Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1: Physical activity types, MET values, codes and intensity categories*

Activity type	Intensity	MET	Codes*
Heavy manual work	Vigorous	6.5	11477
Manual work	Moderate	4.5	11476
Standing work	Moderate	3.8	Mean of 11610 and 11630
Sedentary work	Low	1.8	Mean of 11580, 11585, and 11590
Manual work in the farming season	Vigorous	6.3	Mean of 11145 and 11146
Semi-mechanized work in the farming season	Moderate	3.4	Mean of 11146 and 11147
Fully mechanized work in the farming season	Low	2.4	Mean of 11147 and 11170
Work outside the farming season	Low	2	11147
Walking	Moderate	4	17270
Bicycle	Vigorous	6.8	1011
Motorbike	Moderate	3.5	16030
Private or public transportation (such as bus, car, underground, and ferry)	Low	1.7	Mean of 16010, 16015, and 16016
Household activity	Low	2.8	Mean of 05030†, 05040†, 05035, 05055, 05070, 05090†, 05092†, 05184, 05197, and 05200
Tai-Chi/qigong/leisure walking	Moderate	3.3	Mean of 15670 and 17160
Jogging/aerobic exercise	Vigorous	7.4	Mean of 03015, 12020, and 12150
Ball games	Moderate	5.5	Mean of 15020†, 15030†, 15055, 15080, 15090, 15255, 15605†, 15610†, 15652, 15660, 15675, 15710†, and 15711†
Brisk walking/gymnastics/folk dancing	Moderate	4.2	Mean of 03025, 15300, and 17200
Swimming	Vigorous	7.2	Mean of 18230, 18240, and 18310
Other exercise, e.g. mountain walking, home exercise and rope jumping	Moderate	5.9	Mean of 02010, 02064, 04001, 04100, 15110†, 15120†, 15200, 15240, 15310, 15425†, 15430†, 15537, 15550‡, 15551‡, 15552‡, 15580, 15590, 15730, 15732‡, 15733‡, 15734‡, and 19030

MET: Metabolic equivalent of tasks.

* Based on the 2011 Compendium of Physical Activities: a second update of codes and MET values. Ainsworth BE, et al. Medicine and Science in Sports and Exercise, 2011;43(8):1575-1581.

† Assigned 1/2 weight in calculating the mean MET value because the connecting two items represent one type of activity.

‡ Assigned 1/3 weight in calculating the mean MET value because the connecting three items represent one type of activity.

eTable 2: Mean (SD) levels of plasma biochemical markers by levels of physical activity in a subset of CKB participants

Biochemistry	No. of participants	Total physical activity (MET-h/day)					P-value for trend
		≤9.1	9.2 - 14.7	14.8 - 22.4	22.5 - 33.7	≥ 33.8	
Total cholesterol, mmol/L	9282	4.7 (0.9)	4.7 (0.9)	4.6 (0.9)	4.5 (0.9)	4.5 (0.9)	<0.0001
LDL-C, mmol/L	9282	2.4 (0.7)	2.4 (0.6)	2.3 (0.6)	2.2 (0.7)	2.3 (0.7)	<0.0001
HDL-C, mmol/L	9282	1.2 (0.3)	1.2 (0.3)	1.3 (0.3)	1.3 (0.3)	1.3 (0.3)	<0.0001
ApoB, mg/dl	9282	84.0 (20.4)	84.5 (19.5)	82.5 (19.1)	79.7 (19.8)	79.8 (20.3)	<0.0001
ApoA1, mg/dl	9282	133.6 (22.9)	134.7 (21.9)	136.2 (21.5)	137.7 (22.3)	138.0 (22.8)	<0.0001
Log triglycerides, log mmol/L	9282	0.6 (0.6)	0.6 (0.6)	0.5 (0.5)	0.5 (0.6)	0.4 (0.6)	<0.0001
Log Lp(a), log nmol/L	9282	3.0 (1.2)	3.0 (1.1)	3.0 (1.1)	3.0 (1.1)	3.0 (1.2)	0.7385
Fibrinogen, g/L	5247	3.1 (0.7)	3.1 (0.7)	3.1 (0.7)	3.1 (0.7)	3.1 (0.7)	0.0194
Log CRP, log mg/L	9282	0.2 (1.1)	0.1 (1.0)	-0.0 (1.0)	-0.0 (1.0)	-0.1 (1.0)	<0.0001
Log Gamma glutamyl tranferase, log u/L	8412	3.1 (0.7)	3.1 (0.7)	3.0 (0.6)	3.0 (0.7)	2.9 (0.7)	<0.0001
Albumin, g/L	8538	42.2 (2.8)	42.4 (2.7)	42.2 (2.6)	42.2 (2.7)	42.4 (2.8)	0.3488
Creatinine, umol/L	9282	65.5 (15.9)	64.5 (15.2)	62.8 (14.9)	63.1 (15.5)	61.8 (15.8)	<0.0001
Cystatin-C, mg/L	8117	0.9 (0.2)	0.8 (0.2)	0.8 (0.2)	0.8 (0.2)	0.8 (0.2)	<0.0001

All values are adjusted for age, sex, and area where appropriate.
To convert the values of total, LDL-C, HDL-C to milligrams per decilitre, divide by 0.0259.

eTable 3: Types of activity by area and gender

	Rural Mean (SD)*		Urban Mean (SD)*		Total Mean (SD)	
	Men (n = 113,983)	**Women (n = 162,593)**	**Men (n = 85,035)**	**Women (n = 125,723)**	**Men (n =199,018)**	**Women (n = 288,316)**
Total physical activity (MET-h/day)	**24.8 (12.9)**	**22.2 (12.9)**	**20.4 (12.9)**	**18.5 (12.9)**	**22.9 (12.8)**	**20.6 (12.8)**
Non-occupational	5.3 (4.4)	10.3 (4.4)	5.9 (4.4)	9.6 (4.4)	5.5 (4.4)	10.0 (4.4)
Occupational	19.5 (12.5)	11.9 (12.5)	14.5 (12.5)	8.9 (12.5)	17.4 (12.4)	10.6 (12.4)
Sedentary leisure-time, hours/day	**3.0 (1.5)**	**2.9 (1.5)**	**3.2 (1.5)**	**3.0 (1.5)**	**3.1 (1.5)**	**2.9 (1.5)**

*All values were adjusted for age.

eTable 4: Adjusted HRs for major cardiovascular diseases by total, occupational and non-occupational physical activity

