

SUPPLEMENTAL MATERIAL

Data S1. Study Descriptions.

Copenhagen Psychosocial Questionnaire version I (COPSOQ-I), Denmark

The COPSOQ-I is a prospective cohort study of a random sample of Danish residents selected from the Danish population register. The participants were aged 20-60 years of age and were in paid employment at the study baseline in 1997. A baseline questionnaire and an invitation to take part was posted to 4 000 people and 2 454 individuals agreed to participate.¹⁰ In Denmark, questionnaire- and register-based studies do not require approval from the Danish National Committee on Biomedical Research Ethics (Den Centrale Videnskabetiske komité). COPSOQ-I was approved by and registered with the Danish Data protection agency (registration number: 2008 - 54 - 0553).

Copenhagen Psychosocial Questionnaire version II (COPSOQ-II), Denmark

COPSOQ-II was carried out in 2004-2005. It included a follow up of respondents from COPSOQ I and also a representative sample of Danish residents aged 20-60 at study baseline. The questionnaire was sent to 8 000 individuals from the random sample and 4 732 individuals responded, returning the questionnaire by post or via the internet.¹¹ In Denmark, questionnaire- and register-based studies do not require ethics committee approval. COPSOQ-II was approved by and registered with the Danish Data protection agency (registration number: 2004-54-1493).

Danish Work Environment Cohort Study (DWECS), Denmark

DWECS is a split panel survey of working age Danish people. The cohort was established in 1990, when a simple random sample of men and women, aged 18-59, was drawn from the Danish population register. The participants have been followed up at five-year intervals and data from the year 2000 were used for the IPD-Work. That year 11 437 individuals were invited to participate and 8 583 agreed to do so.^{12, 13} In Denmark, questionnaire- and register-based studies do not require ethics committee approval. DWECS was approved by and registered with the Danish Data protection agency (registration number: 2007-54-0059).

Finnish Public Sector study (FPS), Finland

The Finnish Public Sector study is a prospective cohort study comprising the entire public sector personnel of 10 towns or municipalities, and 21 hospitals in the same geographical areas. Participants were recruited from employers' records in 2000-2002 and 2004.¹⁴ At either time of recruitment (2000-2002 or 2004), a total of 66 430 individuals aged 17 to 65 responded to the baseline questionnaire. Ethical approval was obtained from the Helsinki and Uusimaa hospital district ethics committee.

Health and Social Support (HeSSup), Finland

The Health and Social Support (HeSSup) study is a prospective cohort study of a stratified random sample of the Finnish population in the following four age groups: 20-24, 30-34, 40-44 and 50-54 years. The participants were identified from the Finnish population register and posted an invitation to participate in 1998. In all, 25 898 individuals responded and returned the baseline questionnaire.¹⁵ Turku University Central Hospital Ethics Committee approved the study.

Helsinki Health Study (HHS), Finland

The Finnish Helsinki Health Study (HHS) is a prospective cohort study comprising all employees of the City of Helsinki, who turned 40, 45, 50, 55, or 60 years in 2000-2002.¹⁶ We included in this study all participants who responded to the baseline survey (n=8 960, response rate 67%, 80% women) and provided an informed written consent to combine their survey responses with retrospective and prospective register based follow-up data on different diseases and mortality (n=6 605). Ethical approvals for this study were obtained from the ethics committees of the health authorities of the City of Helsinki, and the Department of Public Health, University of Helsinki.

Intervention Project on Absence and Well-being (IPAW), Denmark

IPAW is a 5-year psychosocial work environment intervention study including 22 intervention and 30 control workplaces in three organisations (a large pharmaceutical company, municipal technical services and municipal nursing homes) in Copenhagen, Denmark.^{17, 18} The baseline questionnaire was posted to all the employees at the selected work sites between 1996 and 1997. Interventions took place at 22 workplaces during 1996-98 at the organisational and interpersonal level. Of the 2 721 employees who worked at the IPAW sites, 2 068 men and women completed the baseline questionnaire. IPAW was approved by and registered with the Danish Data Protection Agency (registration number: 2000-54-0066).

