

SUMMER BOSS

Getting exercised about

Cognitive fitness is critical to protecting against senility, but do we resist exercising the brain as much as we avoid working out the body?

Roderick Gilkey and
Clint Kilts.

As life expectancy continues to rise, people are doing more and more to ensure their lives, if long, are going to be healthy. But until recently there seemed to be no guidelines for active efforts you could make to stay mentally healthy. There were no brain exercises you could do to stave off the loss of memory and analytic acuity that comes as you grow older. In the worst-case scenario you could end up with Alzheimer's disease, for which there are no proven treatments.

But a concentrated commitment of resources in the US by the National Institute of Health, National Institute of Mental Health and Library of Congress during the 1990s yielded research that has up-ended some deeply held beliefs about the brain – including that the brain diminishes with age. It turns out neurons do not have to die off as we get older. In fact, a number of regions of the brain important to functions such as motor behaviour and memory can actually expand their complement of neurons as we age.

live your life. The brain's anatomy, neural networks and cognitive abilities can all be strengthened and improved through your interactions with your environment. The health of your brain isn't just the product of childhood experiences and genetic inheritance; it reflects your adult choices and experiences as well.

For a long time it was thought that brain development ceased in childhood or early adolescence, but we now know there is a regimen you can follow to retain and even build mental capacity as you age.

Brain-imaging studies indicate, for example, that acquired expertise in areas as diverse as playing a cello, juggling, speaking a foreign language and driving a taxicab expands and makes more communicative the neural systems in the parts of the brain responsible for motor control and spatial navigation. In other words, you can make physical changes in your brain by learning new skills.

These advances in neuroscience suggest that there is no reason your brain at 60 can't be as competent as it was at 25.

of what we call cognitive fitness – a state of optimised ability to reason, remember, learn, plan and adapt, enhanced by certain attitudes, lifestyle choices and exercises.

Cognitive fitness allows you to be more open to new ideas. It gives you the capacity to change your behaviours and forecast their outcomes to realise your goals. You can become the kind of person your company values most. Perhaps more important, you can delay senility for years and even enjoy a second career.

So how can you become cognitively fit? We have identified four steps you can take.

Step 1 Understand how experience makes the brain grow

The discovery of dedicated neural systems that represent objects, people and actions provides a new explanation of how the brain processes experience to encode learning and build performance capacity.

pushing it toward bankruptcy, he urged her to engage in a walkabout.

It made excellent sense from a neurological standpoint for Mulcahy to acquire a deeper understanding of the people who would follow her, because the neural networks that would enable her decision-making would not yet be fully formed. If she had stayed isolated in the corner office, those networks would certainly have ended up looking different from what they do today.