Baseline physical activity (MET-h/day)	Major coronary events		Ischaemic stroke		Intracerebral haemorrhage		Cardiovascular deaths		Major vascular events	
	No. of events	HR* (95% CI)	No. of events	HR* (95% CI)	No. of events	HR* (95% CI)	No. of events	HR* (95% CI)	No. of events	HR* (95% CI)
Total										
≤9.1	2183	1.00 (0.95 - 1.05)	9364	1.00 (0.98 - 1.02)	1656	1.00 (0.95 - 1.06)	3611	1.00 (0.96 - 1.04)	13229	1.00 (0.98 - 1.02)
9.2 - 14.7	1197	0.83 (0.78 - 0.87)	6828	0.93 (0.91 - 0.95)	1185	0.86 (0.81 - 0.92)	1830	0.75 (0.72 - 0.79)	9177	0.90 (0.88 - 0.92)
14.8 - 22.4	702	0.74 (0.69 - 0.80)	4176	0.86 (0.84 - 0.89)	882	0.78 (0.73 - 0.83)	1206	0.67 (0.63 - 0.71)	5846	0.83 (0.81 - 0.86)
22.5 - 33.7	586	0.71 (0.65 - 0.78)	2929	0.83 (0.80 - 0.86)	827	0.70 (0.65 - 0.75)	1061	0.60 (0.56 - 0.64)	4408	0.79 (0.76 - 0.81)
≥ 33.8	414	0.69 (0.62 - 0.77)	2350	0.79 (0.75 - 0.82)	702	0.77 (0.71 - 0.83)	729	0.59 (0.55 - 0.64)	3524	0.77 (0.74 - 0.80)
P for non-linearity		<0.0001		0.0004		0.0001		<0.0001		<0.0001
Occupational[†]										
0	2743	1.00 (0.94 - 1.07)	13352	1.00 (0.97 - 1.03)	1954	1.00 (0.94 - 1.07)	4164	1.00 (0.95 - 1.05)	18020	1.00 (0.98 - 1.03)
0.1 - 5.9	648	0.77 (0.70 - 0.84)	3467	0.89 (0.86 - 0.93)	871	0.87 (0.81 - 0.94)	1276	0.75 (0.70 - 0.80)	5012	0.87 (0.84 - 0.90)
6.0 - 13.8	698	0.70 (0.65 - 0.76)	3577	0.83 (0.81 - 0.86)	949	0.75 (0.71 - 0.80)	1260	0.66 (0.62 - 0.69)	5312	0.80 (0.78 - 0.82)
13.9 - 25.7	548	0.69 (0.63 - 0.76)	2713	0.82 (0.79 - 0.85)	833	0.70 (0.65 - 0.75)	1054	0.61 (0.58 - 0.66)	4150	0.77 (0.75 - 0.80)
≥ 25.8	445	0.68 (0.62 - 0.76)	2538	0.79 (0.75 - 0.82)	645	0.75 (0.69 - 0.82)	683	0.59 (0.55 - 0.65)	3690	0.77 (0.74 - 0.79)
P for non-linearity		<0.0001		0.54		0.0001		<0.0001		<0.0001
Non-occupational[†]										
0 - 3.9	1273	1.00 (0.94 - 1.07)	5358	1.00 (0.97 - 1.03)	1139	1.00 (0.93 - 1.07)	2047	1.00 (0.95 - 1.05)	7801	1.00 (0.97 - 1.03)
4.0 - 6.5	1020	0.88 (0.82 - 0.93)	4921	0.94 (0.91 - 0.96)	977	0.91 (0.85 - 0.97)	1685	0.89 (0.85 - 0.93)	6992	0.92 (0.90 - 0.95)
6.6 - 8.4	1027	0.86 (0.81 - 0.91)	5211	0.93 (0.90 - 0.95)	1089	0.89 (0.84 - 0.95)	1795	0.85 (0.81 - 0.89)	7369	0.90 (0.88 - 0.93)
8.5 - 11.6	881	0.80 (0.75 - 0.85)	4930	0.90 (0.88 - 0.93)	1025	0.89 (0.84 - 0.95)	1485	0.78 (0.74 - 0.82)	6876	0.88 (0.86 - 0.90)
≥ 11.7	881	0.78 (0.72 - 0.84)	5227	0.88 (0.85 - 0.90)	1022	0.84 (0.78 - 0.90)	1425	0.71 (0.67 - 0.75)	7146	0.85 (0.83 - 0.87)
P for non-linearity		0.41		0.99		0.62		0.77		

* All HRs are adjusted for stratified by age at risk, sex, and region and adjusted for income, education, BMI, alcohol, smoking, SBP, fresh fruit intake, sedentary leisure time, and self-rated health.
[†] Occupational physical activity additionally adjusted for non-occupational physical activity. Non-occupational physical activity additionally adjusted for occupational physical activity.

eTable 5: Adjusted event rates for major cardiovascular diseases by baseline levels of total, occupational and non-occupational physical activity

Baseline physical activity (MET-h/day)	Major coronary events		Ischaemic stroke		Intracerebral haemorrhage		Cardiovascular deaths		Major vascular events	
	No. of events	Event rate* (95% CI)	No. of events	Event rate* (95% CI)	No. of events	Event rate* (95% CI)	No. of events	Event rate* (95% CI)	No. of events	Event rate* (95% CI)
Total										
≤ 9.1	2183	1.66 (1.56 - 1.76)	9364	7.53 (7.33 - 7.73)	1656	1.87 (1.72 - 2.01)	3611	3.12 (2.96 - 3.28)	13229	11.35 (11.1 -11.63)
9.2 - 14.7	1197	1.32 (1.22 - 1.41)	6828	6.92 (6.73 - 7.11)	1185	1.46 (1.35 - 1.56)	1830	2.10 (1.98 - 2.22)	9177	9.74 (9.50 - 9.98)
14.8 - 22.4	702	1.11 (1.02 - 1.20)	4176	6.49 (6.27 - 6.71)	882	1.27 (1.17 - 1.36)	1206	1.84 (1.72 - 1.96)	5846	8.99 (8.73 - 9.25)
22.5 - 33.7	586	1.11 (0.91 - 1.31)	2929	6.49 (6.07 - 6.92)	827	1.18 (1.03 - 1.34)	1061	1.63 (1.42 - 1.84)	4408	8.91 (8.41 - 9.41)
≥ 33.8	414	0.96 (0.75 - 1.17)	2350	5.88 (5.31 - 6.46)	702	1.37 (1.16 - 1.57)	729	1.69 (1.39 - 2.00)	3524	8.42 (7.74 - 9.09)
Occupational										
0	2743	1.67 (1.54 - 1.80)	13352	7.41 (7.18 - 7.64)	1954	1.89 (1.70 - 2.08)	4164	3.13 (2.93 - 3.33)	18371	11.50 (11.1 -11.85)
0.1 - 5.9	648	0.91 (0.76 - 1.06)	3467	6.95 (6.06 - 7.84)	871	1.45 (1.25 - 1.66)	1276	1.91 (1.71 - 2.12)	5085	9.79 (8.85 -10.73)
6.0 - 13.8	698	0.95 (0.86 - 1.04)	3577	6.06 (5.70 - 6.41)	949	1.22 (1.11 - 1.32)	1260	1.73 (1.51 - 1.95)	5425	8.59 (8.16 - 9.02)
13.9 - 25.7	548	1.20 (0.76 - 1.65)	2713	7.29 (6.36 - 8.22)	833	1.26 (1.00 - 1.52)	1054	1.79 (1.34 - 2.24)	4230	9.93 (8.90 -10.97)
≥ 25.8	445	1.22 (0.83 - 1.61)	2538	6.02 (5.45 - 6.58)	645	1.43 (1.07 - 1.78)	683	2.20 (1.50 - 2.91)	3771	9.20 (8.28 -10.12)
Non-occupational										
0 - 3.9	1273	1.65 (1.50 - 1.80)	5358	7.72 (7.33 - 8.11)	1139	1.93 (1.64 - 2.22)	2047	3.30 (2.95 - 3.65)	7964	11.81 (11.3 -12.35)
4.0 - 6.5	1020	1.40 (1.29 - 1.50)	4921	6.96 (6.73 - 7.18)	977	1.39 (1.27 - 1.50)	1685	2.39 (2.25 - 2.53)	7132	10.11 (9.83 -10.39)
6.6 - 8.4	1027	1.29 (1.21 - 1.38)	5211	6.83 (6.63 - 7.03)	1089	1.45 (1.36 - 1.55)	1795	2.28 (2.16 - 2.40)	7490	9.83 (9.58 -10.07)
8.5 - 11.6	881	1.23 (1.14 - 1.32)	4930	6.59 (6.39 - 6.80)	1025	1.39 (1.29 - 1.49)	1485	2.03 (1.91 - 2.14)	7013	9.49 (9.24 - 9.74)
≥ 11.7	881	1.21 (1.09 - 1.33)	5227	6.48 (6.23 - 6.73)	1022	1.26 (1.14 - 1.37)	1425	1.92 (1.76 - 2.07)	7283	9.24 (8.92 - 9.55)

*All event rates are per 1,000 person-years and are adjusted for age, sex, and area.

eTable 6: Estimated regression dilution ratio for total, occupational and non-occupational physical activity

