

Improving work for the body – a participatory ergonomic intervention among childcare institution workers

Submission date 11/01/2017	Recruitment status No longer recruiting	☒ Prospectively registered ☒ Protocol
Registration date 12/01/2017	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 02/02/2026	Condition category Injury, Occupational Diseases, Poisoning	☐ Individual participant data

Plain English summary of protocol

Background and study aims

Danish childcare institution workers report a high physical workload, high levels of physical exertion during work, high rates of musculoskeletal pain (bone and muscle pain) as well as a high levels of sickness absence. It is therefore very important to develop effective and feasible programs for reducing the work demands and physical exertion during work as well as preventing musculoskeletal pain (MSPs) and its consequences (sickness absence). Participatory ergonomics is a strategy that works to try to identify and correct factors that negatively impact the physical health of workers. This type of program has previously been successful in reducing physical workloads and MSPs in other occupations. The aim of this project is to develop and test a participatory ergonomic program and evaluate whether this is effective at reducing physical exertion during work, MSPs and physical work demands amongst childcare institution workers.

Who can participate?

All daycare workers employed in participating childcare institutions

What does the study involve?

Participating childcare institutions are randomly allocated to one of two groups. At the start of the study, participants in both groups are asked to fill out questionnaires about work and health related factors, participate in a short health check, and have their level of physical activity at work measured by wearing an accelerometer and a heart rate monitor. Those in the first group then take part in the participatory ergonomics program. This involves taking part in team workshops and meetings led by a consultant where they will discuss ergonomic issues (issues relating to efficiency and comfort in the working environment) and solutions. Participants in this group take part in the program for the duration of the eight month study. Those in the second group continue as normal for four months, after which they take part in the participatory ergonomics program. Participants in both groups are followed up monthly from the start of the study until the end (eight months) in order to assess their physical exertion levels, MSPs and work demands in the workplace.

What are the possible benefits and risks of participating?

This study will benefit participants by reducing their physical work demands, reducing their physical exertion during work and potentially reduce MSPs and sickness absence. There are no notable risks involved with participating in this study.

Where is the study run from?

The study is run from The National Research Centre for the Working Environment and Arbejdsmiljø København and takes place in approximately 15-20 childcare institutions in the municipality of Copenhagen (Denmark)

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

January 2017 to December 2019

Who is funding the study?

The Danish Work Environment Research Fund (Denmark)

Who is the main contact?

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Contact information

Type(s)

Scientific

Contact name

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Study information

Scientific Title

Improving work for the body – a participatory ergonomic intervention for reduction of physical exertion and musculoskeletal pain among childcare institution workers; a cluster-randomised controlled trial

Study objectives

Implementation of a participatory ergonomic intervention will:

1. Reduce physical exertion among childcare institution workers compared to a control group receiving usual treatment
2. Reduce musculoskeletal pain among childcare institution workers compared to a control group receiving usual treatment
3. Reduce physical work demands among childcare institution workers compared to a control group receiving usual treatment

Ethics approval required

Old ethics approval format

Ethics approval(s)

The National Research Centre for the Working Environment has an institutional agreement with the Danish Data Protection Agency about procedures to treat confidential data (journal number 2015-41-4232), e.g. by securing data at a protected drive with limited access and making all individual data anonymous. The Danish National Committee on Biomedical Research Ethics (The local ethical committee of Frederiksberg and Copenhagen) has evaluated a description of the study and concluded that, according to Danish law as defined in Committee Act § 2 and § 1, the intervention described should not be further reported to the local ethics committee (Ref number: 16048606).

Primary study design

Interventional

Study design

Cluster randomised wait-list controlled trial

Study type(s)

Prevention

Health condition(s) or problem(s) studied

Work environment

Interventions

Participating childcare institutions will be randomised to either intervention or control (usual treatment)/wait-list arms of the trial. Participating childcare institutions will be informed of their allocation to intervention or control group by researchers before the beginning of baseline surveys. The intervention lasts approximately four months.

