STRUCTURED REVIEW OF COMPUTER-BASED PROGRAMS AND VIDEOGAMES FOR EXECUTIVE FUNCTION RETRAINING

Introduction

The prevalence of older individuals with executive function deficits is growing as the population ages and more individuals live into old age. Conditions such as stroke also affect executive functioning (Hachinski et al., 2006). Globally, executive function refers to "high-level cognitive functions that provide control and direction of lower-level, more automatic functions" (Stuss, 2009, p. 8) and encompasses cognitive processes including: initiation, planning, sequencing, monitoring, problem-solving, divided attention, flexibility, working memory and inhibition (Anderson, 2008; Godefroy & Stuss, 2007; Lezak, 1989; Stuss, 2009). Clinicians are seeking ways of working to improve executive function in their patients and one of the ways that has been suggested is through the use of computer-based tools and videogames that enable targeted remediation of specific executive processes, for example.

The objective of this structured review was to provide clinicians with relevant computer-based tools / videogames that might be included within a more comprehensive program of cognitive rehabilitation. These tools should be chosen in light of their content/characteristics and according to the needs of the client (Pépin, Loranger & Benoît, 1995).

For the purpose of this review, we selected and critically appraised a variety of tools with different characteristics (e.g. CD-ROMs versus brain training websites versus videogames, available in French and/or English, in different price ranges) that might be suitable for different training needs and contexts. It should be noted that the evidence of effectiveness of most of these tools still remains limited and many of the studies published to date have been conducted in healthy older adults, and not specifically in the stroke population.

Note 1: Prices are current as of 2013.

Note 2: Please note that this review of studies on the effectiveness of software is not exhaustive and additional studies may have been published since our review from September 2011 to March 2013. Please contact the software provider for updated information.

BRAIN TRAINING WEBSITES

Software	**Executive function components** **Planning** **Problem-solving** **Inhibition** **Working memory** **Divided attention** **Flexibility**	➢ **Description of the software** ✓ **Characteristics of the cognitive training**	➢ **Development and scientific validity** ✓ **Effectiveness**	**Clinical utility** ○ **Target clientele** ○ **Pre-requisite abilities** ○ **Language** ○ **System requirements** ○ **Ordering information** ○ **Cost**
CogniFit	X X X X X X	➢ Includes 28 brain training games targeting different cognitive skills (e.g. planning, eye-hand coordination, visual short-term memory, working memory, naming, divided attention, shifting, inhibition, spatial perception, focus, etc...) ✓ Levels of difficulty and training tasks automatically selected by the software (based on the results of a pre-training assessment that determines the user's cognitive profile) ✓ The program automatically adjusts the training progress by monitoring the client's performance ✓ Duration of each exercise is variable (most exercises are 4 minutes each) ✓ Client's performance is recorded during each training session and presented in a graph; also each cognitive skill is recorded individually ✓ Uses auditory and visual feedback ✓ iPhone and iPad applications are also available.	➢ Developed and validated through neurology, cognitive science and brain research. ✓ Published studies show improvements in cognitive function in healthy older adults. Other studies in individuals with multiple sclerosis and dyslexia were also published (see http://www.cognifit.com/neuroscience). No studies on the effectiveness of CogniFit in persons with stroke were found.	**Target clientele:** Developed for healthy older adults and also adults and children with various neurological disorders, learning disabilities or attention disorders **Pre-requisite abilities:** - Using a mouse to point and click - Other pre-requisites: understanding written instructions and basic attention skills. **Language:** English, French, Spanish (and 7 other languages) **System requirements:** - Internet access **Contact information:** www.cognifit.com *Click on the following link to watch videos of the program:* http://videos.cognifit.com/ **Cost:** Free registration. All training free except for some additional applications.
Lumosity	X X X X X X	➢ Includes over 35 games and exercises to enhance brain functions ➢ 5 types of game categories available: Speed, memory, attention, flexibility and problem-solving ➢ Uses visual and/or auditory stimuli	➢ Designed by neuroscientists and game developers. Based on principles of neuroplasticity. ✓ Some studies on Lumosity showed improvements in	**Target clientele:** All individuals. **Pre-requisite abilities:** - Using a mouse to point and click - Other pre-requisites: understanding written instructions and basic attention skills. - Some exercises require typing on a keyboard

