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**Literature search results**

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<th>Search completed for:</th>
<th>Stroke in adults and the use of ipad type devices/technology to enable rehabilitation interventions i.e. playing games to increase concentration</th>
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**Search details**

Stroke in adults and the use of ipad type devices/technology to enable rehabilitation interventions i.e. playing games to increase concentration

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; AMED; CINAHL; MEDLINE; Google Scholar; Google Advanced Search


*Evidence search string(s)*: stroke (rehab OR recovery) (tablet OR ipad)

*Google search string(s)*: stroke (rehab OR recovery) (tablet OR ipad)

**Summary**

Unfortunately there is very little evidence proving a link between playing tablet or smartphone based games or apps and stroke rehabilitation. I broadened the search to include brain injuries, cognition disorders and general neuro-rehabilitation and still very little was retrieved.

There is, however, anecdotal evidence (a Google search using: stroke (rehab OR recovery) (tablet OR ipad) brings up blog posts, news items and app lists) but it depends if this information is suitable for your practice.
### Guidelines

**National Clinical Guideline Centre/NICE**  
*Stroke rehabilitation: long term rehabilitation after stroke*, 2013  
One mention on p. 287 that iPad apps can be used for Augmentative and Alternative Communication.

### Evidence-based reviews

- n/a

### Published research

**Enhancing cognition with video games: a multiple game training study.**  
**Author(s)** Oei AC, Patterson MD  
**Citation:** PLoS ONE [Electronic Resource], 2013, vol./is. 8/3(e58546), 1932-6203;1932-6203 (2013)  
**Publication Date:** 2013  
**Abstract:** BACKGROUND: Previous evidence points to a causal link between playing action video games and enhanced cognition and perception. However, benefits of playing other video games are under-investigated. We examined whether playing non-action games also improves cognition. Hence, we compared transfer effects of an action and other non-action types that required different cognitive demands. METHODOLOGY/PRINCIPAL FINDINGS: We instructed 5 groups of non-gamer participants to play one game each on a mobile device (iPhone/iPod Touch) for one hour a day/five days a week over four weeks (20 hours). Games included action, spatial memory, match-3, hidden-object, and an agent-based life simulation. Participants performed four behavioral tasks before and after video game training to assess for transfer effects. Tasks included an attentional blink task, a spatial memory and visual search dual task, a visual filter memory task to assess for multiple object tracking and cognitive control, as well as a complex verbal span task. Action game playing eliminated attentional blink and improved cognitive control and multiple-object tracking. Match-3, spatial memory and hidden object games improved visual search performance while the latter two also improved spatial working memory. Complex verbal span improved after match-3 and action game training. CONCLUSION/SIGNIFICANCE: Cognitive improvements were not limited to action game training alone and different games enhanced different aspects of cognition. **We conclude that training specific cognitive abilities frequently in a video game improves performance in tasks that share common underlying demands.** Overall, these results suggest that many video game-related cognitive improvements may not be due to training of general broad cognitive systems such as executive attentional control, but instead due to frequent utilization of specific cognitive processes during game play. Thus, many video game training related improvements to cognition may be attributed to near-transfer effects.  
**Source:** Medline  
Available in fulltext from PLoS ONE at National Library of Medicine

**Senior-driven design and development of tablet-based cognitive games.**  
**Author(s)** Marques J, Vasconcelos A, Teixeira LF  
**Citation:** Studies in Health Technology & Informatics, 2013, vol./is. 189/(133-8), 0926-9630;0926-9630 (2013)  
**Publication Date:** 2013  
**Abstract:** This paper describes the design and development of a tablet-based
gaming platform targeting the senior population, aiming at improving their overall wellbeing by stimulating their cognitive capabilities and promoting social interaction between players. To achieve these goals, we started by performing a study of the specific characteristics of the senior user as well as what makes a game appealing to the player. Furthermore we investigated why the tablet proves to be an advantageous device to our target audience. Based on the results of our research, we developed a solution that incorporates cognitive and social mechanisms into its games, while performing iterative evaluations together with the final user by adopting a user-centered design methodology. In each design phase, a pre-selected group of senior participants experimented with the game platform and provided feedback to improve its features and usability. Through a series of short-term and a long-term evaluation, the game platform proved to be appealing to its intended users, providing an enjoyable gaming experience. Source: Medline

Seven capital devices for the future of stroke rehabilitation.