Swedish Longitudinal Occupational Survey of Health (SLOSH), Sweden

Swedish Longitudinal Occupational Survey of Health (SLOSH) is an on-going prospective cohort study following up individuals who participated in the Swedish Work Environment Survey (SWES) between 2003 and 2011¹⁹. SWES, conducted biennially by Statistics Sweden (commissioned by the Swedish Work Environment Authority), is based on a sample of gainfully employed people aged 16-64 years drawn from the Labour Force Survey (LFS). These

individuals were first sampled into LFS through stratification by county, sex, citizenship and inferred employment status.

Still Working

Still Working is an ongoing prospective cohort study.^{20,21} In 1986, the employees (n = 12 173) at all Finnish centres of operation of Enso Gutzeit (a forestry products manufacturer) were invited to participate in a questionnaire survey on demographic, psychosocial and health-related factors and 9 282 individuals participated. The study was approved by the ethics committee of the Finnish Institute of Occupational Health.

Whitehall II, United Kingdom

Whitehall II is a prospective cohort study set up to investigate socioeconomic determinants of health. At study baseline in 1985-1988, 10 308 civil service employees aged 35-55 and working in 20 civil service departments in London were invited to participate in the study.²² Data on weekly working hours were collected in study phase 3, in 1991-94, which was used as an analytical baseline in our investigation. The Whitehall II study protocol was approved by the University College London Medical School committee on the ethics of human research. Written informed consent was obtained at each data collection wave.

Work, Lipids, and Fibrinogen Stockholm (WOLF S), Sweden

WOLF Stockholm study is a prospective cohort study of 5 698 people (3 239 men and 2 459 women) aged 19–70 and working in companies in Stockholm county.²³ At study baseline the participants underwent a clinical examination and completed a set of health questionnaires at 20 occupational health units in 1992-95. The Regional Research Ethics Board in Stockholm and the ethics committee at Karolinska Institutet, Stockholm, Sweden, approved the study.

Data S2. SAS and Stata Commands.

Study-specific Analyses

SAS

```
proc phreg data=pad1;
  model futime_pad*PAD_inc(0) = strain / rl;
  by study;
  ods output ParameterEstimates=pe;
  data res; set pe; by study; if parameter='strain';
  keep study Estimate StdErr ProbChiSq HazardRatio HRLowerCL HRUpperCL;
  proc print data=res;
run;
proc phreg data=pad1;
  model (age_beginning,age_end)*PAD_inc(0)= sex strain / rl;
  by study;
  ods output ParameterEstimates=pe;
  data res; set pe; by study; if parameter='strain';
  keep study Estimate StdErr ProbChiSq HazardRatio HRLowerCL HRUpperCL;
  proc print data=res;
run;
proc phreg data=pad1;
  class sex smokerex alcocl ses inactive wgcl2;
  model (age_beginning,age_end)*PAD_inc(0)= sex smokerex alcocl ses inactive diabetes wgcl2
  strain / rl;
  by study;
  ods output ParameterEstimates=pe;
  data res; set pe; by study; if parameter='strain';
  keep study Estimate StdErr ProbChiSq HazardRatio HRLowerCL HRUpperCL;
  proc print data=res;
run;
```

Stata

```
stset yexit, failure(PAD_inc) origin(byear) id(id)
xi:stcox job_strain, nohr

stset yexit, failure(PAD_inc) enter(byear) origin(yob) id(id)
xi:stcox sex job_strain, nohr
xi:stcox sex i.ses i.wgcl2 i.smokerex i.alcocl inactive diabetes strain, nohr
```

Meta-analyses

Stata

```
use H:\studyspecific_results.dta, clear
```

```
sort model Study
```

```
admetan logHR logse2 if model==1 | model==2 | model==3, re(eb) rfdist eform by(model) ///  
    lcols(Study Nallfollowup NPADfollowup) ///  
    sgwt nograph nooverall saving(H:\admetan_results_eb.dta, replace)
```

```
use H:\admetan_results_eb.dta, clear
```

```
replace _LABELS="Unadjusted" if _LABELS=="1" & _ES==.
```

```
replace _LABELS="Multivariable-adjusted" if _LABELS=="3" & _ES==.
```

```
/* changed "subgroup" to "summary" in a string var used for labelling the figure */
```

```
gen n = "Summary" if substr(_LABELS,1,8) == "Subgroup"
```

```
replace _LABELS= n + substr(_LABELS,9,20) if substr(_LABELS,1,8) == "Subgroup"
```

```
label var _LABELS "Model and study"
```

```
drop n
```

```
tostring Nallfollowup, replace
```

```
tostring NPADfollowup, replace
```

```
forestplot, hr plotid(_BY) lcols(Nallfollowup NPADfollowup)    ///  
    box1opts(mcolor(gs13)) ci1opts(lcolor(gs13)) ///  
    box2opts(mcolor(gs9)) ci2opts(lcolor(gs9)) ///  
    box3opts(mcolor(gs6)) ci3opts(lcolor(gs6)) ///  
    graphregion(color(white)) noadjust rfdist(_rfLCI _rfUCI)
```

