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Occupational and recreational physical activity and Parkinson's disease in Denmark ¹

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1 *Supplementary material*

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Supplementary Table A. Metabolic equivalent (MET) level estimates for occupational activities from International Standard Classification of Occupations 1968 (ISCO68) based on body position and intensity (modified from Tudor-Locke et al., 2011).

MET	Body position, intensity	ISCO68 job titles
1.5	Sit, light	Physicists, architects, engineers, draughtsmen, pilots, optometrists, medial x-ray technician, statisticians, systems analysts, economics, accountants, lawyers, judges, authors, journalists, sociologists, philologists, government administrators, typists, machine operators, clerks, business services salesmen, managers (except farm), buyers, agents, projectionists, etc.
2.0	Sit and stand, light	Chemists, biologists, dentists, producers, ministers of region, postmasters, police and protective service workers, producers, metal workers, tailors and dressmakers, milliners, machine-tool operators, radio and television repairmen, photographic workers, bookkeepers and cashiers, receptionists and travel agency clerks, motor vehicle drivers, painters, railway drivers and brakemen, typesetters, etc.
2.5	Sit, mod; Stand, light; Sit, stand walk, no carry	Surveyors, engineer technicians, doctors, veterinary, ships' deck officers and pilot, pharmacists, nurses, midwives, physiotherapists, occupational therapists, teachers, photographers, performing artists, actors, librarians, social workers, railway station masters, mail and filing clerks, salesman shop assistants and demonstrators, housekeeping and production supervisors, cooks, launderers, beauticians, shoemakers and repairmen, etc.
3.0	Stand, light and mod; Sit, stand, walk, carry <15 lbs	Personal nursing, waiter and bartenders, farm managers and supervisors, farmers, livestock workers, nursery workers and gardeners, fishermen, sawyers and related wood-processing maker, paper makers, spinners and winders, food preservers and processers, woodworking-machine operators, electrical workers, etc.

3.5	Stand, mod; Walk, not carry Stand, walk, carry 15-25 lbs	Sculptors, commercial artists and designers, choreographers and dancers, athletes, guides, poultry farm workers, miners and quarrymen, metal makers, machinery fitters and assemblers, roofers, etc.
4.0	Stand, mod and heavy	Soldier and military employee, metal casters and processors, blacksmiths and toolmakers, motor vehicle mechanics, aircraft engine mechanics, plumbers and pipe fitters, rubber and plastics product maker, insulators, etc.
4.5	Walk, carry < 25 lbs	Maids and related housekeeping service workers, charworkers, cleaners and related workers, building caretakers, etc.
5.0	Stand, walk, carry 25-50 lbs	Fire-fighters, sheet-metal workers, bricklayers, stonemasons and tile setters, reinforced-concreters, cement finishers and terrazzo workers, material-handling equipment operators, etc.
6.0	Carpentry	Carpenters, joiners and parquetry workers
7.5	Stand, walk, carry > 50 lbs	Hammersmith and forging-press operators, dock workers and freight handlers, etc.
8.0	Heavy power tools	Riggers and cable splicer, loggers

Not all job titles were listed; job titles list here may not be the original title names in ISCO-68, e.g. engineers, including civil engineers, electrical and electronics engineers, chemical engineers, mechanical engineers, and industrial engineers

Supplementary Table B. Multivariable-adjusted odds ratios (aOR) with 95% confidence intervals (CI) for Parkinson's disease (PD) and occupational physical activity; 10-year exposure lagged analyses.

