- Brain / Mind and body

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YOUR Best Brain

Words by Caroline Robertson



Image: Anastasiya Gepp

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Are you feeling alert or brain dead? We all suffer from brain fog sometimes but when we're in a constant cloud, it's time to get clear. Applying principles of neurogenesis and neuroplasticity can build better brains for beautiful lives.

Brains are the body's boss. They're Captain Kirk on the starship's bridge receiving information, discharging orders and processing piles of past, present and potential emotions plus events. The busy brain is always controlling and coordinating something with more than 100,000 chemical reactions and up to 70,000 thoughts daily. No wonder it's hard to switch off the brain, which uses over 20 per cent of the body's energy, more than any other organ.

The brain is akin to 1.4kg of tofu in a tub containing mostly water. Brain tissues include connective, neural and vascular. The brain also consists of cerebrospinal fluid, grey matter, white matter and the choroid plexus, which produces cerebrospinal fluid.

Our cranium is a hub of constant communication with messenger neurons receiving and sending signals across synaptic gaps via neurotransmitters. These then activate certain areas of the brain and body. For example, when you chew chocolate, the mouth's sensory neurons detect the sweet taste and relay the deliciousness to the brain. The brain then releases neurotransmitters such as dopamine and endorphins, which activate pleasure pathways in brain areas such as the nucleus accumbens. This leads to a positive feeling that we are likely to crave again.

Brain issues can impact every aspect of our being. A balanced brain is essential for the following:

- Cognitive decision-making, reasoning, thinking and problem-solving
- Emotional responses and feelings
- Maintaining homeostatic balance including heart rate, hunger and temperature
- Memory storage and recall
- Motor control of voluntary movements such as walking and involuntary movements such as respiration
- Sensory functions including interpreting signals from our senses such as smell
- Communication via neurotransmitters

Keeping a healthy head is a combination of brain training, exercise, nutrition, therapies, rest and clean living.

Senior moments

"Brain cells don't age, it's our blood vessels that age. So whatever you can do to take care of your blood vessels, that is the secret to anti-ageing. That means exercise, not smoking, not drinking much caffeine, not drinking much alcohol because all those things decease blood flow." ~ Dr Daniel Amen

As we age, our approximately 100 billion neurons decrease, neurotransmitters wane and the brain shrinks by around five per cent each decade after 40 years. Inflammation and amyloid-beta plaques may start to impair our brain's blood flow and functions. Protecting the brain from both biochemical, functional and physical damage is key to maintaining optimal brain function into our golden years.

After analysing thousands of SPECT brain scans, psychiatrist Dr Daniel Amen, author of *Change your Brain, Change your Life*, concluded that brain regeneration is attainable. However, Dr Amen emphasises that prevention is much better than management of head-hurting issues. His Bright Minds Program cites 11 factors contributing to brain damage as follows:

B – Blood flow insufficiency
R – Retirement
I – Inflammation
G – Genetics
H – Head trauma
T – Toxins
M – Mental health
I – Immunity/infection issues
N – Neurohormone deficiencies
D – Diabesity – diabetes associated with obesity
S – Sleep problems

With these 11 influences in mind, the best brain care can include these measures:

- Stimulate cerebral circulation with exercise, herbs, massage and inversions
- Learn new things to keep the brain active
- Avoid inflammation with diet, earthing, herbs and relaxation
- Cultivate healthy habits that keep negative epigenetic tendencies at bay
- Avoid and address head trauma
- Minimise toxin exposure and undergo regular cleansing through diet and therapeutic aids
- Manage mental health issues such as anxiety, depression and anger
- Improve immunity to minimise infections
- Support healthy neurohormones such as oxytocin with hugs
- Maintain balanced blood sugar and weight
- Prioritise quality sleep

Riding the waves

"The wave frequency of the human cavity resonates between six and eight hertz. All biological systems operate in the same frequency range. The human brain's alpha waves function in this range and the electrical resonance of the earth is between six and eight hertz. Thus, our entire biological system – the brain and the earth itself – work on the same