Table S1. International Classification of Diseases (ICD) versions 8, 9 and 10 codes to identify lower limb peripheral arterial disease (PAD).

Coding system	Description
Code	
ICD-10	
I702	Atherosclerosis of arteries of extremities (including atherosclerotic gangrene)
I738	Other specified peripheral vascular disease
I739	Peripheral vascular disease, unspecified (including intermittent claudication)
I743	Embolism and thrombosis of arteries of lower extremities
I744	Embolism and thrombosis of arteries of extremities, unspecified
I745	Embolism and thrombosis of iliac artery
E105, E115, E125, E135, E145	Diabetes with peripheral circulatory complications
ICD-9	
2507	Diabetes with peripheral circulatory disorders
4402	Atherosclerosis of native arteries of the extremities
4404	Chronic total occlusion of artery of the extremities (including complete occlusion of artery of the extremities, total occlusion of artery of the extremities)
4438	Other specified peripheral vascular disease
4439	Peripheral vascular disease, unspecified (including intermittent claudication NOS, peripheral angiopathy or vascular disease NOS, spasm of artery)
4442	Arterial embolism or thrombosis of extremities
44481	Arterial embolism or thrombosis of iliac artery
ICD-8	
4402	Arteriosclerosis of arteries of the extremities
4438	Other peripheral vascular disease, other
4444	Embolism and thrombosis of arteries of the extremities

NOS: not otherwise specified

Table S2. Baseline covariates by study.

Study	Socioeconomic position		Smoking		Alcohol consumption		Physical activity		Body mass index		Diabetes
		N (%)		N (%)		N (%)		N (%)		N (%)	N (%)
COPSOQ_I	Low	759 (43.95)	Never	681 (38.67)	None	-*	Active	-*	<18.5	-*	16 (0.9)
	Intermediate	494 (28.60)	Ex-	429 (24.36)	Moderate	-	Inactive	-	18.5 to 24.9	-	
	High	474 (27.45)	Current	651 (36.97)	Heavy	-	All	-	25.0 to 29.9	-	
	All	1727 (100.0)	All	1 761 (100.0)	All	-			>=30.0	-	
								All	-		
COPSOQ-II	Low	1445 (42.45)	Never	1 424 (41.86)	None	601 (17.71)	Active	1 757 (51.91)	<18.5	49 (1.45)	<5 (<0.1)
	Intermediate	971 (28.53)	Ex-	886 (26.04)	Moderate	2 464 (72.62)	Inactive	1 628 (48.09)	18.5 to 24.9	1 814 (53.80)	
	High	988 (29.02)	Current	1 092 (32.10)	Heavy	328 (9.67)	All	3 385 (100.0)	25.0 to 29.9	1 118 (33.16)	
	All	3404 (100.0)	All	3 402 (100.0)	All	3 393 (100.0)			>=30.0	391 (11.60)	
								All	3 372 (100.0)		
DWECS	Low	2372 (43.33)	Never	2 222 (39.96)	None	3 109 (55.99)	Active	2 325 (41.86)	<18.5	93 (1.69)	51 (0.9)
	Intermediate	1659 (30.31)	Ex-	1 280 (23.02)	Moderate	2 134 (38.43)	Inactive	3 229 (58.14)	18.5 to 24.9	3 209 (58.22)	
	High	1443 (26.36)	Current	2 058 (37.01)	Heavy	310 (5.58)	All	5 554 (100.0)	25.0 to 29.9	1 786 (32.40)	
	All	5474 (100.0)	All	5 560 (100.0)	All	5 553 (100.0)			>=30.0	424 (7.69)	
								All	5 512 (100.0)		
FPS	Low	11 807 (18.2)	Never	39 777 (63.4)	None	8 884 (13.8)	Active	51 292 (80.2)	<18.5	810 (1.3)	1 438 (2.2)
	Intermediate	34 282 (52.8)	Ex-	11 446 (18.3)	Moderate	48 746 (75.9)	Inactive	12 632 (19.8)	18.5 to 24.9	35 488 (55.4)	
	High	18 872 (29.1)	Current	11 506 (18.3)	Heavy	6 593 (10.3)	All	63 924 (100.0)	25.0 to 29.9	20 311 (31.7)	
	All	64 961 (100.0)	All	62 729 (100.0)	All	64 223 (100.0)			>=30.0	7 423 (11.6)	
								All	64 032 (100.0)		
HeSSup	Low	4 180 (22.7)	Never	7 772 (42.4)	None	2 526 (13.7)	Active	14 606 (79.6)	<18.5	291 (1.6)	331 (1.8)
	Intermediate	9 828 (53.5)	Ex-	6 193 (33.8)	Moderate	14 188 (76.9)	Inactive	3 748 (20.4)	18.5 to 24.9	10 472 (57.0)	
	High	4 375 (23.8)	Current	4 374 (23.9)	Heavy	1 734 (9.4)	All	18 354 (100.0)	25.0 to 29.9	5 793 (31.5)	
	All	18 383 (100.0)	All	18 339 (100.0)	All	18 448 (100.0)			>=30.0	1 812 (9.9)	
								All	18 368 (100.0)		