Baseline physical activity groups	Mean Baseline Physical activity (MET-h/day)	Mean First Re-survey Physical activity (MET-h/day)	Ratio of the ranges (MacMahon-Peto) regression dilution ratio estimate	Self-correlation regression dilution ratio estimate
Total				
≤9.1 (i)	5.95	12.02		
9.2 -14.7 (ii)	11.97	15.09		
14.8 - 22.4 (iii)	18.23	19.34	0.53	0.51
22.5 - 33.7 (iv)	27.85	25.44		
≥33.8 (v)	43.58	31.98		
Difference (v–i)	***37.63***	***19.96***		
Occupational				
0 (i)	0	2.43		
0.1 - 5.9 (ii)	3.15	8.73		
6.0 - 13.8 (iii)	9.97	12.37	0.63	0.57
13.9 - 25.7 (iv)	18.85	17.95		
≥ 25.8 (iv)	35.71	25.08		
Difference (v–i)	***35.71***	***22.65***		
Non-occupational				
0 - 3.9 (i)	2.11	4.58		
4.0 - 6.5 (ii)	5.30	6.74		
6.6 - 8.4 (iii)	7.70	8.24	0.50	0.48
8.5 - 11.6 (iv)	10.08	9.20		
≥11.7 (v)	15.53	11.15		
Difference (v–i)	***13.42***	***6.57***		

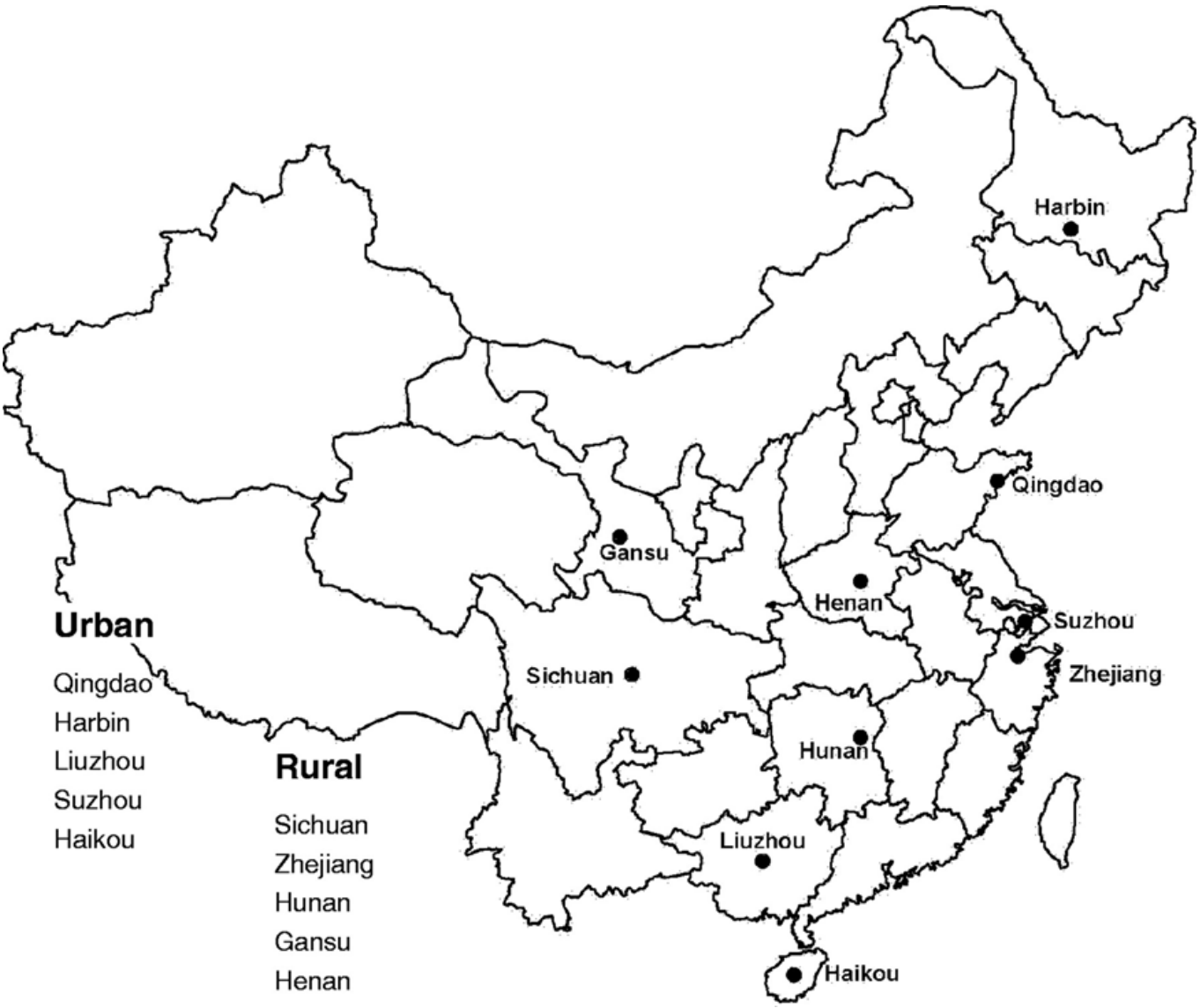
eTable 7: Adjusted HRs* for major cardiovascular diseases by total, occupational and non-occupational physical activity after excluding participants with major prior chronic diseases†, poor self-rated general health and the first three years of follow-up

	Major coronary events		Ischaemic stroke		Intracerebral haemorrhage		Cardiovascular deaths		Major vascular events	
Baseline physical activity (MET-h/day)	**No. of events**	**HR* (95% CI)**	**No. of events**	**HR* (95% CI)**	**No. of events**	**HR* (95% CI)**	**No. of events**	**HR* (95% CI)**	**No. of events**	**HR* (95% CI)**
Total										
≤9.1	1334	1.00 (0.94 - 1.07)	6679	1.00 (0.97 - 1.03)	964	1.00 (0.93 - 1.08)	1985	1.00 (0.95 - 1.05)	8876	1.00 (0.98 - 1.02)
9.2 - 14.7	819	0.87 (0.81 - 0.93)	5068	0.91 (0.89 - 0.94)	845	0.95 (0.89 - 1.02)	1180	0.80 (0.76 - 0.85)	6683	0.91 (0.89 - 0.93)
14.8 - 22.4	499	0.82 (0.75 - 0.89)	3213	0.86 (0.83 - 0.89)	609	0.83 (0.76 - 0.89)	785	0.73 (0.68 - 0.79)	4355	0.85 (0.83 - 0.88)
22.5 - 33.7	413	0.76 (0.68 - 0.85)	2273	0.81 (0.78 - 0.85)	599	0.76 (0.69 - 0.83)	708	0.64 (0.59 - 0.69)	3314	0.79 (0.76 - 0.82)
≥33.8	317	0.78 (0.69 - 0.88)	1880	0.77 (0.74 - 0.81)	537	0.84 (0.77 - 0.93)	525	0.66 (0.60 - 0.73)	2777	0.79 (0.76 - 0.82)
P for non-linearity		0.064		0.0004		<0.0001		<0.0001		0.0005
Occupational										
0	1754	1.00 (0.92 - 1.09)	9595	1.00 (0.97 - 1.04)	1201	1.00 (0.92 - 1.09)	2406	1.00 (0.94 - 1.07)	12409	1.00 (0.97 - 1.03)
0.1 - 5.9	395	0.77 (0.68 - 0.86)	2583	0.88 (0.84 - 0.92)	587	0.93 (0.85 - 1.02)	751	0.76 (0.70 - 0.83)	3553	0.87 (0.84 - 0.91)
6.0 - 13.8	489	0.76 (0.70 - 0.83)	2742	0.81 (0.78 - 0.85)	646	0.79 (0.73 - 0.85)	788	0.69 (0.64 - 0.74)	3916	0.81 (0.78 - 0.83)
13.9 - 25.7	396	0.75 (0.67 - 0.83)	2146	0.81 (0.77 - 0.85)	618	0.76 (0.69 - 0.82)	740	0.67 (0.62 - 0.73)	3181	0.79 (0.76 - 0.82)
≥25.8	348	0.75 (0.67 - 0.84)	2047	0.77 (0.73 - 0.81)	502	0.82 (0.74 - 0.90)	498	0.66 (0.60 - 0.73)	2946	0.78 (0.75 - 0.81)
P for non-linearity		0.0036		0.0002		0.0043		0.0002		<0.0001
Non-occupational										
0 - 3.9	814	1.00 (0.92 - 1.08)	3969	1.00 (0.96 - 1.04)	717	1.00 (0.92 - 1.09)	1170	1.00 (0.93 - 1.07)	5459	1.00 (0.97 - 1.03)
4.0 - 6.5	689	0.90 (0.83 - 0.97)	3692	0.93 (0.90 - 0.96)	670	0.97 (0.90 - 1.05)	1034	0.92 (0.86 - 0.98)	5064	0.93 (0.91 - 0.96)
6.6 - 8.4	674	0.88 (0.81 - 0.95)	3885	0.90 (0.87 - 0.93)	738	0.95 (0.89 - 1.03)	1106	0.89 (0.84 - 0.94)	5286	0.90 (0.88 - 0.93)
8.5 - 11.6	593	0.81 (0.74 - 0.88)	3689	0.87 (0.84 - 0.90)	720	0.96 (0.89 - 1.03)	943	0.80 (0.75 - 0.86)	5021	0.88 (0.86 - 0.91)
≥11.7	612	0.82 (0.75 - 0.89)	3878	0.84 (0.81 - 0.87)	709	0.89 (0.82 - 0.98)	930	0.72 (0.67 - 0.78)	5175	0.84 (0.82 - 0.87)
P for non-linearity		0.50		0.49		0.80		0.28		0.75

