EuroJEM for physical workload and psychosocial factors: Exposome Project for Health and Occupational Research (EPHOR)

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About EPHOR – Horizon 2020 EU project

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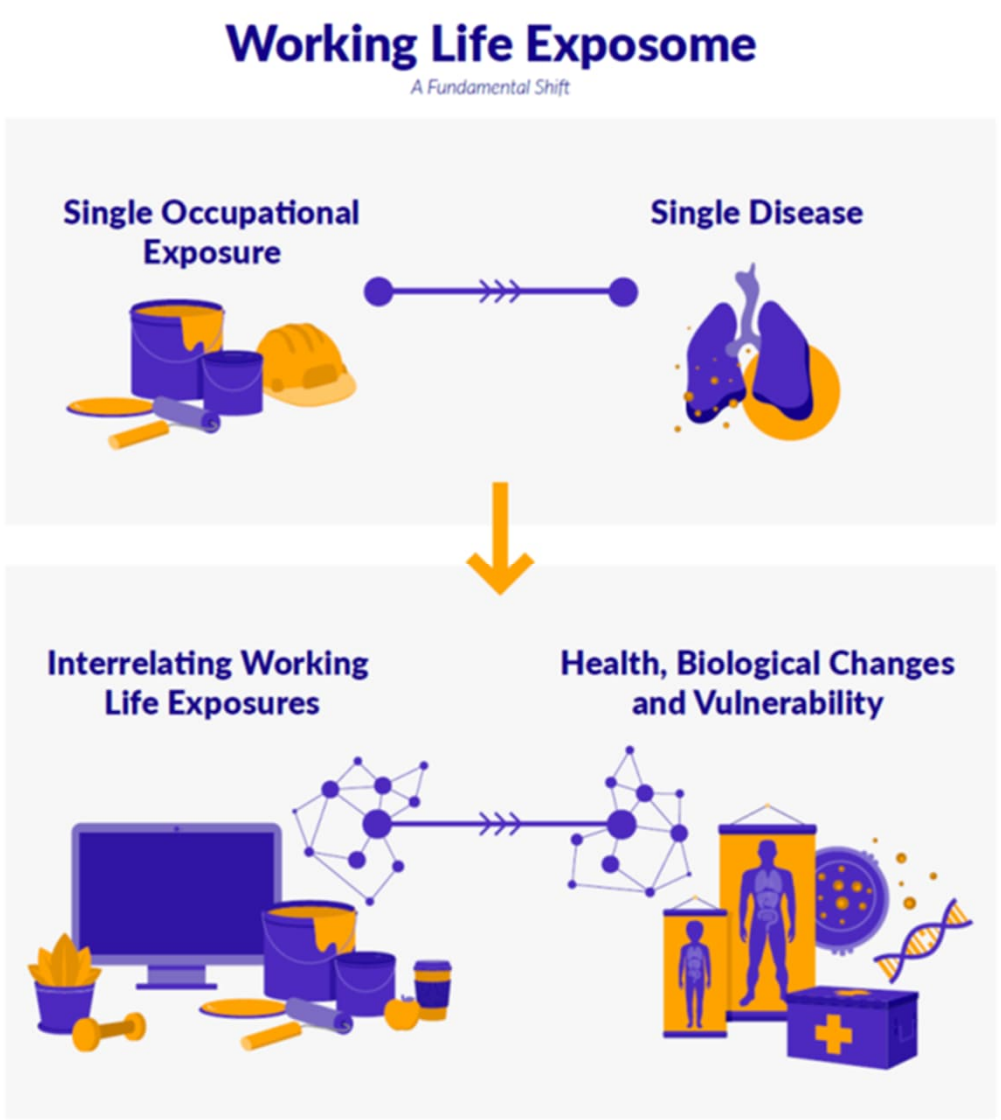

The overall goal

to develop the working-life exposome, defined as all occupational and related non-occupational factors, in order to improve the evidence base for developing cost-effective preventive actions, targeting improvement of health, and reducing the burden of non-communicable diseases

Combined approach

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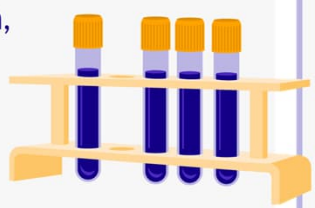
APPROACH	EXPOSOME DATA	EXPOSURE-RESPONSE DATA
Mega Cohort Large scale pooling of EU cohorts	**Existing Data** Cohorts, job exposure matrices, databases	**Increased Power** Associations between (interacting) working life risk factors and NCDs, vulnerable life periods or sub groups, e.g. gender, SES
Case Studies Focus on respiratory disease Focus on shift work	**Also New Data** External: individual level, high resolution, many exposures Internal: biomarkers and omics	**Increased resolution** Biological pathways, markers of exposure or disease, multiple short term exposures related to acute effects



HEALTH AND ECONOMIC IMPACT

Based on working life exposure-response data.

Introduction

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- Job Exposure Matrix (JEM) can provide workers' exposure data in the absence of individual exposure information
- JEMs for physical workload and psychosocial factors have been developed in several countries during past years
- Generalizability and cross-national use of the existing JEMs have been discussed and few efforts have been made to develop international JEMs

Aims

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❑ As part of the EPHOR we aimed

to harmonize JEMs existing in Europe and to construct a gender-specific European JEM (EuroJEM) for occupational physical workload and psychosocial factors to be used in epidemiological studies based on European cohorts

❑ Aim of the current study

to explore performance of the EuroJEM in different occupational cohorts by testing predictive validity of the physical workload and psychosocial EuroJEMs against self-reported musculoskeletal pain and diagnosed depression, respectively

Construction of EuroJEMs for physical workload and psychosocial factors

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- Existing JEMs were identified through literature search

  12 JEMs from 7 countries

- Identified JEMs were reviewed for similarities with regard to

  included exposures exposure definitions and assessments
  comparability of occupational coding systems

- For the harmonization and construction of the EuroJEM gender-specific national JEMs were selected

  for physical workload from Finland, France, Norway and Sweden

  for psychosocial factors from Finland, Norway and Sweden

- Agreement between exposure categories of the selected JEMs was examined and disagreements were resolved by consensus of expert panels

Physical workload EuroJEM: exposure, exposure categories

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Exposures	Categories, based on proportion of exposed	
Heavy lifting	0 - 0-5%	non-exposed
Fast breathing due to heavy workload	1 - 6-24%	
Working in forward bent posture	2 – 25-49%	possibly exposed
Working with hands above shoulder	3 – 50-74%	exposed
Kneeling or squatting	4 – 75-100%	