*Body mass index was not measured in Still Working; Body mass index, physical activity and alcohol consumption were not measured in COPSOQ-I; the quality of the alcohol consumption measure was questionable in SLOSH.

Table S2, continued. Baseline covariates by study

Study	Socioeconomic position		Smoking		Alcohol consumption		Physical activity		Body mass index		Diabetes
		N (%)		N (%)		N (%)		N (%)	N (%)	N (%)	
HHS	Low	917 (14.2)	Never	3 394 (53.0)	None	421 (6.6)	Active	1 272 (19.8)	<18.5	61 (1.0)	171 (2.7)
	Intermediate	2 216 (34.4)	Ex-	1 529 (23.9)	Moderate	5 712 (89.0)	Inactive	1 700 (26.5)	18.5 to 24.9	3 172 (49.6)	
	High	3 314 (51.4)	Current	1 482 (23.1)	Heavy	285 (4.4)	All	6 413 (100.0)	25.0 to 29.9	2 229 (34.9)	
	All	6 447 (100.0)	All	6 405 (100.0)	All	6 418 (100.0)			>=30.0	934 (14.6)	
								All	6 396 (100.0)		
IPAW	Low	1367 (67.51)	Never	601 (29.83)	None	336 (17.01)	Active	814 (41.55)	<18.5	57 (2.91)	40 (2.0)
	Intermediate	288 (14.22)	Ex-	464 (23.03)	Moderate	1 502 (76.05)	Inactive	1 145 (58.45)	18.5 to 24.9	1182 (60.34)	
	High	370 (18.27)	Current	950 (47.15)	Heavy	137 (6.94)	All	1 959 (100.0)	25.0 to 29.9	556 (28.38)	
	All	2 025 (100.0)	All	2 015 (100.0)	All	1 975 (100.0)			>=30.0	164 (8.37)	
								All	1 959 (100.0)		
Still Working	Low	6 332 (69.2)	Never	3 185 (35.2)	None	434 (4.8)	Active	1 742 (19.5)	<18.5	-*	86 (0.9)
	Intermediate	2 162 (23.6)	Ex-	2 881 (31.8)	Moderate	8 162 (90.4)	Inactive	7 216 (80.6)	18.5 to 24.9	-	
	High	660 (7.2)	Current	2 988 (33.0)	Heavy	249 (4.8)	All	8 958 (100.0)	25.0 to 29.9	-	
	All	9 154 (100.0)	All	9 054 (100.0)	All	9 025 (100.0)			>=30.0	-	
								All	-		
WOLF-S	Low	1 711 (30.9)	Never	2 571 (46.3)	None	212 (3.8)	Active	1 321 (23.4)	<18.5	82 (1.5)	73 (1.3)
	Intermediate	2 932 (52.9)	Ex-	1 563 (28.1)	Moderate	4 864 (87.9)	Inactive	4 325 (76.6)	18.5 to 24.9	3 270 (58.0)	
	High	899 (16.2)	Current	1 422 (25.6)	Heavy	457 (8.3)	All	5 646 (100.0)	25.0 to 29.9	1 853 (32.9)	
	All	5 542 (100.0)	All	5 556 (100.0)	All	5 533 (100.0)			>=30.0	433 (7.7)	
								All	5 638 (100.0)		
SLOSH	Low	2 315 (21.5)	Non-smoker	9 145 (84.0)	None	-*	Active		<18.5 to 24.9	5 341 (50.2)	310 (2.9)
	Intermediate	5 315 (49.4)	Smoker	2 743 (16.0)	Moderate	-	Inactive	2 075 (19.1)	25.0 to 29.9	4 101 (38.5)	
	High	3 126 (29.1)			Heavy	-	All	8 781 (80.9)	>=30.0	1 208 (11.3)	
	All	10 756 (100.0)	All	10 888 (100.0)	All	-		10 650 (100.0)	All	10 650 (100.0)	
Whitehall II	Low	2 287 (22.5)	Never	4 997 (49.6)	None	1 926 (19.0)	Active	8 382 (82.9)	<18.5	142 (1.4)	92 (0.9)
	Intermediate	4 864 (47.9)	Ex-	3 227 (32.1)	Moderate	6 647 (65.5)	Inactive	1 735 (17.2)	18.5 to 24.9	6 025 (59.5)	
	High	3 002 (29.6)	Current	1 843 (18.3)	Heavy	1 580 (15.6)	All	10 117 (100.0)	25.0 to 29.9	3 260 (32.2)	
	All	10 153 (100.0)	All	10 067 (100.0)	All	10 153 (100.0)			>=30.0	705 (7.0)	
								All	10 132 (100.0)		