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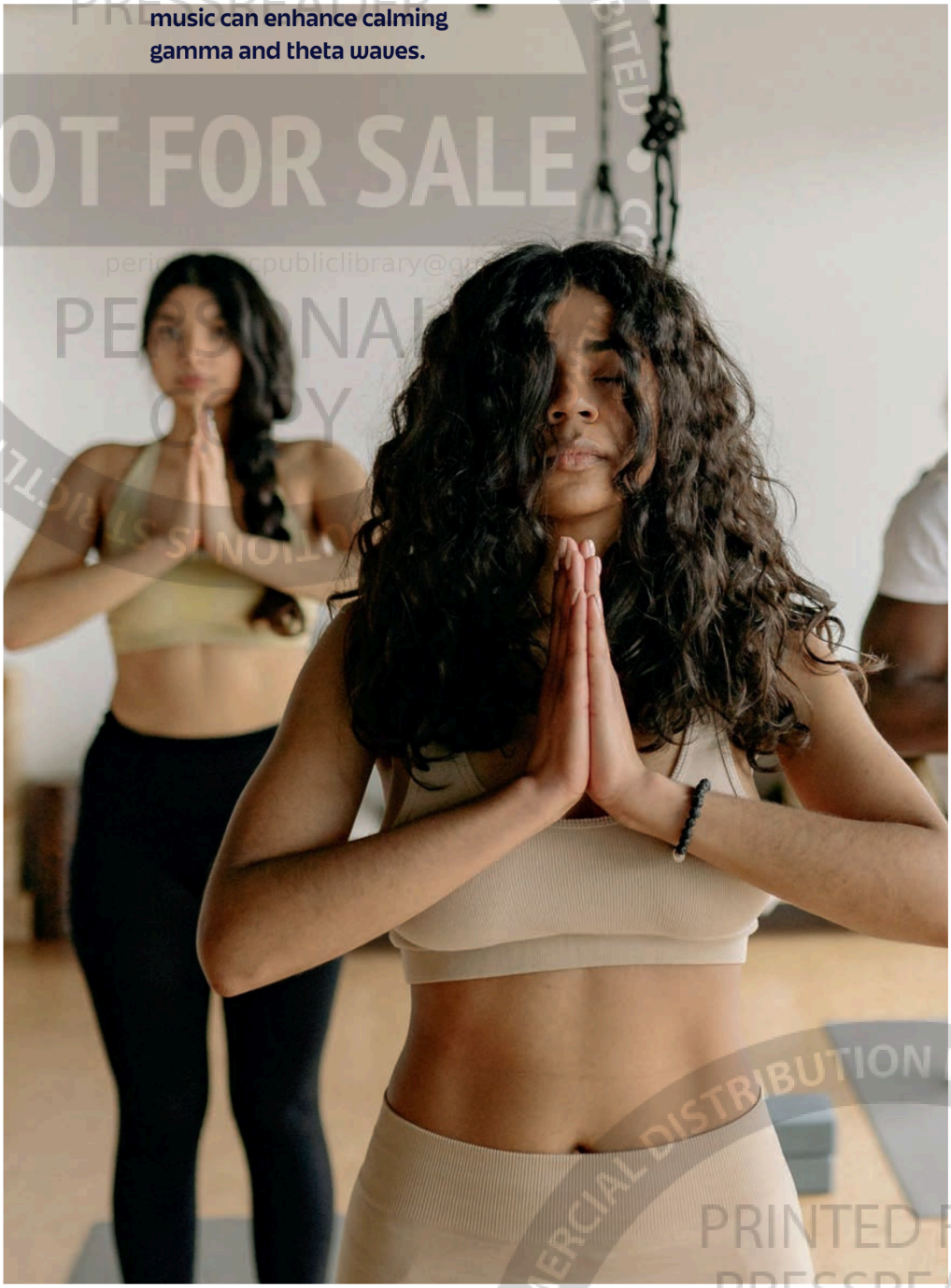
Meditation, yoga and certain music can enhance calming gamma and theta waves.



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frequencies. If we can control that resonate system electronically, we can directly control the entire mental system of humankind." ~ Nikola Tesla

Did you know there's an ocean of ever-changing brain waves within you? As billions of neurons connect, they create an electrical current that produces a vibrational pulse. These frequencies are measured by electroencephalography as hertz and classified into five flowing brain waves as follows:

Delta (0.5–4 Hz):

- The slowest waves
- Deep, dreamless sleep, healing and automatic actions such as showering
- Vital for rejuvenation

Theta (4–8 Hz):

- Auto-pilot states, light-dreaming sleep and relaxation
- Associated with creativity, intuition, meditation and memory

Alpha (8–12 Hz):

- Calm, relaxed, drifting off to sleep state
- Promotes creativity, learning, focus and regeneration

Beta (12–30 Hz):

- Alert and actively thinking
- Decision-making, conversing, learning and problem-solving