Number of exposed occupations is small

For the current study, possibly exposed and exposed categories were merged

Validation cohorts

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- ❑ the CONSTANCES cohort (France), N=104 910
- ❑ the Stockholm Public Health Cohort 2002 (SPHC, Sweden), N=12 759
- ❑ the Surveys of Living Condition on Working Environment 2009 (LKU2009, Norway), N=9 534
- ❑ the Health 2000 Study (H2000, Finland), N=3 948

Eligible study population

- 25-60 years old
- working during the past 12 months

Outcome: Musculoskeletal pain

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Outcome selection was based on

- previous knowledge regarding the associations of the outcomes with the exposures included in EuroJEM
- the outcome was measured comparably in at least two cohorts

We selected five pain outcomes

1)	any pain in the low back during the past 30 days	Finnish and Norwegian cohorts
2)	frequently occurring/daily low back pain	French and Swedish cohorts
3)	frequently occurring/daily shoulder pain	French and Swedish cohorts
4)	any pain in the knee during the past 30 days	Finnish cohort
5)	severe knee pain during the past 7 days	French cohort

Description of cohorts. Men

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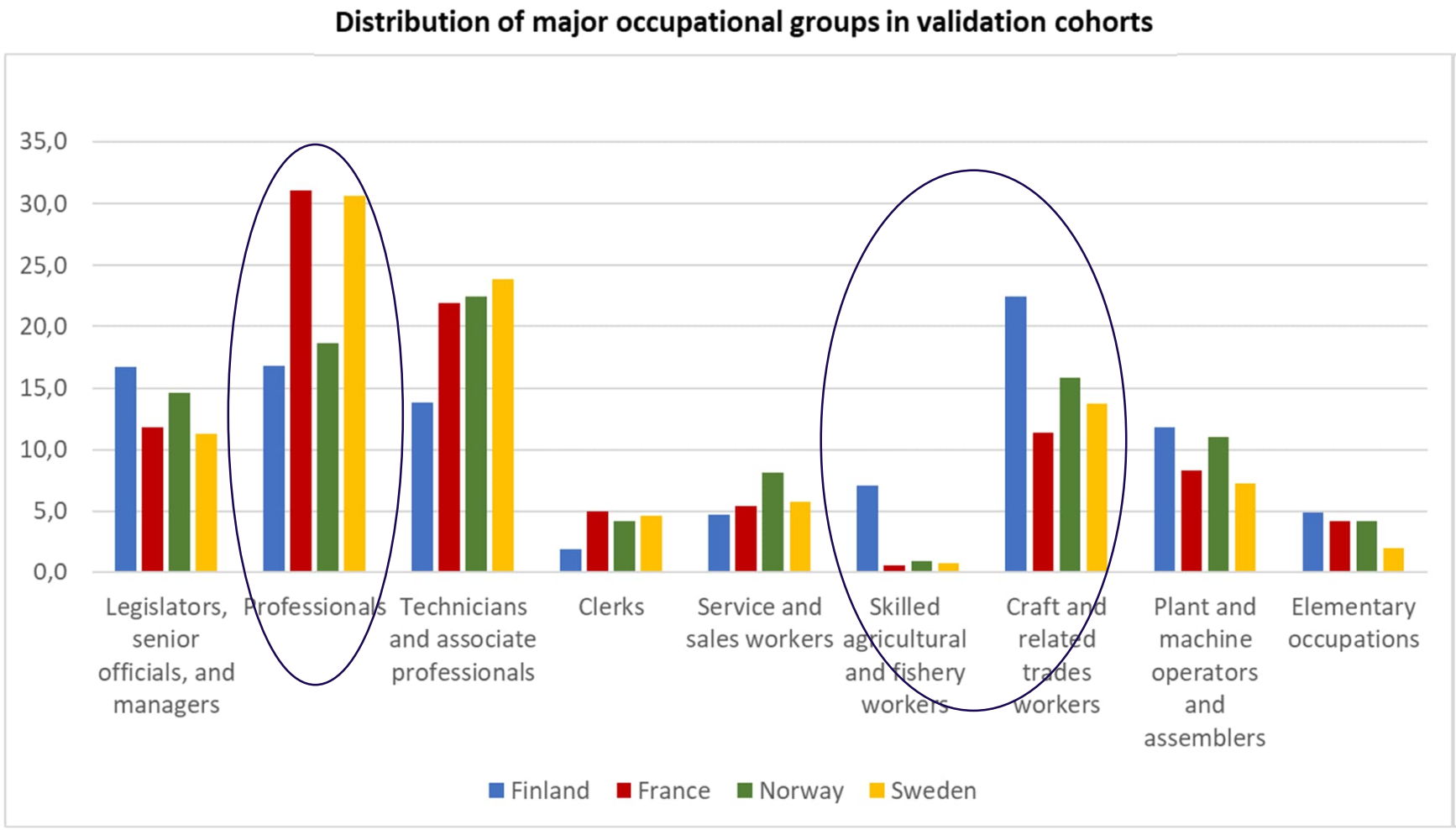