*Body mass index was not measured in Still Working; Body mass index, physical activity and alcohol consumption were not measured in COPSOQ-I; the quality of the alcohol consumption measure was questionable in SLOSH.

Table S3. Associations of job strain with incident peripheral artery disease (PAD).

Study	N with PAD	HR (95 % CI) for PAD	N with PAD	HR (95 % CI) for PAD	N with PAD	HR (95 % CI) for PAD
	Unadjusted		Age- and sex-adjusted		Multivariable-adjusted*	
COPSOQ_I	16	1.75 (0.61 to 5.04)	16	1.90 (0.66 to 5.48)	16	2.05 (0.69 to 6.07) †
COPSOQ-II	12	3.04 (0.92 to 10.10)	12	3.24 (0.97 to 10.81)	12	3.70 (1.05 to 13.03)
DWECS	37	1.68 (0.85 to 3.35)	37	1.92 (0.96 to 3.82)	37	1.94 (0.95 to 3.96)
FPS	110	1.14 (0.76 to 1.72)	110	1.25 (0.83 to 1.89)	110	1.19 (0.76 to 1.86)
HeSSup	55	0.78 (0.42 to 1.45)	55	0.84 (0.45 to 1.57)	55	0.76 (0.41 to 1.44)
HHS	41	1.53 (0.73 to 3.21)	41	1.67 (0.78 to 3.56)	40	1.67 (0.78 to 3.55)
IPAW	25	2.63 (1.16 to 5.94)	25	3.82 (1.40 to 7.26)	25	2.71 (1.12 to 6.55)
SLOSH	16	1.37 (0.44, 4.26)	16	1.40 (0.45 to 4.35)	11	2.17 (0.62 to 7.62) †
Still Working	161	0.99 (0.65 to 1.52)	161	1.13 (0.74 to 1.74)	161	1.06 (0.68 to 1.66) †
Whitehall II	159	1.23 (0.81 to 1.87)	158	1.32 (0.86 to 2.01)	156	1.21 (0.79 to 1.85)
WOLF S	35	1.77 (0.83 to 3.77)	35	2.22 (1.04 to 4.76)	35	2.13 (0.94 to 4.83)
Random effects summary estimates						
		HR (95% CI)		HR (95% CI)		HR (95% CI)
	EB	1.25 (1.04 to 1.50)		1.46 (1.17 to 1.82)		1.41 (1.11 to 1.80)
	τ^2	<0.00001		0.0285		0.0427
	I^2	<0.01%		21.8%		26.9%
	DL	1.25 (1.04 to 1.50)		1.46 (1.18 to 1.81)		1.41 (1.11 to 1.78)
	τ^2	<0.00001		0.0241		0.0357
	I^2	<0.01%		18.7%		23.6%
	REML	1.25 (1.04 to 1.50)		1.44 (1.18 to 1.77)		1.40 (1.11 to 1.76)
	τ^2	<0.00001		0.0136		0.0291
	I^2	<0.01%		11.5%		20.1%

