

Acute myocardial infarction in relation to physical activities at work: a nationwide follow-up study based on job-exposure matrices ¹

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1. Supplementary material

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Table S1. Crude and adjusted risk of acute myocardial infarction according to covariates. Incidence rate ratios (IRR) with 95% confidence intervals (CI). Bold indicates p-value for trend <0.001 (fully adjusted analyses only).

		Men				Women			
		N AMI	IRR ^a	IRR _{adj} ^b	95% CI	N AMI	IRR ^a	IRR _{adj} ^b	95% CI
Age (time varying)									
	30-39	560	1.00	1.00	-	162	1.00	1.00	-
	40-49	5 838	3.36	3.38	3.10-3.69	1 707	3.31	3.73	3.17-4.39
	50-59	11 728	6.19	5.92	5.92-7.04	3 631	6.33	7.75	6.58-9.13
	60+	3 911	7.98	7.73	7.73-9.31	1 442	9.45	10.51	8.82-12.52
Highest education at baseline									
	Long tertiary	933	1.00	1.00	-	1 52	1.00	1.00	-
	Medium tertiary	2 008	1.37	1.29	1.19-1.39	1 092	1.53	1.35	1.13-1.61
	Short tertiary	858	1.61	1.38	1.25-1.52	126	1.23	1.00	0.78-1.27
	Secondary	9 066	1.84	1.50	1.39-1.62	2 389	2.07	1.47	1.23-1.76
	Primary	4 238	2.24	1.72	1.59-1.87	1 834	2.69	1.72	1.43-2.06
	Missing	4 934	5.63	4.51	4.18-4.87	1 349	6.93	4.80	4.01-5.74

Social position at baseline ^c											
	Managers and professionals (1,2)		3 317	1.00	1.00	-		487	1.00	1.00	-
	Technicians (3)		2 718	1.31	1.15	1.09-1.21		1 099	1.29	1.15	1.03-1.28
	Clerks, service and sales workers (4,5)		1 867	1.51	1.20	1.12-1.27		2 059	1.77	1.31	1.18-1.46
	Skilled workers (6,7)		3 246	1.43	1.06	1.00-1.12		71	2.15	1.51	1.17-1.94
	Unskilled workers (8,9)		4 385	1.75	1.17	1.11-1.24		626	2.07	1.29	1.13-1.47
	Missing		6 504	1.74	1.16	1.09-1.23		2 500	2.37	1.30	1.14-1.48
Employment status (time varying)											
	Employee		17 061	1.00	1.00	-		4 804	1.00	1.00	-
	Employer		776	1.01	1.06	0.98-1.14		121	1.02	1.08	0.89-1.29
	No gainful employment		4 200	1.38	1.13	1.07-1.19		1 017	1.72	1.36	1.22-1.50
Cohabitation (time varying)											
	Yes		5 294	1.00	1.00	-		4 996	1.00	1.00	-
	No		16 701	1.15	0.97	0.94-1.00		1 939	1.23	1.17	1.11-1.23
	Missing		42	0.03	0.03	0.02-0.04		7	0.02	0.02	0.01-0.04

Years with a probability of current smoking >Q3 ^d											
	0-≤1		4010	1.00	1.00	-	0 - ≤5	1 203	1.00	1.00	-
	>1-7		4 306	1.06	1.02	0.98-1.07	>5-10	1 630	1.23	1.01	0.94-1.09-
	>7-13		6 128	1.27	1.05	1.00-1.09	>10-13	1 461	1.36	1.02	0.94-1.10
	>13-15		4 532	1.53	1.06	1.01-1.11	>14-15	1 262	1.43	0.96	0.88-1.05
	>15-40		3 061	1.67	1.02	0.96-1.08	>15-40	1 386	2.22	1.17	1.06-1.28
Years with a probability of a body mass index >Q3 ^d											
	0		7 897	1.00	1.00	-	0	1 241	1.00	1.00	-
	>0-2		1736	1.21	1.10	1.04-1.16	>0-5	1 320	1.42	1.22	1.13-1.33
	>2-9		5 615	1.40	1.18	1.13-1.22	>5-11	1 893	1.74	1.34	1.24-1.45
	>9-14		3 494	1.52	1.25	1.19-1.30	>11-17	1 523	1.99	1.49	1.36-1.62
	>14-35		3 295	1.39	1.19	1.13-1.25	>17-40	965	1.73	1.41	1.28-1.56
Years with a probability of a leisure time physical activity score >Q3 ^d											
	0-≤ 4		7 897	1.00	1.00	-	0≤ 4	2 843	1.00	1.00	-
	>4-7		1 736	0.91	1.04	1.00-1.08	>4-8	1 889	0.91	1.12	1.05-1.19

