

Twenty weeks of home-based interactive training of children with cerebral palsy improves functional abilities

Submission date 20/11/2014	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol ☐ Statistical analysis plan ☒ Results ☐ Individual participant data
Registration date 04/12/2014	Overall study status Completed	
Last Edited 17/12/2020	Condition category Nervous System Diseases	

Plain English summary of protocol

Background and study aims

Cerebral palsy is a term used to describe a number of neurological conditions that affect movement and co-ordination. It can result in stiff or floppy muscles, muscle weakness, random or uncontrolled movements and balance and co-ordination problems. Treatment can include physiotherapy to strengthen muscles and improve balance and co-ordination. Home-based training (treatment) is becoming more important with increasing demands on public health systems. We investigated whether individually tailored and supervised interactive home-based training delivered through the internet improves functional abilities in children with cerebral palsy.

Who can participate?

Children with cerebral palsy aged between 7 -16.

What does the study involve?

Children are allocated into one of two groups. Those in the interventional group are given access to the home-based training system, which includes training modules to train cognitive, perceptual and motor abilities. The training consists of 30 minutes daily home-based training for 20 weeks. Those children in the control group are not given access to the training system. Each participant's motor skills and functional strength are evaluated before and after the 20 week training period.

What are the possible benefits and risks of participating?

The training is likely to lead to improvements in arm and leg function and general improvement in motor skills.

Where is the study run from?

1. Helene Elsass Center, Charlottenlund (Denmark)
2. Institute of Sport and Nutrition, University of Copenhagen (Denmark)

When is the study starting and how long is it expected to run for?
January 2009 to January 2011

Who is funding the study?
Ludvig and Sara Elsass Foundation (Denmark)

Who is the main contact?
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Contact information

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Study information

Scientific Title
Twenty weeks of home-based interactive training of children with cerebral palsy improves functional abilities: an interventional trial

Study objectives

Home-based training is becoming ever more important with increasing demands on the public health systems. We investigated whether individualized and supervised interactive home-based training delivered through the internet improves functional abilities in children with cerebral palsy (CP).

Ethics approval required

Old ethics approval format

Ethics approval(s)

Ethics committee of Copenhagen, Denmark (Videnskabsetisk komite, Region hovedstaden), 18/06/2009, ref: H-B-2009-017

Primary study design

Interventional

Study design

Non-randomized controlled clinical training study

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Cerebral palsy (CP)

Interventions

34 children with CP were included in this non-randomized controlled clinical training study. 12 children were allocated to a control group in which measurements were performed with 20 weeks interval without any intervening training.

The intervention consisted of training of the children that took place in their own home over a 20 week period. The training program was delivered to the children and ensured that they trained 30 minutes per day every day during the whole period. The training was delivered through the internet and consisted of a server-based interactive training-system using flash-technology. The system has been developed through collaboration between The Helene Elsass Center, a private software development company (Head-fitted; Århus, Denmark) and the University of Copenhagen. It has now been made commercially available through collaboration between the Helene Elsass center and the Ministry of Research under the name Mitii (Move It To Improve It; Mitii developments, Charlottenlund, Denmark). The training-system is designed to combine cognitive and motor challenges in order to train cognitive, perceptual and motor abilities at the same time. It consists of a number of training modules in which the child has to analyse visual information, solve a cognitive problem (i.e. mathematical question or similar) and respond with a motor act to objects presented on the screen (i.e. bend to pick up needle and blow up balloon with the right answer). The core of the system is that the computer program identifies the movements of the child from video images sampled from a simple web-camera attached to the computer.

Intervention Type

Behavioural

Primary outcome(s)

1. Daily activities - tested by AMPS (Assessment of motor and process skills)
2. Functional abilities of upper- and lower limbs. Upper limb function was tested by AHA (Assisting Hand Assessment) test. Functional Strength of lower limbs was tested by the Sit-to-stand test and Half kneeling-standing test.

All evaluated before, immediately after training and 12 weeks after training. The training consisted of 30 minutes daily home-based training for 20 weeks delivered through the internet.

Key secondary outcome(s)

Balance - tested by Romberg 30 seconds, eyes open test.

Completion date

01/01/2012

Eligibility

Key inclusion criteria

1. Children (both girls and boys) with cerebral palsy
2. Age range from 7 to 16

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Child

Lower age limit

7 Years

Upper age limit

16 Years

Sex

All

Total final enrolment

34

Key exclusion criteria

Severe cognitive and physical disability that made training impossible

Date of first enrolment

01/01/2009

Date of final enrolment

01/01/2011

Locations

Countries of recruitment

Denmark

Study participating centre

Helene Elsass Center

Holmegaardsvej 28

Charlottenlund

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Sponsor information

Organisation

Institute of Sports and Nutrition, University of Copenhagen

ROR

<https://ror.org/035b05819>

Funder(s)

Funder type

Charity

Funder Name

Ludvig and Sara Elsass Foundation (Denmark)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	10/05/2015	17/12/2020	Yes	No