Software	Executive function components Planning Problem-solving Inhibition Working memory Divided attention Flexibility	➢ **Description of the software** ✓ **Characteristics of the cognitive training**	➢ **Development and scientific validity** ✓ **Effectiveness**	**Clinical utility** ○ **Target clientele** ○ **Pre-requisite abilities** ○ **Language** ○ **System requirements** ○ **Ordering information** ○ **Cost**
		✓ Training level of difficulty is automatically adjusted by monitoring the users performance ✓ Training may be customized according to the user's goals ✓ A personalized Brain Performance Index is available to monitor the user's development in each area of cognitive function to identify strengths and weaknesses ✓ Duration of each exercise varies depending on the exercise; each training session lasts approximately 15 minutes.	cognitive and executive function performance after training in survivors of childhood cancer, healthy young adults and persons with mild cognitive impairment (see http://hcp.lumosity.com/research/completed). The pilot study on Mild Cognitive Impairment showed improvement in sustained attention in trained participants compared to controls. While no published studies on the effectiveness of the Lumosity in persons with stroke were found, an ongoing study is currently underway to assess Lumosity's effect on patients with stroke.	**Language:** English **System requirements:** Internet **Contact information:** www.lumosity.com **Cost:** Free trial and registration online Monthly : 14.95/month Yearly : 6.70/month Two Year : 4.99/ month Lifetime cost: 299.95 30-day money back guarantee

Other brain training websites that might be considered for executive function retraining:

BrainHQ from Posit Science: http://www.positscience.com/ (online brain training system that includes many exercises including all the exercises in Brain Fitness Program & InSight CD-ROMs (see the section on CD-ROMs below).

Happy Neuron: http://www.happy-neuron.com (brain training program developed for home use; a Brain Fitness CD-ROM is also available)

Scientific brain training PRO: http://www.scientificbraintrainingpro.com/programs (offers 4 different training programs adapted for different clientele i.e. rehabilitation program for persons with cognitive impairments, psychiatry program, aging well program and memory treatment program)

Vigorous Mind: http://www.vigorousmind.com/ ("web-based brain wellness & social networking platform for senior living, home care and hospitals")

CD-ROMs

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Attentionnel *(Laporte, Pépin & Loranger, 2002a,b,c,d)*	X X	➢ Includes 6 software targeting different attentional processes (i.e. alertness, vigilance, sustained attention, selective attention, divided attention) ➢ Uses visual and/or auditory stimuli ✓ Several levels of difficulty ✓ The program automatically adjusts the training progress according to the client's performance ✓ Duration of each exercise: ≈7-8 minutes ✓ Client's performance is recorded during each training session and summarized in a table ✓ Instructions and feedback presented with auditory and visual support ✓ Integrates familiar daily life scenes that facilitate understanding of potential real-life contexts in which the skills could be used (↑ ecological validity)	➢ Developed by psychologists/ researchers in psychology; development of the tasks is based on psychological/ neuropsychological models of attention ✓ No published studies on the effectiveness of these software in persons with stroke were found.	**Target clientele:** Developed for adults and children with various neurological disorders, learning disabilities or attention disorders **Pre-requisite abilities:** - Most tasks only require pressing the space bar on the keyboard. For a few tasks, the client also needs to use the computer mouse; - Other pre-requisites: understanding verbal *or* written instructions, basic attention skills. **Language:** French **System requirements:** - PC or PC compatible microcomputer with a Pentium III processor - Graphics card with at least 4 M octets of memory - Colour screen with screen resolution of 800x600 - Standard CD ROM drive - Hard drive with at least 650 M octets of free space - Windows software (1998 or more recent) - Computer mouse, sound card and two speakers (or earphones) **Contact information:** http://www.psychotech.qc.ca/logiciels/attentionnel.htm Le Réseau Psychotech inc. 1440, boul. Louis XIV, C.P. 59012 Succursale Bourg-Royal, Québec (Québec), Canada, G2L 2W6 Tél: 418-659-7000 Fax: 418-659-7010 E-mail : info@psychotech.qc.ca **Cost:** 75$ per software, unlimited number of users on 1 computer