[MET-year]	All					Men					Women				
	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c
All participants															
<55.0	455/426	1.00		1.00		251/213	1.00		1.00		204/213	1.00		1.00	
55.0-77.5	375/422	0.80 (0.65-0.98)		0.80 (0.65-0.98)		214/252	0.72 (0.54-0.95)		0.72 (0.53-0.93)		161/170	0.95 (0.70-0.28)		0.97 (0.71-1.32)	
77.5-107.3	414/439	0.84 (0.68-1.04)		0.84 (0.68-1.05)		255/276	0.78 (0.58-1.05)		0.78 (0.58-1.05)		159/163	0.96 (0.69-1.32)		0.99 (0.71-1.37)	
>107.3	396/428	0.82 (0.65-1.04)	0.24	0.83 (0.65-1.05)	0.26	264/299	0.77 (0.56-1.06)	0.36	0.78 (0.57-1.08)	0.43	132/129	0.95 (0.65-1.38)	0.80	0.94 (0.65-1.37)	0.79
Incident cases															
<55.0	116/106	1.00		1.00		59/53	1.00		1.00		57/53	1.00		1.00	
55.0-77.5	136/133	0.89 (0.61-1.30)		0.93 (0.64-1.37)		79/80	0.87 (0.52-1.47)		0.90 (0.53-1.53)		57/53	1.00 (0.58-1.75)		1.03 (0.58-1.84)	
77.5-107.3	156/169	0.80 (0.55-1.17)		0.84 (0.57-1.23)		101/106	0.85 (0.50-1.44)		0.89 (0.52-1.52)		55/63	0.83 (0.47-1.45)		0.93 (0.52-1.67)	
>107.3	169/175	0.78 (0.52-1.17)	0.26	0.81 (0.54-1.22)	0.30	119/127	0.82 (0.46-1.44)	0.57	0.83 (0.47-1.47)	0.56	50/48	0.87 (0.46-1.66)	0.59	0.85 (0.44-1.65)	0.56

MET, metabolic equivalent

^a Logistic regression models adjusted for sex, education, smoking, coffee consumption, age, index age, and family history of PD

^b Logistic regression models adjusted for the above covariates and leisure-time physical activity

^c Linear trend test used the midpoint of each exposure category to generate a continuous variable in regression models

Supplementary Table C. Multivariable-adjusted odds ratios (aOR) and 95% confidence intervals (CI) for Parkinson's disease (PD) and occupational physical activity; incidence cases only (diagnosed between 2006-2009).

[MET-year]	All					Men					Women				
	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c	Case/Control	Model 1 ^a	P-trend ^c	Model 2 ^b	P-trend ^c
Entire work-life															
<70.0	125/112	1.00		1.00		58/53	1.00		1.00		67/59	1.00		1.00	
70.0-94.5	150/157	0.82 (0.58-1.17)		0.85 (0.59-1.21)		90/97	0.85 (0.51-1.41)		0.86 (0.51-1.44)		60/60	0.88 (0.52-1.48)		0.91 (0.53-1.56)	
94.5-125.8	149/148	0.86 (0.60-1.24)		0.89 (0.62-1.28)		100/88	1.02 (0.60-1.71)		1.04 (0.61-1.75)		49/60	0.75 (0.44-1.29)		0.79 (0.45-1.38)	
>125.8	153/166	0.76 (0.52-1.11)	0.24	0.79 (0.54-1.15)	0.29	110/128	0.79 (0.46-1.35)	0.42	0.79 (0.46-1.35)	0.38	43/38	0.91 (0.50-1.67)	0.61	0.90 (0.48-1.68)	0.63
Work years before 50															
<57.5	144/126	1.00		1.00		72/64	1.00		1.00		72/62	1.00		1.00	
57.5-75.5	138/142	0.84 (0.59-1.18)		0.85 (0.60-1.20)		81/85	0.86 (0.53-1.39)		0.88 (0.54-1.43)		57/57	0.93 (0.55-1.58)		0.95 (0.56-1.63)	
75.5-100.9	149/160	0.78 (0.55-1.10)		0.79 (0.56-1.11)		94/102	0.87 (0.54-1.39)		0.88 (0.55-1.41)		55/58	0.76 (0.44-1.30)		0.74 (0.43-1.26)	
>100.9	146/155	0.80 (0.56-1.15)	0.27	0.81 (0.56-1.16)	0.29	111/115	0.99 (0.61-1.61)	0.77	1.01 (0.62-1.64)	0.77	35/40	0.65 (0.35-1.19)	0.13	0.61 (0.33-1.14)	0.09
Work years before 30															
<21.3	172/165	1.00		1.00		92/89	1.00		1.00		80/76	1.00		1.00	
21.3-33.5	148/129	1.06 (0.76-1.48)		1.06 (0.76-1.48)		80/73	1.12 (0.70-1.80)		1.13 (0.71-1.82)		68/56	1.06 (0.65-1.73)		1.06 (0.64-1.73)	
33.5-45.5	123/144	0.78 (0.56-1.11)		0.78 (0.56-1.11)		79/98	0.86 (0.54-1.37)		0.87 (0.55-1.38)		44/46	0.79 (0.46-1.37)		0.76 (0.44-1.33)	
>45.5	134/145	0.86 (0.61-1.22)	0.22	0.86 (0.61-1.22)	0.22	107/106	1.12 (0.71-1.75)	0.77	1.11 (0.71-1.74)	0.80	27/39	0.55 (0.29-1.04)	0.05	0.53 (0.28-1.00)	0.04

