



## IROMECE for children with developmental disabilities

### Type of Project

Finished research project

### Summary

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

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

IROMECE play robot developed within the European project IROMECE, cofounded by the European Commission 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 engagement 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
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### 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. Preceedings 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 IROMECE 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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### **Website**

www.technologyincare.nl

### **Publication**

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

### **Keywords**

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