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NeuroActive Program: Complete Brain Training	X X X X X	➢ Includes 20 exercises involving various cognitive and executive functions ➢ Patients/therapists may follow a predetermined training program or select the exercises of their choice ✓ Three levels of difficulty: beginner, intermediate, advanced ✓ Training level is also customized to the person's skills by constantly analyzing their answers and adapting the program accordingly ✓ Duration of the exercises: ≈4-6 minutes per exercises; recommended duration of each training session = ≈20 minutes ✓ Provides written/visual feedback on performance	➢ Developed in collaboration with medical specialists and neuropsychologists ✓ No published studies on the effectiveness of this software in persons with stroke were found.	**Target clientele:** Designed for healthy individuals. Some tasks may be difficult for adults with cognitive impairments. **Pre-requisite abilities:** Using the mouse, understanding written instructions, sufficient attention skills. Patients with more important cognitive and/or motor impairments might need help from a caregiver/therapist to use the software and do the exercises. **Language:** French and English **System requirements:** *PC*: Processor 500 MHz or higher; operating system Microsoft Windows 98 or higher *Mac*: PowerPC G4 1.5 GHz; operating system OS 10.4 *For both Mac and PC:* - RAM: 256 MB - CD/DVD player - Sound Card - Speakers or Headphones - Graphics Card: 16 MB (supports 3D graphics) - Screen Resolution: 800x600 - 300 MB free space on hard disk **Contact information:** http://www.neuroactiveprogram.ca 2700 Jean Perrin Street, suite 300 Quebec (Quebec) G2C 1S9, CANADA Tel : 418-843-7885 E-mail: info@braincenterinternational.com **Cost*:** Professional Edition: unlimited number of users on 1 computer: 575$ Personal Edition: 99.99$ *Prices subject to change

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Posit Science: Brain Fitness Program	X	➢ Includes 6 exercises targeting precision and speed of auditory processing, auditory discrimination and working and short-term memory. Secondary gains are also in thought process and communication abilities. ➢ Uses auditory and visual stimuli ✓ The program automatically customizes the training progress/level of difficulty according to the client's performance during the exercise ✓ Uses familiar daily life scenes ✓ Recommended duration of each training session = 15 minutes to an hour; approximately 40 hours of content is available on this software ***Note:*** Posit Science recently developed an online brain training system, ***BrainHQ***, that includes all the exercises in the Brain Fitness Program CD-ROM and in the Insight CD-ROM (described below), plus many more (see http://www.positscience.com/why-brainhq). A *BrainHQ* subscription costs 8$ per month for a yearly subscription and 14$ per month for a monthly subscription.	➢ Developed by neuro-scientists, clinical collaborators and university partners. ✓ Some studies support the effectiveness of the Brain Fitness Program in outcomes such as memory and auditory processing speed particularly in the healthy aging population (see http://www.positscience.com/why-brainhq/world-class-science/peer-reviewed-research). No published studies in persons with stroke.	**Target clientele:** More extensively studied in the healthy aging population but can also be used with persons with various clinical conditions (e.g. mild cognitive impairment, traumatic brain injury, Alzheimer's Disease, schizophrenia, however not specifically studied in the stroke population). **Pre-requisite abilities:** - All tasks require the use of a mouse to point and click; - Other pre-requisites: understanding written instructions, functional hearing ability (can be used with hearing aids), and basic attention skills. **Language:** English **System requirements:** - Internet access *For Windows:* - Windows 2000, XP Home or Professional, Vista, Windows 7 - At least 256MB RAM (512MB for Vista) - 1 GHz or faster processor - x24 CD-ROM or DVD drive - 500MB free disk space - Windows XP with at least 512 MB RAM *For Mac:* - Power PC 10.3.9 - 10.4.x - Intel 10.4.x - 10.6.x - At least 512MB RAM - Combo drive/DVD - 1GB free disk space - Headphone jack **Contact information:** http://www.positscience.com/