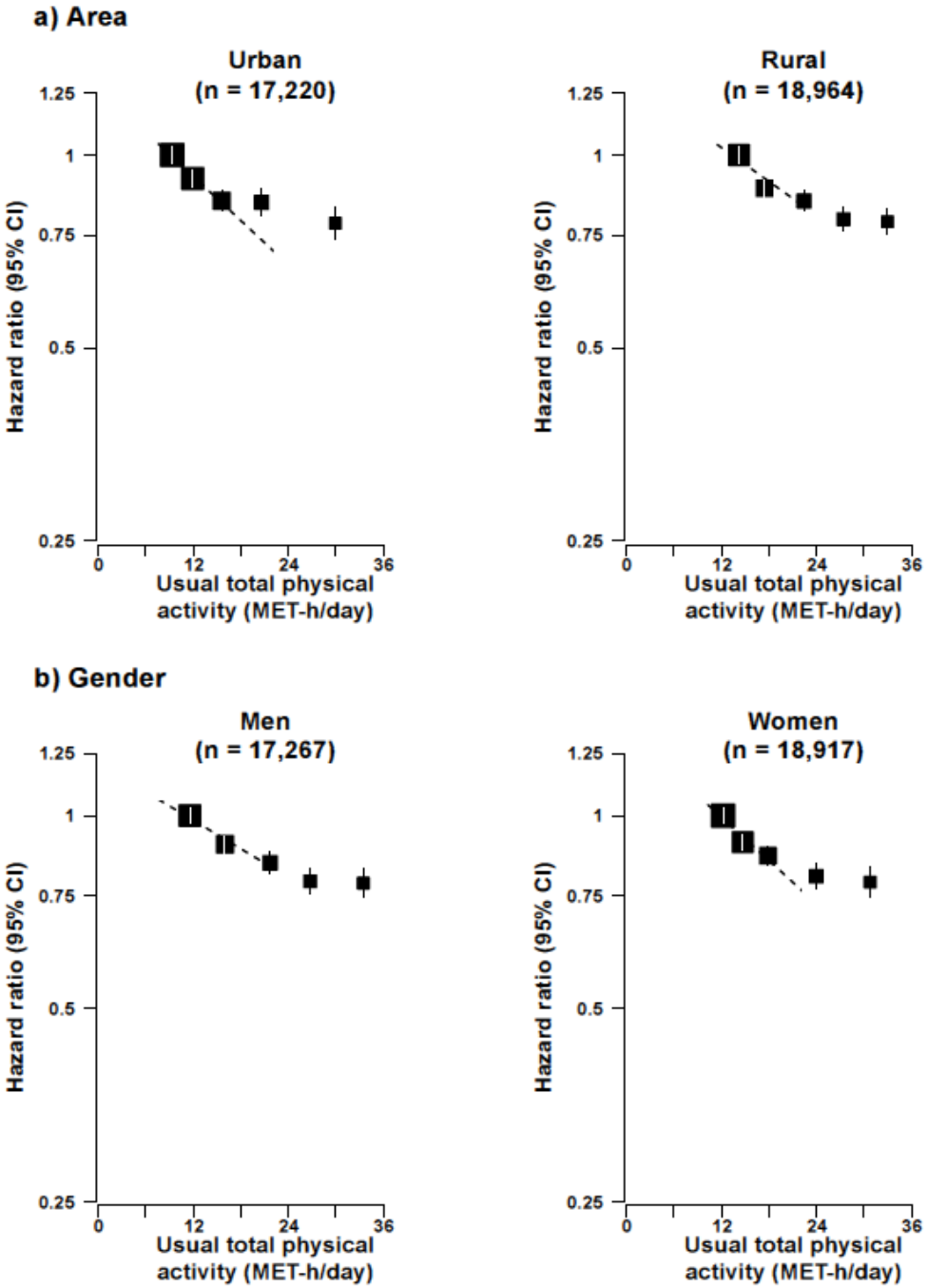
* All HRs are stratified by age at risk, sex, and region and adjusted for income, education, alcohol, smoking, fresh fruit intake, sedentary leisure-time and mutually adjusted for other domain-specific physical activity when appropriate.

† Exclusions include prior history of CVD, tuberculosis, chronic obstructive pulmonary disease, emphysema or bronchitis, asthma, rheumatic heart disease and cancer.

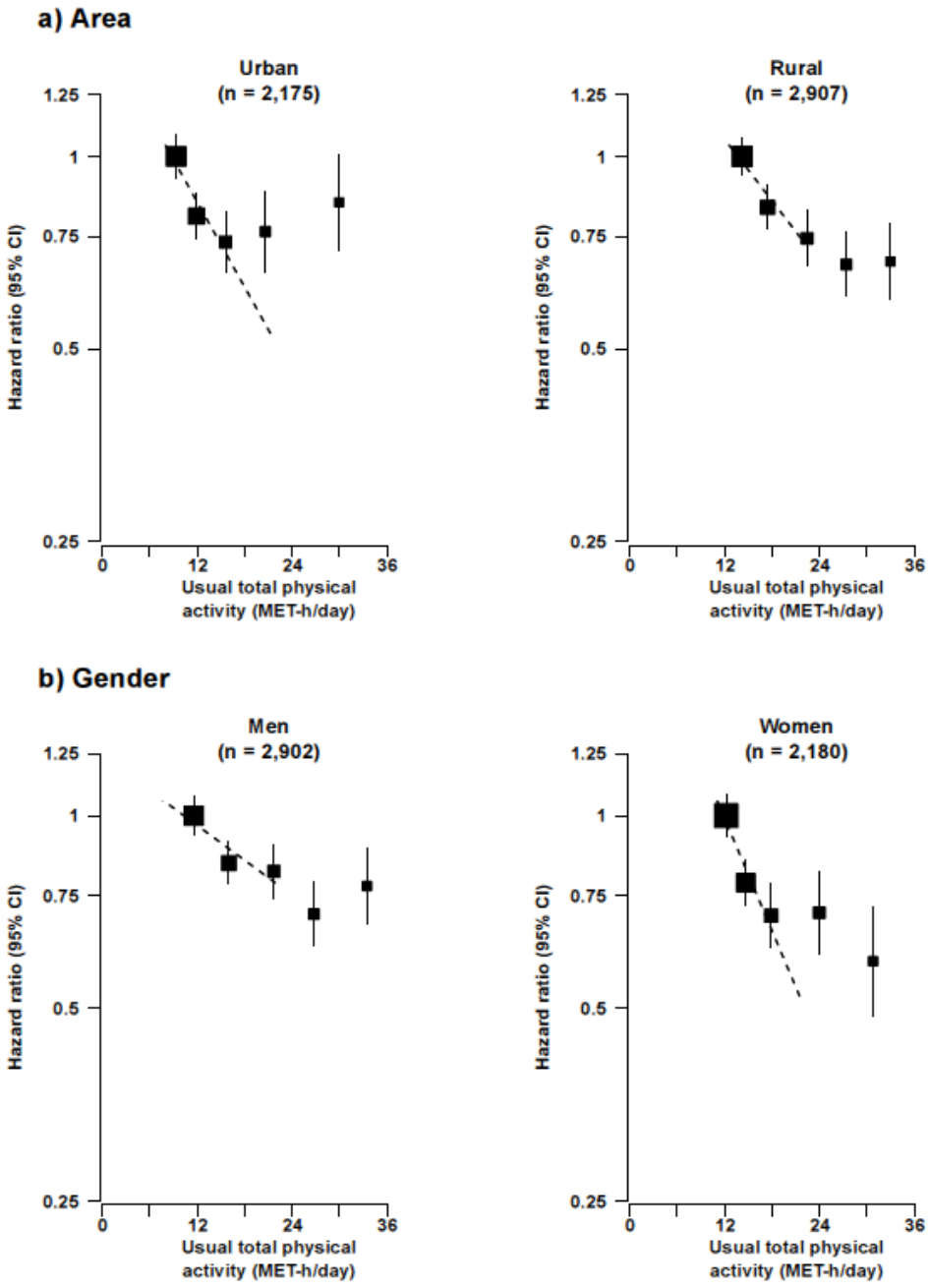
eFigure 1: The location of the 10 areas included in the China Kadoorie Biobank