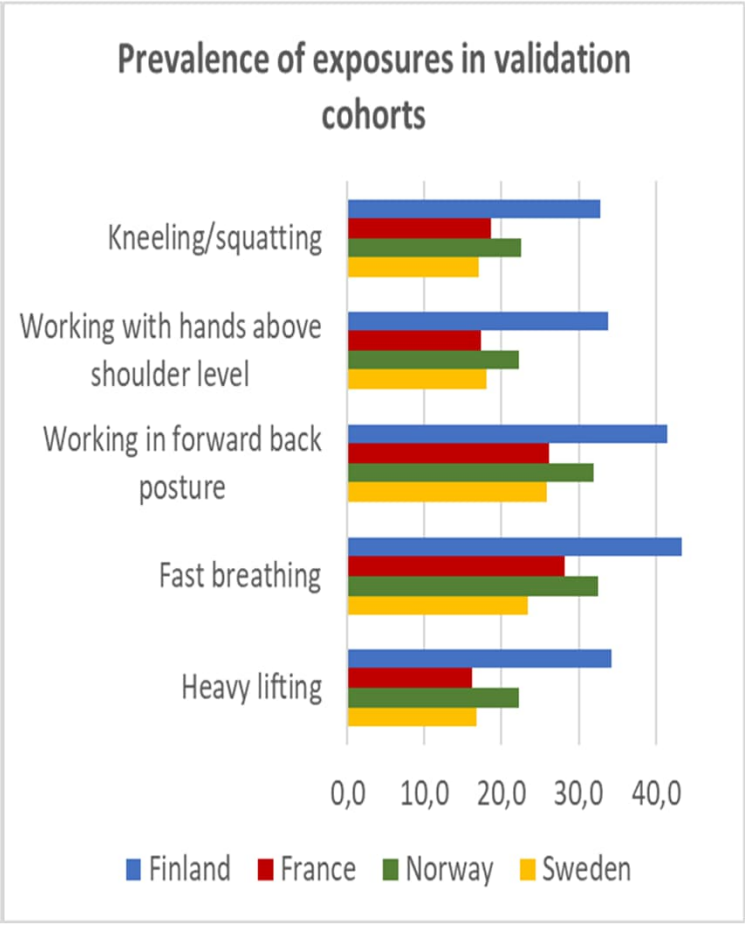

Description of cohorts. Women

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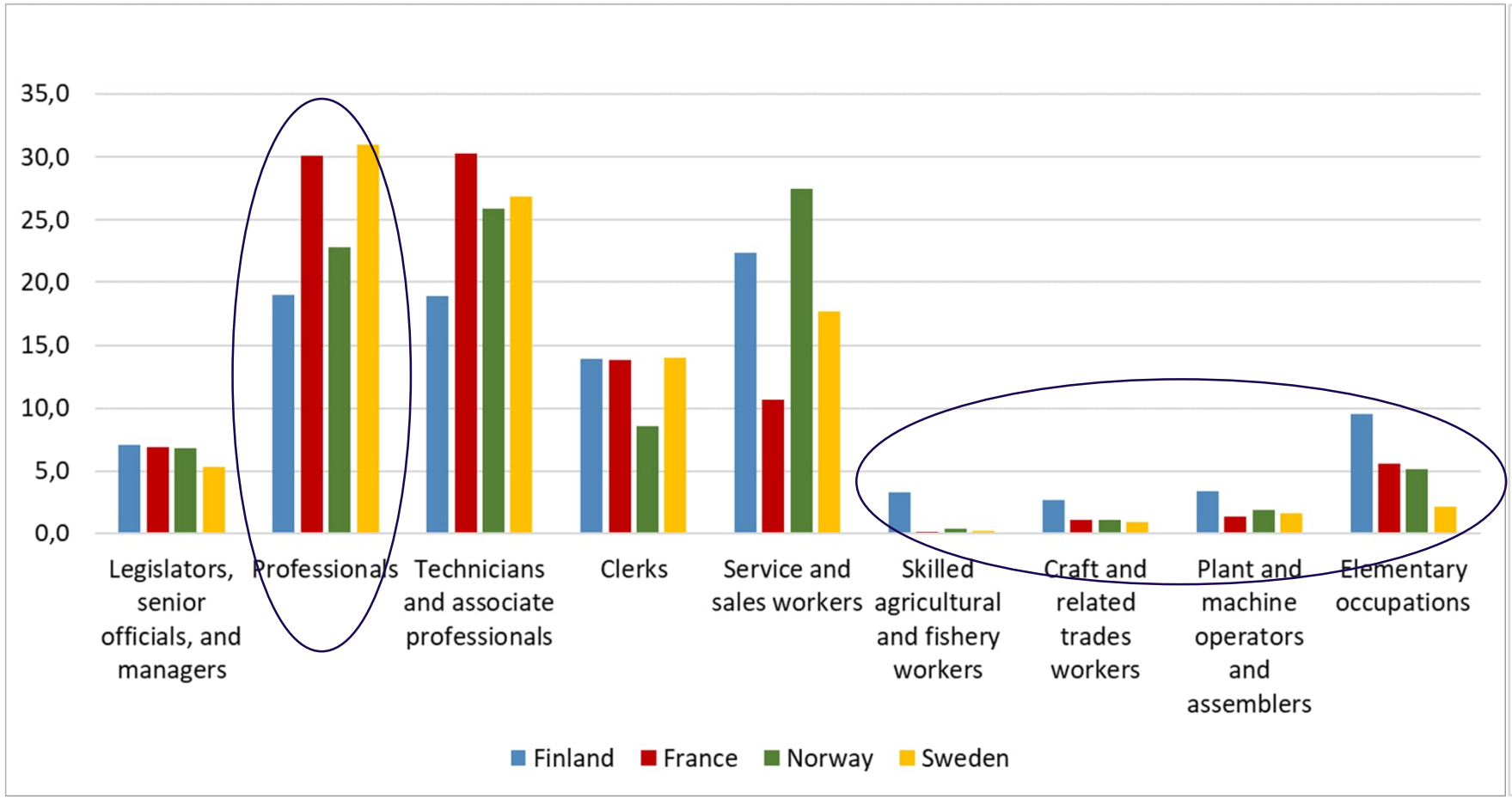

