

# How to KEEP YOUR BRAIN SHARP

An unmissable series to reduce your dementia risk



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NEUROSURGEON

**T**HE human brain is a highly sensitive receiver which takes in millions of stimuli every day, but its ability to process this constant barrage of information varies from person to person.

You might be the sort who finds yourself easily crushed by world events and struggling under the privations of yet another lockdown, or you might feel emboldened and undaunted, able to stay positive and make the best of whatever situation you find yourself in.

The key factor separating those two camps is not genetics or personality, but something entirely different: resilience.

You might believe you are born with a huge wealth of resilience, or with little, and you could be forgiven for thinking any you may have is being diminished and weakened by the unrelenting onslaught of the pandemic we are all going through.

But I can tell you resilience can be built and nurtured.

As a neuroscientist and health journalist I have spent the past 25 years working on the medical frontline, analysing the latest brain research and travelling the globe in search of ways to boost the capacity of our brains and protect ourselves against dementia.

One of the most fabulous discoveries of recent years is the fact that your individual store of resilience is bundled up in what we brain specialists call 'cognitive reserve'. The more cognitive reserve you have, the more resilient you will be.

A resilient brain can withstand frequent trauma, it can think differently, it can stave off brain-related illnesses, including depression, and retain cognitive memory for peak performance.

Research shows that possessing a resilient brain is what separates strategic, visionary thinkers from more average ones, but resilience is not completely dependent on IQ or education — it is available to all of us.

All this week the Daily Mail is exclusively serialising my new book, *Keep Sharp*, which is packed with scientifically backed ways to minimise your risk of dementia and keep your brain keen.

Today, my focus is on building

It's never too late to BOOST your BRAIN POWER



Brilliant four-page pullout

Picture: GETTY

resilience. In the quest to protect your brain from dementia and keep it working at its absolute optimum, this is arguably the most important factor of all.

## Boost your brain's back-up system

COGNITIVE reserve is your brain's ability to improvise and navigate around problems or

obstacles. Just as your car has an efficient breaking and acceleration system to allow you to swerve quickly to negotiate unfamiliar turns, so your brain can change how it finds alternative routes, so helping it to cope with challenges that could be harmful otherwise.

It is like a mental safety buffer, a big, flexible, fast-thinking

back-up system that protects the brain.

We know that whatever your age, cognitive reserve helps you function better for longer in the face of unexpected life events such as chronic stress, surgery, or an unexpected onslaught of environmental toxins.

However, scientists have only recently discovered an important

role played by cognitive reserve in protecting us against the ravages of old age.

It originated in the late 1980s when scientists in California started to study of a group of older care-home residents.

They got to know the residents during their twilight years and conducted autopsies on them after their deaths.

What startled them was frequently finding the sort of brain changes you'd expect to see in advanced Alzheimer's disease in high-functioning individuals who had shown no signs of dementia when alive.

The scientists concluded that these highly intelligent individuals had somehow developed enough brain 'cache' to offset the damage to the rest of their brain caused by dementia. This would have allowed them to continue to function as normal with no sign of cognitive impairment at all. This prompted the research-

## THINK ELECTRIC!

■ WHEN one brain cell sends signals to another, the synapse between them strengthens. The more often a particular signal is sent between them, the connection grows stronger. Each time you experience something new, your brain rewrites to accommodate it.

■ AS YOU learn new things more connections are made. The brain continually organises and reorganises itself in response to your experiences — your education, the challenges you face, and the memories that you make.

■ THE segments of brain cells which receive electric impulses from other cells are called dendrites. Novel experiences and learning cause new dendrites to form, whereas repeated behaviour and learning cause existing dendrites to become more entrenched. Both are important.

■ THE creation of new dendrites is called plasticity. It is this which helps the brain rewrite itself if damaged. It is also the core ingredient for resilience, vital for building a better brain.

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# KEEP YOUR BRAIN SHARP

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ers to come up with the theory that cognitive reserve can be built up so successfully that it can take over the functioning of damaged portions of the brain which might be affected by age and disease.