>7-10		5 615	0.86	1.02	0.98-1.06	>8-10	2 443	0.96	1.25	1.16-1.35
>10-13		3 494	0.87	0.99	0.93-1.05	>10-14	314	0.88	1.27	1.13-1.44
>13-35		3 295	0.86	1.05	1.00-1.11	>14-35	452	0.69	1.24	1.11-1.39

^a IRR adjusted for age (integers).

^b IRR_{adj}, adjusted for age (integers), cohabitation, employment status, length of education, social position, smoking, body mass index and leisure time physical activity.

^c Social position is defined by the first digit of the DISCO-88 codes (28).

^d Q3:75-percentile for the distribution of sex-, age- and period-specific JEM-based estimates of lifestyle factors. Missing values in a year were replaced by the individual average across all previous years.

Table S2. Risk of acute myocardial infarction according to cumulative physical activities at work 1976-1995 and during the previous 10 years stratified by sex. Incidence rate ratios (IRR) with 95% confidence intervals (CI). Bold indicates p-value for trend <0.001 (fully adjusted models only).

		Men				Women				
Lifting at work ^a		Cases	IRR ^b	IRR _{adj} ^c	95% CI	Lifting at work ^a	Cases	IRR ^b	IRR _{adj} ^c	95% CI
Ton-years (1976-1995)										
	0-1.9	4 544	1.00	1.00	-	0	1 542	1.00	1.00	-
	>1.9-7.6	4 949	1.23	1.06	1.01-1.10	>0-3.3	1 353	1.13	1.10	1.02-1.19
	>7.6-15.6	5 444	1.35	1.02	0.97-1.07	>3.3-7.9	1 700	1.35	1.14	1.06-1.24
	>15.6-30.1	4 034	1.47	1.07	1.02-1.13	>7.9-14.7	1 338	1.61	1.18	1.08-1.28
	>30.1-64.0	3 066	1.58	1.05	0.99-1.11	>14.7-60.6	1 008	1.65	1.15	1.05-1.27
Ton-years previous 10 years										
	0-3.4	4 903	1.00	1.00	-	0	2709	1.00	1.00	-
	>3.4-8.0	5 190	1.27	1.05	1.01-1.10	>0-0.9	432	1.13	1.01	0.91-1.12
	>8.0-16.6	6 035	1.45	1.04	0.99-1.09	>0.9-4.4	1833	1.23	0.99	0.92-1.05

	>16.6-20.8		3 561	1.45	1.01	0.95-1.06	>4.4-9.1	1049	1.46	1.03	0.95-1.12
	>20.8-35.0		2 308	1.48	0.95	0.89-1.01	>9.1-35.0	913	1.55	1.15	1.05-1.26
	Standing/walking at work ^d						Standing/walking at work ^d				
	Standing/walking (sum score) 1976-1995										
	1-34.6		4 549	1.00	1.00	-	1-41.0	1548	1.00	1.00-	-
	>34.6-54.9		4 531	1.00	0.98	0.94-1.02	>41.1-54.3	1538	1.00	0.95	0.89-1.02
	>54.9-71.6		5 824	0.95	1.00	0.96-1.04	>54.3-68.8	1765	0.95	0.97	0.91-1.05
	>71.6-84.0		4 154	1.11	1.02	0.97-1.06	>68.8-79.8	1214	1.11	0.97	0.89-1.05
	>84.0-109.8		2 979	1.21	1.01	0.96-1.06	>79.8-109.3	877	1.21	1.00	0.91-1.09
	Standing/walking (sum score) previous 10 years										
	1-25.5		4 914	1.00	1.00	-	1-27.5	2 200	1.00	1.00	-
	>25.5-33.6		4 753	0.91	1.01	0.97-1.05	>27.5-40.0	1 492	0.78	0.94	0.87-1.01
	>33.6-45.0		5 407	1.05	1.04	1.00-1.08	>40.0-46.2	1 203	0.75	0.88	0.81-0.95
	>45.0-49.6		3 136	0.99	0.95	0.91-1.00	>46.2-49.3	1 050	0.78	0.91	0.83-0.99
	>49.6-58.8		1 979	0.99	0.91	0.86-0.97	>49.3-58.0	879	1.02	0.98	0.89-1.08

	Missing		977	0.86	0.91	0.85-0.97	Missing	118	0.61	0.69	0.57-0.84
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^a Lifting at work assigned by expert-rated job-exposure matrix. Values across jobs grouped by the sex-specific 25, 50, 75 and 90 percentiles.