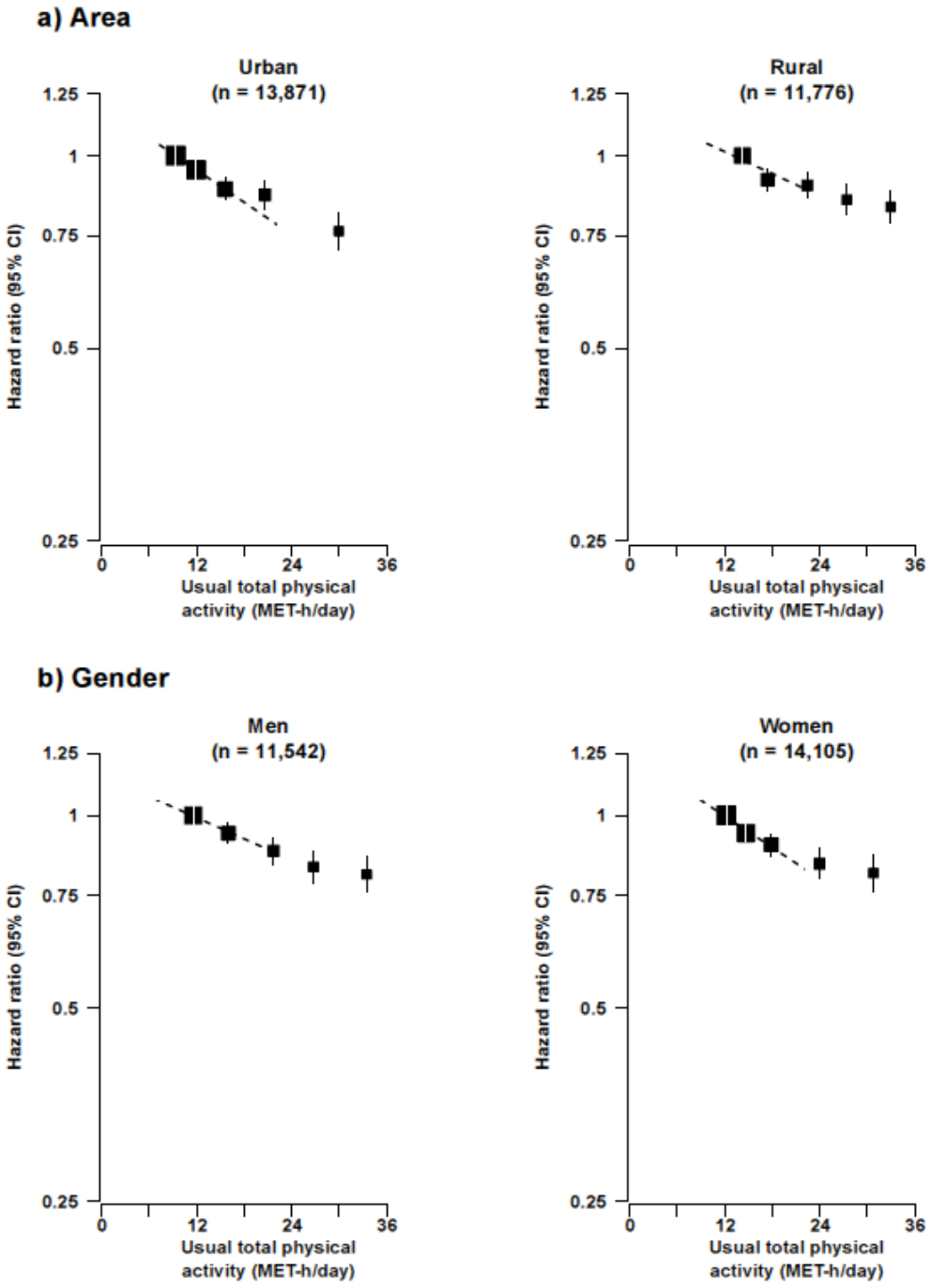
eFigure 2: Adjusted HRs for major vascular events by total physical activity stratified by a) area and b) gender



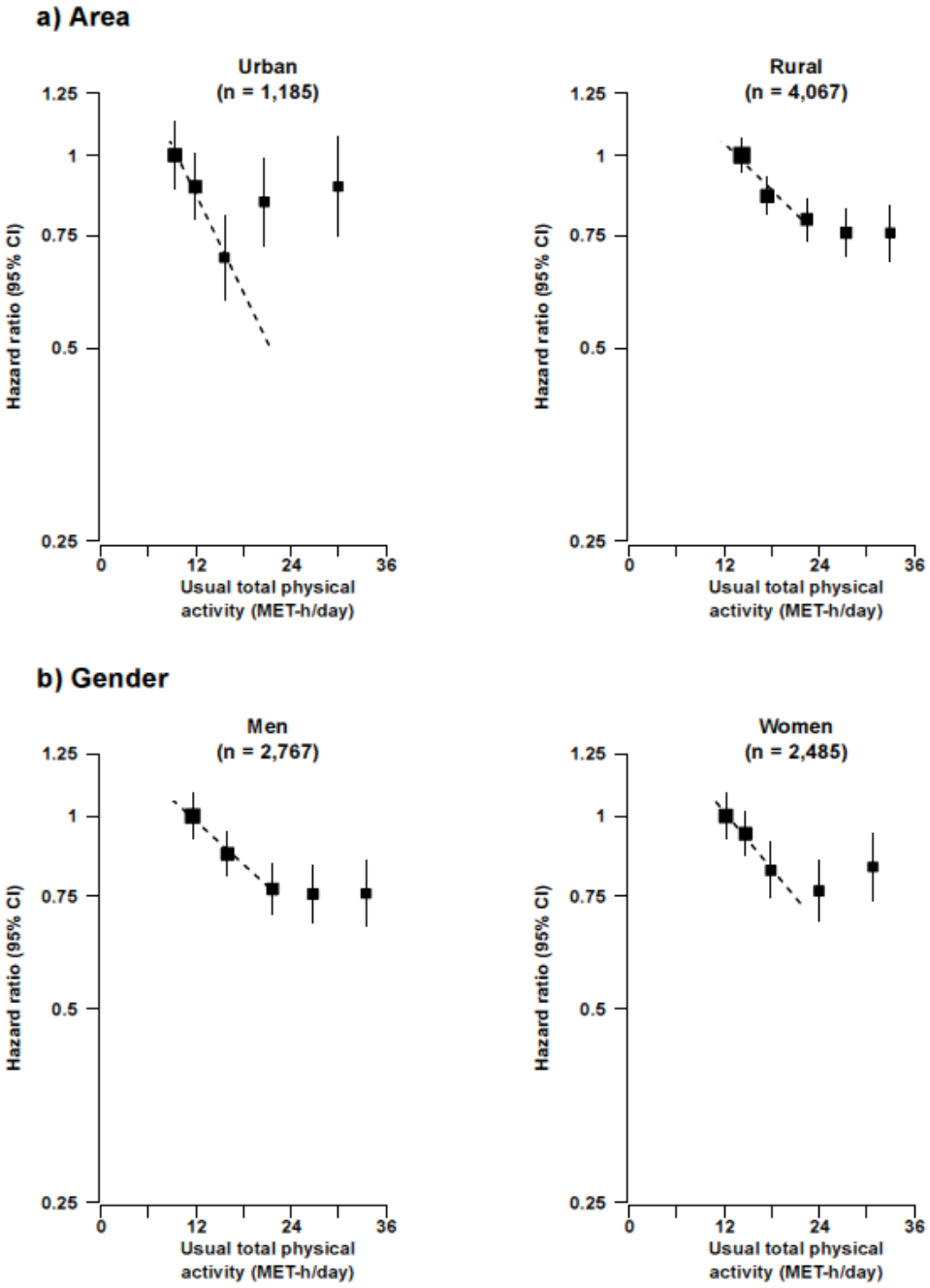
eFigure 3: Adjusted HRs for major coronary events by total physical activity, stratifed by a) area and b) gender