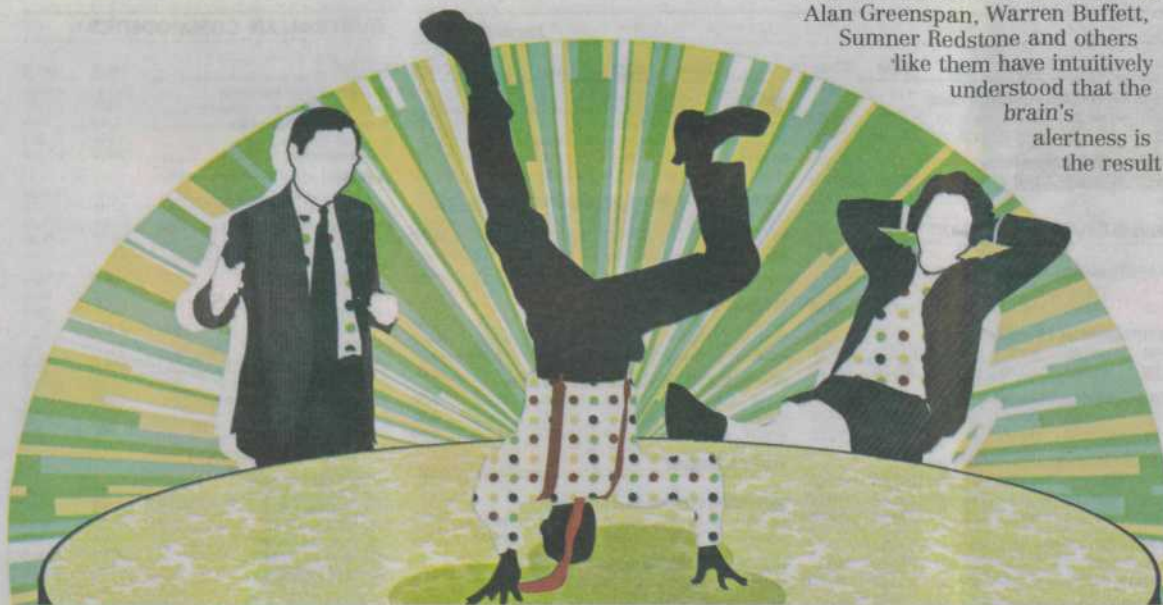
Step 2 Work hard at play

Our ability to play lies at the heart of our capacity to imagine and invent. Play is closely tied to pleasure and strongly associated with the brain's reward systems. Indeed, Jaak Panksepp's neuroscientific research on mammals identified play as a primary human drive and the brain's source of joy.

Joy provides "emotional fuel", which helps the brain develop and expand its synaptic networks. In early life, this neurochemical appears in lower subcortical

The process of neurogenesis is profoundly affected by the way you

socialises. Copernicus and Galileo were all still at the peak of their intellectual powers in their 60s and 70s. Business leaders such as Alan Greenspan, Warren Buffett, Sumner Redstone and others like them have intuitively understood that the brain's alertness is the result



PERSONAL TRAINING

Manage by walking about. Leave the executive dining room and drop into the company cafeteria, production floor or loading docks. Unfamiliar territory broadens your perspective. When you have a mental block on some problem, getting up and changing your environment can lead to an "aha" moment.

Read funny books. Humour promotes insight and enhances our health – even the immune system seems to love a good joke.

Play games. Activities such as bridge, chess, sudoku and crossword puzzles provide neural workouts, as do online, role-playing games.

Try games that challenge your left hemisphere, such as pool.

Act out. Discover your inner actor through improvising and trying on many roles. Such play expands your behavioural repertoire and enhances personality and leadership capacities. Experiment

at meetings. Trying out different ways of interacting with colleagues increases cognitive fitness.

Find out what you're not learning. Figure out what you don't seek – asking a promising young subordinate what they think is a good place to start. Or vary your reading list. If you normally throw yourself into history and biography, try literary fiction; if it's mostly thrillers, try science.

Get the most out of business trips. Travel provides excellent opportunities for jolting your brain. Visit a museum; read a novel set in the city you are visiting; devote a couple of hours to talking to locals.

Take notes, and then read them. Richard Branson carries a bound book with blank pages wherever he goes. Every time he sees or hears something interesting and new, he jots it down. He says many of these ideas have become new businesses.

Try new technologies. Playing with a touch screen and downloading a video from YouTube on your iGadget to display on your megascreen TV activates innumerable brain channels linking your auditory, visual and tactile networks with your limbic system and your prefrontal cortex. Talking about it with your friends will extend the activity throughout the brain.

Learn a language or an instrument. Studying a new language puts you at the pinnacle of mental athleticism. Learning a musical instrument gives your brain a boost too.

Exercise, exercise, exercise. One of the most consistently identified defences against developing Alzheimer's disease is a good exercise regimen. Very specific beneficial biochemical changes, such as increases in endorphins and cortisol, result from cardiovascular and strength training.

The so-called mirror neurons making up these systems aid the speed and accuracy of our perception by mentally simulating objects and actions in our environment. Experience gained through observation activates these performance-enhancing neurons, which accelerate learning progress and capacity.

Traditionally, scientists have assumed that people gain new skills through practice but the existence of mirror neurons means you can also gain skills through observation and indirect experience.

When a golf pro demonstrates the correct stance and swing for you to imitate, mirror neurons are activated, enabling you to learn from his experience by supplying you with the mental image of the correct actions. Your social cognitions are similarly aided by specialised neurons that reflect facial expressions, gestures and other signals, and develop your ability to read other people's actions and expressions by matching them with internal representations you have acquired.

