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Chronic diseases and objectively monitored physical activity profile among aged individuals – a cross-sectional twin cohort study

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Supplementary Table I. Distribution of physical activity and sedentary behavior variables in the target cohort of 779 participants (293 men and 305 women).

Activity/inactivity variable	Median (IQR from 25% to 75%)
Sedentary time (lying and sitting)/day, min	
All	532 (466 to 595)
Men	540 (474 to 598)
Women	526 (454 to 583)
Standing time/day, min	
All	82 (57 to 113)
Men	78 (57 to 107)
Women	86 (57 to 119)
Time of light physical activity/day, min	
All	171 (133 to 214)
Men	172 (130 to 214)
Women	169 (134 to 211)
Time of moderate-to-vigorous physical activity/day, min	
All	35 (18 to 56)
Men	38 (21 to 63)
Women	31 (17 to 50)
Daily step count, number of steps	
All	5958 (4056 to 8516)
Men	6376 (4513 to 8754)
Women	5560 (3713 to 8261)
Peak-10min MET, MET	
All	3.46 (2.93 to 4.14)
Men	3.51 (2.99 to 4.20)
Women	3.43 (2.91 to 4.05)

*All analyses with bootstrapping (1000 repetitions). Activity variables calculated based on one minute exponential moving average.

Supplementary Table II. Self-reported physician-diagnosed diseases by reporting any disease restricting mobility.

Disease	% (n) individuals reporting the physician diagnosed disease			
	All participants	Reported the specific disease including in the cardio-metabolic or arthritis disease cluster*		
		Did not self-report a disease restricting mobility	Self-reported a disease restricting mobility	P value†
Hypertension	47.8 (369 of 772; ND 7)	44.0 (261)	60.3 (108)	.001
Coronary heart disease/MI	12.1 (93 of 769; ND 10)	8.8 (52)	23.2 (41)	<.001
Heart failure	6.6 (51 of 767; ND 12)	4.4 (26)	14.2 (25)	<.001
Atrial fibrillation	9.5 (73 of 769; ND 10)	7.3 (43)	16.9 (30)	.001
Diabetes	14.0 (108 of 772; ND 7)	11.8 (70)	21.2 (38)	.001
Rheumatoid arthritis	4.7 (37 of 779; ND 0)	2.7 (16)	11.6 (21)	<.001
Knee osteoarthritis	20.5 (160 of 779; ND 0)	14.4 (86)	40.9 (74)	<.001
Hip osteoarthritis	7.6 (59 of 779; ND 0)	4.5 (27)	17.7 (32)	<.001

ND; not defined (either unclear status or no response)

*Cardio-metabolic or arthritis disease cluster included hypertension, coronary heart disease/myocardial infarction, heart failure, atrial fibrillation, diabetes, rheumatoid arthritis, knee osteoarthritis, hip osteoarthritis.

†By χ^2 test.

Supplementary Table III. Daily moderate-to-vigorous physical activity according to self-reported disease.*

Disease	Moderate to vigorous physical activity, min		P value [†]
	Without the disease	With the disease	
	n Median (95% CI of median)		
Hypertension	403 39 (35 to 44)	369 29 (26 to 33)	<.0001
Coronary heart disease/MI	676 36 (34 to 38)	93 25 (18 to 32)	<.0001
Heart failure	716 36 (34 to 38)	51 18 (11 to 27)	<.0001
Atrial fibrillation	696 36 (34 to 38)	73 25 (18 to 30)	<.0001
Diabetes	664 36 (34 to 38)	108 25 (15 to 35)	<.0001
Rheumatoid arthritis	742 36 (33 to 37)	37 16 (11 to 27)	<.0001
Knee osteoarthritis	619 37 (34 to 39)	160 25 (21 to 29)	<.0001
Hip osteoarthritis	720 35 (33 to 37)	59 24 (17 to 35)	.001

*All analyses with bootstrapping (1000 samples unless otherwise noted). Activity variable calculated based on one minute exponential moving average

[†]P values for the difference between those with the disease and those without from linear regression analysis adjusted for sex, age and cluster for family.

Supplementary Table IV. Daily steps according to self-reported disease.*

Disease	N of steps		P value [†]
	Without the disease	With the disease	
	n Median (95% CI of median)		
Hypertension	403 6657 (6275 to 7148)	369 5186 (4857 to 5573)	<.0001
Coronary heart disease/MI	676 6180 (5890 to 6440)	93 4346 (3805 to 5050)	<.0001
Heart failure	716 6096 (5821 to 6374)	51 4008 (3233 to 4746)	<.0001
Atrial fibrillation	696 6036 (5758 to 6272)	73 4818 (4285 to 6231)	.002
Diabetes	403 6657 (6275 to 7148)	108 4827 (3988 to 5576)	<.0001
Rheumatoid arthritis	742 6039 (5758 to 6272)	37 3976 (2911 to 5760)	.004
Knee osteoarthritis	619 6156 (5869 to 6453)	160 5329 (4440 to 5767)	.005
Hip osteoarthritis	720 6029 (5759 to 6248)	59 4739 (3633 to 6334)	.017

*All analyses with bootstrapping (1000 samples unless otherwise noted). Activity variable calculated based on one minute exponential moving average

[†]P values for the difference between those with the disease and those without from linear regression analysis adjusted for sex, age and cluster for family.

