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The Effect Video Games Have in Therapy to Treat Ailments in Children and Adolescents

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The Effect Video Games Have in Therapy to Treat Ailments in Children and Adolescents

Spencer Hart, Danielle LaRocco, and Josh Spear
Video games can be therapeutic for:

- Cerebral Palsy
- Injuries
- Learning Disabilities
Cerebral Palsy

- Most common movement disorder that severely impairs motor function in children
- Prevalence ranges between 1.5 and 2.5 per 1000 live births
- Traditional treatment for CP mainly focusing on treating symptoms
  - Physical therapy
  - Braces, casts, and splints
  - Surgery
  - Medicines
    - Botulinum Toxin (Botox)
    - Anticonvulsants

Source: (Sandlund, et. al, 2013)
Cerebral Palsy

- Video game systems such as the Xbox Kinect and the ENLAZA Interface have been shown to improve the following in children with CP
  - Head movement
  - Posture
  - Balance
  - Psychomotor status
  - Activities of daily living ("ADL")
  - Motor Skills

Sources: (Sandlund, et. al, 2013), (Luna-Olivia et al., 2013)
ENLAZA Interface

Source: (Werium Solutions, 2015)
Cerebral Palsy

- Virtual reality is also being used as a morale booster for children with CP
- Virtual Reality:
  - Helps children attain a sense of inclusion and relatability
    - can provide a changing and new environment without the need of transferring the actual person to a different setting
  - Encourages a fun and motivating experience
  - Has a beneficial effect in children suffering from disorders that cause sedentary behavior like CP

Sources: (Luna-Olivia et al., 2013)
Acquired brain injuries ("ABIs") are among the most prevalent causes of death and disability in children.

- Damaging effects of ABI can include:
  - Impairments in physical, psychological, and psycho-emotional functions
  - Impaired balance
  - Chronic pain

Sources: (Tatla, Radomski, Cheung, Maron, and Jarus, 2014)
Injuries

- Video games such as Nintendo’s *Wii Fit* and Xbox Kinect are more fun and keep children motivated to continue rehabilitation more than traditional physical therapy.

- Xbox Kinect and Nintendo’s *Wii Fit* balance board has helped children provide a fun and effective way to improve balance.

- Video games can also reduce or distract from physical and mental stress that can accompany ABIs.

Sources: (Sil et al., 2012)
Memory Training

- Video games offered through systems such as Wii, VR, and Xbox Kinect have been shown to aid children with learning disabilities such as ADHD and dyslexia
  - improve overall working memory
  - increased reading performance
  - Engage and hold interest of child more than traditional methods

Sources: (Pedroli et al., 2017)
Memory Training

- The use of Computer Working Memory Training ("CWMT") has been used to improve the working memory of children with ADHD

- Children with ADHD who have utilized the CWMT have shown
  - Improvements in the ability to initiate, plan, and organize
  - Sustain future-oriented problem solving
  - Improved working memory
  - Improved cognitive flexibility

- The utilization of these new methods had shown more “lasting effects over time and produces improvements in some aspects on which ‘gold standard’ treatments have no clear effectiveness”

Sources: (Bigorra, Garolera, Guijarro, and Hervás, 2015)


References

