

# Brain Games

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Whether in the office, on the sports field, or simply relaxing at home, brain training will soon be an integral part of your daily routine. That's the bold promise of San Francisco-based Lumos Labs.

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**I**n the US, patients with neurological conditions, professional athletes, and anyone interested in improving the way their brain works are increasingly being given a prescription to play. Welcome to the contentious field of cognitive training.

Proponents claim that a daily dose of computer games can make you more focused, boost memory and processing speed, quicken your decision-making, and improve your problem-solving ability. “Outrageous hyperbole,” say cynics for whom the notion that brain performance can be altered through play is a frivolous misreading of the facts.

One thing we do know for sure is that more than 20 million people regularly play Lumosity, a web- and mobile-based suite of 35 brain training games developed by San Francisco's Lumos Labs. These \$10-a-month subscribers hope that by chasing virtual birds and forming words from letters in bubbles they can arrest decline in brain performance.

Aptly described by online magazine *Health Guidance* as a kind of ‘social networking site for the brain,’ Lumosity is a uniquely digital creation. With its funky interface (mobile-friendly buttons, colorful graphs) and comprehensive personalization options, it marries cutting-edge neuroscience with forward-thinking UX design for a seamless online experience.

Once users have created a profile, they can track their training regime across areas including speed, attention, memory, problem-solving, and flexibility. Lumosity's central claim is that it can improve intelligence by ‘challenging cognitive faculties using exercises in which the difficulty level constantly adapts to each person's individual development.’

By pitting itself against increasingly difficult problems, they say, the brain can actually reshape itself to become more efficient, improving cognitive power.

It's something that, until recently, scientists believed was impossible in adults, so it's only natural that this young discipline has encountered skepticism, says Joe Hardy, VP of Research and Development at Lumos Labs. “When I graduated in 2002, we were taught that the brain was relatively fixed. Now we know it is very adaptable,” he says, referring to the science of ‘neuroplasticity,’ the brain's lifelong ability to reshape neural connections when faced with new experiences. “And with functional MRI technology, you can actually see the changes to brains that take place during training.”

Scientists used to think that a dip in brain performance was caused by loss of cells as we get older. In fact, it's a problem of retrieval, not storage, as aging decreases the level of chemical messengers in our brains. But cognitive training, claim advocates, can lead to the release of dopamine – a neurotransmitter. Thus, given the right challenge, the brain can actually become faster and more efficient.

Hardy tells many stories of subscribers who believe cognitive training has benefited them: A 23-year-old entrepreneur who struggled with name recognition when networking; a 34-year-old financial trader who uses Lumosity to quicken his deal-making reflexes; a 28-year-old boxer recovering from concussion; a 45-year-old writer battling aphasia following a traumatic brain injury.

In an effort to confound detractors, Lumos Labs has rolled out what it calls an ‘open science model,’ providing relevant clinicians – ➔



to their arms that measures neurotransmissions flowing through the central nervous system to determine concentration peaks. A similar tool is being developed for golfers: Before making a putt, a player wearing BodyWave would wait for the green light indicating full concentration.

And in the workplace, too, companies are beginning to see merit in using cognitive training to help employees become ‘executive athletes.’ At SAP in Melbourne, Australia, for example, workers have undergone a range of cognitive tests and training, learning how to deal with stress and manage conflict. Similar training has been trialed by executives at National Australia Bank, Cisco, and Accenture.

“As the world becomes more information-rich and complex, cognitive training will become integrated in all kinds of processes, from healthcare and education to workplace performance,” promises Joe Hardy. “In five or 10 years, everyone will be engaged in cognitive training.” Whatever its detractors may think, brain training clearly isn’t done with bold claims yet 🍷

including psychologists, occupational therapists, speech pathologists, and neuropsychologists – with access to free trials of Lumosity in exchange for feedback on how it impacts patients. Hardy says the company has collaborations with research institutions on most continents. (“We’re still looking for that Antarctic connection,” he jokes.)

**I**n sports, professional athletes are discovering that the brain is essentially a muscle, like our legs and arms, and like any muscle, it needs to be exercised. Cognitive areas such as memory, reaction time, and coordination can all be trained.

Santa Monica-based research organization Neurotopia runs a laboratory for Red Bull’s extreme sports athletes in which training begins with ‘neurofeedback’ and ‘EEG brain-mapping’ to check levels of focus, endurance, stress recovery, and reaction speed. From this baseline test, a bespoke interactive video game is developed for each athlete (such as flying a spaceship through an obstacle course) controlled by their brain. The goal is to train the brain into finding that sweet spot where the athlete is focused but relaxed.

In North Carolina, the RCR NASCAR pit crew, who need to be able to remove five lug nuts in a single second, have been learning how to focus better using BodyWave – an iPod-sized tool strapped

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