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				Cost 199$ per software for two user licenses Note: A Total Training Package that includes all the exercises in Brain Fitness Program and Insight (described below) is also available: 369$ per software for two user licenses.
Posit Science : InSight	X X	➢ Includes 5 exercises working on visual precision, visual processing speed, "useful field of view", divided attention and working memory ➢ Uses visual stimuli ✓ The program automatically customizes the training progress/level of difficulty according to the client's performance during the exercise ✓ Uses familiar daily life scenes ✓ Duration of each exercise: a few minutes; approximately 50 hours of content is available on InSight ***Note:*** Posit Science recently developed an online brain training system, ***BrainHQ***, that includes all the exercises in the Brain Fitness Program CD-ROM and in the Insight CD-ROM, plus many more (see http://www.positscience.com/why-brainhq). A *BrainHQ* subscription costs 8$ per month for a yearly subscription and 14$ per month for a monthly subscription.	➢ Developed by neuro-scientists, clinical collaborators and university partners. ✓ Some studies support the effectiveness of the Posit Science training to improve cognitive functions, health-related quality of life, instrumental activities of daily living and overall health, particularly in the healthy aging population (see http://www.positscience.com/why-brainhq/world-class-science/peer-reviewed-research). No published studies in persons with stroke.	**Target clientele:** More extensively studied in the healthy aging population but can also be used with persons with various clinical conditions (e.g. chronic heart failure, traumatic brain injury, Alzheimer's Disease, however not specifically studied in the stroke population). **Pre-requisite abilities:** - All tasks require the use of a mouse to point and click; - Other pre-requisites: understanding written instructions, and basic attention skills. **Language:** English **System requirements:** - Internet access - 1GB free disk space *For Windows*: - Windows XP with at least 512 MB RAM - Windows Vista or Windows 7 with at least 1 GB RAM - 1 GHz or faster processor - x24 CD-ROM or DVD drive *For Mac*: - Intel processor; 10.5.x - 10.6.x - At least 512MB RAM - Combo drive/DVD

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BrainTrain: SmartDriver	X X X	➢ Includes driving games with 45 progressive levels of difficulty working on cognitive skills. ➢ Aimed to improve visual tracking skills, hand-eye coordination, planning, attention to detail, concentration, memory and patience. ✓ Beginner, intermediate, and advanced levels available ✓ The software records the person's scores and completed levels; scores can be printed; ✓ A minimum of 2 hours per week is recommended for the training to be effective (can be done in four half-hour segments). ✓ Duration of each exercise: A few minutes	➢ Developed in collaboration with medical specialists and neuropsychologists ✓ No published studies on the effectiveness of the SmartDriver in persons with stroke were found.	**Target clientele:** Children and adults (aged 6 years and over) who have difficulty processing information due to neurological disorders, Attention Deficit Hyperactivity Disorder (ADHD) or learning disabilities. **Pre-requisite abilities:** - Using a mouse/keyboard *or* touch screen; - Other pre-requisites: sufficient attention and visuoperceptual skills. **Language:** English **System requirements:** - 2.0 Ghz or faster Processor - 100 GB hard drive with at least 10 GB of free space - 2 GB of RAM - Windows XP (SP3) / Vista / Windows 7 / Windows 8 - DVD Rom drive - 256 MB Video Memory - External Speakers or Headphones - Mouse or Trackball - Soundcard (DirectX compatible) - Keyboard and Mouse (Touchscreen Optional) - It is recommended to use SmartDriver in conjunction with a USB steering wheel with brake and accelerator pedals. **Contact information:** **http://www.braintrain.com/smart-driver/** 1-800-822-0538 **Cost** Free trial: http://www.braintrain.com/software-trial-registration-form/ For professionals (unlimited clients at 1 station for 1 year): 149$ without steering wheel /289$ with steering wheel

