Motor imagery training in children with Developmental Coordination Disorder

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON19925

Source
NTR

Health condition

Motor Imagery
Training
Developmental Coordination Disorder
Clumsy children

Motorische inbeelding
Training
Developmental Coordination Disorder
Dyspraxie

Sponsors and support

Primary sponsor: Behavioural Science Institute
Radboud University
Nijmegen
the Netherlands
Source(s) of monetary or material Support: Graduate School
Behavioural Science Institute
Radboud University
Nijmegen
the Netherlands

Intervention

Outcome measures

Primary outcome

The primary outcome measures are the difference in motor abilities (mABC), motor imagery, motor planning and online control abilities before and after the treatment period. Motor abilities will be tested with the Movement Assessment Battery for Children (mABC - second edition). An improvement of 5 to 10 percentile scores on the mABC is considered as a clinical relevant improvement. Motor imagery, motor planning and online control will be tested by means of three experimental tasks. In these tasks reaction time (RT), number of errors/accuracy and the actual planning of a movement ahead of time will be recorded. In addition, by using video recordings and observation schemes, the execution of the trained motor skills will be compared before and after the training.

Secondary outcome

Demographic variables including gender, age and co-morbidity.

Study description

Background summary

Background of the study:

Children with Developmental Coordination Disorder are impaired in the coordination of movements. Children with DCD may experience problems with both gross and fine movements. The prevalence of DCD is 5-10% of all children on primary schools. The motor problems that children with DCD experience have a negative impact on the functioning in daily life and academic achievement. The underlying cause of DCD is until present not yet known. A recent hypothesis, the 'internal modeling deficit' (IMD) hypothesis, states that children with DCD have problems in the generation of an accurate model for a movement.

Earlier studies have shown that children with DCD experience difficulties with motor imagery, motor planning and the online correction of movements. Current intervention programmes for children with DCD are mainly task specific training guided by a pediatric physiotherapist. A widely used training approach is the Cognitive Orientation to Daily Occupational Performance. Although this training seems to be effective to improve the performance of a certain task or movement, it is not aimed at the actual cause of the motor impairment. In addition, improvement on one task often does not transfer to other tasks.

By means of a Motor Imagery Training we want to study if it possible to improve the internal model for a movement in children with DCD, thereby probably improving also the motor abilities these children. This study is the first study that examines whether there is a causal relation between motor imagery capacities of children with DCD and their motor abilities.

Objective of the study:
Studying the effect of two intervention programs (1. Motor Imagery Training, 2. Cognitive Orientation to Daily Occupational Performance (CO-OP)) on the motor abilities, motor imagery and motor planning capacities in children with Developmental Coordination Disorder. These abilities will be tested before and after the training period.

Study design:
Children will be recruited through paediatric physiotherapists and occupational therapists in the Netherlands.
Chidren who sign up by the participating paediatric physiotherapsts and occupational therapists, will be invited to participate in this study.
First parents give their informed consent and then the motor capacities of these children will be tested with the mABC and interference with daily life will be tested with the DCDQ. If the children fullfill all the in- and exclusioncriteria, they will be randomly divided over the following two groups:

1. Motor Imagery training:

Before the start of the treatment sessions, children will participate in a pre measurement (duration: 1.5 hour) in which their motor ablities, their motor imagery, motor planning and online control abilities are tested. After this pre measurement, the treatment sessions (9 in total) can start. Next to the guided treatment, children are asked to perform some homework exercises, 4 times per week for 10 minutes. When children fulfilled the 9 treatment sessions, the motor abilities, motor imagery, planning and online control abilities are again tested during the post-measurement testing session.

2. CO-OP training:

Before the start of the treatment sessions, children will participate in a pre measurement (duration: 1.5 hour) in which their motor ablities, their motor imagery, motor planning and online control abilities are tested. After this pre measurement, the treatment sessions (9 in total) can start. Next to the guided treatment, children are asked to perform some homework exercises, 4 times per week for 10 minutes. When children fulfilled the 9 treatment sessions, the motor abilities, motor imagery, planning and online control abilities are again tested

during the post-measurement testing session.

Study design

Before (T0) and after the treatment (T1) all tests will be assessed:

- mABC-2

- motor imagery: hand rotation task (reaction time and number of errors), visual guided pointing task (movement time)

- action planning: sword task, % of trials where children plan for end-state comfort (ESC)

- online control: double-step reaching task (movement time and errors)

- Video recordings of the trained motor skills

Intervention

- Group 1: Motor Imagery Training

This group will receive 9 treatment sessions of 45 minutes. Because only motor imagery exercises will be to abstract for these children, we choose to combine the motor imagery with actual execution of the movement. This will be alternated, and children will also be asked to compare the imagery and the actual execution of the movement. Next to the guided treatment, children are asked to perform some homework exercises. They have to do the homework sessions 4 x per week 10 minutes per session.

- Group 2: Cognitive Orientation to Daily Occupational Performance (CO-OP)

Children in this group will be treated according to the CO-OP principles during 9 sessions of 45 minutes. CO-OP is expected to improve the knowledge of the task through cognitive strategy use. During a CO-OP intervention, a child learns a self-instruction strategy, which enables the child to identify why the performance was not succesful, and to invent and execute plans to correct his/her performance (the goal-plan-do-check strategy). Next to the guided treatment, children are asked to perform some homework exercises. They have to do the homework session 4 x per week 10 minutes per session.

Contacts

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Eligibility criteria

Inclusion criteria

The inclusion criteria for children with DCD are (according tot the DSM-V criteria for DCD):

- motor ability substantially below expected given the chronological age of the child (criterion A) - the Movement Assessment Battery for Children (mABC - second edition) will be used to assess the motor abilities of the children. Children can only be included in the DCD group if they have a mABC at or below 16th percentile.

- Motor impairment significantly interferes with daily life and/or academic achievement (criterion B). Only children that are referred to the centers for training of their motor abilities are included in this study. Referral for training of motor abilities is a strong indication that the motor impairment either causes problems in daily life, or with academic achievement. In addition, as recommended, the DCD Questionnaire (DCDQ) will be used to assess whether the motor impairment has an impact on the daily life or academic achievement of the child.

- Onset of symptoms is in the early developmental period (criterio C) as evidenced by their referral to a centre for training of their motor abilities between the ages of 7-12 years.

Exclusion criteria

Exclusion criteria (according to DSM-V criteria for DCD):

- Any medical condition that could cause the motor impairment (checked by a questionnaire filled in by the parents of the children).

- An IQ < 70 (only children from regular primary schools will be included in this study)

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Active

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	01-09-2014
Enrollment:	58
Type:	Anticipated

Ethics review

Positive opinion

Date:	25-11-2015
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL5370
NTR-old	NTR5471
Other	NL45175.091.13 : CCMO Netherlands

Study results

Summary results

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