ISRCTN29640851 https://doi.org/10.1186/ISRCTN29640851

Can a school environment that encourages physical movements effect academic results and health?

Submission date
20/01/2019

Recruitment status
No longer recruiting

Registration date
07/05/2019

Overall study status
Completed

Last Edited
13/12/2021

Condition category
Other

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

Plain English summary of protocol

Background and study aims
The background of this study is a more pronounced increase in health complaints in Sweden than in other Nordic countries. This acceleration in health complaints is correlated with less physical exercise and school stress (Public Health Agency of Sweden, 2019). Current study aims to answer the question whether or not physical breaks in class can improve student's physical and mental health and academic results. There is no randomly selection of the participants; therefore, the design of the study is pseudo experimental.

Who can participate?
The study involves 60 students from an upper secondary school are divided into two classes, intervention and control. The control class has higher sport interest than the intervention group but equal in gender and age distribution. All students is as healthy volunteers.

What does the study involve?
The intervention group will have separate classroom prepared for physical low activity breaks of 7 minutes twice in lecture; they will have a rotating schedule of different equipment's: office bikes; standing tables; sitting balls and yoga matts. The intervention group will also have outdoor walking with listening to pods teaching information of physical importance. The teaching for the control group is lectures as usual, with no access to the intervention classroom.

What are the possible benefits and risks of participating?
There is, therefore no side effects for the control group, but might have beneficial effect for the intervention group, in matter of better mental health; of every day physical movements, academic performance and better social climate in the class.

Where is the study run from?
The study take place in a typical secondary school in minor town of Sweden.

When is the study starting and how long is it expected to run for?
February 2019 to December 2019

Who is funding the study?
This is a governmental funded study from the ministry of education in Sweden.

Who is the main contact?
Dr. Hans O. Lofgren
hans.lofgren@umu.se

Contact information

Type(s)
Public

Contact name
Mr Johannes Skog

Contact details
Hjortronvagen 19
Falun
Sweden
79145
+46 23-87743
johannes.skog@falun.se

Type(s)
Scientific

Contact name
Dr Hans Löfgren

ORCID ID
https://orcid.org/0000-0003-2588-0780

Contact details
Child and Adolescent Psychiatry,
Institution of Applied Clinical Medicine,
Umeå University
Umeå
Sweden
901 87
+46 730 92 97 95
hans.lofgren@umu.se

Additional identifiers

Protocol serial number
Dnr 8.1.2-2018:0029833

Study information

Scientific Title
Active and Participating by Innovative Classrooms – a pseudo-experimental study of learning abilities, health, peer involvements and academic self-reflection.

Acronym
APIC

Study objectives
Minor physical and self-reflection can improve learning abilities, health and peer involvements.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 23/04/2019, Swedish Ethical Review Authority (Bow 2110, 780 02 Uppsala, Sweden; + 46 10 475 08 00; registrator@etikprovning.se), ref: 2019 -01 128

Primary study design
Interventional

Study design
Phase One: review and development by expert consensus
Phase Two: prospective cohort
Phase Three: non-randomised experimental intervention

Study type(s)
Prevention

Health condition(s) or problem(s) studied
General health

Interventions
The current study is planned for three phases that will be conducted over 12 months in total. Phase 1 involves establishing which equipment that are available for new and improved classrooms. Phase 2 involves gathering pre-data from two classes, one intervention group and one control group. Phase 3 involves conducting the intervention by teachers in the experimental classroom over two semesters in a typical upper secondary school in a smaller town in Sweden.

The sample include 60 healthy students of both gender, between 16 and 17 years of age. There is no exclusion criteria other than denying participating in the study. Clear oral- and written information, including the aim, of the study are provided to the participants and their parents. Written consent is the inclusion criteria. The teacher that will collect the data collection is responsible for conducting the interventions and holding the anonymization code-key; he is the study-manager. Application for ethical approve is requested from the ministry of ethical applications.