This suggests that mental imagery is a valid mode of learning and acquiring new competences. The brain's ability to learn in this way makes a biological case for the use of simulations and case studies as tools in your quest for development as a leader. You can gain the brain benefits of other people's long-term direct experience through, for example, short-term exposure to simulation.

One of the most powerful tools available for strengthening the executive brain is the walkabout. Walking around – the practice of managers getting out of their offices and talking to employees – is not just good business practice, it is also a sound form of cognitive exercise.

When Anne Mulcahy, the chief executive officer of Xerox, sought Warren Buffett's advice about how to help the company emerge from a financial crisis that was rapidly

regions, which then, according to Panksepp and his colleagues, contribute to the growth and development of higher brain functions associated with the frontal cortex. So play is not only a psychological precursor of social and emotional maturity in adulthood, it is a physiological one as well.

In adult life, play engages the prefrontal cortex, nourishing our highest-level cognitive functions: those related to incentive and reward processing, goal and skill representation, mental imagery, self-knowledge and memory, to name a few. Play, therefore, improves your ability to reason and understand the world.

Play is a tool that we must consciously use as the demands on us increasingly call for greater levels of emotional control – but as we get older, we unfortunately tend to play less often.

A host of hard-driving Silicon Valley companies, such as Google and Apple, provide environments that encourage some kind of play, referred to variously as Zen dens, play spaces and chat chambers. As the leaders of these companies realise, a legitimate and comfortable environment for brains to play can be a powerful tool for allowing people to develop their creative capacities and cognitive health.

Conversely, in companies that stifle play, brainpower may actually decrease as it does in children with failure-to-thrive syndrome, a condition created by experientially deprived or abusive environments.

A big challenge in finding the right environment for your brain to thrive is striking a balance between risk and security. You must have a stake in the game you play if you are to really engage in it; risk alerts the brain and activates capacities for both reason and imagination. If you don't allow for some risk in your career, you may become like an overprotected child who fails to explore the world with any

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age-proofing your brain



business environment, superiority in pattern recognition is perhaps the greatest competitive advantage that can be developed.

There's a lot you can do to develop your left-hemispheric capabilities. Challenge your existing mind-set, enlarge it and make it more complex. Listen to different viewpoints, read new kinds of articles and books and visit places with a focused set of learning objectives. All these experiences will expand your vocabulary, conceptual storehouse and general perspective. These immersions will call into question your own mind-set and improve your abilities in pattern recognition.

Commit to immersing yourself in new systems and ways of thinking. They cannot be occasional events, because the point is to expose yourself to a variety of cases and situations that cumulatively encode rich experience in your brain.


Avoid filling your management team with people who've all followed the same path upward. Take a cold, hard look at how executives make it to the top in your organisation. Isn't there a tendency for one route to dominate?

complex neural networks than those who do not. The people who remain engaged in life display an attitude of openness to new and unexpected experiences. Research shows that those who engage in continuous learning are more resistant to Alzheimer's disease and other forms of dementia.

In early 2001, Richard Wetherill, a retired university lecturer and talented chess player, noticed that his chess ability had diminished. Convinced that this was a signal that something was wrong with him, he consulted a neurologist. He took the usual diagnostic tests and passed them all. His brain scans looked quite normal. He died two years later and post-mortem brain pathology showed he had suffered from advanced-stage Alzheimer's, which would have rendered most individuals cognitively non-functional.

Wetherill's case illustrates how those who are cognitively fit thanks to vigorous intellectual stimulation can be protected from the mental decline that comes with age.

People who are receptive to novelty and innovation also tend to be good in a crisis, because they



autonomy and thus never fully achieves his potential.

But too great a personal stake in the game creates stress, which activates the amygdala and other limbic brain areas that constitute the brain's security system. When the limbic system kicks in, your brain reverts to instinctive, pre-programmed survival behaviours rather than engaging in higher-order learned ones. In extreme situations, stress can trigger anxiety disorders and chaotic behaviours. And the more driven you are, the greater the risk this will happen. Ambitious people don't like failing or looking stupid. As the social scientist Chris Argyris (one of the fathers of organisational-learning theory) put it, smart people have trouble learning because it involves so much floundering and failure. Play is hard work.