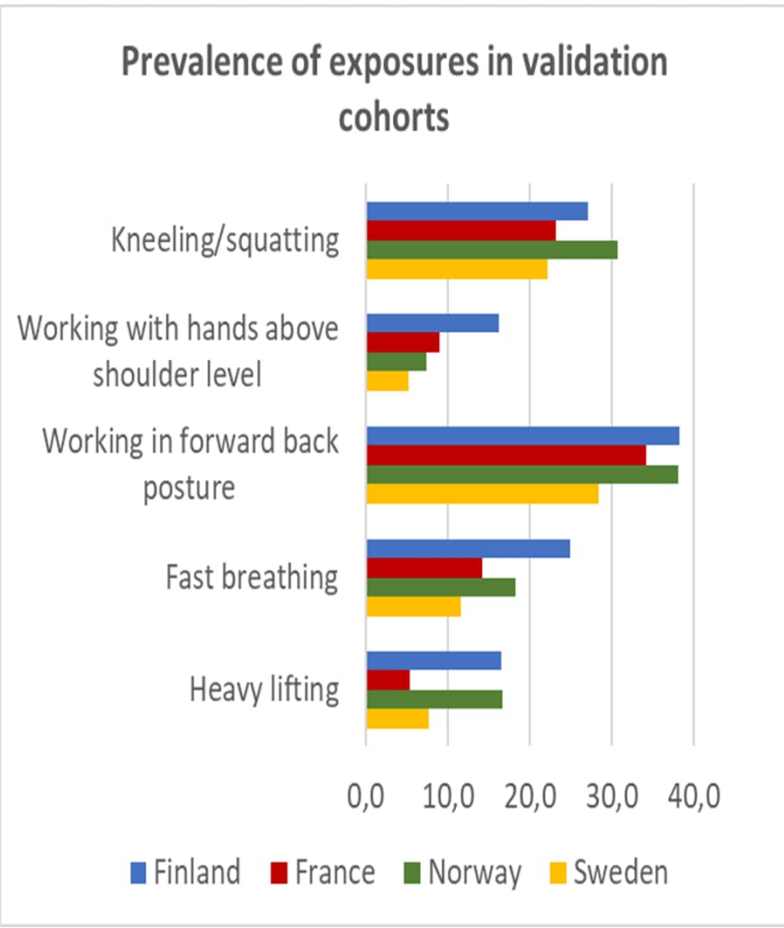

Results: Associations of physical workload exposures with low back pain (LBP)

