

ORGANIZATION NEWS

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Brain Gaming: A User's Product Guide for the Clinician



Brain gaming, also referred to as brain training, uses a broad range of interactive technologies (eg, smart phones, tablets, computers) to deliver games (eg, thinking assessments and exercises) designed to engage cognitive skills. Brain gaming is gaining popularity among adults and individuals with cognitive dysfunction. Interest in the therapeutic benefits of brain gaming has been growing among researchers and clinicians. At this time there is very limited scientific evidence supporting the benefits of brain gaming technologies for preventing cognitive decline and/or improving cognitive function.

This user's guide is designed to inform clinicians and other health care professionals about the current available brain gaming technologies. It highlights pros and cons of brain gaming and provides additional references that may be used to enhance knowledge of brain gaming. A sample of available games is provided in [table 1](#). Information in [table 1](#) includes the following: the brain game name and website address; the type of devices the game can be played on (eg, computer, mobile phone); and the relative cost to buy or play the game. Where applicable, links to peer-reviewed evidence are provided in the table note.

Pros to brain gaming

1. May be fun and engaging.
2. May target a variety of cognitive skills, including
 - Attention
 - Concentration
 - Critical thinking
 - Executive function
 - Language
 - Mathematics skills
 - Memory
 - Mental flexibility
 - Problem-solving
 - Reading
 - Reasoning
 - Speed of processing information
 - Visual motor skills
 - Working memory
3. Many brain games can be played on personal devices (eg, computer, game console, mobile device).
4. Some programs have features that may improve consumer satisfaction, including ability to
 - Customize games according to interest and desired degree of difficulty.
 - Adjust difficulty as performance on games changes.
 - Track progress.
 - Compete with friends.
 - Adjust font size, sound, and game display.

Cons to brain gaming

1. There is a lack of scientific evidence supporting the benefits of brain gaming and limited product testing.

- Many products have never been tested or validated for the purpose of improving cognitive skills.
 - Product messaging, in some instances, implies that brain gaming will improve overall cognitive abilities. However, these claims have not been rigorously tested. There is no evidence that skills learned through brain gaming translate to better performance in daily life activities. For example, improving memory through brain gaming does not transfer to remembering to take medications.
2. Some games are costly (purchase of hardware, software, subscriptions, etc).
 3. Access to and knowledge of computer or mobile technologies are required for the brain games referred to in this guide. High-speed Internet access is also needed for many brain gaming products.
 4. Repeated and prolonged use of the gaming device and/or poor posture during use of the gaming device may result in physical distress (eg, eye strain, shoulder, neck, lower back, wrist pain).
 5. Although brain gaming is convenient to perform at home, assessment and guidance from a health care professional trained in cognitive rehabilitation may be required to identify games suited to individual needs and to optimize results.
 6. Companies may engage in predatory practices. Specifically, in some instances, advertising may take advantage of cognitively vulnerable populations who may not understand how to evaluate product effectiveness prior to purchasing.

Further your knowledge about brain gaming with the following additional sources:

1. Dembosky A. Will doctors soon be prescribing video games for mental health? NPR. 2015. Available from: <http://www.npr.org/sections/health-shots/2015/08/10/430149726/will-doctors-soon-be-prescribing-video-games-for-mental-health>.
2. Doraiswamy PM, Agronin ME. Brain games: do they really work? Scientific American. 2009. Available from: <http://www.scientificamerican.com/article/brain-games-do-they-really/>.
3. Hambrick DZ. Brain training doesn't make you smarter. Scientific American. 2014. Available from: <http://www.scientificamerican.com/article/brain-training-doesn-t-make-you-smarter/>.

Table 1 Brain games for adults

Name and Website	Device	Cost
Brain Fitness (www.mindsparke.com)	Computer and phone app (iOS)	<\$20/mo. Phone app download fee: <\$10.
BrainGymmer* (www.braingymmer.com)	Computer	<\$10/mo.
BrainHQ-Posit Science* (www.brainhq.com)	Computer and phone app (iOS and Android)	<\$20/mo. Free phone app download and free select games; in-app purchase: <\$20/mo.
Braintrain* (www.braintrain.com)	Computer	\$60/y.
Brainturk (www.brainturk.com)	Computer and phone app (iOS and Android)	Free for basic games; upgrades: <\$10/mo. Free phone app download; in-app purchases: <\$5.
Brain Workshop (www.brainworkshop.sourceforge.net)	Computer	Free.
CogMed* (www.cogmed.com)	Computer	>\$150 (set by Cogmed Coach).
Cognifit* (www.cognifit.com)	Computer and phone app (iOS)	<\$20/mo. Free phone app download and free select games. In-app upgrade: <\$20/mo.
Dakim BrainFitness* (www.dakim.com)	Computer	Free initial session. Upgrades: <\$20/mo.
DaisyBrains (www.daisybrains.com)	Computer	Free. Upgrade: <\$20/mo.
Elevate (www.elevateapp.com)	Phone app (iOS and Android)	3 training sessions free. In-app upgrade: <\$10/mo.
Lumosity* (www.lumosity.com)	Computer and phone app (iOS and Android)	Free for basic. Upgrade: <\$20/mo. Free phone app download and free select games. In-app upgrades: <\$20/mo. In-app purchases: \$1-\$60.
Memorado (www.memorado.com)	Computer and phone app (iOS and Android)	<\$30/mo. App download: free. In-app purchases: \$4-\$60.
MyHAPPYNeuron* (www.happy-neuron.com)	Computer and phone app (iOS and Android)	<\$20/mo. App download: free to <\$10/mo. In-app upgrades: <\$5.

NOTE. In-app purchases are purchases made from within a mobile application.

Abbreviation: app, application.

* Indicates that peer-reviewed empirical evidence has been published on that specific product (further information is available from: www.braingymmer.com/en/blog/the-science-behind-braingymmer, www.brainhq.com/world-class-science/published-research, www.braintrain.com/cognitive-training-research/, www.cogmed.com/published-research, www.cognifit.com/neuroscience, www.dakim.com/science/#proven, www.lumosity.com/hcp/research/bibliography, and www.happy-neuron.com/the-method/scientific-validation, respectively).

4. Parker-Pope T. Do brain workouts work? Science isn't sure. The New York Times. 2014. Available from: http://well.blogs.nytimes.com/2014/03/10/do-brain-workouts-work-science-isnt-sure/?_r=1.

Authorship

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Disclaimer

Table 1 is not intended to be an exhaustive list of available products. The information is subject to change over time.

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