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THE JOURNAL REPORT: ENCORE

Putting Brain Exercises to the Test


BY KELLY GREENE
 February 3, 2007; Page R1

A host of new products are arriving in stores and online to help people "exercise" their brains. But what are you getting for your time and money?

At least a dozen companies are promoting software, Web sites and gizmos that promise a daily dose of mental stimulation. The products are the vanguard of what scientists expect will be a flood of tools for a ready market: baby boomers who are anxious to stave off Alzheimer's disease and related ills.

The thinking -- and advertising -- behind most of the products is simple: If 30 minutes on the treadmill each day is good for your body, 30 minutes (or so) of playing computer games and similar activities must be good for your noodle.

WALL STREET JOURNAL PODCAST



You may be able to help keep your brain in shape as you get older, including four big factors that seem to reduce the risk of cognitive decline. Kelly Greene talks with Marilyn Albert of the Johns Hopkins University School of Medicine, who co-wrote the 2002 book, "Keep Your Brain Young."

Scientists don't universally accept the use-it-or-lose-it mantra. Some say there's little evidence that engaging in mentally stimulating activities actually slows mental aging. Other researchers argue that training can improve mental performance -- meaning mental exercise can help your brain function at a higher


level than it would otherwise.

For the moment, definitive answers to the question -- Will brain exercise help me? -- will have to wait for additional testing. That said, if you wish to hedge your bets, as many consumers are doing, what follows is a look at a half-dozen of the most widely available "workouts."

We asked a panel of nine experts, who deal with brain-aging issues in different ways as part of their day jobs, to try these tools at home and in the office. How do they work? What science, if any, is involved? And are these products more about "fun" than about health?

The answers indicate that no one has cornered the market on a tool that's scientifically proven, easy to use -- and entertaining. What is clear, the panel notes, is that the 50-plus crowd is already thinking about mental health and how best to maintain it.

WALL STREET JOURNAL VIDEO



Can videogames and simple do-at-home exercises called "neurobics" keep baby boomers' brains sharp? Dow Jones Online's Ed Crane speaks with two experts.

"Boomers are looking at this remarkably increased longevity and, for the first time, are very seriously wondering: Are their minds going to keep up with their bodies?" says Gene Cohen, director of George Washington University's Center on Aging, Health and Humanities in Washington, D.C.

Brain Age

THE PRODUCT: This is the only portable product in the bunch. Brain Age: Train Your Brain in Minutes a Day is a program for the Nintendo DS, a handheld device that folds up like a book and uses a stylus. You start by assessing your so-called brain age, with the idea of playing games to lower it. The goal is to practice every

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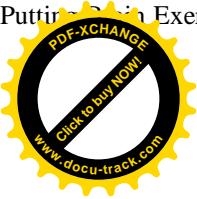
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day to keep yourself sharp, getting as close as you can to 20, the lowest brain age allowed. (The highest is the 80s.) The software uses simple math-related activities and literature passages to read aloud. It was released almost two years ago in Japan by Nintendo Co. and arrived in the U.S. last year.

THE JOURNAL REPORT



Read about how [Menopause hormones](#) appear to reduce risk of diabetes. Plus, [why strength training](#) should become a bigger part of your fitness routine.

- See the complete [Encore report](#).
- Plus, [see the products our testers tried](#). They rated ease of use, clarity of directions, and fun on a scale of 1 to 5, with 5 being best.

THE SCIENCE: Brain Age features a cartoon of a Japanese neuroscientist, Ryuta Kawashima, whom Nintendo's developers consulted. "It can make you feel sharper, but we don't want people to think it's a medical thing," says Perrin Kaplan, a Nintendo spokeswoman.

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Persona

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THE REVIEW: Our testers, two of their husband teenage kids loved using this set of games on the go. The sudoku game -- a math puzzle -- was liked having their speed measured on a scale that runs from "walking" to "rocket-ship."

For another math game, you write answers with a stylus as fast as you can -- but the device had our users' writing. And the device's voice-recognition software didn't work flawlessly: During a test the user to say the color shown on the screen, four testers had trouble getting the machine to recognize the pronunciation of the word blue.

And the program's brain-age assessment fluctuated -- wildly, in some cases. Brent Green, a De consultant who specializes in advertising aimed at boomers, saw his brain age fall to 35 from 77. Margolis, a Boston attorney who specializes in elder law, lowered his to 38 from 80. And Mollie, president of [Healthwise Inc.](#), a Boise, Idaho, nonprofit, went to 23 from 80 after seven sessions "question the meaningfulness of this measurement."

Then there's the concept of brain age itself. Our panel didn't necessarily aspire to have the same brain age as they had in their 20s. They suggested assessing "functionality" instead.

BrainBuilder.com

THE PRODUCT: BrainBuilder.com focuses specifically on improving the user's working memory. Alex Doman, president of Advanced Brain Technologies LLC, the Ogden, Utah, education-software developer developed BrainBuilder. The Web site first puts users through a cognitive test to assess their "baseline" measure of how many numbers in a row you can take in, store, process and recall in the correct order. The test establishes a baseline for how effectively one's eyes and ears process bits of information, which is then used to make it more dynamic and interesting."