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Brain Train: Captain's Log MindPower Trainer	X X X X X	➢ Includes 9 modules of 50 multi-level programs of more than 2000 hours of games/exercises working on attention, problem-solving and memory skills. ➢ Uses visual and/or auditory stimuli ✓ Tasks become more difficult as the person progresses through an exercise ✓ Exercises can be adapted for any level of ability ✓ Client's performance is recorded and presented in summary tables ✓ Provides auditory and visual feedback on performance ✓ Duration of each exercise can be modified from 1 minute to 60 minutes	➢ Developed in collaboration with medical specialists and neuropsychologists ✓ Studies in children with Attention Deficit Hyperactivity Disorder (ADHD) and in adults with traumatic brain injury and psychiatric disorders support the effectiveness of the Captain's Log software for improving cognitive skills.	**Target clientele:** Children and adults (aged 5 years and over) with brain injuries, ADHD, learning disabilities, psychiatric disorders or other cognitive problems. **Pre-requisite abilities:** - Using a mouse/keyboard or touch screen (compatible with Windows 8 Touch Screen Technology) - Other pre-requisites: understanding verbal and/or written instructions, and basic attention skills. **Language:** English **System requirements:** - Pentium 166 or higher PC compatible processor - Windows XP / Vista / 7 / 8 - 2.2 GB of Hard drive space, 32 MB of RAM - VGA Color Monitor (if laptop, requires Active Matrix) - 8X CD-ROM drive (not required for download version) - USB mouse (requires USB port) - Soundcard - Headphones or External Speakers **Contact information:** **www.braintrain.com** *or* 1-800-822-0538 **Cost** *(prices subject to change)* Free trial: http://www.braintrain.com/software-trial-registration-form/ Player Licensing: 1 Player, 1 Year: $395; 5 Players, 1 year: $995 10 players, 1 year: $1295 Station Licensing: 1 Year Station Licenses: 1 station, unlimited Players: $1495 5 Year Station Licenses:1 station, unlimited Players: $5495

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CO-Skills 5.1 (English version) ***Rééduc 5.1 (French version)*** *(Pépin & Loranger, 2007)*	X X X X	➢ Comprises 28 programs targeting different skills: attention, memory, language, reasoning, hand-eye coordination, visuo-spatial skills, mathematics and problem-solving. ✓ Several levels of difficulty ✓ The program automatically adjusts the training progress according to the client's performance ✓ Instructions and feedback presented with auditory and visual support ✓ Client's performance is recorded during each training session and presented in a summary table ✓ Integrates familiar daily life scenes that facilitate understanding of potential real-life contexts in which the skills could be used	➢ Developed by psychologists/ researchers in psychology; the development of the tasks is based on learning principles and cognitive rehabilitation models. ✓ No published studies on the effectiveness of this software in persons with stroke were found. Studies in other populations (e.g. persons with traumatic brain injury (TBI), children with learning disabilities) evaluated the efficacy of some programs for improving specific cognitive skills. For example, one study in persons with TBI showed gains in visuospatial abilities after a 20-hour intervention using Rééduc (Giguère, 1991).	**Target clientele:** Children and adults with cognitive impairment **Pre-requisite abilities:** - Tasks require pressing the space bar on the keyboard, pointing and clicking with the mouse or pressing the arrow keys - Other pre-requisites: reading ability required for some tasks, basic attention skills. **Language:** French, English or Spanish versions **System requirements:** - PC or PC compatible microcomputer with a Pentium III processor; - 128 M octets of live memory; - graphics card with at least 8 M octets of memory; - colour screen; - Standard CD ROM drive; - hard drive with at least 150 M octets of free space; - Windows software (2000 or more recent); - Computer mouse or joystick; - Sound card and two speakers (or earphones) **Contact information:** http://www.psychotech.qc.ca/ Le Réseau Psychotech inc. 1440, boul. Louis XIV, C.P. 59012 Succursale Bourg-Royal, Québec (Québec), Canada, G2L 2W6 Tél: 418-659-7000 Fax: 418-659-7010 E-mail : info@psychotech.qc.ca **Cost:** CO-SKILLS programs are sold as site licenses. Each program may be purchased separately (price ranging from 80$ to 150$); there is a rebate applicable to the simultaneous purchase of all 28 programs.

