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Physical Activity Initiated by Employer and its health effects: an eight-week follow-up study

Submission date
21/07/2015

Recruitment status
No longer recruiting

Registration date
21/08/2015

Overall study status
Completed

Last Edited
05/09/2023

Condition category
Circulatory System

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

Plain English summary of protocol

Background and study aims
In this project we will study whether physical activity motivated at the workplace among road workers and their managers, all with predominantly sedentary work, can have a positive influence on their heart health. Road workers are exposed to diesel exhaust and road dust, which can possibly negatively affect their heart health. Roadworkers spend much of the workday sitting in big machines. Senior and middle managers work long hours, which can also lead to negative consequences for their health. The results will also be of interest to working life in general and for the general population.

Who can participate?
Healthy volunteers aged over 18.

What does the study involve?
You will undergo two or three health surveys. The health survey will be conducted in your local workplace and last about 45 minutes. The examination will consist of an interview/questionnaire regarding work history, history of heart disease or other serious illness, and use of drugs and tobacco. Your height, blood pressure and weight will be measured and we will take blood samples to find out whether you have substances in your blood that may be signs of inflammation. Your aerobic fitness will be determined using a graded test on a cycle ergometer. You will then participate in a physical activity program. Your steps will be measured by a wrist-band pedometer. Both team and individual performance will be monitored and the best performance will be rewarded at the end of the study. After eight weeks you will undergo the tests from the start of the study again.

What are the possible benefits and risks of participating?
The advantage of the project is that it will give us new knowledge about potential health effects of increasing physical activity. This could provide an opportunity to prevent health problems and eventual illness and may affect the assessment of potential occupational diseases, and may also contribute to general public health. Some may find the blood sampling unpleasant. Blood sampling is usually a procedure that does not involve any risks, but injuries (bruising under the

skin) may occur. To reduce risk , only trained personnel will take the blood samples. Certain blood tests used in the project may detect disease that was unknown to you before, in which case you will be notified and referred for further investigation.

Where is the study run from?
The study is carried out by the National Institute of Occupational Health (STAMI) in collaboration with Mesta company.

When is the study starting and how long is it expected to run for?
From August 2014 to October 2015.

Who is funding the study?
Statoil's Fund for Research in Occupational Medicine (Norway).

Who is the main contact?
Dr Marit Skogstad

Contact information

Type(s)
Scientific

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Study information

Scientific Title
Physiological effects of employers motivated physical activity

Acronym
PAIE

Study objectives
In this project we will study whether physical activity motivated at the workplace, increased physical activity among road workers and their leaders, all with predominantly sedentary work, can have a positive influence on their cardiovascular status. Road workers are exposed to diesel exhaust and road dust, which can possibly affect their cardiovascular status negatively. Roadbuilders spends much of the workday sitting in big machines. Senior and middle managers

in the construction industry are exposed to high work and long working hours, which can also lead to negative consequences for their health. The results will also be of interest to working life in general and for the general population .

Ethics approval required
Old ethics approval format

Ethics approval(s)
Regional Ethics Committee in Oslo (2014/1521), 04/12/2014, ref: 2014/1521/REK sør-øst B

Primary study design
Observational

Study design
Single-center observational prospective study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Cardiovascular status

Interventions
All subjects participating in the physical activity program got organized in teams and competed against each other in a virtual internet mountain track. Steps measured by a wrist-band pedometer were recorded on the personally designated profile on the competition website. Both team and individual performances could be continuously monitored and the best performance was rewarded at the end of the program.

Maximal oxygen uptake, blood pressure, resting heart rate (RHR) and blood samples (glycosylated hemoglobin, lipids and C-reactive protein) were obtained at baseline and after eight weeks.

Intervention Type
Behavioural

Primary outcome(s)
Aerobic fitness was tested using a graded test on a cycle ergometer (Monark 874 E, Monark Exercise AB, Vansbro, Sweden). The starting load was 70 W with a cadence of 70 revolutions per minute (RPM). Every minute the resistance was increased by 35 W until the subject was exhausted (cadence <65 RPM). Oxygen uptake was measured continuously with a Cosmed K4b2 breath by a breath metabolism analyser (Cosmed Srl, Rome, Italy) and was calculated from the highest 30 s averaging interval at the conclusion of the test.

Key secondary outcome(s)
1. Blood pressure and resting heart rate (RHR) were measured on the left arm after five minutes of rest. The measurements were taken three times in intervals of one minute. The average of the last two measurements of both the systolic (sBP) and the diastolic pressure (dBP) was used in the statistical analysis. Blood pressure and RHR was measured with BpTRU® (Bp TRU medical devices, Coquitlam, Canada) on both occasions. All tests were performed using the same device and by the same researchers at the same time of the day both at baseline registration and at

follow-up.
2. Glycosylated hemoglobin (HbA1c) was collected in EDTA blood. Serum for investigation of lipids (cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL) and C-reactive protein (CRP) was collected on gel tubes and then centrifuged 35 x 1000 rpm for 15 minutes within 60 minutes after the blood had been drawn from a vein. The tubes were sent by mail to the Department of Medical Biochemistry Oslo University Hospital and analyzed within 24 hours. HbA1c EDTA blood was analyzed with a Tosoh G7 HPLC analyser (Tosoh Bioscience, Inc., San Francisco, CA, USA) which uses "high performance liquid chromatography" as the separation principle. The analytical variation is 1.7 %.
3. Cholesterol, LDL and HDL in serum were analyzed by the enzymatic colorimetric method in the Cobas 8000. Analytical variation coefficients are respectively 3.0, 4.0 and 3.5 %.
4. CRP in serum was quantified by the particle enhanced immunoturbidimetric method on Cobas 8000 (Cobas 8000 Modular Analyzer Roche Diagnostics, www.roche.com). Analytical variation is 8.0 %.
Blood was collected at the same time of the day on both occasions.

Completion date
31/10/2015

Eligibility

Key inclusion criteria
Healthy volunteers aged over 18

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
Some disorders will disqualify for participation in the study, such as serious heart disease and cancer

Date of first enrolment
01/08/2014

Date of final enrolment
01/09/2014

Locations

Countries of recruitment
Norway

Study participating centre
National Institute of Occupational Health
Gydas v 8, Pb 8149 Dep
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N-0033

Sponsor information

Organisation
National Institute of Occupational Health (Norway)

ROR
https://ror.org/04g3t6s80

Funder(s)

Funder type
Charity

Funder Name
Statoil's Fund for Research in Occupational Medicine

Results and Publications

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?
Results article	results	04/05/2016		Yes	No
Results article		09/02/2017	05/09/2023	Yes	No