Step 3 Search for patterns

The brain's left hemisphere is the primary source of neural information that a person uses to carry out routine tasks. The right deals with novelty; it is the more "poetic" part of the brain, operating in metaphorical, image-based, imaginative ways. The left hemisphere often gets taken for granted as essentially determined by genetic inheritance, while many cognitive fitness exercises directed at business people focus on stimulating the right hemisphere.

This is partly because of the classic stereotype of business people

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as dull types in suits who need to loosen up. Creativity is seen as the panacea for corporate ills, but while it is important to stimulate creative, divergent thinking, you'll derive equal benefit, and perhaps more, from stimulating the analytic neural networks that are often viewed as left hemispheric. These networks comprise the standard operating procedures that you use daily.

Recent neuro-imaging investigations have identified one of the engines that serve left-hemisphere performance: constellations of neurons that neuroscientists such as Elkhonon Goldberg call "attractors", which mediate critical executive functions in the brain.

Attractors are especially supportive of the role played by that hemisphere; they are organised to orchestrate thought and action with great efficiency and effectiveness. Together they form the basis of what the Nobel laureate Herbert Simon referred to as pattern recognition, which he considered to be the most powerful cognitive tool we have at our disposal. Pattern recognition is the brain's ability to scan the environment, discern order and create meaning from data and thereby quickly assess a situation so that the right action can be taken quickly.

It is a complex chain reaction that uses the highest-level capacities for abstraction (an idea that doesn't lead to any practical result) and reflection, both based on the deepest repositories of stored experience. For executives trying to make sense of a rapidly changing

evolutionary biology could give you any number of explanations for the survival value of these behaviours, but if you care about your company's cognitive fitness and your management team's ability to discern patterns you need to be on guard against the inclination to pick only one kind of leader.

Selection programs that draw from the same limited population of executives promote an aggregation of cognitive templates based on shared experience and common pattern recognition. When a perspective becomes codified, people stop looking for new patterns and your company sacrifices some of its cognitive fitness – and competitiveness.

Step 4 Seek novelty and innovation

For many years, it wasn't clear how critical a role the right hemisphere played in obtaining the knowledge and wisdom that is later encoded in the left side. Research is now revealing that the right hemisphere is the exploratory part of the brain, dedicated to discovery and learning.

When a child studies a language or an adult takes up painting, the right hemisphere is exercised. Later, the new knowledge (language, for instance) migrates to the left hemisphere, where it is organised, encoded and made available for day-to-day retrieval. If the left hemisphere is about language expression, then the right is about language acquisition. As with the left side, the neural networks on the right benefit from exercise.

The more new things you learn, the better you become at learning. Actively engaging in novel, challenging activities capitalises on your capacity for neuroplasticity – the ability of your brain to reorganise itself adaptively and enhance its performance. Studies of older adults usually show that those who live this way possess more

are open to seeing opportunity in even the most dire situations. What we're talking about is having an open attitude that Buddhist monks refer to as the beginner's mind, a willingness to step back from prior knowledge and existing conventions, starting over and cultivating new options. This is a challenge that typically activates right-hemisphere cognitions. If you are really serious about creating innovative options, you couldn't do better than turning to Buddhist thinking. In *Zen Mind, Beginner's Mind*, Shunryu Suzuki observes: "In the beginner's mind there are many possibilities, but in the expert's, there are few".

Adopting a protege also scores points. A stream of research reveals that the person who often gets the most value from a mentoring relationship is the mentor, who is exposed to information, queries and ideas from which she may otherwise be too remote.

A brain-positive culture that encourages people to put their whole brains to work can become a reality only with the right kind of committed leadership. The future belongs to companies with leaders who develop cognitive fitness for themselves and their organisations. CEOs need to be cognitive coaches to employees whose work and decisions create and propel the company's strategy.

Roderick Gilkey is an associate professor of organisation and management at the Goizueta Business School at Emory University in Atlanta, and an associate professor in the department of psychiatry and behavioural sciences at the Emory University School of Medicine. Clint Kilts is the Dr Paul Janssen Professor in the department of psychiatry and behavioural sciences.

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