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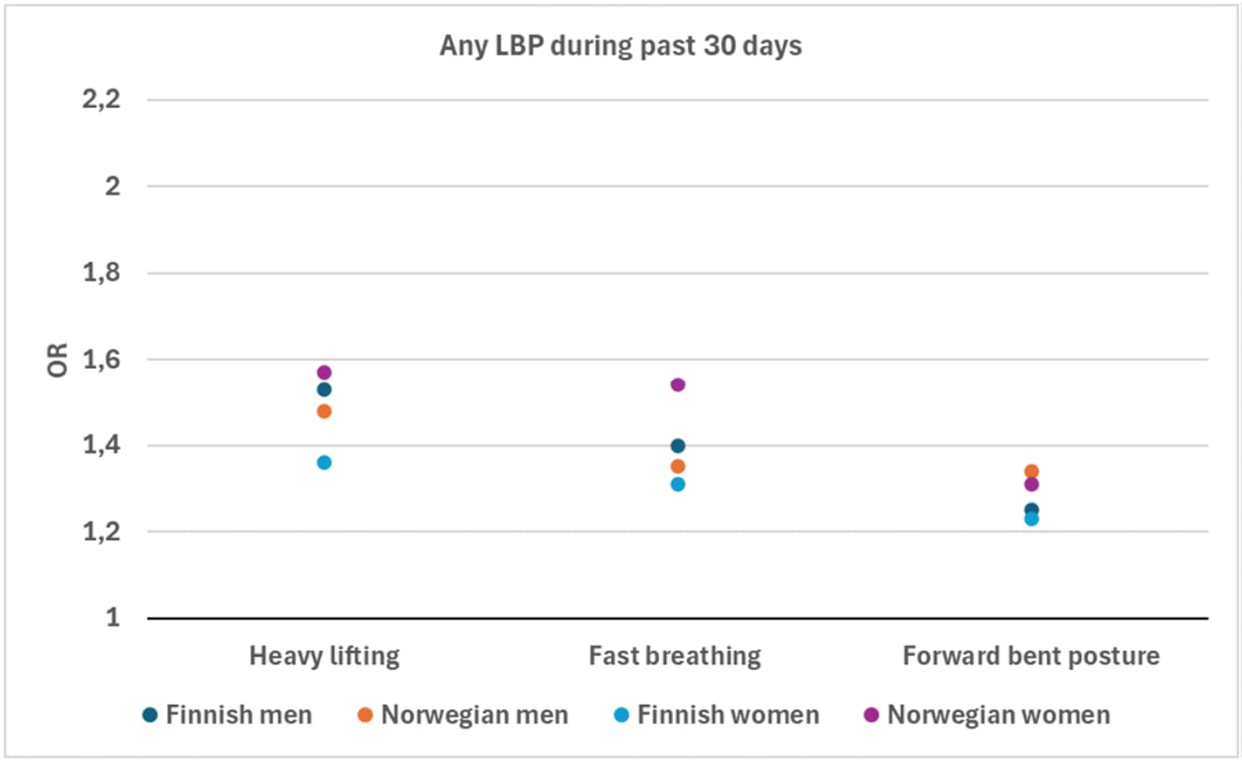
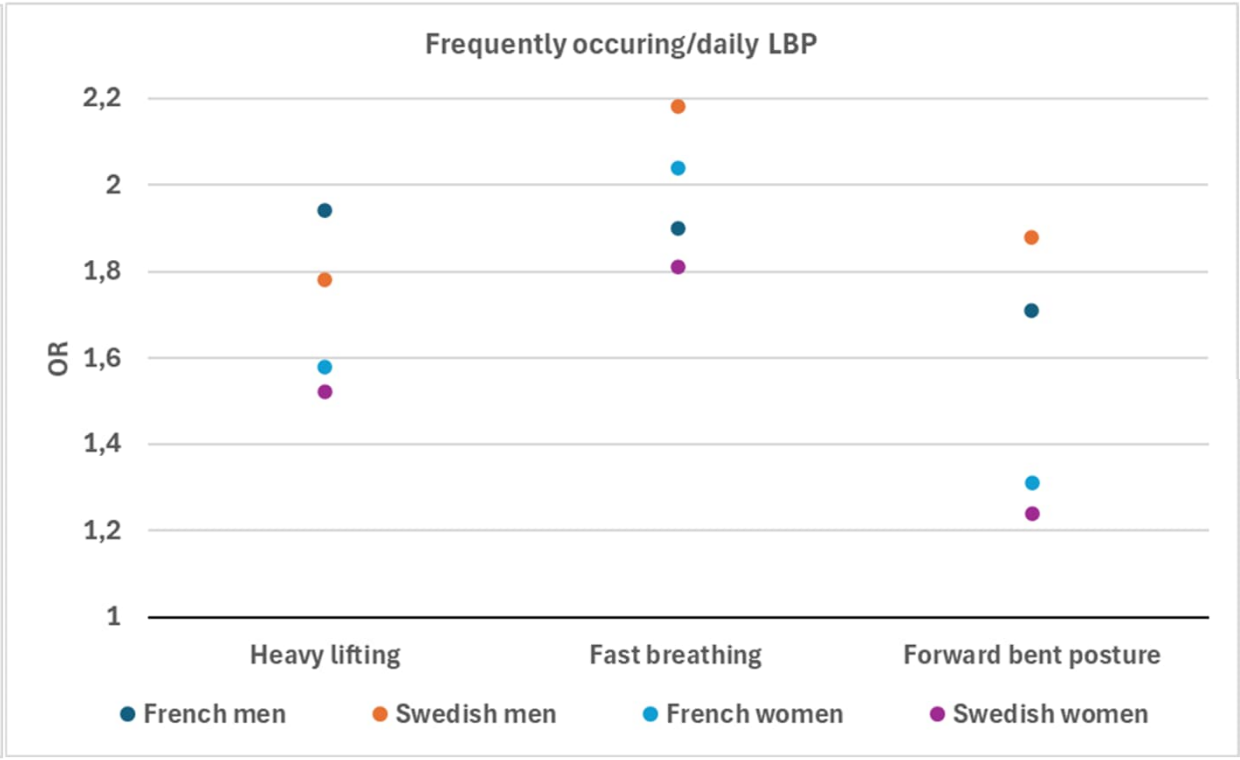
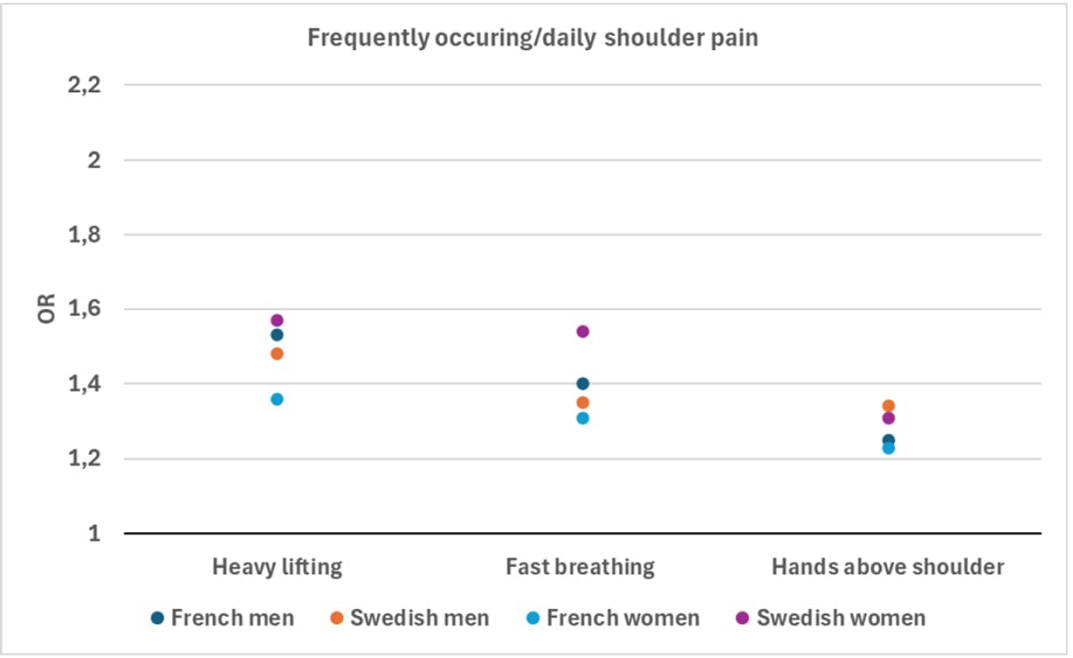
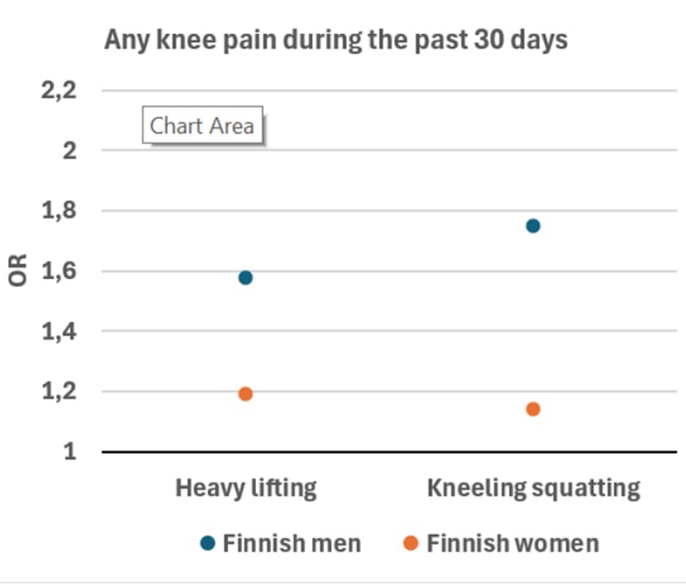
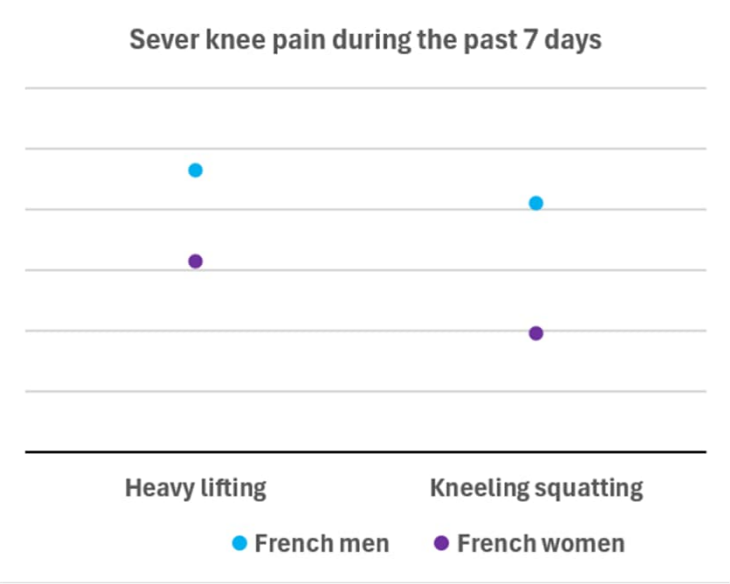




Results: Associations of physical workload exposures with shoulder and knee pain







Psychosocial EuroJEM: exposure, exposure categories

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Exposures	Categories, based on proportion of exposed	
High job demands (quantitative demands)	1 - 0-24%	non-exposed
Low decision authority	2 – 25-49%	
	3 – 50-74%	
	4 – 75-100%	