The intervention encompasses activity breaks in English- and Mathematic lectures in a pre-set classroom with movement stimulating equipment, i.e. Pilates bolls and muscle training rubber bands. One Sofa by the company Lekolar of the model Meeting Point Mr Box 3-sits high back. The high back gives some isolation and privacy for teamwork. One smaller whiteboard, besides the large whiteboard, is for scheduling and as cognitive assistant. Twelve standing tables of

Lekolar is aimed to minimize sitting. Twelve balance plates of Lekolar that can be combined with the standing tables is aimed to increase movements in the classroom. Ten office bikes by the company Kinnarps including registration sensors, and magnetic resistance so that the students can study and bicycle at the same time. Finally, fourteen ordinary working places with chairs and desks. The activity breaks are twice in seven minutes, the purpose is that the brain might rest to achieve cognitive improvement, concentration improvement and the sitting still will by pulse activating and joyful peer-participating activities. The students sees the remaining time to the break on a specific countdown clock (Time Timer). To ensure that every student in the intervention group will have minor physical during class, there will be a rotation schedule of six weeks. There will also be lectures by walking, listening to information about the importance of exercise recorded on pods on the gymnastic lectures. For the control group the lectures will continue as usual in usual classrooms. The study manage-teacher will take notes of any diverges from the study protocol.

The outcomes are measured three times, base line measures before intervention, second measure before summer leave and end measure in the end of 2019. Demographic data of age, gender, origin, living conditions, sports activities and time assessment of activity, parental education and occupations, transportation and distance to school. Academic achievements of English and mathematics (grades). The mental health is measured by of "Youth Self Report" (YSR), (Achenbach, 2001) an 112 questions long questionnaire about symptoms of mental health considered gold standard of mental health measurement of youth YSR will provide total scale, subscales of externalization and internalization and subscales of DSM-5 (Diagnostic and Statistical Manual of mental disorders). The social climate of the classes is measured by the "What Happen in My Class –questionnaire" (WHMC) that measure Student cohesiveness, Involvement and Cooperation in a two dimensions, one actual and one preferred. WHMC has 20 statements that the students is asked to assess on a Likert scale ranging from "almost never" to "almost always". Accelerometers records movements in three phases, each phase is one week from the measures of the questionnaires. The three measurements (T1, T2 and T3) will be statistically analysed by SPSS 25.

The correlation of the demographics, questionnaires and accelerometers of the change between the measure points for each group. The standard deviation of the group's change will be divided by the difference (of the change) between the groups to get an effect size.

Intervention Type
Mixed

Primary outcome(s)
To be measured at baseline, before summer leave and at the end of 2019:
1. Demographic questions of age, gender, origin, living conditions, sports activities and time assessment of activity, parental education and occupations, transportation and distance to school.
2. Academic achievements of English and mathematics.
3. Mental health will be measured by "Youth Self Report" (YSR), (Achenbach, 2001) a 112 items questionnaire with three answering statements "not true", "somewhat or sometimes true" and "very true or often true".
4. The social climate of the classes is measured by the "What Happen in My Class –questionnaire" (WHMC) that measure Student cohesiveness, Involvement and Cooperation in a two dimensions, one actual and one preferred.
5. Physical activity is measured by accelerometers attached to the student's body for one week, three times during the study. The starting day for each measurement is the day of the

questionnaires. Three complement questions address students self-report of leisure time physical activities (The National Board of Health and Welfare, 2011).

Key secondary outcome(s)
none

Completion date
16/12/2019

Eligibility

Key inclusion criteria
1. Student
2. Aged 16-17 years old

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Other

Sex
All

Total final enrolment
60

Key exclusion criteria
none

Date of first enrolment
01/09/2019

Date of final enrolment
01/09/2019

Locations

Countries of recruitment
Sweden

Study participating centre
Kristinegymnasiet
Falun kommun
Bergmästergatan 32

Falun
Sweden
79171

Sponsor information

Organisation
Umeå university

ROR
https://ror.org/05kb8h459

Funder(s)

Funder type
Government

Funder Name
Ministry of Education in Sweden

Results and Publications

Individual participant data (IPD) sharing plan
The datasets in continuous numeric data in excel format, analysed during the current study will be available upon request from Dr Hans O. Lofgren, hans.lofgren@umu.se of: Youth Self Report (Achenbach 2001); What-is-Happening-in-this-Class? (Aldridge & Fraser, 2000); student's academic performance; accelerometer data. This data will be accessible from april 2020 for peer-reviewers or scholars that need to replicate the study, under the condition that the identity of the students or exact location (school) will remain anonymous, the purpose of requisition of data must be for research or education only. Data will not be provided for profitable business. Data will be provided for administration cost (including VAT). The participants of the study has given the consent that peer reviewers might revaluate the data.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		20/10/2021	13/12/2021	Yes	No