

Evidence Based Practice Day
Department of Rehabilitation Sciences, Recreation Therapy Program
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Technology-Based Recreation as a Rehabilitation Tool for Children with Brain Injuries

Search Terms: pediatric & brain injury & technology & intervention & rehabilitation

Years: 2008-2012

Databases: PsycINFO, CINAHL, ERIC, Medline

Number of Articles: 8

Summary of Research Findings:

This review of the literature revealed that technology-based interventions hold the potential to contribute greatly to the rehabilitation of children with brain injuries. To date, a variety of technology-based recreation interventions have been used by therapists including virtual reality (Bart, Agam, Weiss & Kizony, 2011; Grealy, Johnson & Ruchton, 1999; Levac, Miller & Missiuna, 2012; Zhang, Abreu, Seale, Masel, Christiansen & Ottenbacher, 2003), Wii and Sony PlayStation (De Kloet, Berger, Verhoeven, VanStein Callenfels & Vliet Vlieland, 2012; Janssen, Vershuren, Levac, Ermers & Ketelaar, 2012; Lange, Flynn & Rizzo, 2009; Levac et al., 2012) and augmented realities (Chau, Eaton, Lamont, Schwellnus & Tam, 2006).

Since these interventions are all quite new, the research on their use in therapy is somewhat limited. The studies reviewed were small pilot studies ranging from a single subject case study (Janssen, et. al, 2012) to 54 participants (Zhang, et. al, 2003). Although some studies focused exclusively on children/young adults (Bart et al., 2011; Chau, et al., 2006; De Kloet et al., 2012; Janssen, et al, 2012;), others included mixed ages or utilized adults and made generalizations or conclusions about the applicability to the pediatric population (Grealy et al., 1999; Lange et al., 2009; Levac et al., 2012; Zhang, et al., 2003).

Some of the studies aimed to evaluate client progress on therapist mediated goals for improving physical and cognitive functioning (Bart et al., 2011; Chau, et al., 2006; De Kloet et al., 2011; Grealy et al., 1999; Janssen et al., 2012; Zhang et al., 2003) while others used the technology-based interventions for client assessment and/or evaluation purposes. Assessments focused on attention, self-care, motivation, enjoyment, satisfaction and self-expression. (Bart et al., 2011; Chau et al., 2006; Janssen et al., 2012; Lange et al., 2009; Levac et al., 2012). The purpose of evaluation ranged from transfer of skills from virtual to actual activity (Zhang et al., 2003) to correlation with actual task (Bart et al., 2011) and safety (Zhang et al., 2003).

Findings to date have been promising, but because these interventions are new, additional research is definitely needed. Future studies should aim not only to replicate findings in larger studies specifically focused on children with brain injuries, but also to document additional treatment protocols and evaluate additional technology-based recreation interventions.

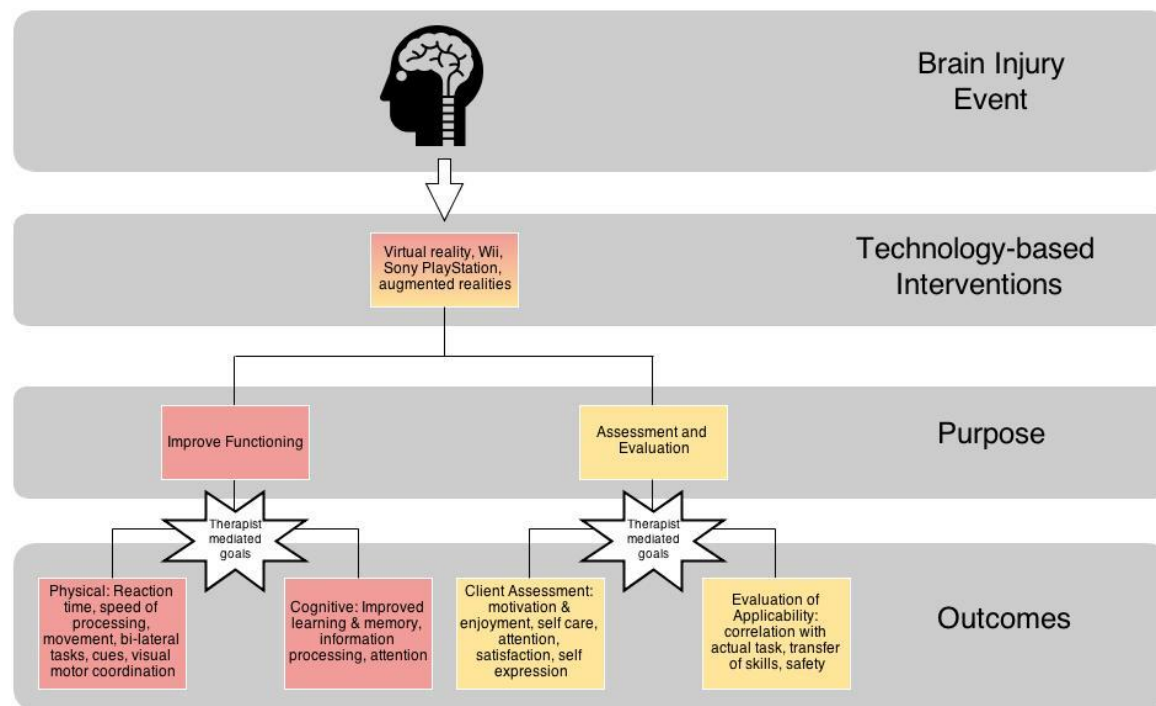
Knowledge Translation Plan:

The knowledge gained from this project is important to the Therapeutic Recreation community because it provides insight on how technology-based interventions can be utilized in the treatment of children with brain injuries. Certified Therapeutic Recreation Specialists (CTRS's) should consider a variety of technology-based interventions (e.g. virtual reality, Wii, Sony PlayStation, augmented realities) as possible tools for addressing a variety of client goals aimed at improving physical functioning (e.g. reaction time, movement time, speed of processing, bi-lateral task performance, motor control, upper extremity functioning, physical activity) cognitive functioning (e.g. learning, memory, logic, information processing, attention, decision making) and transfer of skills (e.g. self-care capabilities, environmental functioning). CTRS's should also consider using technology-based recreation interventions as a means to assist in assessing client skills.

Although individual preferences must always be considered, the literature indicates that pediatric clients generally enjoy technology-based recreation interventions and may be motivated to participate for longer periods of time. However, therapists may want to incorporate technology and gaming preferences into their general TR assessments to see if their client would be a good candidate for these types of interventions. This could be an important factor in CTRS's maximizing the productivity of their sessions and may also play an important role in clients achieving their goals.

It should be noted that while all of these interventions/games can be played simply for fun, they are not therapeutic in and of themselves. Positive outcomes were achieved when therapists structured the games in specific ways or emphasized specific components of the activity that directly linked with patient goals. Therefore, therapists should not only refer to the literature on how specific interventions were structured, but should also be encouraged to document specific protocols they develop when structuring interventions to achieve positive client outcomes. This is essential given the wide range of technology-based recreation resources available and the need for more evidence supporting the use of specific interventions.

Given the rapid advancements in technology, therapists will also need to devise a system for staying up to date with new games and technology-based recreation activities to not only provide children with games/toys/technology they are motivated to use, but also to stay abreast of future studies that document the effectiveness of specific interventions.



References

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