The cognitive reserve then goes on to perform everyday functions to enable the people affected to apparently live free from dementia.

Since this revolutionary finding, research has consistently shown that people with greater cognitive reserve are better able to stave off the degenerative brain changes associated with dementia or other brain disorders, such as Parkinson's disease, multiple sclerosis, or stroke.

## You can generate new brain cells

OLD-SCHOOL thinking dictated that the brain was pretty much fixed and hardwired after childhood. But we now know that to be untrue.

In 2018, researchers from Columbia University in the U.S. showed for the first time that healthy older adults can generate just as many new brain

## THE BRAIN IS MORE POWERFUL THAN YOU KNOW

IT is quite shocking to learn we only use around 10 per cent of our brain's capacity, but that doesn't mean the other 90 per cent is wasted.

That would be ridiculous from an evolutionary standpoint. Brains are so demanding of energy to build, develop and maintain, that it just wouldn't make sense to design something so exquisite then barely use it.

I like to think of the brain as a town. The important structures such as the homes and shops which represent 10 or 20 per cent are in near constant use.

The rest of the town is made up of the roads which connect all these shops and homes.

Without the roads, information could not get where it needs to go. So while the roads are not in constant use, they are absolutely necessary.

cells as younger people. They found that although older adults tend to have fewer, and less robust, blood vessels in the brain they don't necessarily lose their ability to grow new brain cells.

The key word, though, is healthy. If you want to build your brain, you need to stay healthy overall.

Your brain's networks are like a series of roads, and the more networks you have, the more options you have available to shift direction if one route becomes impassable. Those networks make up the cognitive reserve, and they develop over time through education, learning and curiosity.

The cognitive reserve you have right now will be the result of the positive life experiences you might have had, and its size and complexity will reflect how much you have challenged your brain over the years through education, work and other activities.

Studies show the single identifiable factor which appears to statistically protect people with higher IQ, education, occupational achievements, and those who regularly participate in hobbies or sport unrelated to their job, from Alzheimer's, is very likely to be their cognitive reserve.

But the best bit? You can expand and grow your cognitive reserve at any age.

**A**LTHOUGH there's no doubt that brain-training videos, puzzles and crosswords can improve some aspects of memory, research has found that their benefits do not necessarily extend to brain functions such as reasoning and problem solving, which are also key to brain health.

You need to stay as involved as you can in life through

mixing socially with other people and enjoying stimulating activities.

These force the brain to continually acquire knowledge and work with it in ways that ultimately build new networks and strengthen existing ones in the brain.

Just as using many different muscles during exercise improves your overall health, using your brain in a number of challenging ways improves your brain health overall.

If people who have suffered a devastating stroke can learn to speak again — and those born with partial brains, or who lose significant brain tissue to disease, or surgery

can propel their brains' rewiring to work as a whole — think of the possibilities for those of us who just hope to preserve our mental faculties as we age.

Exercise your brain in the right way and you will be able to tap into the 'plastic' power of the brain and boost its ability to rewire itself and strengthen its networks.

Here are some great ways to bolster your mental resilience and build brain matter through active learning and finding a strong sense of purpose in life.

## MASTER A NEW SKILL

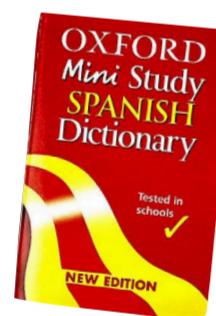
RESEARCH shows that knowledge — whatever you decide to learn — pays off.

So, I urge you to pick a new skill, whether it is playing the piano, cracking computer coding, salsa dancing or writing a novel. It doesn't matter what the topic is, as long as it gets



## TAKE UP A NEW LANGUAGE

SPEAKING two or more languages (even if you learned the second decades after the first) can slow age-related cognitive decline, and being bilingual can protect your brain if Alzheimer's disease strikes, studies reveal. It is thought that the complexity of a second language acts as part of your cognitive reserve, shielding you against symptoms of decline.



