

## Supplementary tables

Supplementary table 1 Incidence rate ratio's (IRR) and confidence intervals (CI) from Poisson regression on the imputed data.

	Working in a cold environment <25% of the time n=4247	Working in a cold environment ≥25% of time n=632					
		Ref.	Crude <sup>a</sup>			Fully adjusted <sup>b</sup>	
		IRR	CI		IRR	CI	
Any MSC	-	<b>1.14</b>	<b>1.05</b>	<b>1.23</b>	<b>1.12</b>	<b>1.03</b>	<b>1.22</b>
Severe MSC	-	1.14	0.82	1.60	0.98	0.69	1.39
MSC in ≥3 anatomical regions	-	<b>1.28</b>	<b>1.06</b>	<b>1.56</b>	1.07	0.88	1.30

<sup>a</sup> Adjusted for age, sex, and number of MSC in Tromsø 6. Interaction term between working in a cold environment ≥25% of time and severe MSC/MSC in ≥3 anatomical regions.

<sup>b</sup> Adjusted for age, sex, number of moderate MSC, education, physical activity at work, smoking status, body mass index, and self-reported health at Tromsø 6. Interaction term between working in a cold environment ≥25% of time and severe MSC/MSC in ≥3 anatomical regions.

MSC=musculoskeletal complaints

Supplementary table 2 Sensitivity analysis for any musculoskeletal complaints (MSC), severe MSC, and MSC in  $\geq 3$  anatomical regions. Three different approaches are shown: a logistic regression, logistic regression adjusted for the 10 major occupational groups in the Norwegian version of the International Standard Classification of Occupations 88 (ISCO-88), and a model with a random intercept for each 4-digit occupational code. The odds ratio (OR), confidence intervals (CI) and Akaike information criterion (AIC) are shown for each model.

n=1982	Crude <sup>a</sup>			Fully adjusted model <sup>b</sup>				
	OR	CI	AIC	OR	CI	AIC		
<b>Any MSC</b>								
Logistic model	<b>1.69</b>	<b>1.22</b>	<b>2.32</b>	2578	<b>1.79</b>	<b>1.23</b>	<b>2.60</b>	2566
Logistic model adjusted for the 10 major occupational groups	<b>1.52</b>	<b>1.07</b>	<b>2.16</b>	2589	<b>1.73</b>	<b>1.17</b>	<b>2.54</b>	2579
Mixed-effects logistic model with 4-digit occupational code	<b>1.66</b>	<b>1.20</b>	<b>2.31</b>	2580	<b>1.79</b>	<b>1.22</b>	<b>2.61</b>	2568
<b>Severe MSC</b>								
Logistic model	1.46	0.90	2.36	1079	1.18	0.66	2.12	1065
Logistic model adjusted for the 10 major occupational groups	1.03	0.60	1.76	1082	1.06	0.58	1.95	1070
Mixed-effects logistic model with 4-digit occupational code	1.46	0.90	2.36	1079	1.18	0.66	2.12	1065
<b>MSC in <math>\geq 3</math> anatomical regions</b>								
Logistic model	<b>1.71</b>	<b>1.16</b>	<b>2.51</b>	1725	1.43	0.93	2.21	1714
Logistic model adjusted for the 10 major occupational groups	<b>1.69</b>	<b>1.17</b>	<b>2.43</b>	1725	1.43	0.93	2.21	1714
Mixed-effects logistic model with 4-digit occupational code	1.40	0.93	2.10	1724	1.45	0.93	2.27	1722

<sup>a</sup> Adjusted for age and number of moderate MSC at Tromsø 6.

<sup>b</sup> Adjusted for age, number of moderate MSC, education, physical activity at work, smoking status, body mass index, and self-reported health at baseline.

Supplementary table 3 Occupations for which participants reported to work 25% of the time in cold environment at the time of Tromsø 6. Sorted by frequency of workers in the occupation.

Occupation	Working in a cold environment $\geq$ 25% of the time
	Yes
Child-care workers	21
Carpenters and joiners	13
Stock clerks	10
Road workers and construction workers	10
Earth-moving and related plant operators	8
Mail carriers and sorting clerks	7
Fishery workers	7
Ships deck officers and pilots	6
Fish-processing-machine operators	6
Pre-primary education teaching associate professionals	5
Electricians, electrical and electronic equipment mechanics and fitters	5
Civil engineering technicians	4
Helpers and cleaners in offices and other establishments	4
Directors and chief executives	3
Nursing assistants and care	3
Shop salespersons and other salespersons (retail)	3
Dairy and livestock producers	3
Welders	3
Motor vehicle mechanics and fitters	3
Aircraft engine mechanics and fitters	3
Electrical line installers, repairers, and cable jointers	3
Heavy truck and lorry drivers	3
Shipsdeck crews	3
Labourers in construction and maintenance, etc.	3
Officers (above the rank of captain)	2
Other public service administrative associate professionals	2
Police officers	2
Clerical officers	2
Caretakers	2
Bricklayers and stonemasons	2
Concrete workers and site labourers	2
Telegraph and telephone installers and servicers	2
Bus- and tram drivers	2
Garbage collectors and related labourers	2
Production and operations department managers in manufacturing, mining and quarrying, electricity, gas and water supply	1
Production and operations department managers in education, health and social security	1
Production and operations department managers in personal care, cleaning and related services	1
Supply and distribution department managers	1
Other department managers not elsewhere classified	1

Transport clerks	1
General managers in construction	1
General managers in wholesale and retail trade	1
General managers in business services	1
Mining engineers, metallurgists, and related professionals	1
Biologists, botanists, zoologists, and related professionals	1
Nursing and midwifery professionals	1
Secondary education teaching professionals	1
Other public service administrative professionals	1
Electrical engineering technicians	1
Electronics and telecommunications engineering technicians	1
Oil, mining and metallurgical technicians	1
Fire inspectors	1
Nurses	1
Primary education teaching associate professionals	1
Estate agents	1
Technical and commercial sales representatives	1
Appraisers, valuers, and auctioneers	1
Bank associate professionals	1
Athletes, sportspersons and coaches	1
Radio and television announcers	1
Transport clerks	1
Dentists secretaries	1
Fire-fighters	1
Salespersons (wholesale)	1
Fish farmers, etc.	1
Plumbers	1
Painters and related workers	1
Chimney sweepers	1
Tinsmiths, etc.	1
Industrial mechanics and fitters	1
Technical illustrators	1
Oil- and gas-processing-plant operators	1
Fishing tackles-machine operators	1
Car, taxi, and van drivers	1
Labourers in manufacturing	1
Storing and goods handling labourers	1

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