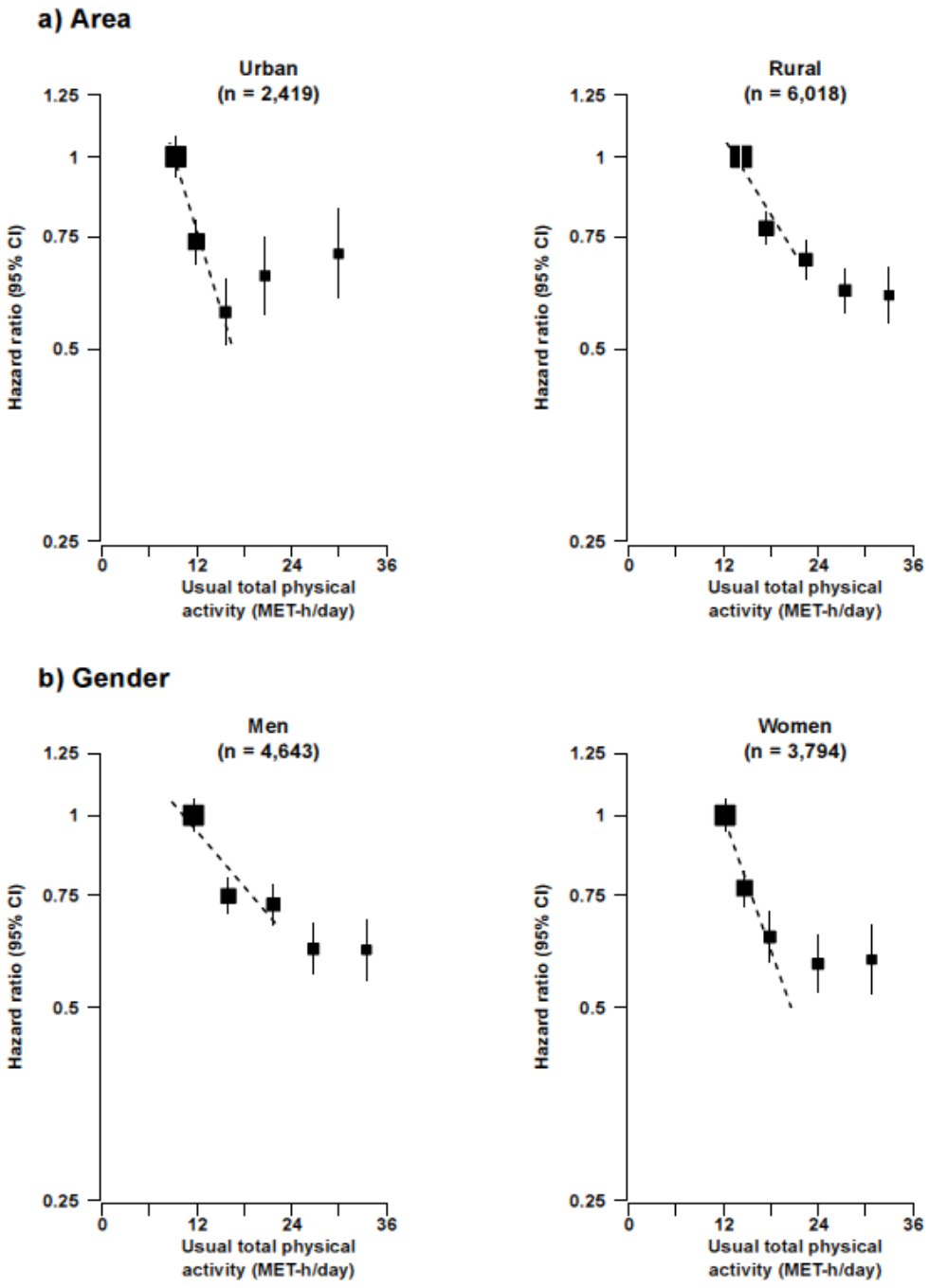
eFigure 4: Adjusted HRs for ischemic stroke events by total physical activity, stratified by a) area and b) gender



eFigure 5: Adjusted HRs for intracerebral haemorrhage by total physical activity, stratified by a) area and b) gender

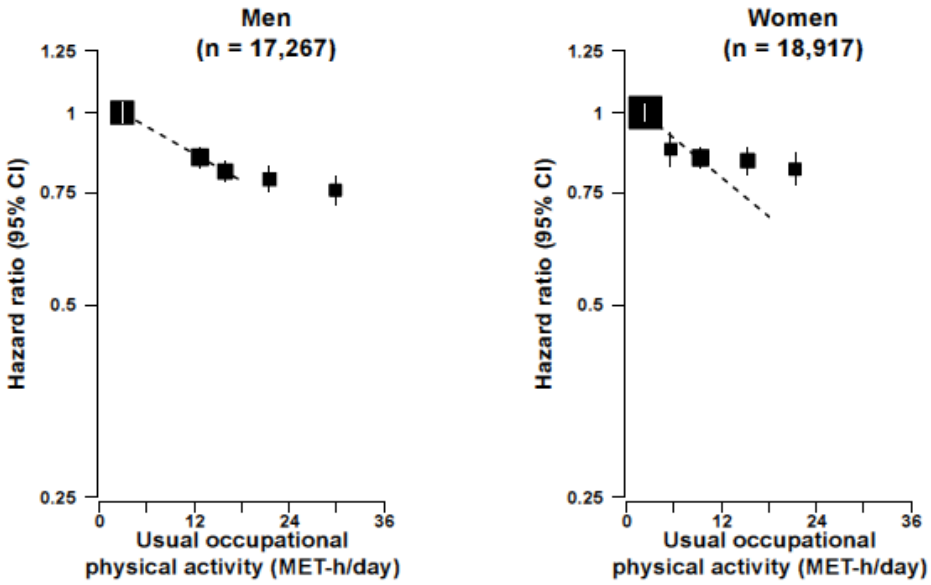


eFigure 6: Adjusted HRs for cardiovascular death by total physical activity, stratified by a) area and b) gender