Job strain

Exposure categories of high job demands and low decision authority dichotomized using 50% cut-off

Validation register-based cohorts

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- Swedish Work, Illness, and labor-market Participation (SWIP) cohort

(N ~3 million)

- Finnish State of Labor Force Cohort (N =1 768 369)

Eligible study population

- 30-60 years old at baseline
- occupation at baseline

Proportion of exposed based on EuroJEM in Swedish and Finnish samples

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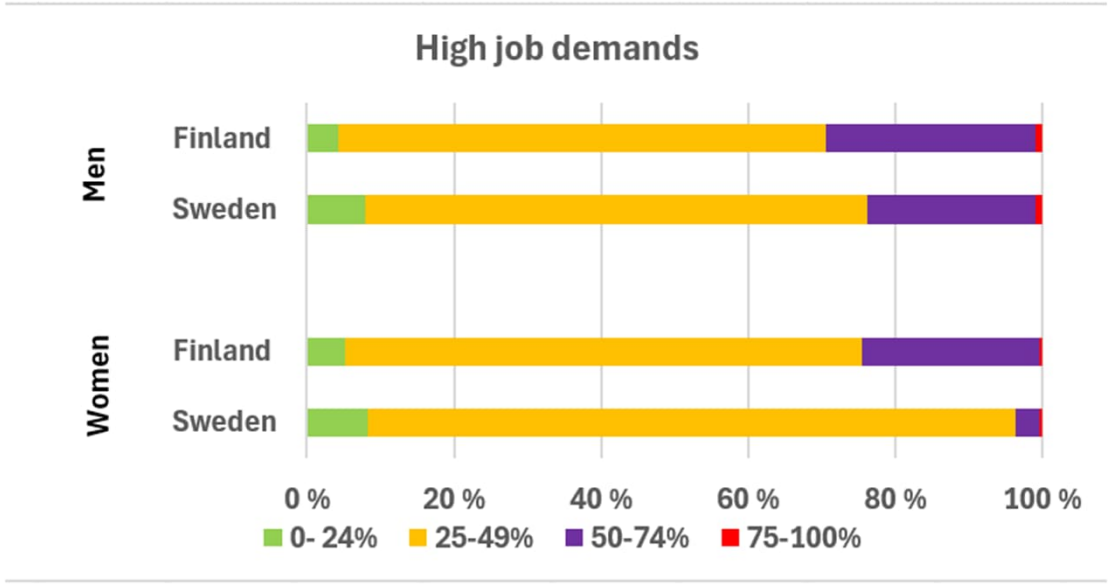