MET, metabolic equivalent

^a Logistic regression models adjusted for sex, education, smoking, coffee consumption, age, index age, and family history of PD

^b Logistic regression models adjusted for the above covariates and leisure-time physical activity

^c Linear trend test used the midpoint of each exposure category to generate a continuous variable in regression models

Supplementary Table D. Multivariable-adjusted odds ratios (aOR) with 95% confidence intervals (CI) for Parkinson's disease (PD) and leisure-time physical activity; incidence cases only (diagnosed between 2006-2009).

	All			Men			Women		
	Case/Control	OR (95%) ^a	P-trend ^b	Case/Control	OR (95%) ^a	P-trend ^b	Case/Control	OR (95%) ^a	P-trend ^b
Age 15-25 years									
None	172/166	1.00		97/93	1.00		75/73	1.00	
1-4hr/w	255/222	1.10 (0.83-1.47)		141/114	1.17 (0.79-1.73)		114/108	1.04 (0.67-1.60)	
≥5 hr/w	157/190	0.76 (0.56-1.05)	0.10	121/157	0.67 (0.46-0.99)	0.03	36/33	1.04 (0.58-1.89)	0.87
Age 25-50 years									
None	217/226	1.00		124/139	1.00		93/87	1.00	
1-4hr/w	275/256	1.07 (0.83-1.40)		164/146	1.14 (0.81-1.62)		111/110	0.95 (0.63-1.42)	
≥5 hr/w	85/97	0.86 (0.60-1.23)	0.60	65/80	0.81 (0.53-1.24)	0.46	20/17	0.98 (0.46-2.06)	0.85
Age ≥50 years									
None	242/240	1.00		152/163	1.00		90/77	1.00	
1-4hr/w	249/267	0.85 (0.65-1.10)		140/146	0.96 (0.69-1.34)		109/121	0.68 (0.45-1.04)	
≥5 hr/w	55/60	0.84 (0.55-1.29)	0.23	42/40	0.97 (0.59-1.62)	0.86	13/20	0.55 (0.25-1.23)	0.05

hr/w, hour per week

^a Logistic regression models adjusted for sex, education, smoking, coffee consumption, age, index age, and family history of PD

^b Linear trend test used the midpoint of each exposure category to generate a continuous variable in regression model