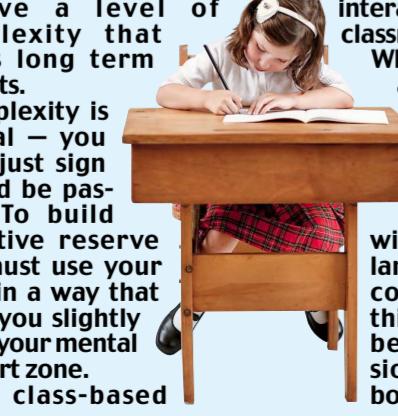
## JOIN AN ONLINE CLASS

A TRADITIONAL class-based learning programme is a more effective way to build up cognitive reserve than any brain-training programme.

That's because classes (whether in an actual classroom or online) usually involve a level of complexity that offers long term benefits.

Complexity is critical — you can't just sign up and be passive. To build cognitive reserve you must use your mind in a way that takes you slightly out of your mental comfort zone.

Live class-based



# Why it's time to put on those

# DANCING SHOES

## and other surprising activities that really do work out the brain

### LEARN A SONG — AND SING IT!

SINGING is a great way to build cognitive reserve.

That's because if you want to sing a song, you must first retrieve the words and be able to say them. This complex process typically involves the left side of the brain.

However, when you try to actually sing those words you use completely different parts of the brain — those which handle pitch and tone.

All of this information must move to and from the righthand and lefthand sides of the

brain to sync up and integrate the data.

Adding a rhythm or a beat means you have to start charging up the back of the brain (the cerebellum) too.

Music is a great enterprise to undertake — the mere act of learning a new skill, such as playing the violin, is proved to be a great way to effectively 'rewire' parts of the brain that are responsible for fine motor control.

The brain really is a wonderful thing! I feel so privileged to



## VOLUNTEER AND HELP OTHERS

FIND out ways you can volunteer regularly for a good cause in your community. Studies show that those who do so are far less likely to be blighted by anxiety, depression, loneliness and social isolation — plus they benefit from having a great sense of purpose.

One large 2018 survey found that over-50s who volunteer at least once a year have higher mental well-being scores than those who don't.

For even better cognitive reserve, take up a leadership role in a group or organisation you already belong to — even if it is just online for now.

## FIND A SENSE OF PURPOSE

HAVING purpose is all about seeing your life as being deeply meaningful, setting goals to aim for and having a clear sense of direction.

With many of us in lockdown it is easy to find yourself floundering a little or just living a kind of half-existence.

But I encourage you to spend time working out what your sense of purpose could be. This is a profoundly powerful skill well worth acquiring because having a sense of purpose is a great way to keep your brain plastic and preserve that cognitive reserve.

In the past 20 years, dozens of studies have shown that older people with a sense of purpose in life are less likely to develop a slew of ailments — from mild cognitive impairment and Alzheimer's disease, to disabilities, heart attacks, and strokes. And they are more likely to live longer than people without this strong undercurrent.

In fact, feeling you have a strong purpose right now might reduce your risk of suffering dementia in the future by up to 20 per cent.

The brain-boosting benefits might be partly explained by the fact that purpose often fires the motivation to remain physically active and take better care of yourself. And this in turn helps you manage stress and makes you less prone to dangerous inflammation. Purpose often engenders a love for life and all the experiences it offers.

It also puts a damper on depression, which can be common as we get older, and is a huge risk factor for memory decline, stroke, and dementia.

## ENCOURAGE DEEP FOCUS

YOU know that feeling when you are totally immersed in an activity without distraction or any sense of agitation? That deep focus, which sees you absolutely absorbed and enjoying a feeling of intense energy?

That's 'flow', and it is very, very good for your cognitive reserve.

Finding flow does not mean you are stressed — you can feel blissfully relaxed while being challenged or under pressure at the same time.

You need a clear sense of purpose to truly be in the flow and it is a great state to occupy. Think about the last time you were in the flow. What were you doing?

How long has it been since that time? Who were you with?

I encourage you to list those experiences. They may inspire you to find new routes to flow today.

# BRAIN MYTHS DEBUNKED

## AS WE AGE, WE'RE DOOMED TO FORGET

THERE is a kernel of truth to this myth because some cognitive skills do decline as you age, especially if you don't employ strategies to pay closer attention and help you remember.