Gamma (30 Hz and above):

- Heightened awareness, concentration, connection and superior cognition
- Associated with flow states of consciousness and peak mental states

Using neurofeedback programs such as binaural beats, the Mendi or Muse headsets may allow us to measure and train our brain wave state to optimise brain function for a particular activity or aim. Being able to turn on alpha for sleep and beta for study is truly mastering the mind. An example of using feedback for a condition is the treatment of attention deficit hyperactivity disorder or ADHD. Monitoring brain waves during games while rewarding states of concentration in beta waves, a person can learn to self-regulate attention by increasing focus and minimising impulsivity. According to the Sydney Cognitive Development Centre, "Research over the past 40 years has shown that neurofeedback can be highly effective in altering brain dysregulation via principles of neuroplasticity, without the use of medication, in a non-invasive manner." However, a 2022 meta-analysis, *Is neurofeedback effective in children with ADHD?,* by Rahmani et al, concluded "that there was no significant benefit of neurofeedback treatment compared with other treatments or control conditions".

We can boost our chilled alpha and theta brain waves through deep breathing, meditation, mindfulness, creativity and relaxing. Alert beta waves may be increased through exercise, brain training and stimulating head massage. Meditation, yoga and certain music can enhance calming gamma and theta waves.

Brain drains

If you want to help rather than hurt your head, then aim to minimise the following brain baddies:

Allergies

Does your brain feel foggy after certain foods? Brain haze is a common sign of allergies as systemic inflammation can cause cognitive impairment. "Brain-allergic responses were associated with behavioural impairments, including motor and learning deficits," according to a study linking allergies to brain inflammation by Liqing Zhou et al. Allergies cause elevated histamine levels, which correlate with cognitive impairment and confusion, according to several studies. Allergies often disturb sleep. which also affects brain function.

Coffee

Could coffee shrink your brain? Yes, according to a 2021 study involving 17,702 participants. "Higher coffee consumption was significantly associated with reduced brain volume – essentially, drinking more than six cups of coffee a day may be putting you at risk of brain diseases such as dementia and stroke," according to lead researcher Kitty Pham. Hence, moderation is key with caffeine.

Dehydration

Hydration is crucial for higher functions as the brain is up to 80 per cent water. Even mild dehydration can impair attention, learning, memory and reaction time, according to a 2021 study in *Nutrients*, "Effects of Hydration on Cognitive Function". A dehydrated brain shrinks and has impaired neural connections, according to a 2021 systematic review, *Brain Imaging of Dehydration.*

Ear buds/headphones

Pumping up the volume through ear buds or headphones increases the incidence of noise-induced hearing impairment, which can disable brain function in the long term. Keep the volume low, take breaks and ensure earbuds are clean to reduce the risk of infection.

Electromagnetic fields

Unless we move to Mars, we will be affected by electromagnetic fields or EMFs. Our attention and concentration are impaired by using mobile phones for more than 90 minutes daily as revealed in *The Journal of Microscopy & Ultrastructure.* In a speech at a fundraising event in Melbourne, renowned brain cancer surgeon Dr Charlie Teo advised the audience to use mobile phones on loudspeaker, place clock radios at the foot of their beds and refrain from opening microwaves until they have completely finished beeping.

Heavy metals

"Adult human epidemiologic studies have consistently shown lead, cadmium and manganese are associated with impaired cognitive function and cognitive decline," according to a 2020 report in the journal *Alzheimer's Disease*. Keep a clean brain with minimal toxins from food, body-care products, chemicals and

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"Higher coffee consumption was significantly associated with reduced brain volume - essentially, drinking more than six cups of coffee a day may be putting you at risk of brain diseases such as dementia and stroke."

toxic interior or exterior agents such as formaldehyde in wood resins and furniture flame-retardant polybrominated diphenyl ethers.

Nutrition

Starving the brain can make us stupid, according to several studies. Malnourishment starves the brain of vital nutrients such as B vitamins, iodine, iron, omega-3s, zinc and selenium.

Brains are extra hungry during childhood, pregnancy, lactation and exertion. Deficiencies can contribute to cognitive decline, short attention span and poor academic achievement, according to research, "The Effects of Malnutrition on Cognitive Development and Function in Children" by A. V. Grantham-McGregor et al.