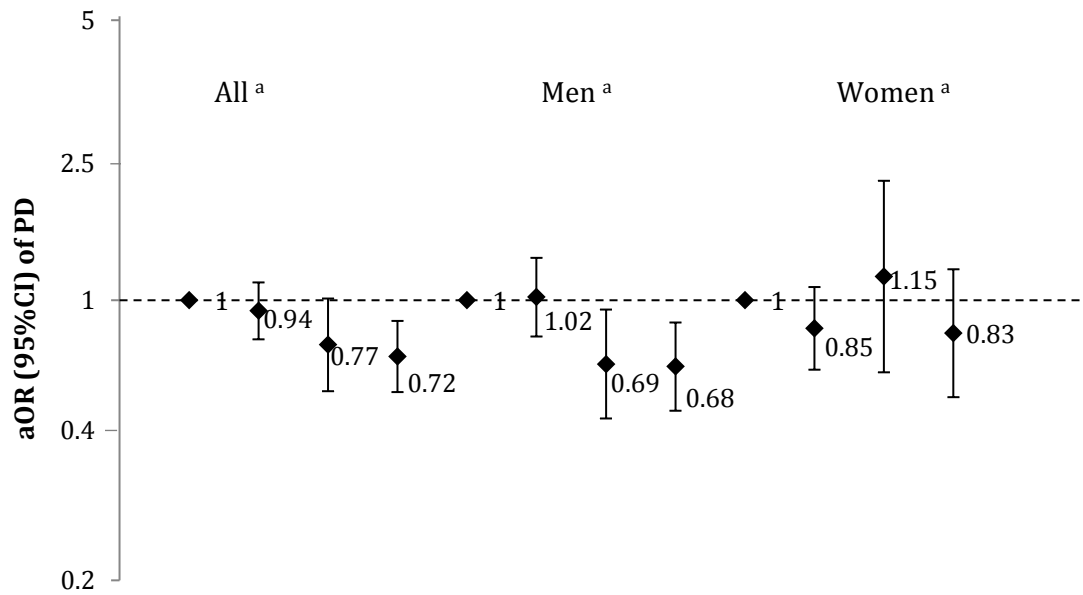
Supplementary Table E. Multivariable-adjusted odds ratios (aOR) and 95% confidence intervals (CI) for Parkinson's disease (PD) and combined occupational and leisure-time physical activity (PA).

Occupational Leisure-time		All		Men		Women	
PA	PA	case/control	OR (95%) ^a	case/control	OR (95%) ^a	case/control	OR (95%) ^a
Age before 25 years							
Low	None	286/278	1.00	145/125	1.00	141/153	1.00
Low	1-4hr/w	438/382	1.07 (0.86-1.34)	209/171	0.99 (0.72-1.37)	229/211	1.15 (0.85-1.55)
Low	≥5 hr/w	245/281	0.80 (0.62-1.02)	172/204	0.65 (0.47-0.90)	73/77	1.07 (0.71-1.60)
High	None	187/189	0.97 (0.74-1.28)	131/121	0.99 (0.69-1.41)	56/68	0.87 (0.56-1.35)
High	1-4hr/w	231/261	0.86 (0.67-1.11)	137/166	0.72 (0.51-1.02)	94/95	1.05 (0.72-1.53)
High	≥5 hr/w	160/229	0.66 (0.50-0.87)	135/199	0.58 (0.41-0.81)	25/30	0.87 (0.48-1.56)
Age 25-50 years							
Low	None	345/341	1.00	197/181	1.00	148/160	1.00
Low	1-4hr/w	376/393	0.94 (0.76-1.16)	198/226	0.78 (0.58-1.04)	178/167	1.16 (0.85-1.59)
Low	≥5 hr/w	151/159	0.92 (0.70-1.21)	115/120	0.85 (0.61-1.20)	36/39	0.98 (0.58-1.65)
High	None	283/323	0.90 (0.72-1.13)	162/206	0.81 (0.60-1.09)	121/117	1.09 (0.77-1.55)
High	1-4hr/w	275/286	0.91 (0.73-1.15)	164/158	0.97 (0.71-1.32)	111/128	0.85 (0.60-1.21)
High	≥5 hr/w	106/112	0.91 (0.66-1.24)	83/88	0.86 (0.59-1.26)	23/24	0.94 (0.50-1.76)

hr/w, hour per week

^a Logistic regression models adjusted for sex, education, smoking, coffee consumption, age, index age, and family history of PD

Supplementary Figure A. Multivariable-adjusted odds ratios (aOR) with 95% confidence intervals (CI) of Parkinson's disease (PD) according to changes of strenuous leisure-time physical activities across the lifetime.



^a Left to right:

Low-Low trajectory (reference group): low activity at 15-25, 25-50 and ≥ 50 age periods.

Low-High trajectory: low activity at 15-25, and high activity at either 25-50, ≥ 50 or both age periods.

High-Low trajectory: high activity at 15-25, and low activity at either 25-50, ≥ 50 or both age periods.

High-High trajectory: high activity at 15-25, 25-50 and ≥ 50 age periods.

The analysis adjusted for sex, education, smoking, coffee consumption, age, index age, and family history of PD.