Perceptual learning to reduce crowding in visually impaired children: 'Learning to see the forest ánd the trees'

Published: 04-12-2014 Last updated: 15-05-2024

The main goal of this study is to investigate whether visual perceptual learning, i.e. practicing a challenging visual task and thereby improving performance, transfers to improved reading and search performance in children with visual impairment....

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Congenital eye disorders (excl glaucoma)
Study type	Interventional

Summary

ID

NL-OMON40727

Source ToetsingOnline

Brief title Perceptual learning

Condition

• Congenital eye disorders (excl glaucoma)

Synonym visual impairment

Research involving Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Sint Radboud **Source(s) of monetary or material Support:** LSBS;ODAS en Stichting Bartiméus-Sonneheerdt.

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Intervention

Keyword: -eye movements, -perceptual learning, -visual impairment.

Outcome measures

Primary outcome

The main study parameter is the crowding ratio. This variable has our main

interest, because it is known that crowding imposes a fundamental limit on

reading, visual search and object recognition.

Secondary outcome

Secondary study parameters are visual acuity (sensory component), fixation

stability (motor component), saccade execution (motor component), and reading

performance (cognitive aspect).

Study description

Background summary

Children with visual impairment show stronger crowding than children with normal vision; they have more difficulty identifying a suprathreshold object in the presence of clutter. Children with visual impairment also show a lag in their reading skills and longer visual search times than age-matched peers with normal vision. Recent studies demonstrate the potential prospects of perceptual learning to improve visual functions. However, it is still unclear which mechanisms are responsible for these improvements.

Study objective

The main goal of this study is to investigate whether visual perceptual learning, i.e. practicing a challenging visual task and thereby improving performance, transfers to improved reading and search performance in children with visual impairment. The second aim is to investigate which mechanisms underlie these improvements, and to investigate whether they are caused by oculomotor, sensory and/or cognitive mechanisms.

Study design

Non-randomized controlled trial.

Intervention

Children with visual impairment will be divided in two groups: (i) an experimental group (n=30), and (ii) a control group (n=30). The groups will be trained during 5 weeks, with 2 training sessions per week (10x 1h training sessions in total). The experimental group will be given a different training paradigm with small element spacing, thereby evoking crowding. The control group will follow a training program where spacing is large and no crowding is evoked. Children with normal vision will only be seen once and will serve as a reference group.

Study burden and risks

Children will visit the institute twice for a pre- and post-test. These visits will consist of a short ophthalmological examination (max. 30 minutes), and experimental measurements (max. 60 minutes). Training sessions will occur at school. The benefits of participation are that visual functions are likely to improve. This gain might be beneficial for children with visual impairment. Training sessions will consist of half an hour net practice and will be child-friendly, in order to make sure that participation will not put a strong burden on children.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age Children (2-11 years)

Inclusion criteria

-Age 6-10 years:
-Normal birth weight;
-Birth at term;
-No perinatal complications;
-Normal development;
-No motor or intellectual impairments.

Exclusion criteria

-motor or mental impairment; -children with normal vision: distance visual acuity <20/25 or 0.80. -children with visual impairment: distance visual acuity <20/400 or >20/40 -dyslexia.

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active

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Primary purpose:

Treatment

Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	02-02-2015
Enrollment:	80
Туре:	Actual

Ethics review

Approved WMO	
Date:	04-12-2014
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)
Approved WMO Date:	05-03-2015
Application type:	Amendment
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)
Approved WMO Date:	06-07-2015
Application type:	Amendment
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

ID: 21908 Source: Nationaal Trial Register Title:

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In other registers

Register	ID
ССМО	NL49432.091.14
OMON	NL-OMON21908