to increase the heart rate, boost the respiratory system and bring more oxygen to the muscles.

"The focus for the 40s age group

is to build muscle mass and maintain cardio functions to prevent diseases such as diabetes and hypertension," says Mr Kuck, who has observed that people in their 40s are usually time-starved as they work hard to build their careers while juggling work, family and social life.

Besides cardio, the session also includes 45 minutes of strength training once a week using weights to boost strength, endurance and stamina.

At the gym, Ms Lim does a series of squats to build muscles faster under Mr Kuck's watchful eye. Other exercises include bench press, rowing and core exercises.

She advises those in her age group to "get over the initial inertia" and set small, achievable goals.

"Exercise is amazing," says Ms Lim, an avid health advocate who regularly updates her clients on the latest news from the Ministry of Health.

"I releases endorphins and makes you, as well as those around you, happier."

IN YOUR 50S: BALANCE AND FLEXIBILITY TRAINING; FOUR HOURS A WEEK

Mr Ivan Ho, a registered male nurse at a public healthcare provider, has been exercising since before his national service almost 35 years ago.

His exercise frequency has varied through the years since he started working, but his baseline has been at least twice a week.

When he signed up at Fitness Tutor in March, he was put on an exercise programme of twice-weekly workouts at the gym lasting an hour a session with Mr Kuck and three to four times a week exercising on his own, which lasts about two hours a session. These sessions include jogging, core exercises and weight training.

Mr Kuck says that those in their 50s need about four hours a week of exercises which target balance and flexibility as these are the areas that show decline for this group.

He created a regimen that includes 45 minutes to an hour of strength training twice a week that incorporates lifting weights in the gym, paired with about 30 minutes of cardio twice a week and a further 30 minutes of balance and flexibility training once a week.

"The exercises that Paul crafted for me are within my capabilities," says Mr Ho, 52, who adds that he does not want to be limited to workouts recommended for his age cohort.

He finds that Mr Kuck is mindful of adding weights to keep his muscles progressively challenged over time as well as doing it safely.

"On my own, I have concerns about injury and I may not be able to correct my form," adds Mr Ho, who does not work out for more than two hours continuously in each session.

IN YOUR 60S: STRENGTH TRAINING, CARDIO AND WORKOUTS FOR BALANCE AND FLEXIBILITY; FIVE HOURS A WEEK

Freelance training consultant Eliza Chee, who retired from a healthcare provider in 2020, keeps herself busy with part-time work at training consultancies and public healthcare institutions, and since April, has been working out at Fitness Tutor too.

Besides gymwork with Mr Kuck, which is about twice weekly lasting up to an hour a session, Ms Chee, 61, also walks to the supermarket, which is about a bus stop away from her home, for her weekly grocery shopping.

Mr Kuck says that for those in their 60s, staying active and living a healthy lifestyle is a priority.

"This is the age when the body shows signs of decline, including cognitive functions such as memory and social interactions," he says, highlighting that more time should be spent on exercising, such as five days set aside for physical activities that address issues such as bone and muscle mass, cardio, balance, coordination and flexibility.

For those aged 60 to 69, Mr Kuck suggests a total of five hours a week, which includes 45 minutes of strength training twice weekly; 30 minutes of workouts that combine balance, coordination and flexibility twice a week; and 30

minutes of cardio twice a week. When Ms Chee first started on a personalised training regimen by Mr Kuck, she found exercises such as squatting and running difficult as she has been grappling with osteoarthritis of the knee since 2002.

"I also lacked the stamina to do cardio exercises such as walking on the treadmill and cross-training because of having led a sedentary lifestyle all my life," says Ms Chee, who is married with a daughter, 34, and son, 32.

After just four months, the regular gymwork and active lifestyle have shown results – she has

lost 2kg and her cholesterol level has dropped from high to almost healthy without her taking medication.

"I remember feeling like throwing up after exercising on the cross-trainer for two minutes," says Ms Chee of her initial training sessions.

"But Paul has been very patient and encouraging as he knew my limitations. I have improved tremendously since April and am enjoying my workouts," she says.

"My hope is for people out there, who have a sedentary lifestyle, to take the first steps and embark on their own workout journeys."