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Healthy work among train drivers

Submission date
04/08/2023

Recruitment status
No longer recruiting

Registration date
06/09/2023

Overall study status
Completed

Last Edited
18/09/2025

Condition category
Other

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Train driving is an occupation that was once physically demanding, with train drivers having to shovel coal, but has now become predominantly sedentary, with drivers seated while operating the train. Consequently, train drivers still experience injuries and poor health, highlighting the need for interventions that promote their well-being and health in the workplace. Many traditional health-promoting workplace interventions are based on initiatives that are often an add-on to the actual productive work. In contrast to these conventional health promotion approaches, this study adopts an organizational and holistic approach to workplace health promotion, aiming to integrate health promotion into the existing work tasks and productive work. Therefore, the aim of this proof-of-concept study is to examine the potential and possibilities of redesigning and organizing train drivers' work and work tasks in a way that can possibly be health-promoting.

Who can participate?
Train drivers working at DSB can participate

What does the study involve?
This is a mixed-methods study among train drivers in Denmark, including approximately 15 train drivers. The study team will develop, test and evaluate the feasibility of conducting an organizational health-promoting workplace intervention, inspired by the Goldilocks Work Principle.

The study involves four phases:
1. Mapping of the train drivers' work tasks, work demands and physical activity at work
2. Development of a workplace intervention
3. Implementation of the intervention
4. Evaluation of the intervention including feasibility and acceptance

In the first phase, the team aims to map and assess the train drivers' work tasks, work demands and physical activity at work and then to observe the workers in their daily work routine. The team plan to do semi-structured interviews with the train drivers, about their work tasks and perceived demands and challenges and measure the participants' physical activity during work (walking, standing, sitting or running using objective measurements, by an accelerometer sensor attached to their thigh). In the second phase – development - the team aim to identify potential

areas of improvement and develop the intervention in collaboration with the workplace. One or two workshops are planned with the employees, managers and occupational safety and health OSH representatives so that they become involved in the project and through a participatory approach, have them involved in developing the intervention. Third, in the intervention phase, the feasibility of implementing the initiatives developed will be tested. Testing the intervention involves having the train drivers perform their work with the implemented changes (intervention) that were designed during the third phase. Lastly, we plan to evaluate the feasibility and acceptance of the intervention from the train drivers and their manager(s)' perspectives.

What are the possible benefits and risks of participating?
Participating train drivers can gain better insight into their physical and psychosocial working conditions and beneficial health effects. There are no risks or side effects of participating.

Where is the study run from?
The National Research Center for the Working Environment (Denmark)

When is the study starting and how long is it expected to run for:
March 2023 to February 2024

Who is funding the study?
Trygfonden (Denmark)

Who is the main contact?
Charlotte Diana Nørregaard Rasmussen (Senior researcher), cnr@nfa.dk

Contact information

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Study information

Scientific Title
Proof of concept study of reorganizing work among train drivers to promote health – a goldilocks work approach

Study objectives
It is feasible to organize work in a way that ensures a more balanced distribution of physical and psychosocial work demands among train drivers in order to enhance the workers physical, social and mental health and well-being.

Ethics approval required
Ethics approval not required

Ethics approval(s)
Ethical approval was not required as the planned evaluation of the study did not fall under the definition of the laws defined in Committee Act § 2 and § 1, and could be initiated without approval from The Committees on Health Research Ethics for the Capital Region of Denmark (Ref number: F-23031959).

Primary study design
Interventional

Study design
Eight weeks non-randomized quasi-experimental proof-of-concept study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Physical and psychosocial work demands in train driving

Interventions
In this non-randomized proof-of-concept study, there will be no control group, and all participants will receive the organizational intervention at their workplace. The intervention consists of measurements of physical activity, a workshop to develop the intervention together with the workplace, and the intervention itself, which will focus on the reorganization of work to

improve physical and psychosocial work demands for train drivers. The duration of the intervention will be approximately eight weeks and ends with follow-up measurements of physical behaviors, acceptability, and psychosocial working conditions as well as self-reported measurements of musculoskeletal pain, stress, well-being, need for recovery and burnout.

Intervention Type
Other

Primary outcome(s)
1. Feasibility of the intervention measured using questions based on the validated instrument Feasibility of Intervention measures (FIM) through questionnaires and semi-structured interviews with the participants at follow-up
2. Participants' acceptability of the intervention measured using a validated questionnaire and semi-structured interviews of selected participants during follow-up. The questionnaire and the interview guide will be based on the Theoretical Framework of Acceptability (TFA), which includes a generic TFA-based questionnaire.

Key secondary outcome(s)
1. Work demands: Information about work tasks and organization of work is measured using the observations made by a researcher at the workplace, from work schedules collected from the workplace, and through data about employees' physical behavior (see specifics under physical behavior), at baseline and at follow-up approximately 8 weeks from baseline
2. Physical behavior: Information about the participants' physical activity at work (number of steps, light-, moderate- and high physical activity and sitting time) is measured using observations, and using a triaxle accelerometer (SENS Motion®, Copenhagen, Denmark) attached to the right thigh of the participants for 24 hours over five consecutive days. Participants will be asked to report their work hours, leisure time and sleep using an app (MOTUS, The National Research Center for the Working Environment, Copenhagen, Denmark)
3. Psychosocial and physical factors and health: Influence at work, Physical and emotional fatigue and stress measured using The Danish Psychosocial Questionnaire at baseline and follow-up with questions from the validated questionnaire. Participants will also be asked about their experience of influence and involvement in their work tasks and work demands in semi-structured interviews at baseline and follow-up
4. Information about physical demands at work, pain frequency and pain limitation during work measured using validated questions from Work Environment and Health in Denmark Study, in a questionnaire at baseline and follow-up
5. Physical exertion during work measured using the Borg Rating of Perceived Exertion (RPE) scale in a questionnaire at baseline and follow-up
6. Participants' well-being measured using the 5-item World Health Organization scale in a questionnaire at baseline and follow-up
7. Need for recovery measured using a short-form validated Danish NFR scale, in a questionnaire at baseline and follow-up

Completion date
01/02/2024

Eligibility

Key inclusion criteria
Train drivers working at "Danske Statsbaner" (DSB) – a Danish train operating company

Participant type(s)
Employee

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
67 Years

Sex
All

Total final enrolment
22

Key exclusion criteria
1. Pregnancy
2. Allergic to plasters
3. Fever

Date of first enrolment
01/09/2023

Date of final enrolment
01/11/2023

Locations

Countries of recruitment
Denmark

Study participating centre
Copenhagen Central Station
Bernstorffsgade 16
Copenhagen V
Denmark
1577

Sponsor information

Organisation
National Research Center for the Working Environment

Funder(s)

Funder type
Research organisation

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

Results and Publications

Individual participant data (IPD) sharing plan
The data that will be generated and analyzed based on the study are not expected to be made available due to protection of participants' identity.

IPD sharing plan summary
Not expected to be made available