* Adjusted for baseline age, sex, socioeconomic position, smoking, alcohol consumption, body mass index and physical activity.

† Still Working estimates not adjusted for body mass index; COPSOQ-I estimates not adjusted for body mass index, physical activity and alcohol consumption; SLOSH estimates not adjusted for alcohol consumption.

Abbreviations: EB: empirical Bayes; DL: DerSimonian and Laird; REML: restricted maximum likelihood

Table S4. Associations of job strain with incident peripheral artery disease (PAD), with cases during the 1st year of follow-up excluded.

Study	N (%) PAD	Multivariable-adjusted* HR (95 % CI) for PAD
COPSOQ_I	15	2.31 (0.77 to 6.99) †
COPSOQ-II	10	3.20 (0.77 to 13.32)
DWECS	33	2.11 (0.99 to 4.49)
FPS	102	1.25 (0.79 to 1.98)
HeSSup	53	0.72 (0.38 to 1.39)
HHS	40	1.56 (0.77 to 3.16)
IPAW	24	2.71 (1.12 to 6.55)
SLOSH	7	2.80 (0.61 to 12.78) †
Still Working	160	1.01 (0.64 to 1.60) †
Whitehall II	156	1.21 (0.79 to 1.85)
WOLF S	34	1.86 (0.78 to 4.40)
Random effects		HR (95 % CI)
summary	EB	
estimates	HR (95% CI)	1.40 (1.10 to 1.79)
	τ^2	0.0423
	I ²	26.2%
	DL	HR (95 % CI)
	HR (95% CI)	1.39 (1.10 to 1.77)
	τ^2	0.0357
	I ²	23.1%
	REML	HR (95 % CI)
	HR (95% CI)	1.39 (1.10 to 1.75)
	τ^2	0.0291
	I ²	19.6%

* Adjusted for baseline age, sex, socioeconomic position, smoking, alcohol consumption, body mass index and physical activity.

† Still Working estimates not adjusted for body mass index; COPSOQ-I estimates not adjusted for body mass index, physical activity and alcohol consumption; SLOSH estimates not adjusted for alcohol consumption.

Abbreviations: EB: empirical Bayes; DL: DerSimonian and Laird; REML: restricted maximum likelihood

Table S5. Absolute risk of PAD, by job strain.

Study	Incidence of PAD (per 10,000 person-years)		Difference in incidence per 10,000 person-years (95% CI)
	<i>Job strain</i>	<i>No strain</i>	
COPSOQ-I	11.7	6.7	5.0 (1.4 to 8.6)
COPSOQ-II	16.7	5.5	11.2 (7.8 to 14.6)
DWECS	11.0	6.6	4.4 (2.5 to 6.3)
FPS	1.9	1.7	0.2 (0.01 to 0.5)
HeSSup	1.9	2.4	-0.5 (-1.0 to -0.1)
HHS	6.3	4.1	2.2 (0.6 to 3.8)
IPAW	19.8	7.5	12.3 (8.0 to 16.6)
SLOSH	2.1	2.7	0.6 (-0.1 to 1.4)
Still Working	8.1	8.1	-0.1 (-1.6 to 1.5)
Whitehall II	6.9	5.6	1.3 (-0.1 to 2.7)
WOLF S	6.3	3.5	2.8 (1.1 to 4.4)