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Can we improve children's motor skills in preschool?

Submission date
19/04/2016

Recruitment status
No longer recruiting

Registration date
13/10/2016

Overall study status
Ongoing

Last Edited
20/07/2023

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol

Background and study aims
Children’s motor skills (ability to move) seem to influence their well-being, learning ability and general health. Therefore, children with good motor skills are happier, better at learning and move more than children with poorer motor skills. Accordingly, better motor skills might help to reduce the risk of diseases triggered by an unhealthy lifestyle such as cardiovascular disease (heart and blood vessel disease) and diabetes. The aim of this study is to investigate the relationship between motor skills and other parts of the child's development. The study will also aim to find out whether a targeted effort in the preschools can improve the children’s motor skills and whether that in turn will improve the children’s health, well-being and cognitive function (mental processing).

Who can participate?
All children attending kindergarten in the municipality of Svendborg, Denmark.

What does the study involve?
Participating kindergartens are randomly allocated to one of two groups. Kindergartens in the first group take part in four to five weekly sessions of adult-controlled physical activities, each lasting 45 minutes, during which the children get their heart rates up and complete a range of exercises focusing on different areas. These include gross motor skills (big movements) including crawling, jumping, climbing and running; fine motor skills (small movements), such as holding a pencil or handling beads, co-ordination skills through dancing, catching and throwing; balance; improving vestibular sense (sense of balance and spatial orientation), tactile sense (sense of touch) and kinesthetic sense (a sense which helps detect body weight and position); and relaxation techniques, such as through child yoga. Each kindergarten has the freedom to develop specific activities following a basic course structure. Kindergartens in the second group continue a normal for the duration of the study. At the start of the study and then again after 6, 18 and 30 months, children in both groups have their motor skills assessed. Information is also collected throughout the study to monitor the children’s development.

What are the possible benefits and risks of participating?
Participating children benefit from having their development closely monitored and having any problems investigated at an early stage, which may lead to better outcomes. There are no notable risks involved with participating.

Where is the study run from?
The study is run from the University of Southern Denmark and takes place in kindergartens in the municipality of Svendborg (Denmark)

When is the study starting and how long is it expected to run for?
December 2015 to July 2019

Who is funding the study?
1. Tryg Foundation (Denmark)
2. The Danish Chiropractors' Foundation (Denmark)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
Effectiveness of a structured intervention for improving Motor skills in Danish PreSchool children: a randomised controlled trial

Acronym
MiPS

Study objectives
By introducing a motor skills focus to regular kindergarten activities, it is possible to improve the children's motor skills.

Ethics approval required
Old ethics approval format

Ethics approval(s)
The Regional Committees on Health Research Ethics for Southern Denmark, 13/01/2016, ref: S-20150178

Study design
Multi-centre cluster randomised controlled trial

Primary study design
Interventional

Secondary study design
Cluster randomised trial

Study setting(s)
Other

Study type(s)
Prevention

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

Health condition(s) or problem(s) studied
Motor skills

Interventions
Participating preschools are randomized, stratified by socioeconomic background (family-type (single parent, both parents etc.) and household income of the up-take area) to one of two groups

Intervention: At least four days a week (preferably five) participants take part in a minimum of 45-minutes of adult-initiated and adult-led activities, where all children participate. These activities challenge:

1. Motor function: This involves gross motor challenges such as creeping, crawling, running, jumping, hopscotch, jumping, climbing; fine motor challenges such as holding a pencil, handling small objects like beads and construction toys or catching insects; coordination exercises such as crawling exercises, cross-body movements, "Angels in the Snow", jumping jack and throwing, gripping and kicking exercises; and different dynamic and static balance exercises such as walking on a line and standing on one leg.
2. Sensing: The vestibular sense is stimulated for example by rolling, turning around, doing somersaults and swinging. The tactile sense is stimulated by touch from others, for example, in the form of massage and by touching various materials and objects of different size, shape and temperature. The kinaesthetic sense is stimulated by challenging the body's joints, muscles and tendons in different ways, for example, by bending, stretching and pushing, lifting objects of different weights and by fast and slow movements.
3. Relaxation: The children will also experience other types of physical stimulus, namely relaxation and unwinding. It can, for example, be through massage, children’s yoga or similar.
All pedagogues in the intervention pre-schools will go through a comprehensive competency development program aimed at improving the children’s motor skills.

Control: Participants continue as usual for the duration of the study.

Participants in both groups are followed up at 6, 18 and 30 months and have their motor skills assessed. Information is also collected throughout the study to monitor the children’s development.

Intervention Type
Behavioural

Primary outcome measure
Gross and fine motor skills are measured using Movement Assessment Battery for Children (shuttle-run, 20m fast run and one-leg stance) at baseline, 6, 18 and 30 months

Secondary outcome measures
1. Perceived motor competence is measured using the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children at age six (last test before leaving pre-school)
2. Musculoskeletal disorder rate is measured through parent interviews via SMS every two weeks from baseline until study end. Additionally, ICD-10 diagnoses of persistent complaints (four weeks or more) will be made at an orthopaedic department as they occur throughout the study period
3. Physical activity is measured using axivity AX3 accelerometers (http://axivity.com/produdts /ax3) for six days at baseline, 6 months, 18 months and 30 months
4. General well-being is measured using the Strength and Difficulties Questionnaire, filled in electronically by both parents and teachers every six months from baseline
5. Language development is measured using Language assessment 3-6 which is administered by the preschool teachers at baseline and at school-start. The assessment battery consists of measures within two domains of language, i.e. oral language (Vocabulary, Comprehension, Communication strategies) and pre-literacy measures (Rhyme detection, Print awareness, Deletion and Letter identification)
6. Executive function is measured using three elements from Preschool Self-Regulation Assessment (balance beam, pencil tap and snack delay) at baseline, 6, 18 and 30 months

Overall study start date
01/12/2015

Completion date
01/07/2029

Eligibility

Key inclusion criteria
All children attending kindergarten in the municipality of Svendborg, Denmark

Participant type(s)
Healthy volunteer

Age group
Child

Sex
Both

Target number of participants
800 children in 17 kindergartens

Total final enrolment
435

Key exclusion criteria
Does not meet inclusion criteria

Date of first enrolment
01/08/2016

Date of final enrolment
01/08/2018

Locations

Countries of recruitment
Denmark

Study participating centre
University of Southern Denmark
Campusvej 55
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Sponsor information

Organisation
University of Southern Denmark

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Sponsor type
University/education

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ROR
https://ror.org/03yrrjy16

Funder(s)

Funder type
Charity

Funder Name
TrygFonden

Alternative Name(s)
Tryg Foundation

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Denmark

Funder Name
The Danish Chiropractors' Foundation

Results and Publications

Publication and dissemination plan
Knowledge and insights gained through this research will be disseminated to scientific communities, preschool staff, primary care clinicians, opinion and decision-makers, and finally to the public, using a variety of avenues. The protocol is expected to be submitted for publication by the end of 2016 and the results of the RCT in late 2019.

Intention to publish date
31/12/2022

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?
Protocol article	protocol	29/08/2017		Yes	No
Other publications		12/12/2021	20/07/2023	Yes	No
Results article		23/11/2021	20/07/2023	Yes	No
Results article		22/02/2022	20/07/2023	Yes	No