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Logiciels de Remédiation Cognitive	X X X X	➢ Includes 19 programs divided into 3 modules: 1) attention; 2) memory; 3) regulation. ✓ Different task parameters may be modified to adapt the level of difficulty ✓ Client's performance is recorded during each training session and presented in a summary table ✓ Provides written/visual feedback on performance ✓ Duration of each exercise varies depending on the exercise	✓ Developed by Jean Châtelois, neuropsychologist ✓ No published studies on the effectiveness of this software in persons with stroke were found.	**Target clientele:** Children (≥ 13 years old) and adults with cognitive impairment **Pre-requisite abilities:** - Tasks require pressing the space bar on the keyboard, clicking with the mouse *or* pressing specific keys on the keyboard; - Other pre-requisites: reading and basic attention skills. **Language:** French **System requirements:** - PC or PC compatible microcomputer; - Graphics card; - Computer mouse; - Windows software (1998 or more recent); - Standard colour screen; - Standard CD ROM drive; - Hard drive with at least 5 M octets of free space. **Contact information:** http://www.psychotech.qc.ca/ Le Réseau Psychotech inc. 1440, boul. Louis XIV, C.P. 59012 Succursale Bourg-Royal, Québec (Québec), Canada, G2L 2W6 Tél: 418-659-7000 Fax: 418-659-7010 E-mail : info@psychotech.qc.ca **Cost:** The programs are sold as site licenses. They may be purchased separately for 119.95$ per program. Simultaneous purchase of the 19 programs = 950$.

VIDEOGAMES

Videogame	Executive function components Planning Problem-solving Inhibition Working memory Divided attention Flexibility	➢ **Description of the videogame** ✓ **Characteristics of the cognitive training**	➢ **Development and scientific validity** ✓ **Effectiveness**	**Clinical utility** ○ **Target clientele** ○ **Pre-requisite abilities** ○ **Language** ○ **System requirements** ○ **Ordering information** ○ **Cost**
Big Brain Academy: Wii Degree	X	➢ Consists of 15 mini-games designed to provide training and practice on a variety of mental tasks. Divided into 5 categories: identify; memorize; analyze; compute; and visualize. ➢ Games work on the following abilities: perceptual speed and scanning, closure speed, numerical estimation, working memory, backwards memory span, visual working memory, visual matching, visual inspection (dynamic), spatial integration, categorical matching/verbal and visual, spatial visualization, numerical computation, spatial orientation (Ackerman et al., 2011) ✓ 4 levels of difficulty available: easy, medium, hard and expert (can only access expert level once certain score is obtained) ✓ User chooses level of difficulty ✓ Progress is saved in program ✓ In addition to the single-player modes, the game allows up to 8 players to play together. ✓ Duration of the exercises varies depending on the mode of play (test, practice or versus [i.e. playing against other participants]) ✓ In the 'practice' mode, players can do a 10-trial practice sequence on any of the mini-games. ✓ In the 'test' mode, players complete a	➢ Developed by Nintendo EAD (Entertainment Analysis and Development) ✓ Studies available are limited. One study in middle aged adults showed task-specific improvement with the Big Brain Academy training (with over 20 hrs of practice across 4 weeks), however there was no transfer from the Wii training to measures of cognitive functions (Ackerman et al., 2011). Another study in patients with mild stage Alzheimer's Disease showed that the Big Brain Academy program was more effective than an Integrated Psychostimulation Program (specifically for Alzheimer's) to reduce cognitive decline and decrease depressive symptoms. (Fernández-Calvo et al., 2011)	**Target clientele:** Mainly tested on adults, however targets all individuals. **Pre-requisite abilities:** - Ability to point and click with Wii remote (requires good motor coordination with one hand) - Sufficient attention and perceptual skills; this videogame might be more appropriate for persons with *mild* (to moderate) cognitive impairment given the relatively high level of difficulty of some mini-games; - Understanding written instructions. **Language:** French or English **System requirements:** Television screen, Wii console and Wii remote **Contact information:** www.bigbrainacademy.com **Cost:** Approximately 60$ for Wii Big Brain Academy Approximately 160$ for Wii system (includes one remote) (Prices may vary)