^b IRR adjusted for age (integers).

^c IRR_{adj}, adjusted for age (integers), cohabitation, highest education, employment status, social position, smoking, body mass index and leisure time physical activity.

^d Standing/walking at work assigned by a self-report job-exposure matrix (Do you stand or walk? Never (1), rarely (2), about ¼ of the time (3), about ½ of the time (4), about ¾ of the time (5), almost all the time (6)). Values grouped by the sex-specific 25, 50, 75 and 90 percentiles.

Table S3. Average total load lifted per day at work from 1976-1995 by sex and social position. Percent according to sex-specific percentiles.

Social position ^a	Men – percentiles				Women – percentiles			
	0-<50	50-<75	75-<90	90-100	0-<50	50-<75	75-<90	90-100
1. Legislators, senior officials and managers	73	20	5	2	71	17	9	4
2. Professionals	88	9	3	0	77	19	3	1
3. Technicians and associate professionals	75	17	6	2	58	33	7	2
4. Clerks	59	20	13	8	80	11	6	3
5. Service workers and shop and market sales workers	45	41	10	4	10	31	46	13
6. Skilled agricultural and fishery workers	7	60	30	3	7	20	58	15
7. Craft and related trades workers	28	45	20	7	21	32	32	16
8. Plant and machine operators and assemblers	14	26	26	34	14	30	24	32
9. Unskilled workers	18	28	30	24	16	52	20	12

^a Social position is defined by the first digit of the DISCO-88 codes (28).

Table S4. Risk of acute myocardial infarction by cumulative load lifted (ton-years) from 1976 to previous year in four major DISCO-88 groups with large exposure ranges. Bold indicates p-value for trend <0.05 (fully adjusted analyses only).

DISCO-88 strata		Men aged 31-50 year at start of follow-up				Women aged 31-50 year at start of follow-up			
		Cases	IRR ^a	IRR _{adj} ^b	95% CI	Cases	IRR ^a	IRR _{adj} ^b	95% CI
3. Technicians, N men / women 92 381 / 145 564									
	0-50	2639	1.00	1.00	-	825	1.00	1.00	-
	>50-75	620	1.03	1.01	0.92-1.10	417	1.06	1.06	0.93-1.20
	>75-90	201	1.18	1.08	0.93-1.26	103	1.13	1.04	0.83-1.29
	>90-100	111	1.36	1.29	1.04-1.60	26	1.26	1.01	0.67-1.50
7. Craft and related trades workers, N men / women 125 632 / 7 093									
	0-50	1090	1.00	1.00	-	19	1.00	1.00	-
	>50-75	2503	1.06	1.03	0.96-1.12	29	1.00	0.90	0.49-1.67

