Increasing adolescents' executive functioning, mental health and academic achievement through physical education

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To examine the effect of a physical activity intervention on executive functioning, mental health and academic achievement in healthy adolescents. The secundaire objective is to examine the effect of a physical activity intervention on physical...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Anxiety disorders and symptoms
Study type	Interventional

Summary

ID

NL-OMON46411

Source
ToetsingOnline

Brief title
Increasing adolescents' cognitive functioning through physical education

Condition

- Anxiety disorders and symptoms

Synonym
anxiety symptoms, depression symptoms

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen
Source(s) of monetary or material Support: Nationaal Regieorgaan Onderwijsonderzoek (NRO)

Intervention

Keyword: academic achievement, executive function, mental health, Physical activity intervention

Outcome measures

Primary outcome

The primary outcome measures of the present are: executive functioning (e.g. inhibition and working memory), mental health (depression symptoms, anxiety symptoms, characteristics of ADHD and self-concept) and academic achievement (spelling and mathematics).

Secondary outcome

The secondary outcome measures are implementation measures, physical fitness and BMI. Finally, school absence and switching of educational level will be measured.

Study description

Background summary

Adolescence represents a crucial stage in the maturation of executive functioning (e.g. working memory and inhibition) and mental health (i.e. behavioral and emotional functioning, and self-concept), which are important predictors of academic achievement. In this study we examine whether intensive and cognitively demanding physical education (PE) lessons can improve these aspects of cognition and indirect academic achievement. The findings of this study might be relevant for PE teachers and school boards, because more intensive and cognitively demanding PE lessons might be more beneficial for adolescents* cognitive functioning than regular PE lessons. Cognitive functioning (executive functions, mental health and academic achievement) will be examined using different questionnaires and two computer based tasks.

Study objective

To examine the effect of a physical activity intervention on executive

functioning, mental health and academic achievement in healthy adolescents. The secundaire objective is to examine the effect of a physical activity intervention on physical fitness and BMI.

Study design

We will use a cluster randomized controlled trial (RCT), with a control and an experimental group.

Intervention

The control group will receive the regular PE lessons. For the intervention group an increase of moderate to intensive activities take place in the adjusted PE lessons, the students also have to perform more cognitive demanding tasks. Both groups will receive two one-hour sessions of PE as part of their school curriculum per week, during 14 weeks.

Study burden and risks

Adolescents receive adjusted PE lessons during their regular PE lessons twice a week for 14 weeks. During this period an increase of moderate to intensive activities take place in the adjusted PE lessons, the students also have to perform more cognitive demanding tasks. During two PE lessons intensity will be measured by an accelerometer (external load), heart rate monitor (internal load) and Pictorial Children*s Effort Rating Table (PCERT; experienced load), furthermore, intrinsic motivation will be measured with a questionnaire. Before and after the intervention cognitive functioning and physical fitness will be measured. All measures will take place in five hours, the aim is to measure academic achievement during a mathematics and a Dutch lesson. Mental health and executive functioning will be measured in a mentor class, it could be that the measurements also take place in other school hours this depends on the school timetable. Of all tests is known that they are experienced as not stressful in this study population. Finally, physical fitness will be measured during two PE lessons. There are no greater risks than normal associated with the intervention or tests during this study. There are no direct benefits for the participants.

Contacts

Public
Universitair Medisch Centrum Groningen

Antonius Deusinglaan 1
Groningen 9713AV

NL
Scientific
Universitair Medisch Centrum Groningen

Antonius Deusinglaan 1
Groningen 9713AV
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)

Inclusion criteria

age 13-15 years old, written informed consent (both from individual as parent/caregiver)

Exclusion criteria

Participant who cannot participate in regular PE lessons due to limitations

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)

Control:	Active
Primary purpose:	Prevention

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	21-09-2018
Enrollment:	825
Type:	Actual

Ethics review

Approved WMO Date:	30-08-2018
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Approved WMO Date:	15-05-2019
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

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
CCMO	NL64543.042.17