What are the effects of 10 minutes of exercise breaks during the school curriculum on the cognitive and academic performance in children.

No registrations found.

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

Summary

ID

NL-OMON24694

Source
Nationaal Trial Register

Brief title
effects of physical activity on academic achievement

Health condition

academic achievement, physical health, cognitive performance

leerprestatie, cognitieve prestatie

Sponsors and support

Primary sponsor: VU University Medical Center Amsterdam
Source(s) of monetary or material Support: The current research is part of the SMART MOVES! project, supported by a grant from NWO (grant number: SPO-12-14).

Intervention

Outcome measures

Primary outcome

Cognitive task performance:

-Attention Network Task, D2 test of attention, the Amsterdam Executive Function Inventory, symbol digit substitution task

-accelerometer, heart rate data (in a subgroup)

Secondary outcome

Length, weight (BMI), fitness level, outcomes of competence questionnaire (Competentie-Belevingsschaal voor Kinderen), variation of fluency task.

Confounders: social economical status (proxy measured through parent's education level), gender, age, possible learning disorders of other disorders, school grades at baseline.

Study description

Background summary

Recent studies indicate that a single bout of physical exercise can have immediate positive effects on cognitive performance of children and adolescents. However, the type of exercise that affects cognitive performance the most in young adolescents is not fully understood. Therefore, this controlled study examined the acute effects of three types of 12-min classroom-based exercise sessions on information processing speed and selective attention. The three conditions consisted of aerobic, coordination, and strength exercises, respectively. In particular, this study focused on the feasibility and efficiency of introducing short bouts of exercise in the classroom. One hundred and ninety five students (5th and 6th grade; 10–13 years old) participated in a double baseline within-subjects design, with students acting as their own control. Exercise type was randomly assigned to each class and acted as between-subject factor. Before and immediately after both the control and the exercise session, students performed two cognitive tests that measured information processing speed (Letter Digit Substitution Test) and selective attention (d2 Test of Attention). The results revealed that exercising at low to moderate intensity does not have an effect on the cognitive parameters tested in young adolescents. Furthermore, there were no differential effects of exercise type. The results of this study are discussed in terms of the caution which should be taken when conducting exercise sessions in a classroom setting aimed at improving cognitive performance.

Keywords: acute exercise, exercise type, cognition, selective attention, information processing speed, adolescents, school setting

Study objective

A single exercise bout with a minimum duration of 10 minutes and a moderate to vigorous intensity level has small but positive effects on cognitive performance in children. These acute effects on cognitive performance are thought to be mediated by an increase in physiological arousal, resulting in the release of catecholamines (noradrenaline, dopamine) and indolamines (serotonin).

We hypothesize that the acute effects of such daily exercise breaks will have a cumulative effect, resulting in larger and more enduring benefits for the cognitive and academic performance of children.

Study design

Baseline: 22 august until 5th of september 2016

Post intervention: First two weeks of december 2016

Intervention

The intervention group will perform an exercise break of 10 minutes with a moderate to vigorous intensity level for 5 days a week, from September to December 2016. The exercise break consists of 10 minutes dancing to "Just Dance" videos online (Ubisoft, streamed online via YouTube). Each video consists of digital characters demonstrating a choreography to a popular song. The children are asked to perform each choreography as shown in the video. Each 10 minute exercise break consists of a minimum of three such videos. All selected videos were previously tested to ensure that each dance choreography had a moderate to vigorous intensity level.
The exercise break will take place during the school curriculum, between the first and the last subject taught on the first half of the school day (that is before the lunch break). All children present in the class will perform the exercise intervention. Experimental outcomes will be analyzed only for children who have a signed informed consent form.

The control group will follow their regular school curriculum. However, to prevent biases, participants in the control group will be asked to perform 10 minutes of reading once a week as a placebo condition.

Contacts

Public
EMGO Institute - VU University medical center
P.O. Box 7057
1007 MB Amsterdam
A. Singh
van der Boechorststraat 7
room: H-531
Amsterdam 1081 BT
The Netherlands
+31 20 4448382
Scientific
EMGO Institute - VU University medical center
P.O. Box 7057
1007 MB Amsterdam
A. Singh
van der Boechorststraat 7
room: H-531
Amsterdam 1081 BT
The Netherlands
+31 20 4448382

Eligibility criteria

Inclusion criteria

-Children who are following primary education and are in grade 5 and 6 (grade 7 and 8 in the Dutch system).

-Children who are enrolled in a regular primary school in the Netherlands (thus no special education).

-Children with an signed informed consent form to participate in this study.

-Children who are physically able to exercise without any serious health issue.

Exclusion criteria

-children not following primary education in a regular primary school.

-Children who are not able to exercise during the intervention periode, due to health issues or serious injuries.

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	22-08-2016
Enrollment:	500
Type:	Anticipated

Ethics review

Positive opinion

Date:	21-07-2016
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	NL5838
NTR-old	NTR5993
Other	SMART MOVES! : 2014.363

Study results

Summary results
no publications based on this trial.

Publications related to the SMART MOVES! project:

Physical Activity in the School Setting: Cognitive Performance Is Not Affected by Three Different Types of Acute Exercise
Vera van den Berg • Emi Saliasi • Renate H. M. de Groot • Jelle Jolles • Mai J Chinapaw • Amika S. Singh
Article • May 2016 • Frontiers in Psychology