IROMEC for children with developmental disabilities

Type of Project

Finished research project

Summary

IROMEC is a robot to support play in impaired children. In this study the short-term effects of the IROMEC robot in an occupational therapy intervention for children with developmental disabilities are evaluated.

Low-tech, high-tech products, services and contexts for play

IROMEC play robot developed within the European project IROMEC, cofounded by the European Commision within the 6th Framework Program. Modular and configurable robotic platform that can be used within therapy and education. Specifically developed for children with Autistic Spectrum Disorder, severe motor impaired children and children with mild mental disabilities.

The context of use

Occupational therapy, children with developmental disabilities aged 3-5 years

Type of play in this play system

Cognitive

- Practice
- Symbolic
- Rule play (including videogames)

Social

- Solitary
- Cooperative

Objectives related to play according to ICF-CY

Play for the sake of play: Major life areas - d880 enagement in play

- d8809 engagement in play, unspecified

Play-like activities: Therapeutic and educational objectives

- b1 Mental functions
- b2 Sensory functions and pain
- b7 Neuromusculoskeletal and movement related functions
- d3 Communication
- d7 Interpersonal interactions and relationships

Number of participants

- 1-5

Chronological Age

- 0-3 years
- 3-6 years

Development Age

0-3 years
3-6 years

LUDI Categories of disabilities

Mental/intellectual impairments::
moderate
Physical impairments:
Moderate
Severe

Explanation on the use of low-tech, high-tech devices, services or contexts

Explanation

No instruction, self-discovery of the participant/subject
Verbal instruction, language and communication fitting to chronological age
Modeling by therapist/researcher
Hand over hand: therapist/researcher leads the actions of the participant
Guided discovery: therapist/researcher coaches the participant so s/he discovers how to use the assistive technology

Involvement

Adult: therapist/educator/researcher

Role

Non-participatory observer
Participatory observer

Evaluation of objectives and outcome measures

Description of outcome measure(s)

Observation by professional/researcher providing the play experience
Observation by other professional/researcher
Video analysis
Feedback from client/parents/professionals
(validated and reliable) outcome measures like tests, self-reports of client/system, questionnaires

Information about availability of outcome measure: publisher, website, contact person

- Parham, L.D. & Fazio, L.S. (2008) Play in occupational Therapy for Children. (2nd ed.) St. Louis: Mosby Elsevier - E. Ferrari, B. Robins, and K. Dautenhahn (2010) "Does it work?" A framework to evaluate the effectiveness of a robotic toy for children with special needs. Preoceedings IEEE ROMAN 2010, 19th International Symposium in Robot and Human Interactive Communication, Sep. 12-15th, 2010, Viareggio, Italy

Summary of achieved effects

Results confirmed the IROMEC robot did partly meet the needs of the children and the therapists, and positive impact on ToP results was found with two children. This suggests robotic toys can support children with developmental disabilities in enriching play. Long term effect evaluation should verify these positive indications resulting from use of this innovative social robot for children with developmental disabilities. It also became clear further development of the robot is required.

References to the intervention or research project

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Publication

Bernd, T., Gelderblom, G. J., Vanstipelen, S., & De Witte, L. (2010). Short term effect evaluation of IROMEC involved therapy for children with intellectual disabilities Social Robotics (pp. 259-264): Springer.

Keywords

IROMEC, effects, play robot, therapy, developmental disabilities.