But although you might have been quicker at picking up a new language or memorising a list of random words when you were younger, as an older adult you are more likely to have a superior vocabulary and to be a good judge of character.

You'll score higher on tests of social communication and diplomacy, such as how to settle an argument or deal with a conflict.

The other good news about an ageing brain is that we tend to improve over time at controlling our own emotions, weathering stress, and finding meaning in our lives.

## OLDER PEOPLE CAN'T LEARN NEW THINGS

LEARNING can take place at any age, especially when you get involved with cognitively stimulating activities such as meeting new people or trying new hobbies.

What's known is that keeping an active mind can help to reduce the decline in thinking skills, and for some people, doing crossword puzzles is a way to do that. For others, however, this may not be true.

## ...BUT COMPUTER GAMES MAY HELP

ANY product that says it can reduce or reverse cognitive decline should be viewed with caution, in my opinion.

Video-based brain games

have come under fire for being over-hyped, for example.

However,

I admit that some 'speeding training' games are

may show promise.

These are short, simple games where you hit a button when you see a red car on a fast-moving screen, for instance — and the way you focus while rapidly processing visual information seems to be surprisingly effective at slowing dementia.

One impressive 2016 study found that 11-14 hours of speed training over six weeks was enough to cut the risk of developing dementia by 29 per cent.

As the player answers correctly, the game becomes more difficult with more distractions making the targets more difficult to identify, and the speed is increased.

Video games will never be a panacea, and unscrupulous companies will continue to sell video games on the back of false brain-boosting claims, but I am optimistic this could be a useful way to build cognitive reserve in future.

to learn. Although mastering new skills, such as a second or third language, might take an older person slightly longer, this doesn't mean you cannot achieve the feat.

Never say 'never'. Even people diagnosed with cognitive decline can continue to learn new things.

## CROSSWORDS KEEP YOUR BRAIN YOUNG

IT'S an urban legend that crossword puzzles can keep your brain young. Unfortunately, the puzzles flex only a portion of your brain, mostly its word-finding ability.

So, while practising might help you excel at that skill, it won't necessarily keep your brain sharp in any general, overall sense.

That said, there is value in doing word and number puzzles, including games such as Sudoku.

In 2019, a follow-up study by the University of Exeter Medical School and King's College London confirmed earlier results that showed the more often participants did puzzles, the better they perform on tasks assessing attention, reasoning, and memory.

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cer, which was designed to help boost multi-tasking networks in the brain, really could work.

After older people played NeuroRacer three times a week for a month, they improved their ability to multitask beyond the level of even 20-year-olds who played one single time.

Better still, those cognitive improvements lasted for six months with no more practice.

The reason this appeals to me is that certain cognitive abilities not specifically targeted by the game (specifically working memory and sustained attention) also showed enduring improvement. These skills are important for everyday tasks, such as handling the post and dealing with bills, planning and cooking meals.

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# KEEP YOUR BRAIN SHARP

**A**FEW years ago, I wrote a book about confidence and how to achieve it. 'Oh great,' a pal scoffed when I told him about it. 'You're writing a training manual for annoying people.'

The actual word he used to describe the sort of people he thought my book was aimed at was rather stronger. But you get his point, and so did I.

It's easy to think that those who are constantly in your face, banging on about how great they are and interested in talking only about themselves are supremely confident beings.

In fact, they're not particularly confident at all—they're simply trying very hard at appearing to be so, which is what makes them so annoying to be around.

Truly confident people come across as being much more relaxed about life. They possess a quiet self-belief that makes it somehow effortless to be in their company.

They are the opposite of the annoying type my friend described. So, how do they achieve this state of ease with themselves, various life situations and with those around them?

**T**HE golden rule when it comes to confidence is: 'What you practise, you become'. And with that in mind, there are four key things you need to practise in order to become that naturally confident person so many of us aspire to be: talk to yourself in a confident way.

Make big, bold positive pictures of your positive self in your mind. Use your body as if you were already confident. Take at least one risk every single day.