Intervention: The intervention is based on a participatory approach. The intervention mapping process will be used to further develop the intervention before intervention start. This is to make the intervention both relevant and feasible for the childcare institutions. However, some things are settled beforehand. First, the management will be informed about the intervention through meetings and emails, and they will be involved in further planning of the process. Second, a workshop (of approximately 2-3 hours) will be held for each of the working teams in the childcare institutions for all childcare institution workers where the aim is to introduce the project and discuss ergonomic issues related to physical exertion and musculoskeletal pain that are experienced among the childcare institution workers. At the workshop the childcare institution workers are asked to prioritize among ergonomic issues and find solutions to these issues. Action plans will be made, and at 3-4 meetings (of 1 hour each) the working teams will evaluate, and adjust plans if required. A final evaluation meeting will be held after

approximately four months (approximately 2 hours). The intervention is delivered by local work environment consultants (occupational therapists and physiotherapists).

Control group: While in this group no other interventions will be offered. However, they will be offered treatment as usual, e.g. ergonomic consultancy and guidance or individual advice on pain management which is something that are already offered to the workplaces. This group will then receive the intervention after approximately four months.

All participants, both the intervention and the control group will receive an electronic questionnaire (which they can fill out during working hours) at baseline and at two follow-ups (after approximately 4 months and after the control group receive the intervention (after approximately 8 months)). In addition to the electronic questionnaire the participants will also be offered a health check at baseline as well as objective measurements of physical activities by accelerometers and by heart rate monitors at baseline and at follow up. Finally the researchers will observe the childcare institution workers' physical work demands during the working day. Both the intervention group and the control group will be followed up with questionnaires and objective measurements after the control group has received the intervention. It is expected that during this time, the first intervention group will continue with the intervention in this period.

Intervention Type

Behavioural

Primary outcome(s)

1. Self-rated physical exertion measured on a numeric rang scale (0-10) each month by questionnaire from baseline to 8 months
2. Musculoskeletal pain (duration, intensity and number of pain regions) measured each month by questionnaire from baseline to 8 months
3. Work-related pain interference (days) measured by questionnaire each month from baseline to 8 months

Key secondary outcome(s)

1. Self-reported sickness absence due to musculoskeletal pain (days) is measured by questionnaire each month from baseline to 8 months
 2. Objectively are measured occupational physical activities by accelerometers and (added 10/08/2017) heart rate by a heart rate monitor at baseline, 4 and 8 months
 3. Self-efficacy is measured by questionnaire at baseline, 4 and 8 months
 4. Need for recovery is measured by questionnaire at baseline, 4 and 8 months
- Added 10/08/2017: 5. Employee involvement is measured by questionnaire at baseline, 4 and 8 months

Economic analysis:

1. Resource use and cost of implementation of the intervention is measured by questionnaire and by registrations from researchers and the workplaces at 8 months
2. Absenteeism and presenteeism is measured by questionnaire at baseline, 4 and 8 months

Completion date

31/12/2019

Eligibility

Key inclusion criteria

All childcare institution workers from the recruited institutions.

Participant type(s)

Mixed

Healthy volunteers allowed

No

Age group

Adult

Sex

All

Total final enrolment

0

Key exclusion criteria

There are no exclusion criteria.

Date of first enrolment

14/08/2017

Date of final enrolment

03/11/2017

Locations**Countries of recruitment**

Denmark

Study participating centre

The National Research Centre for the Working Environment

Lersø Parkalle 105

Copenhagen

Denmark

2100

Study participating centre

Arbejdsmiljø København

Enghavevej 82

Copenhagen

Denmark

2450

Sponsor information

Organisation

The National Research Centre for The Working Environment

ROR

https://ror.org/03f61zm76

Funder(s)

Funder type

Research organisation

Funder Name

The Danish Work Environment Research Fund

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		01/07/2020	17/01/2020	Yes	No
Results article	Cost-effectiveness results	09/02/2022	11/02/2022	Yes	No
Results article	Physical Work Demands of Childcare Workers in Denmark: Device-Based Measurements and Workplace Observations Among 199 Childcare Workers from 16 Day Nurseries	01/07/2020	13/02/2024	Yes	No
Results article	Process evaluation	15/01/2024	13/02/2024	Yes	No
Results article	The Use of Time Flow Analysis to Describe Changes in Physical Ergonomic Work Behaviours Following a Cluster-Randomized Controlled Participatory Ergonomic Intervention	01/11/2022	13/02/2024	Yes	No
Protocol article		31/07/2018		Yes	No
Interim results article		13/05/2025	02/02/2026	Yes	No