Be aware of excesses also as too much iron destroys brain cells and contributes to β-amyloid and neurofibrillary tangles, promoting the development of Alzheimer's disease, according to a 2018 report in *Frontiers in Neuroscience* by J Liu et al. Excess salt contributes to high blood pressure and inflammation, while the Framingham Heart Study suggested sugary drinks age the brain, causing shrinkage, memory loss and a higher risk of dementia.

Over or underuse

If you don't use your mind, you lose it. According to Dr Mercola, "Your brain is designed and constructed to be stimulated and challenged ... if you don't sufficiently challenge your brain with new, surprising information, it eventually begins to deteriorate." However, overthinking or multitasking denies the brain vital downtime to consolidate and rejuvenate.

Select medicines

Check with your health professional or pharmacist if medication appears to be negatively impacting your brain capacity. Anticholinergics, antidepressants, antihistamines, antispasmodics, benzodiazepines and muscle relaxants may make you drowsy.

Screen time

Excessive screen time adversely affects attention, cognition and recall, especially in children, according to a slew of studies. Recent research by Hutton and Durkin using neuroimaging revealed "lower microstructural integrity of brain white matter tracts, supporting language and emergent literacy skills in prekindergarten children". Increased screen time reduced attention span and cognitive performance, according to a meta-analysis by Hinkley et al. Digital multitasking impaired memory and learning ability in adolescents in a study by Kray et al. Not surprisingly, being a screen slave decreases quality sleep, which will inevitably affect brain function.

Sleep issues

The Sleep Research Society links lack of sleep to brain shrinkage, raised β-amyloid, associated with dementia and impaired cognition. Sleeping more than 10 hours is connected with cognitive decline also, according to the 2017 study "Association Between Sleep Duration and Cognitive Decline".

Stress head

Worry messes with our mind. Stress management is key to clear thinking. A study "Chronic Stress and the Brain: A Review of the Neurobiological Mechanisms", published in *Nature Reviews Neuroscience* 2023, concluded that chronic stress can lead to neuroinflammation, neuronal damage and cognitive impairment, including handicapping memory and emotional regulation. Instil peaceful practices for your daily dose of sanity.

Substance abuse

Drowning our sorrows in dope, drugs or alcohol may cause more sorrows. Alcohol, cannabis, cocaine and opiates age our brain, according to brain disorder specialist Dr Daniel Amen. Alcohol shrinks the brain, cannabis reduces blood flow to the brain, cocaine destroys brain's grey matter and heroin "can create persistent impairments in the front brain regions, with severe consequences including problems with memory, attention, spatial planning and executive functions", according Dr Antontello Bonci (WebMD Connect to Care).

Weight issues

A fit body supports a functional brain. Being overweight can adversely affect brain function as revealed in the 2016 study *Obesity and Brain Structure: A Review of Neuroimaging Studies*. Excess weight can contribute to cognitive decline by reducing brain volume, connectivity and neuroinflammation.

Brain insurance

The common conclusion by brain experts is that a healthy headspace requires a multifactorial approach. Irrespective of our age, these tips can keep our brain in top condition:

Brain bites

The central nervous system thrives on suitable fluids, organic vegetables, legumes, fruits, oils, nuts and seeds. These ensure we supply our brain with abundant carbohydrates, fatty acids, fibre, protein and micronutrients. Diets proven to enhance mental performance include the Mediterranean, DASH, MIND and 5:2 programs. Meals for the mind can include antioxidant avocados, flavonoid-rich berries, vitamin B-abundant legumes, fatty-acid-soaked salmon, antioxidant green tea, choline-packed eggs, omega-3 seeds, anti-inflammatory turmeric, nourishing nuts such as walnuts and moderate fats such as algae oil, coconut oil or ghee. Ayurveda medicine considers ghee a memory marvel due to its antioxidant vitamins ADEK and DHA (docosahexaenoic acid) content.

Intellectual exercise

Keep those brain cogs firing and rewiring with any of these pursuits proven to get your brain boogieing: word games such as sudoku, learning a new language, partner dancing, laughter, playing an instrument, reading, social interaction, creative hobbies, travelling and teaching others. Regular physical exercise increases BDNF (brain-derived neurotrophic factor), encouraging the growth of new nerve connections.

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Nootropic herbs [are] known to boost brain functions such as creativity, cognition, focus, memory and stress resilience.