The more you practise doing these four things, the more naturally confident you will become. Soon, you

will find yourself automatically responding to new situations with confidence instead of fear, with self-belief instead of self-doubt.

And it's easy enough to do. In fact, you can start today by becoming familiar with the following exercise. This is important because it forms part of a simple daily confidence programme that boasts truly transformative powers.

## CONFIDENCE WORKOUT

I HAVE developed this quick daily confidence workout to assist you in easily developing the confidence habit.

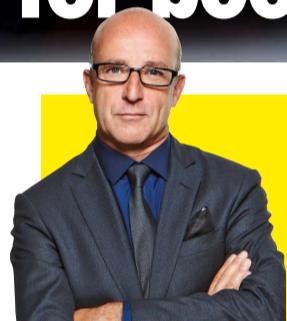
All you need is a bit of paper to write on, a mirror and five of the 1,440 minutes we are given to play with each and every day.

### Minute One: Your successful you movie

TAKE a minute to run through the Successful You movie as described in the box above, thinking about any success you have experienced in the past or looking forward to an experience in the future.

Remember to juice up your

# Feeling low? Imagine you're a **FILM STAR** ...and my other techniques for boosting confidence



## Paul McKenna's MIND TRICKS TO BEAT STRESS

memories by using bright colours and big, bold, moving images!

### Minute Two: The Mirror

1. Stand in front of a mirror and close your eyes.
2. Now, think about someone who loves you and imagine viewing yourself through their eyes.
3. When you are ready, open your eyes and look into the mirror. Allow yourself to really see

yourself through the eyes of someone who truly loves you.

### Minute Three: Compliment Yourself

STILL looking in the mirror, use your confident internal voice to compliment yourself over and over again for a full minute.

If you find this difficult, then it is even more important for you to persevere with it.

Remember, you are changing your energy so that you will attract more of what you want

into your life — what you practise is what you become.

### Minute Four: Push The Confidence Switch

1. Remember a time when you felt really, really confident.

Fully return to that time now—see what you saw, hear what you heard and feel how good you felt.

If you can't remember a time when you did feel this good, imagine your life if you had all the power, strength and

self-belief that you could ever need!

**2.** As you keep going through this memory, make the colours brighter and richer, the sounds louder, and the feelings stronger.

**3.** As you feel the good feelings, squeeze your thumb and middle finger of either hand together.

**4.** Still holding your thumb and finger together, think about a situation coming up in the next 24 hours during which you want to feel more confident. Imagine things going perfectly. See what you'll see, hear what you'll hear and feel how good it feels!

### Minute Five: Confidence in Action

1. Take a minute to write down any inspired actions that came up as you tried the workout.

**2.** Choose at least one of them that feels like a little bit of a risk to try in the next 24 hours.

Each time you complete this five-minute daily confidence workout, your self-belief and sense of inner comfort will increase. Unlike working out at a gym, there is no recovery time needed between workouts. The more you do each exercise, the faster your confidence will grow.

- FOR information on Paul's books, including *Control Stress*, *I Can Make You Happy*, *Instant Confidence* and *I Can Make You Sleep*, visit: paulmckennabooks.co.uk

## IMAGINE A MOVIE ABOUT A SUCCESSFUL YOU

*THIS exercise should form part of your daily confidence workout. Read through all the steps before you do it for the first time...*

- **Imagine you are watching a movie about a future, more successful you. Notice every detail of how that future you appears — the expression on your face, the way you hold your body, the light in your eyes.**
- **When you're ready, I'd like you to float out of your seat and into that successful you. See through their eyes, hear through their ears and feel the feelings of your successful self.**

**Make the colours brighter, the sounds louder and the feelings stronger.**

**■ Notice where that feeling of success is strongest in your body and give it a colour. Now move that colour up to the top of your head and down to the tip of your toes, doubling the brightness and doubling it again.**

**■ Float back into your present-moment self, being sure to keep as much of the feeling of natural confidence and success as feels truly wonderful.**

# TOMORROW: THE RIGHT FOODS TO FIRE UP YOUR BRAIN