

CP Fit 'n' Fun

Health and Social Benefits of Virtual Exercise Games in Youth with Cerebral Palsy

Hamilton Hernandez, Md Ameer Hamza, T.C. Nicholas Graham, and Tadeusz Stach

1 The Problem

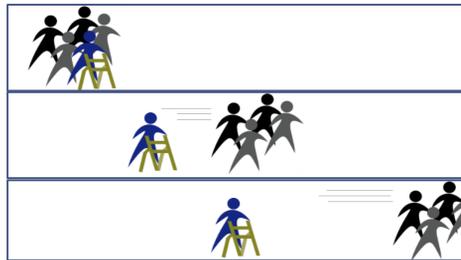
Children with CP



Teenagers



decrease in
physical
function



Children with Cerebral Palsy (CP) have difficulties in participating in traditional physical activities.

Due to limited physical access to peers, experience increased social isolation.

Impacts negatively on physical fitness and overall quality of life.

2 An Opportunity

"Exergames", video games that involve physical activity, can be effective in motivating people to engage in physical activity.



Physically disabled people, especially kids with CP, have the potential of benefiting from Exergames.

3 Project Overview

Goals

Develop and evaluate multiplayer exergames to engage youth with CP in physical exercise to improve their physical fitness and increase social interaction with their peers.

People

Dr. Nick Graham (& team), Queen's University.
Dr. Darcy Fehlings, Pediatrician. Holland Bloorview, U. Toronto.
Dr. Virginia Wright, Physiotherapist, Holland Bloorview.
Dr. Ryan Rhodes, Exercise Psychologist. U. Victoria.
Dr. Regan Mandryk, Comp. Sc. Prof., U. Saskatchewan.
Dr. Annette Majnemer, Prof. Rehabilitation Medicine. McGill U.
Dr. Darren Warburton, Prof. Kinesiology, U. British Columbia.

4 Challenges in Making the Games

- Recognizing and smoothing input that may be affected by muscle spasticity
- Allowing youth with CP of different physical fitness levels to play together
- Making the games fun to play for motivating long term engagement
- Supporting social interactive and collaborative play

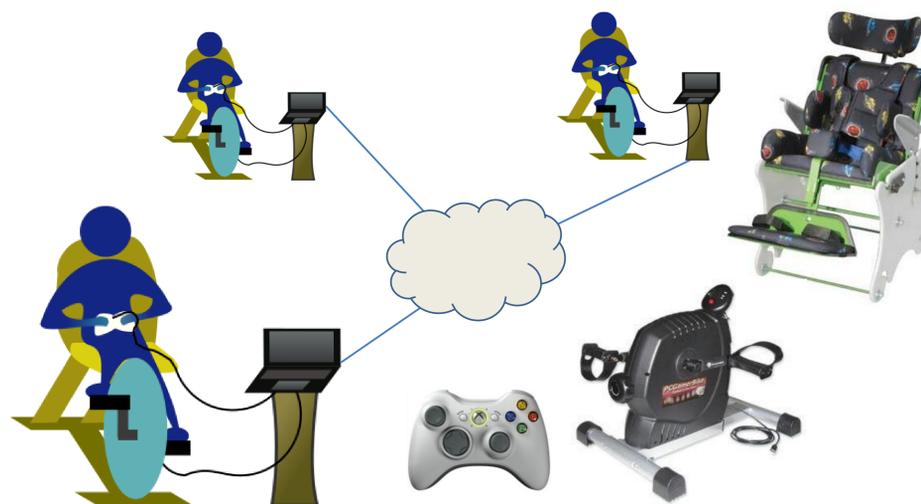
5 Overcoming Challenges

- Participatory Design sessions involving youth with CP, therapists, game designers, and developers.
- Rapid iterative refinement and testing of game features. A Game Development Toolkit is being developed for this purpose, and to relieve designers from low level technicalities.

6 Putting It All Together

Evaluation Plan

- Collaboration with other specialists to evaluate the effectiveness of exergames in this context.
- Design of a case series involving 10 kids with CP and assess improvement in physical fitness, social participation, and quality of life.



Multiplayer Exergaming platform for youth with CP

Future Implications

- If long term benefits for youth with Cerebral Palsy are found, this finding may have generalizability to individuals with other disabilities as well.
- This kind of exergames can be considered as an alternate highly motivating and effective rehabilitation treatment for promoting fitness, health, and social integration.