Meditation

Meditation enhances memory by cultivating creativity and focus, as well as promoting the thickening of the cerebral cortex. Practising mindfulness allows us to approach life with a renewed, aware outlook. Multitasking tends to muddle the mind, so an antidote is meditation, which bestows the ability to concentrate and monotask. Rest is also essential for the brain to rebuild. Research indicates that relaxation can lead to an increase in brain size within only eight weeks. Connecting with our heart as well as our head harnesses intuition along with intellect for emotional as well as logical intelligence. As co-founder of Emotional Intelligence (EI) Skills Group, psychologist David Caruso imparted, "It is very important to understand that emotional intelligence is not the opposite of intelligence, it is not the triumph of heart over head — it is the unique intersection of both."

Head rest

"Sleep is the single most effective thing we can do to reset our brain and body health each day." ~ Matthew Walker, author of *Why We Sleep: Unlocking the Power of Sleep and Dreams*.

Sleeping brainwashes us in a positive way as the glymphatic system cleanses our brain, reducing the likelihood of beta-amyloid plaques and fuzzy thinking. Sleep is vital to process impressions and consolidate memories. Conversely, "Disturbed sleep delays storage of memories and makes us forget sooner," says Professor Chris Idzikowski, director of The Edinburgh Sleep Centre.

Awakening oils

To promote brain health, Ayurveda medicine advocates Brahmi hair oil applied to the crown fontanelle daily. After doing a skin allergy test, try massaging rosemary essential oil into your scalp in the same way ancient Romans wore rosemary wreathes on their head to enhance their intellect. Burning basil, lemon and sage in a diffuser is also said to promote mental acuity.

Brain aids

Natural mental medicines can support brain health via their antioxidant, anti-inflammatory, circulatory stimulant, sedative and cognitive-enhancing effects. Some herbs act as neurotransmitter balancers such as withania. Whereas L-theanine, an amino acid abundant in green tea, has been shown to promote alpha brain waves, cultivating focus, creativity and clarity, while easing stress. Supplements for a better brain include alpha lipoic acid, B complex, choline, DHA, coenzyme Q10, folate, vitamin C, vitamin D, vitamin E, grape seed extract, lion's mane mushroom, L-theanine, magnesium, MCT oil, omega-3 fatty acids, zinc, alpha lipoic acid, magnesium, resveratrol and ubiquinol.

Nootropic herbs known to boost brain functions such as creativity, cognition, focus, memory and stress resilience include the following.

Brahmi's leaf looks like a brain indicating its efficacy as a cerebral tonic. It is traditionally used as a neuroprotective, nootropic agent applied to assist anxiety, cognition, focus and memory. An open-label study to elucidate the effects of standardised *Bacopa monnieri* extract in the management of symptoms of ADHD in children, by Usha Pinakin Dave et al., concluded: "Standardised extract of *B monnieri* was found to be effective in alleviating the symptoms of ADHD."

Ginkgo biloba is a herb traditionally used for memory and tinnitus. "Ginkgo biloba may have beneficial effects on cognitive function and can potentially improve memory and attention in individuals with mild cognitive impairment," according to a meta-analysis published in the *Journal of Alzheimer's Disease* (2022).

Panax ginseng helps decrease the formation of beta-amyloid plaques, while also protecting brain cells from damage and alleviating anxiety.

Rhodiola significantly improves learning and memory according to a systematic review of 36 studies by Gou-ping Ma et al.

Saffron improves cognitive function, mood and other neurological outcomes, according to the 2024 review, "Therapeutic potential of saffron in brain disorders: From bench to bedside". Pre-clinical studies suggest saffron may play a promising role in preventing and supporting neurogenerative diseases such as Alzheimer's and Parkinson's.

Withania, aka ashwagandha or Indian ginseng, has adaptogenic and regenerative properties that increase stress resilience and seem to support synaptic plasticity and brain health. A 2024 study published in the journal *Nutrients* concluded "a liposomal form of ashwagandha (225mg daily) can improve short-term memory, attention and vigilance, and reaction times."

Smart-tea

Want to wake up your brain and raise your IQ? Try this tasty tea!

Combine ½ tsp each of organic herbs Brahmi, ginkgo, ginger root, any ginseng, green tea and rosemary. Add to a teapot with 3 cups of freshly boiled water. Allow to steep for 5 minutes. Stir and strain 1 cup. Swirl in 1 tsp of MCT oil or ghee. An optional addition is coconut or almond milk for a creamy flavour. Enjoy 1 cup 3 times a day before 7pm so as not to disrupt sleep.

Caroline Robertson is a dedicated naturopath, Ayurveda practitioner, teacher and author with more than 35 years' experience. Contact Caroline for consultations, courses and retreats at carolinerobertson.com.au.

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