THE SCIENCE: The company is an offshoot of the Child Development, started by Mr. Doman's father, a 30 years researching digit span. Advanced Brain Technologies has tested BrainBuilder's effectiveness, Mr. Doman says.

THE REVIEW: Our testers liked the "focus" exercise. They resist hitting the space bar when you see an eyeball pop up on the screen. Paul Nussbaum, a Pittsburgh neuropsychologist who has studied recent sleep, diet and exercise on a scale from 1 to 100, liked the site's "brain diary," a tool with which

correlates with their brain-exercise results. But the way the site quantifies those results wasn't ideal. Mettler, author of a self-care health guide. "Being rated 'L3/8322' in focus doesn't say much to me. Recalling numbers in order might be a useful way to assess memory, our users found it tedious. BrainBuilder the least fun among the products sampled. One likened it to eating cooked spinach."

Brain Fitness Program 2.0

THE PRODUCT: This software, by San Francisco-based Posit Science Corp., has six exercises to test the brain's ability to process, store and recall speech. The program -- 40 one-hour sessions, which



focuses on listening, with the user wearing provided headphones.

By improving your ability to hear and process language, you can also improve your recall. During one exercise, you listen to sounds going up or down in frequency and click with a computer corresponding "up" or "down" arrow. In another, you practice differentiating between sounds that are close together, such as "dah" and "gah."

Customers get an 85-page book explaining the science behind the program and each exercise.

THE SCIENCE: The company has hired in-house researchers and tapped about 50 outside scientists and experiments showing ways the program can benefit the brain. They are led by Michael Merzenich at the University of California, San Francisco, whose work is the program's foundation.

A study published in a peer-reviewed journal last year found that the program improved memory performance on average. The subjects -- 62 participants ages 60 to 87 -- improved their performance on programs designed to test well as their overall memory skills, as measured with a standardized battery of neuropsychological tests. The study showed those gains three months after completing the program.

THE REVIEW: Our testers considered Brain Fitness 2.0 the easiest product to use. It provides clear directions, with a well-written handbook and start-up DVD. They also considered it the most successful.

Nancy Ceridwyn, an executive at the American Society on Aging in San Francisco, says she "enjoyed the program of travel and animals" shown after the exercises and accompanied by a brief sound clip, which "motivated me to continue." Although she initially didn't consider the product fun, she kept using it because "I can see improvement, and I could see where I needed to work."

Other testers found the exercises "very basic and very boring," in the words of Colin Milner, with the International Council on Active Aging, a trade group in Vancouver, British Columbia. Adds Peter Mettler, director of the New England Cognitive Center, in Hartford, Conn.: "The science is there, but if you don't have the experience both stimulating and pleasurable, they just won't do it."

Our testers also balked at the time commitment: "Forty-five minutes-plus a day?! I don't have time for that," Mettler says.

Happy Neuron

THE PRODUCT: Quixit Inc. of Menlo Park, Calif., has developed 40 Web-based games with the goal of cross-training five skills likely to decline with age: memory, attention, language, reasoning and problem-solving.

For example, a memory game called An American in Paris has players match landmarks from a list on a map in a specified sequence. A tracking system keeps a record of which games players play and how well they did.

THE SCIENCE: Three French scientists developed the games with an eye toward ensuring user enjoyment and "cognitive agility." A pilot study in Des Moines, Iowa, found that 10 patients with memory problems showed "improvement in cognitive skills" after training with Happy Neuron games three times a week for six weeks, with eating a specialized diet and taking part in physical exercise as part of a "brain wellness" program.

THE REVIEW: Our testers gave the games high marks for their creativity. Ms. Ceridwyn, who recently led a national poll about brain-health awareness, raved about Play With the Haikus, saying it inspired her to try writing poetry, an old hobby. "A product for edgy, caffeine-hyped baby boomers," adds Ms. Merzenich.

There were a few glitches. The games have graphics with too much white-on-gray for older eyes, and some had difficulty using the site's "flash" software. Half of our testers wanted verbal instructions and some were frustrated by the ego-crushing factor. Happy Neuron told one tester she is "slow and below average."

MindFit

THE PRODUCT: This program, made by CogniFit Ltd., is loaded from a CD or downloaded to a computer for Internet access to use. It involves 24 sessions and is designed to be used for 20 minutes at a time for several months.

The program evaluates the starting point for each user, based on 14 memory and perception skills.



on the weaker skills. The "Picasso" task, for example, trains visual short-term memory by having you scan an abstract design made up of blocks with different designs, and then recreate it with a different set of blocks.

THE SCIENCE: CogniFit, started eight years ago by an Israeli psychologist, says it has shown experiments that cognitive skills can improve with regular training. For example, 119 MindFit users before and after training showed "highly systematic improvement," according to the company's Web site. Yoqneam, Israel, has had no research findings published so far in scientific journals.