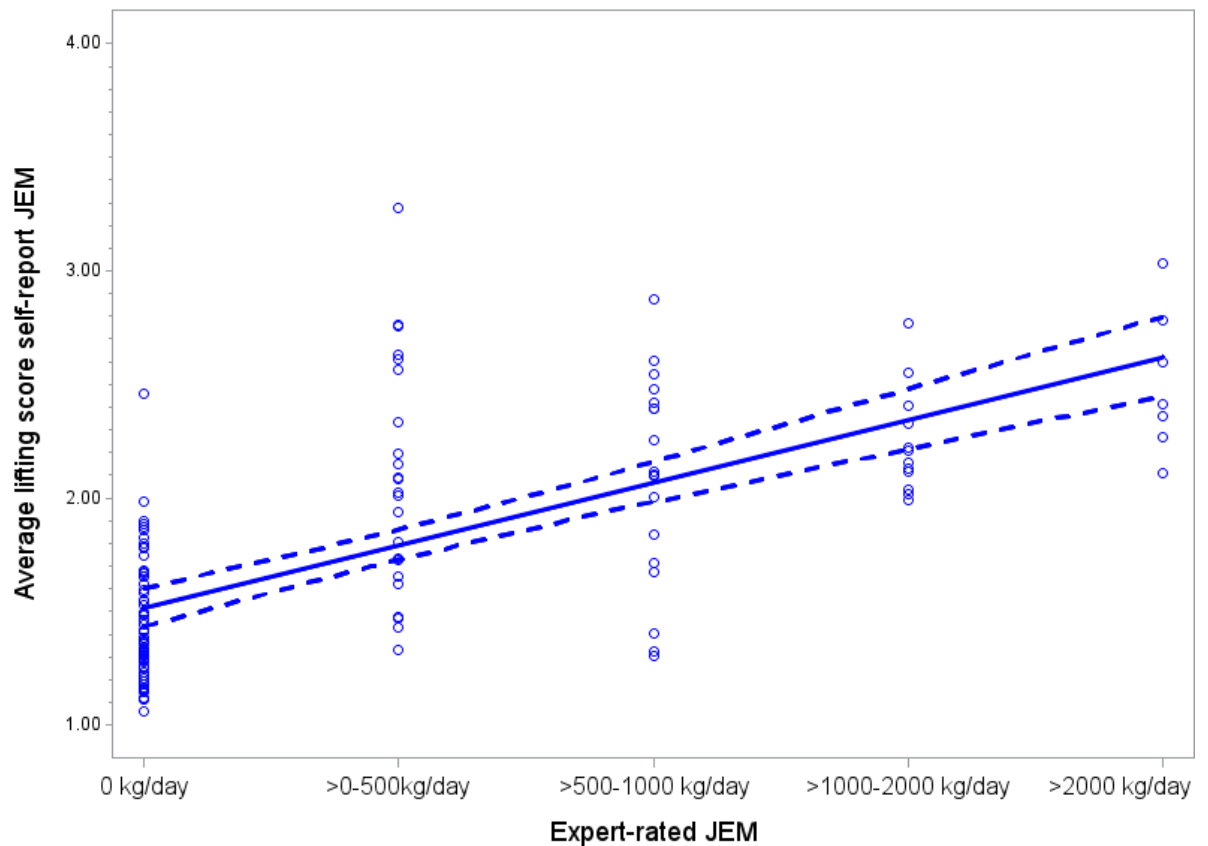
	>75-90		883	1.03	1.08	0.98-1.19		29	1.09	0.97	0.51-1.84
	>90-100		817	0.93	1.02	0.92-1.14		32	1.26	1.15	0.60-2.22
8. Plant and machine operators and assemblers, N men / women 69 694 / 28 421											
	0-50		322	1.00	1.00	-		38	1.00	1.00 ^c	-
	>50-75		802	1.05	1.04	0.91-1.19		116	1.17	1.17	0.80-1.70
	>75-90		917	1.05	1.01	0.88-1.15		119	1.19	1.22	0.84-1.78
	>90-100		1529	1.09	1.03	0.90-1.19		217	1.29	1.35	0.93-1.95
9. Unskilled workers N men / women 44 866 /46 445											
	0-50		262	1.00	1.00	-		78	1.00	1.00	-
	>50-75		487	1.13	1.00	0.96-1.05		397	1.34	1.10	0.99-1.21
	>75-90		626	1.20	1.03	0.98-1.09		255	1.50	1.08	0.95-1.23
	>90-100		817	1.20	1.03	0.97-1.09		139	1.83	1.19	1.03-1.37

^a IRR adjusted for age (6 groups rather than integers because of less sample sizes).

^b IRR_{adj}, adjusted for age (6 groups), cohabitation, highest education, employment status, smoking, body mass index and leisure time physical activity.

^c Highest education left out of full model to obtain model fit.

Figure S1. Linear regression of average scores (range 1-6) of time spent lifting at work for 125 4-digit DISCO-88 codes obtained among men in a Danish population survey (39) on ranking of DISCO-88 codes in five categories of total load lifted per day according to the expert-rated lifting JEM applied in this study.



Linear regression coefficient 0.28, stderr 0.027, $p < 0.0001$. Similar results were observed for women: linear regression coefficient 0.26, stderr 0.048, $p < 0.0001$ (data not shown).