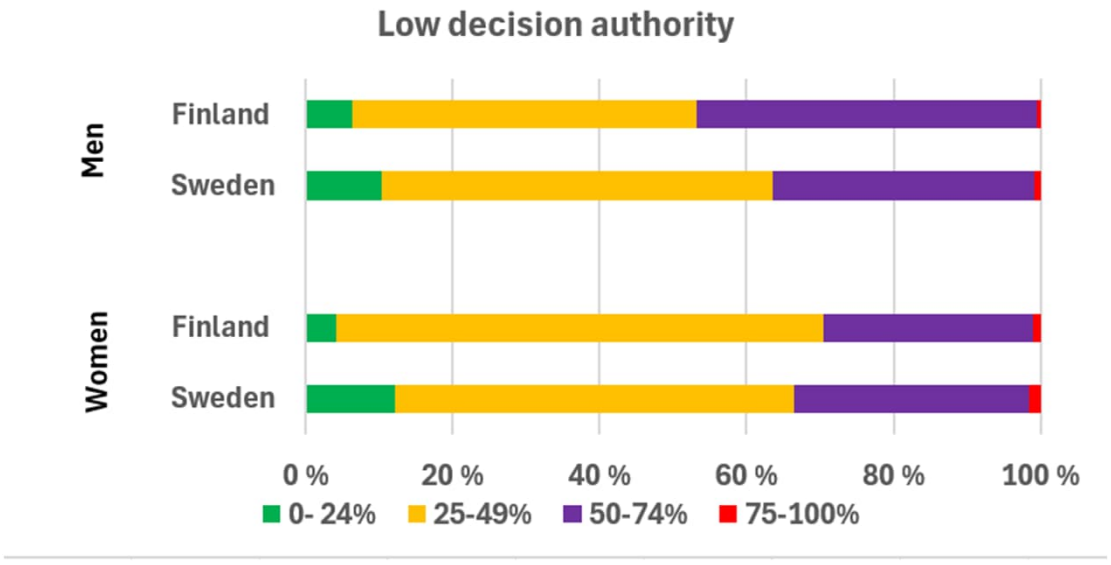

Outcome

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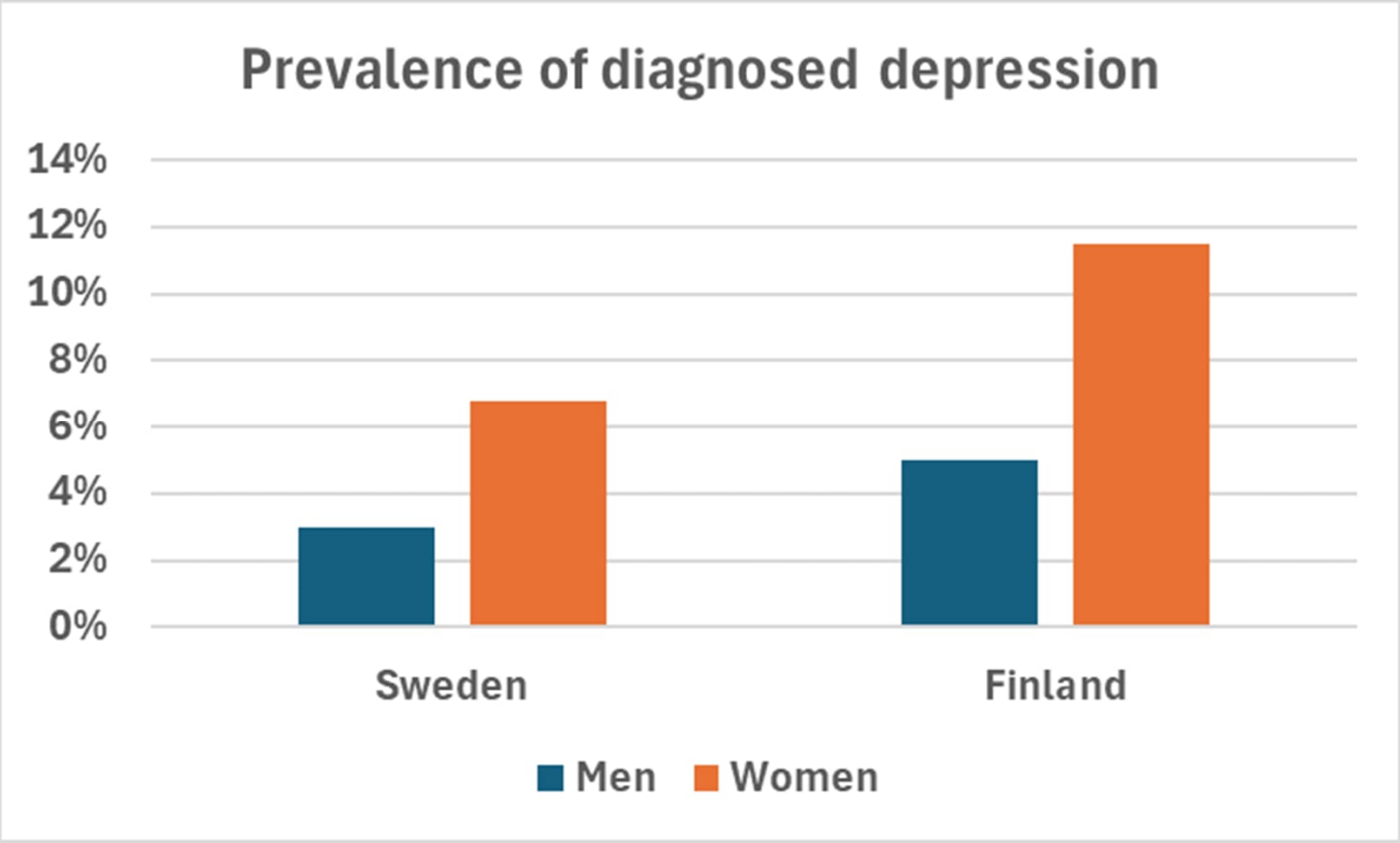
The first in- or out-patient health care visit due to depression (ICD-10 codes F32 and F33, either primary or secondary diagnosis)



Results: Association between psychosocial exposures and risk of diagnosed depression by country and gender. HRs are adjusted for age

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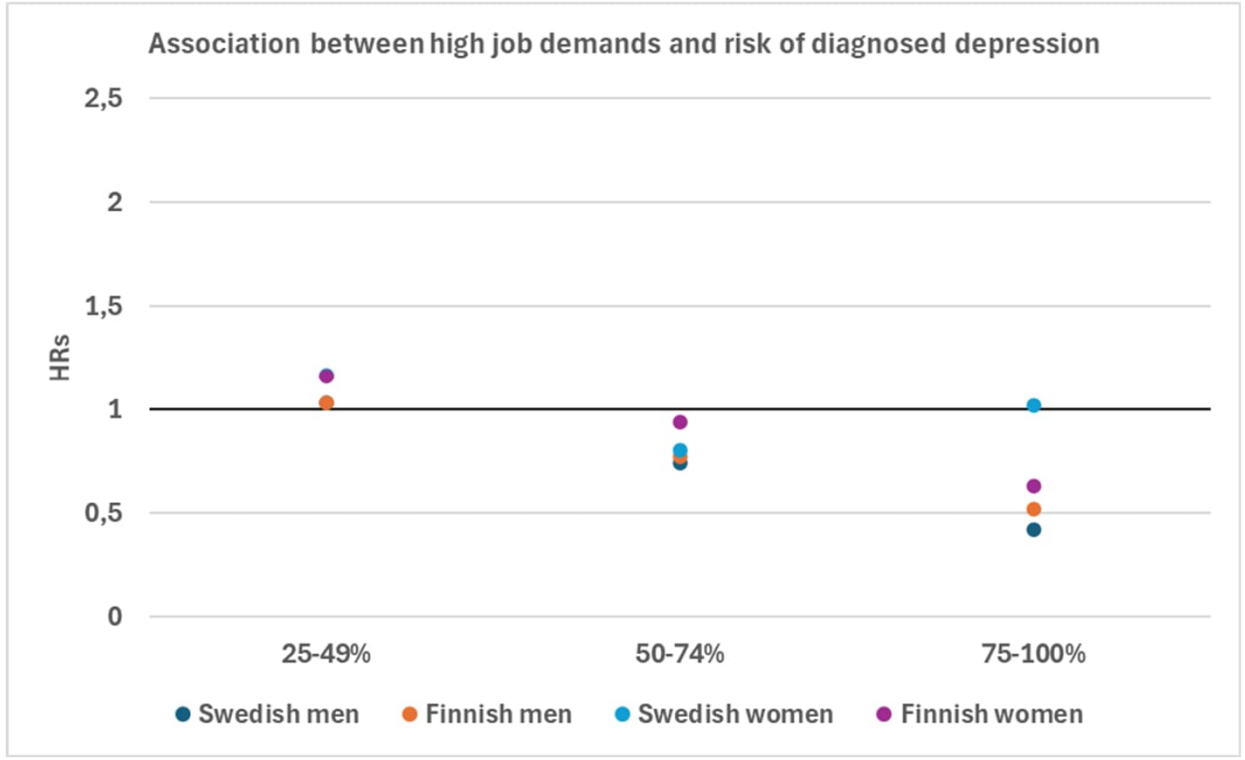