THE REVIEW: Our testers were impressed with MindFit's assessment tools and the variety of tasks to do task-switching, and had to change your concentration. It really felt like I was using part of my brain to use very much," Ms. Mettler says. Another plus: The product "clearly outlines the benefits of each exercise." "I found the strongest motivation for using the program."

Adds Ms. Said: "This one was based the most solidly in cognitive science and what we think is best for our users."

Our users also liked MindFit's instant feedback. They found the program's assessment of their intelligence rather than a single number tagging their "brain age," more satisfying and "reality-based."

But the testers felt that the evaluation required to start the program -- three sessions spread over a week -- was long, damping their enthusiasm.

MyBrainTrainer.com

THE PRODUCT: The 16 exercises in MyBrainTrainer.com last just a few minutes each and test a variety of skills: reflexes, cognitive quickness, decision making, perceptual acuity, visual recognition, memory and attention. The site measures reaction time to the thousandth of a second and lets users track their own results.

THE SCIENCE: Fifty people who completed 21 sessions on MyBrainTrainer.com in one month showed a nine-point increase in IQ, compared with a one-point increase among a control group, according to a study by the Los Angeles-based company. The Web-site users also showed enhanced "cognitive efficiency and speed."

THE REVIEW: MyBrainTrainer ranked last among our testers for ease of use and clarity of directions. But our testers enjoyed two of the exercises: a word-to-picture matching game with an "element of surprise" and a decision-making game that Mr. Green describes as "consistently challenging without becoming frustrating." He also liked the option of competing online with other exercisers.

And the winner is...

When our panel of nine experts gathered (by telephone) to talk about their experiences after finishing the tests, things became clear: The six products are tackling mental exercise in starkly different ways, focusing on different parts of the brain and different skill sets, from memory to hearing to reaction time. They offer a lot of different choices, with more entering the market each year.

But all those differences also made it tough to come up with a "best pick," along with the fact that each product has at least one flaw, as noted above. In fact, our panel, composed largely of scientists, nonprofit executives and journalists, was surprised to find that their favorite picks largely came down to entertainment value -- "rewinding video, sophisticated graphics or sound. They found a need for the bells and whistles to combat boredom."

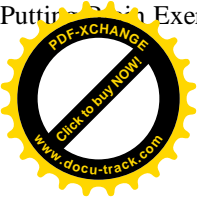
Posit Science's Brain Fitness Program 2.0 took top honors for ease of use and clear directions. It was the only product that Posit's product -- one of the few so far to undergo clinical trials and peer-reviewed research -- had solid scientific grounding. But it ranked low for "fun."

The top pick in that category was MindFit, chosen by our testers for the variety of its tasks and Nintendo's Brain Age was a close second, mainly because it's used on a handy little device.

"If cognitive exercise isn't at least pleasant, we can't keep people engaged for very long," Ms. Said says. "It's all about balancing fun with the challenge. When you finish a session, you should feel like you've been doing something that doesn't mean you can't enjoy it."

Brain Games

Here are the products our testers tried. They rated ease of use, clarity of directions, and fun on a scale of 1 to 5, with 5



PRODUCT/MANUFACTURER/WEB SITE	PRICE	PRODUCT DESCRIPTION	EASE OF USE	CLARITY OF DIRECTIONS	FUN	THE GOOD	THE BAD	MEMORABLE
Brain Age Nintendo Co. brainage.com	\$129.99 for Nintendo DS device; \$19.95 for software (1)	Palm-sized device and game chip	3.5	3.7	3.7	Portability is this product's greatest asset.	Voice and writing recognition need work.	Fun walk on the beach -- but is it a workout?
BrainBuilder.com Advanced Brain Technologies LLC brainbuilder.com	\$49.95 (12-month single membership) (2)	Web site	3.6	3.7	2	Users liked the "brain diary" that monitors impact of sleep and diet.	The "auditory reverse digits" exercise was "like drowning."	Jogging on the same track every day.
Brain Fitness Program 2.0 Posit Science Corp. positscience.com	\$395	CD and headphones; requires Internet	4.5	4.8	2.6	Grounded in science; testers quickly made progress.	Pressing "up" and "down" arrows can get boring.	Personal trainer who's knowledgeable not dazzling.
Happy Neuron Quixit Inc. happyneuron.com	\$9.95 a month or \$99.95 a year	Web site	3.6	3.9	3.6	Games relevant to adult leisure life: touring cities, haiku.	Some testers wanted more variety and sound effects.	Well-equipped but skewed to fitness buffs.
MindFit CogniFit Ltd. www.cognifit.com	\$149 for CD or \$129 to download	CD or downloadable; requires Internet	4.0	4.4	3.9	Adapts well to user's ability; testers liked matching pictures.	Baseline setup was extremely long, taking at least three days.	All the machines -- a total workout.
MyBrainTrainer.com MyBrainTrainer LLC mybraintrainer.com	\$9.95 (four-month membership)	Web site	3.4	3.5	3.1	Online community; individualized training plan.	Many instructions in "teensy-tiny print."	Sports facility for highly competitive athletes.

1) Price on CircuitCity.com; rest of prices from proprietary Web sites

2) Other membership options available

Source: WSJ reporting

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