Author(s) Iosa M, Morone G, Fusco A, Bragoni M, Coiro P, Multari M, Venturiero V, De Angelis D, Pratesi L, Paolucci S

Citation: Stroke Research and Treatment, 2012, vol./is. 2012/(187965), 2042-0056 (2012)

Publication Date: 2012

Abstract: Stroke is the leading cause of long-term disability for adults in industrialized societies. Rehabilitation's efforts are tended to avoid long-term impairments, but, actually, the rehabilitative outcomes are still poor. Novel tools based on new technologies have been developed to improve the motor recovery. In this paper, we have taken into account seven promising technologies that can improve rehabilitation of patients with stroke in the early future: (1) robotic devices for lower and upper limb recovery, (2) brain computer interfaces, (3) noninvasive brain stimulators, (4) neuroprostheses, (5) wearable devices for quantitative human movement analysis, (6) virtual reality, and (7) tablet-pc used for neurorehabilitation. Source: Medline

Available in fulltext from Stroke Research and Treatment at National Library of Medicine

Read-Right: a "web app" that improves reading speeds in patients with hemianopia.

Author(s) Ong YH, Brown MM, Robinson P, Plant GT, Husain M, Leff AP

Citation: Journal of Neurology, December 2012, vol./is. 259/12(2611-5), 0340-5354;1432-1459 (2012 Dec)

Publication Date: December 2012

Abstract: Effective behavioral therapies exist for patients with brain injury. The main issue is one of access. Can the internet be used as a resource so that suitable patients can build up enough practice to improve? We tested this hypothesis using a web-based application for patients with a right-sided hemianopia causing slow text reading. We studied 33 patients aged 26-81 years who fitted the entry criteria and accessed the therapy website between May 2010 and December 2011, in a longitudinal cohort study. The therapy consisted of reading animated, laterally scrolling text whose content and form was selected by the patients. Reading speeds on static text (main outcome) were assessed after every 5-h period of practice had been accrued. Statistical analysis was carried out using a repeated measures ANOVA. Read-Right therapy produced significant improvements in text reading speeds at all time points with a clear dose effect: 10 % at 5 h, 20 % at 10 h, 39 % at 15 h and 46 % at 20 h. Sub-analyses demonstrated that this was unlikely to be due to either multiple exposure to the testing materials (familiarity) or to the simple passage of time. This is the first
example of a clinically proven therapy being delivered effectively to stroke patients over the internet. As therapists' time is more limited than patients' capacity to improve, carefully designed, web-based resources like Read-Right represent a realistic way of delivering a sufficient therapy dose to patients so they can obtain clinically meaningful improvements.

**Source:** Medline

**Smartphones in stroke.**

**Author(s)** Chakrabarti R, Perera C

**Citation:** Neurosurgery, October 2012, vol./is. 71/4(E910; author reply E910-1), 0148-396X;1524-4040 (2012 Oct)

**Publication Date:** October 2012

**Source:** Medline

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**Google Scholar**

*From 1st 50 results…*

**Human computer interactive system for fast recovery based stroke rehabilitation**

A Dinevan, YM Aung… - Hybrid Intelligent Systems, 2011 - ieeexplore.ieee.org

In Australia, about 88% of stroke survivors live at home with disabilities affecting their daily life activities and quality of their lives. Therefore, there is a need to improve their lost functions and promote their lives via rehabilitation process. One way to improve the stroke rehabilitation process is through human interactive system, which can be achieved by augmented reality technology. This development draws from the work currently being pursued in the gaming industry to make the augmented reality technology more accessible to the medical industry for the improvement of stroke rehabilitation. In this paper, two augmented reality games: Pong Game and Goal Keeper Game were developed. These games have been designed for rehabilitation with consideration to human interactive systems and have features such as on-screen feedbacks and high immersive value to keep stroke victims motivated in the rehabilitation process. The developed games were aimed to replace boring and repetitive traditional rehabilitation exercises. This paper details the success of implementing augmented reality into the rehabilitation process, which will in turn contribute to society by minimizing the number of people living at home with stroke related disabilities and the requirement for direct supervision from therapist.