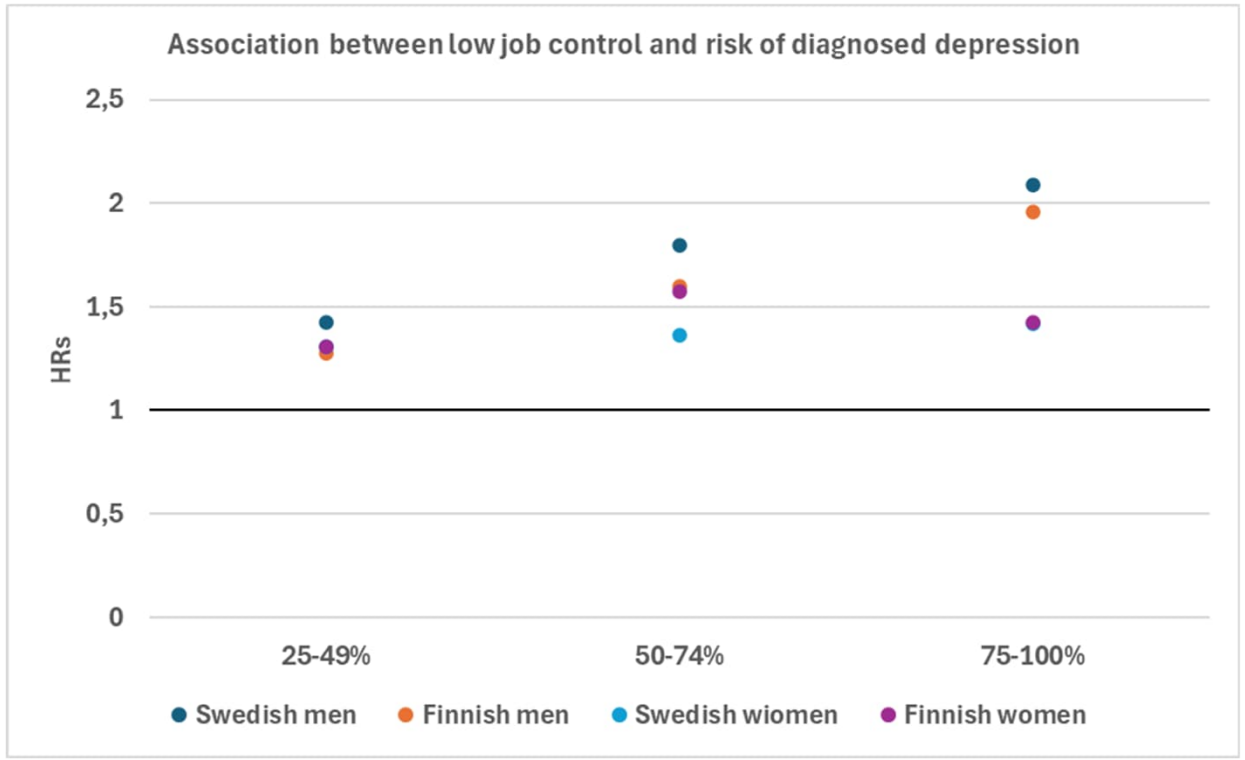

Results: Association between job strain and risk of diagnosed depression by country and gender. HRs are adjusted for age

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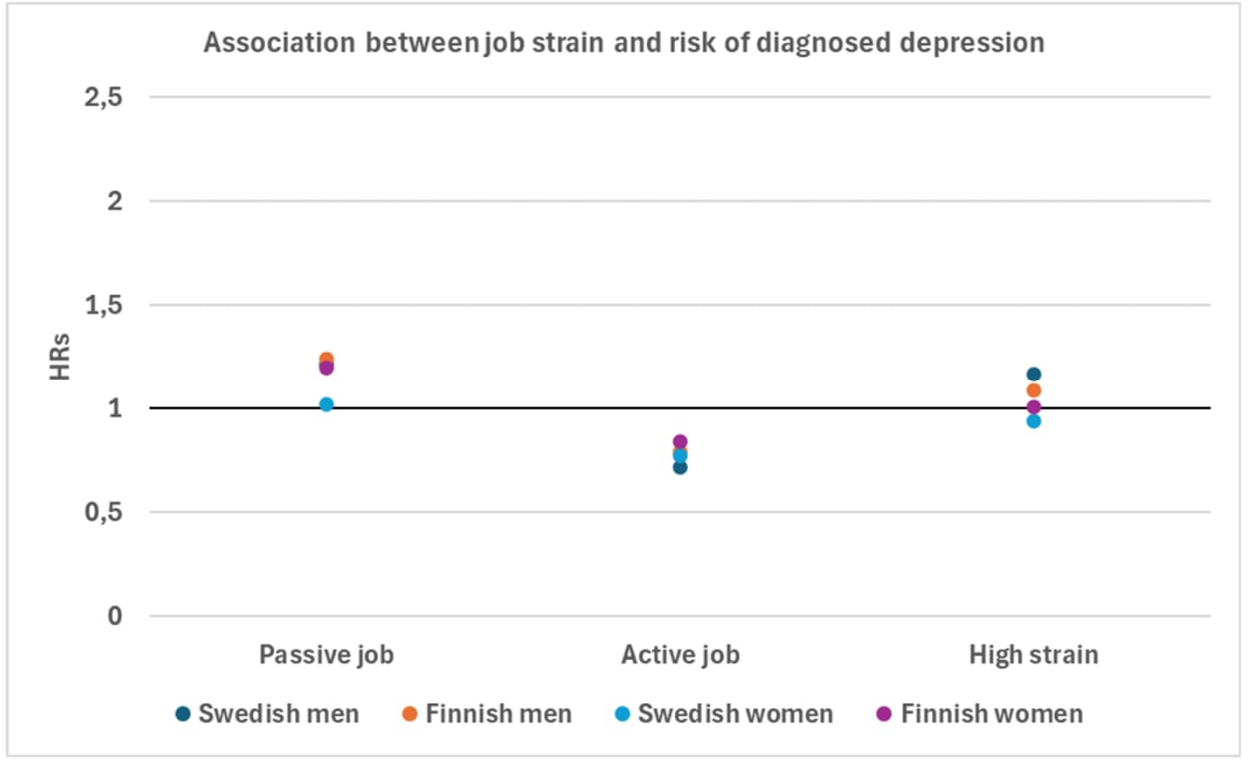

Summary

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- We observed a good predictive validity of both EuroJEMs, particularly for physical workload
- Regardless of differences in distribution of occupations, definitions and prevalence of outcomes across validation cohorts the magnitude of associations is relatively similar
- EuroJEMs constructed via harmonization of existing JEMs provide a standardized exposure assessment across the countries and different time periods
- EuroJEMs for physical workload and psychosocial factors could be considered as a valid instrument for exposure assessment in large-scale epidemiological studies, when individual-level exposure information is not available

Access to the EuroJEM

Other EuroJEMs developed within EPHOR

- Chemical
- Occupational noise
- Solar ultraviolet radiation (UVR) EuroJEM

Open Access Policy

EuroJEM is maintained and hosted by Institute of Environmental Medicine, Karolinska Institutet

Contact for more information: eurojem@ki.se

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THANKS FOR YOUR ATTENTION

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