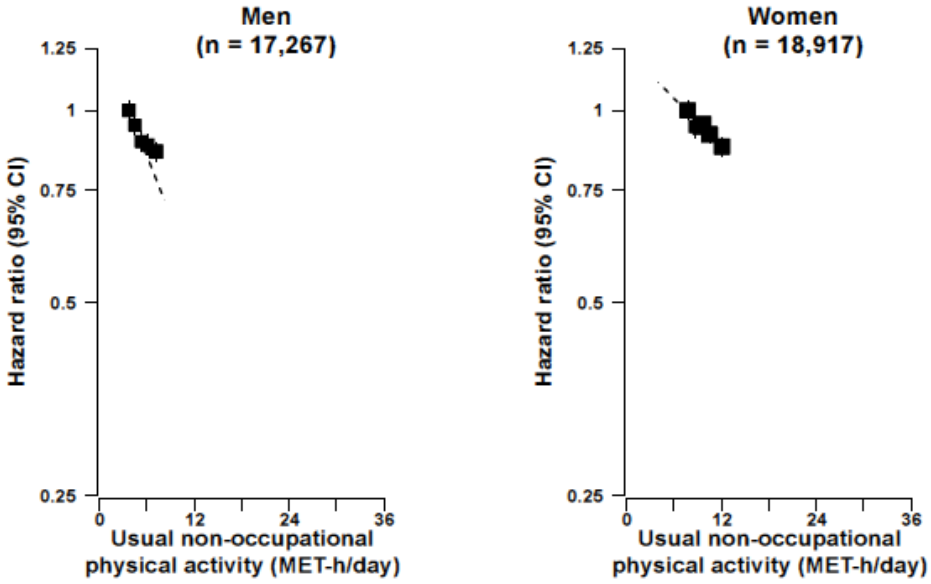


eFigure 7: Adjusted HRs for major vascular events by a) occupational and b) non-occupational physical activity, in men and women

a) Occupational physical activity

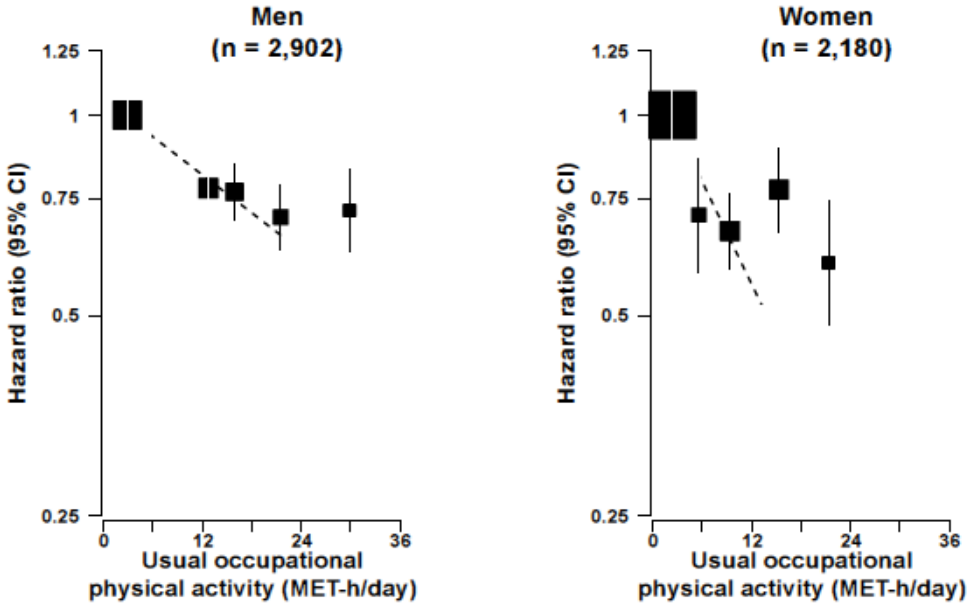


b) Non-occupational physical activity

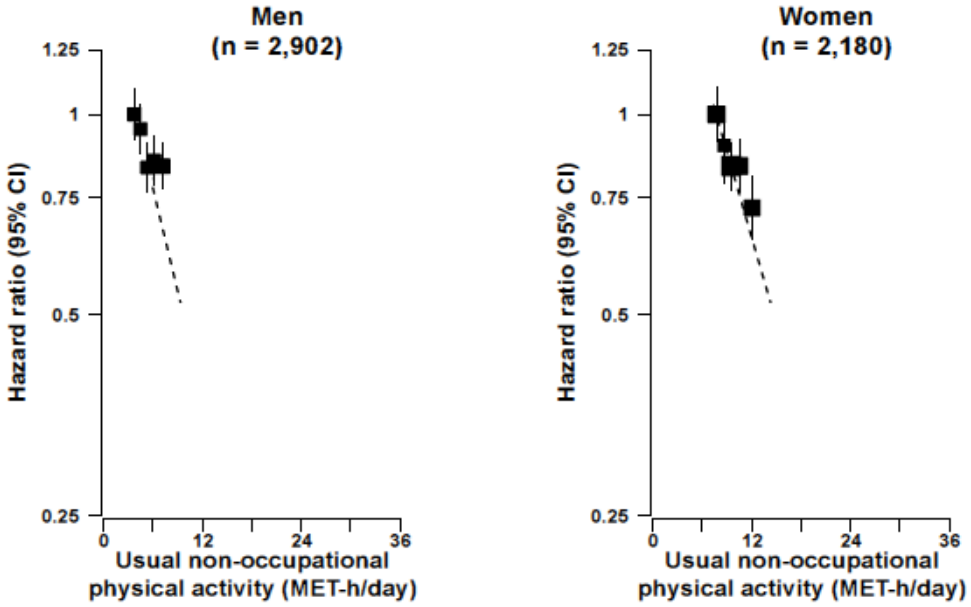


eFigure 8: Adjusted HRs for major coronary events by a) occupational and b) non-occupational physical activity, in men and women

