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Effect of physical active math and language lessons on the academic achievement of 7-10 year old (socially disadvantaged) children

Submission date
26/08/2015

Recruitment status
No longer recruiting

Registration date
27/08/2015

Overall study status
Completed

Last Edited
25/02/2016

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
There are many benefits of taking part in physical activity for the body, but there is a good deal of evidence that it is also beneficial for the brain. Studies have shown that children who are physically active tend to perform better in the classroom at academic tasks, such as math and spelling. There have been a number of studies which have shown that physical activity can have a positive effect on academic performance in lessons afterwards. The combination of physical activity and academic learning in the classroom, however, may be an innovative way of improving academic results. The aim of this study is to investigate the effects of a physically active academic intervention on academic achievement, academic engagement (how well they are engaging with what they are learning), executive functioning (the ability to analyse, plan, organise, adjust and complete tasks) and the physical fitness of children.

Who can participate?
Children from second and third grades of mainstream elementary schools in the Northern Netherlands.

What does the study involve?
At each school a second and third grade class are randomly assigned to the intervention or the control group. Children in the intervention group participate in physically active academic lessons in the class room 3 times per week, 22 weeks per year, for a period of two years. The control group participates in regular classroom lessons only for the duration of the study. The children’s academic achievement, executive functioning and physical fitness is measured before the intervention starts, after the first and second intervention year and 7-9 months after the intervention ends. Children's time-on-task (time focusing on a specific task) is measured during the first intervention year.

What are the possible benefits and risks of participating?
Participants could potentially benefit from an improvement of academic achievement, physical

fitness, executive functioning and academic engagement by participation in the physical active academic lessons. There are no significant risks of participating, although there is a possibility of muscle pain in relation to the physical activity.

Where is the study run from?
1. Public Education Group Groningen (Netherlands)
2. Christian Education Association Groningen (Netherlands)
3. Catholic Education Central (Netherlands)
4. Association of Christian education East (Netherlands)
5. Municipality Hoogezand (Netherlands)

When is the study starting and how long is it expected to run for?
January 2011 to July 2015

Who is funding the study?
Ministry of Education, Culture and Science (Netherlands)

Who is the main contact?
Mrs Marijke Mullender-Wijnsma

Contact information

Type(s)
Public

Contact name
Mrs Marijke Mullender-Wijnsma

Contact details
Antonius Deusinglaan 1
Groningen
Netherlands
9713 AV

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
ODB10015

Study information

Scientific Title
Effect of physical active math and language lessons (Fit & Vaardig op school) on the academic achievement of 7-10 year old (socially disadvantaged) children

Acronym
F&V

Study objectives
Primary:
The F&V intervention improves the academic achievement of (socially disadvantaged) children

Secondary:
1. The F&V intervention improves the academic engagement of elementary school children
2. The F&V intervention improves the executive functioning of elementary school children
3. The F&V intervention improves the physical fitness of elementary school children

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethical Committee of the Center for Human Movement Sciences of the University Medical Center Groningen/University of Groningen, 30/05/2012, ECB/15052012/4

Study design
Multi-centre cluster randomized controlled trial.

Primary study design
Interventional

Secondary study design
Cluster randomised trial

Study setting(s)
School

Study type(s)
Quality of life

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

Health condition(s) or problem(s) studied
Academic achievement gap, physical inactivity and obesity

Interventions
Intervention group:
Physical active academic lessons in the classroom. The intervention lessons were taught in the classroom during two school years, 22 weeks per year, three times a week for 20-30 minutes In each lesson, 10-15 minutes are spent on math activities and 10-15 minutes on language activities. Each lesson is supported by a presentation on the interactive whiteboard. The physical exercises are aimed at moderate to vigorous intensity. For example, the children jump on the spot eight times to solve the multiplication sum “2x4”.

Control group:
Regular sedentary classroom lessons.

Intervention Type
Behavioural

Primary outcome measure
Academic achievement is measured by the Speed-Test-Arithmetic, the One-Minute-Test (reading), and the spelling and math tests from a child academic monitoring system (CAMS) before the start of the intervention (T0), after the first intervention year (eight months to one year after T0; T1) after the second intervention year (one year after T1; T2), and 7-9 months after the intervention (T3).

Secondary outcome measures
1. Physical fitness is measured using the EUROFIT physical fitness test battery before the start of the intervention (T0), after the first intervention year (eight months to one year after T0; T1) after the second intervention year (one year after T1; T2), and 7-9 months after the intervention (T3).
2. Executive functioning is measured using the Stroop test, Digit and Visual memory span (part of Wechsler Memory Scale Revised), and M-WCST before the start of the intervention (T0), after the first intervention year (eight months to one year after T0; T1) after the second intervention year (one year after T1; T2), and 7-9 months after the intervention (T3).
3. Academic engagement is measured by time-on-task observations in the classroom, during the first intervention year.

Overall study start date
01/01/2011

Completion date
01/07/2015

Eligibility

Key inclusion criteria
1. Children from second and third grades of mainstream elementary schools
2. Informed consent from the school principals

Participant type(s)
Other

Age group
Child

Sex
Both

Target number of participants
600

Key exclusion criteria

Special schools (schools catering for children who have special educational needs due to learning difficulties, physical disabilities or behavioural problems).

Date of first enrolment
01/01/2011

Date of final enrolment
01/07/2012

Locations

Countries of recruitment
Netherlands

Study participating centre
Public Education Group Groningen (Openbaar Onderwijs Groep Groningen)
Leonard Springerlaan 39
Groningen
Netherlands
9727 KB

Study participating centre
Christian Education Association Groningen (Vereniging Christelijk Onderwijs Groningen)
Eenrumermaar 4
Groningen
Netherlands
9735 AD

Study participating centre
Catholic Education Central (Katholieke Onderwijs Centrale)
Groningen
Netherlands
9701 BL

Study participating centre
Association of Christian education East-Groningen (Vereniging christelijk onderwijs Oost-Groningen)
Scholtenswijk 10
Groningen
Netherlands
9665 KN

Study participating centre
Municipality Hoogezand (Gemeente Hoogezand)
Gorecht-Oost 157
Hoogezand
Netherlands
9600 AB

Sponsor information

Organisation
University of Groningen, University Medical Center Groningen, Center for Human Movement Sciences (Netherlands)

Sponsor details
Antonius Deusinglaan 1
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9713 AV

Sponsor type
University/education

Organisation
University of Groningen, Groningen Institute for Educational Research (Netherlands)

Sponsor details
Grote Rozenstraat 3
Groningen
Netherlands
9712 TG

Sponsor type
University/education

Organisation
University Medical Center Groningen

Sponsor details

Sponsor type
Not defined

Website

http://www.umcg.nl/EN

ROR
https://ror.org/03cv38k47

Funder(s)

Funder type
Government

Funder Name
Ministry of Education, Culture and Science (Ministerie van Onderwijs, Cultuur en Wetenschap)

Alternative Name(s)
Ministry of Education, Culture and Science, Netherlands, OCW

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Netherlands

Results and Publications

Publication and dissemination plan
We already published 2 articles that included study results.
We intend to publish 4 more articles of our study results as soon as possible (2 before the end of 2015 and 2 in 2016).

Intention to publish date
31/12/2015

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/10/2014		Yes	No

Results article	results	19/04/2015	Yes	No
Results article	results	01/02/2016	Yes	No