Supplementary Table V. Moderate-to vigorous physical activity and daily steps according to the number of self-reported diseases and sex.*

Activity variable	Disease status†			
	No reported disease	1 reported disease	2 reported diseases	3 or more reported diseases
	N of persons in each cell			
All	n = 259	n = 246	n = 171	n = 103
Men	n = 122	n = 110	n = 89	n = 57
Women	n = 137	n = 136	n = 82	n = 46
	Median (95% CI)			
Moderate-to-vigorous physical activity, min				
All	43 (38 to 48)	37 (31 to 39)	30 (27 to 37)	15 (11 to 22)
Men	48 (40 to 56)	42 (36 to 44)	37 (30 to 48)	17 (11 to 24)
Women	39 (34 to 44)	31 (26 to 37)	27 (24 to 32)	13 (7 to 25)
Steps				
All	6975 (6431 to 7815)	6114 (5700 to 6610)	5475 (4979 to 5799)	3765 (3311 to 4405)
Men	7903 (6944 to 8439)	6236 (6058 to 6788)	5728 (5054 to 6544)	4056 (3544 to 4777)
Women	6236 (5847 to 7136)	5450 (4858 to 6656)	5374 (4795 to 5740)	3215 (2568 to 4405)

*All analyses with bootstrapping (1000 repetitions).

†Number of self-reported cardio-metabolic or arthritis disease cluster diseases (reported hypertension, coronary heart disease/myocardial infarction, heart failure, atrial fibrillation, diabetes, rheumatoid arthritis, knee osteoarthritis or hip osteoarthritis ignoring the reporting of mobility restricting disease).

Supplementary Table VI. Daily physical activity/inactivity characteristics according to self-reported physician-diagnosed diseases restricting mobility and other physician diagnosed diseases and sex.*

Activity variable	Disease status		
	No reported disease	Other reported disease†	Reported disease restricting mobility
	N of persons in each cell		
All	n = 240	n = 358	n = 181
Men	n = 115	n = 178	n = 85
Women	n = 125	n = 180	n = 96
	Median (95% CI)		
Sedentary time, min			
All	503 (482 to 519)	536 (524 to 548)	558 (545 to 574)
Men	514 (487 to 531)	549 (531 to 558)	551 (529 to 588)
Women	495 (466 to 518)	526 (508 to 543)	565 (544 to 590)
Standing time, min			
All	90 (85 to 96)	81 (77 to 89)	70 (63 to 75)
Men	83 (73 to 89)	78 (74 to 85)	73 (63 to 85)
Women	99 (91 to 108)	87 (78 to 93)	67 (59 to 74)
Light physical activity, min			
All	185 (180 to 195)	168 (159 to 176)	149 (145 to 160)
Men	190 (180 to 200)	169 (155 to 179)	150 (145 to 170)
Women	183 (177 to 194)	168 (159 to 181)	148 (134 to 165)
Moderate-to-vigorous physical activity, min			
All	45 (39 to 49)	37 (33 to 40)	20 (17 to 25)
Men	48 (41 to 57)	40 (36 to 44)	25 (18 to 32)
Women	41 (36 to 48)	34 (27 to 37)	18 (13 to 24)
Steps			
All	7145 (6518 to 7965)	6168 (5686 to 6519)	4085 (3680 to 4637)
Men	7823 (6710 to 8468)	6257 (5989 to 6597)	4442 (3805 to 5160)
Women	6475 (6024 to 7830)	5579 (5131 to 6711)	3812 (3145 to 4604)
Peak-10min MET			
All	3.79 (3.63 to 4.00)	3.56 (3.44 to 3.67)	2.99 (2.87 to 3.11)
Men	3.74 (3.51 to 4.08)	3.66 (3.47 to 3.81)	3.10 (2.88 to 3.27)
Women	3.88 (3.63 to 4.03)	3.44 (3.28 to 3.60)	2.92 (2.75 to 3.08)

*All analyses with bootstrapping (1000 repetitions). Activity variables calculated based on one minute exponential moving average

†Self-reported cardio-metabolic or arthritis disease cluster (reported hypertension, coronary heart disease/myocardial infarction, heart failure, atrial fibrillation, diabetes, rheumatoid arthritis, knee osteoarthritis or hip osteoarthritis but did not report mobility restricting disease).

Supplementary Table VII. Median of the mid-life mean MET-index from self-reported leisure-time physical activity in 1975, 1981 and 1990* according to self-reported physician-diagnosed diseases restricting mobility at follow-up and sex. †

Activity/inactivity variable	Reported disease restricting mobility (n of persons)		P value [†]
	No (n=470)	Yes (n=139)	
All	(n=215)	(n=71)	
Men	(n=255)	(n=68)	
Women			
	Median (95% CI)		
Mid-life leisure-time mean MET-index from years 1975, 1981 and 1990, MET-hours/day			
All	2.14 (1.94 to 2.29)	2.04 (1.63 to 2.37)	.167
Men	2.24 (2.02 to 2.63)	2.34 (1.57 to 2.74)	.375
Women	2.05 (1.80 to 2.29)	1.89 (1.48 to 2.24)	.301

*Previous physical activity habits were assessed from the cohort by questionnaires in 1975, 1981 and 1990. All three questionnaires enabled calculation of the leisure-time MET-index. The MET-index was expressed as the sum-score of leisure-time physical activity MET-hours per day. To estimate the mean volume of physical activity during the three baseline survey years, the average of the MET index values obtained in 1975, 1981, and 1990 was computed and termed mid-life mean MET-index (see reference 23 in the manuscript).

†All analyses with bootstrapping (1000).

†P values for the difference between those with the disease and those without from linear regression analysis adjusted for sex, age and cluster for family.