Videogame	Executive function components Planning Problem-solving Inhibition Working memory Divided attention Flexibility	➢ **Description of the videogame** ✓ **Characteristics of the cognitive training**	➢ **Development and scientific validity** ✓ **Effectiveness**	**Clinical utility** ○ **Target clientele** ○ **Pre-requisite abilities** ○ **Language** ○ **System requirements** ○ **Ordering information** ○ **Cost**
		test in which they solve problems from the 15 mini-games. ✓ Feedback on performance provided after each practice session or test	✓ No studies in the population with stroke were found.	

OTHER WII GAMES THAT MIGHT BE CONSIDERED FOR EXECUTIVE FUNCTION RETRAINING:

Wii Videogame	Executive function components	Description	Concerns/pre-requisite abilities	Contact information Language
Tetris Party Deluxe	Planning, divided attention and working memory (+ visuoperceptual abilities)	✓ Tetris Party is a puzzle video game. ✓ In addition to the single-player modes, the game allows up to 4 players to play offline together. ✓ The game keeps skill charts and statistics for players to monitor their progress. ✓ The game also includes a mode for beginners, which is particularly relevant for persons with cognitive impairment.	✓ Sufficient perceptual and attentional skills are required given the game's relatively high level of difficulty → this videogame is more appropriate for persons with mild cognitive impairments. ✓ Good fine motor abilities to manipulate the Wii remote; players need to press the buttons with both hands. Players may also use the Wii Balance Board.	http://www.tetrisparty.com/ http://www.nintendo.com/games/detail/1dBYjZqMtB5390N2vC8gi4GCRRZvZway **Language**: French and English (and other languages)
Mario Kart	Divided attention (and possibly working memory)	✓ Mario Kart Wii is a racing video game including 32 different tracks. The player can race against other players or against a "ghost" which simulates their	✓ Sufficient perceptual and attentional skills are required given the game's relatively high level of difficulty → this	http://www.mariokart.com/wii/launch/ **Language**: French and English

Wii Videogame	Executive function components	Description	Concerns/pre-requisite abilities	Contact information Language
	(+ visuoperceptual abilities)	previous performance/data (i.e. the players try to beat their own records). In addition to the single-player modes, the game allows 2-4 players to play offline together. The following racing tracks are easier for beginning players: Coupe Champignon – Circuit Luigi Coupe Champignon – Prairie Meuh Meuh Coupe carapace- N64 Autodrome Mario Coupe Fleur – Circuit Mario Coupe banane – GBA Plage Shy Guy Coupe feuille – GCN Circuit Mario Coupe Étoile - Circuit Daisy Coupe Éclair – SNES Circuit Mario 3	videogame is more appropriate for persons with mild cognitive impairments. ✓ Good motor abilities to manipulate the Wii steering wheel with both hands (or a joystick and buttons)	

OTHER WII GAMES:

Solitaire and *Mahjong*: http://www.nintendo.com/games/detail/o7STGbjteOWG0m0Jo2gtrcroplP-JcBO

Jewel Quest trilogy: http://www.nintendo.com/games/detail/EGrsl3S_BDwJ_ig7A-Zp468Ww1sXIBiE

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