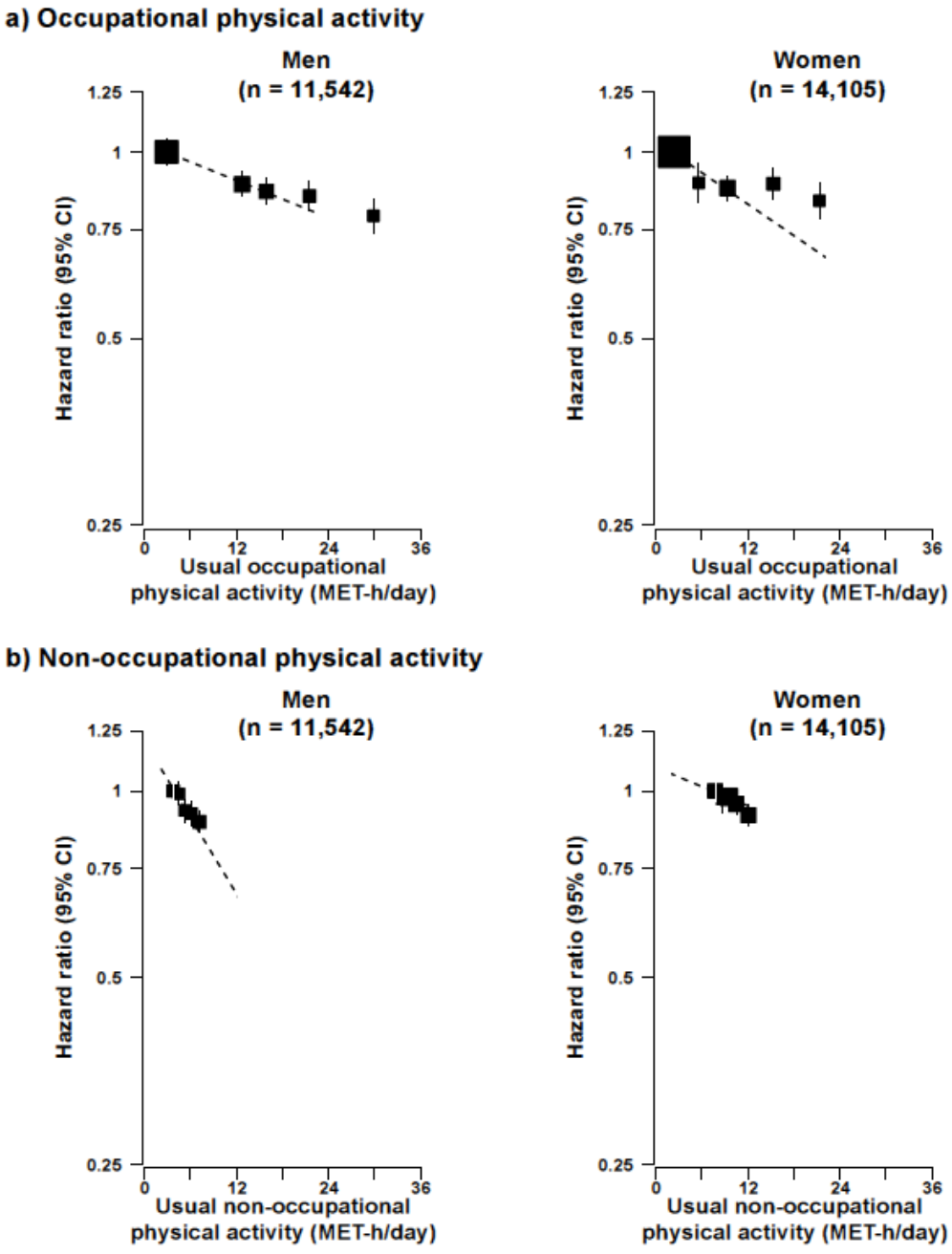
a) Occupational physical activity



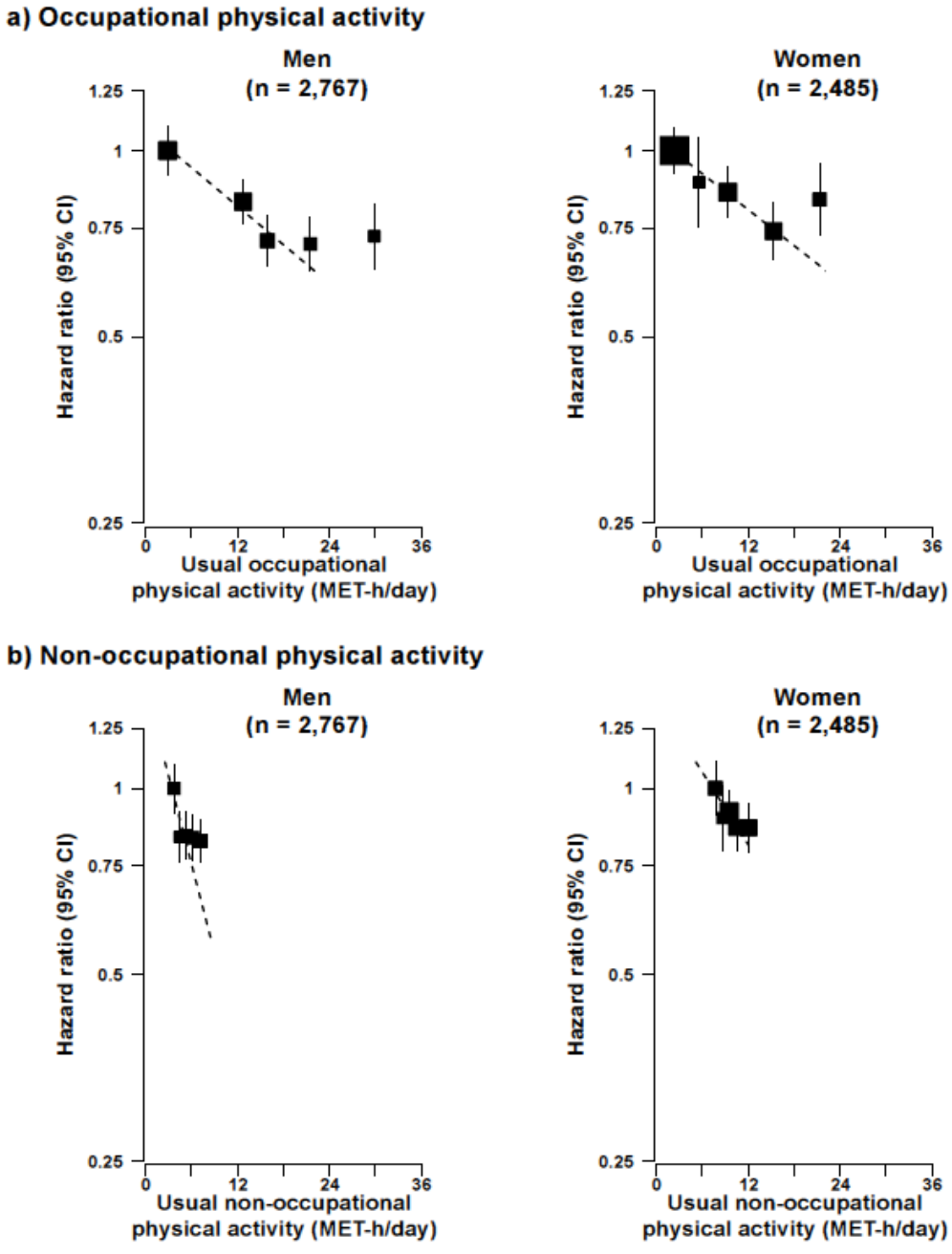
b) Non-occupational physical activity



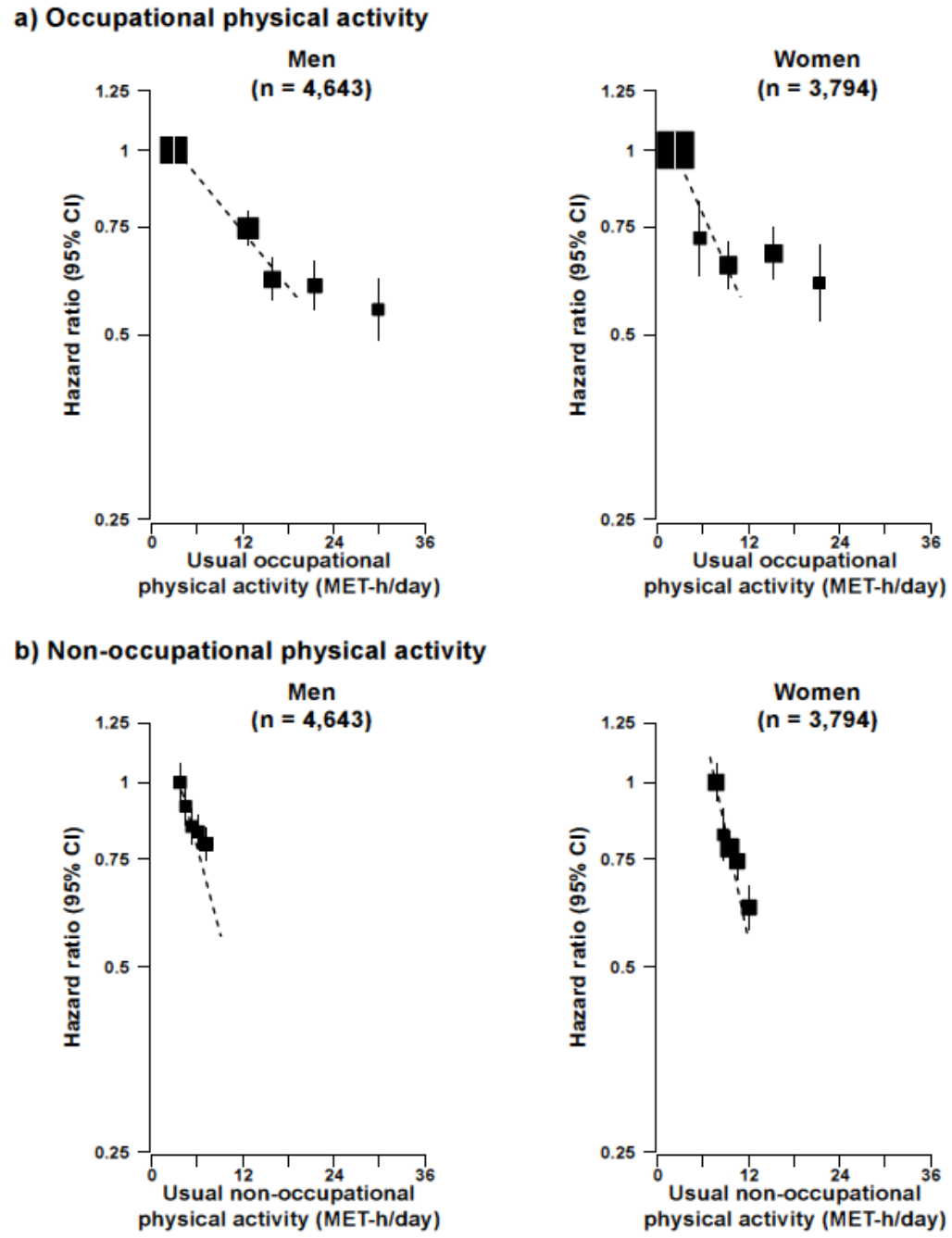
eFigure 9: Adjusted HRs for ischaemic stroke by a) occupational and b) non-occupational physical activity, in men and women



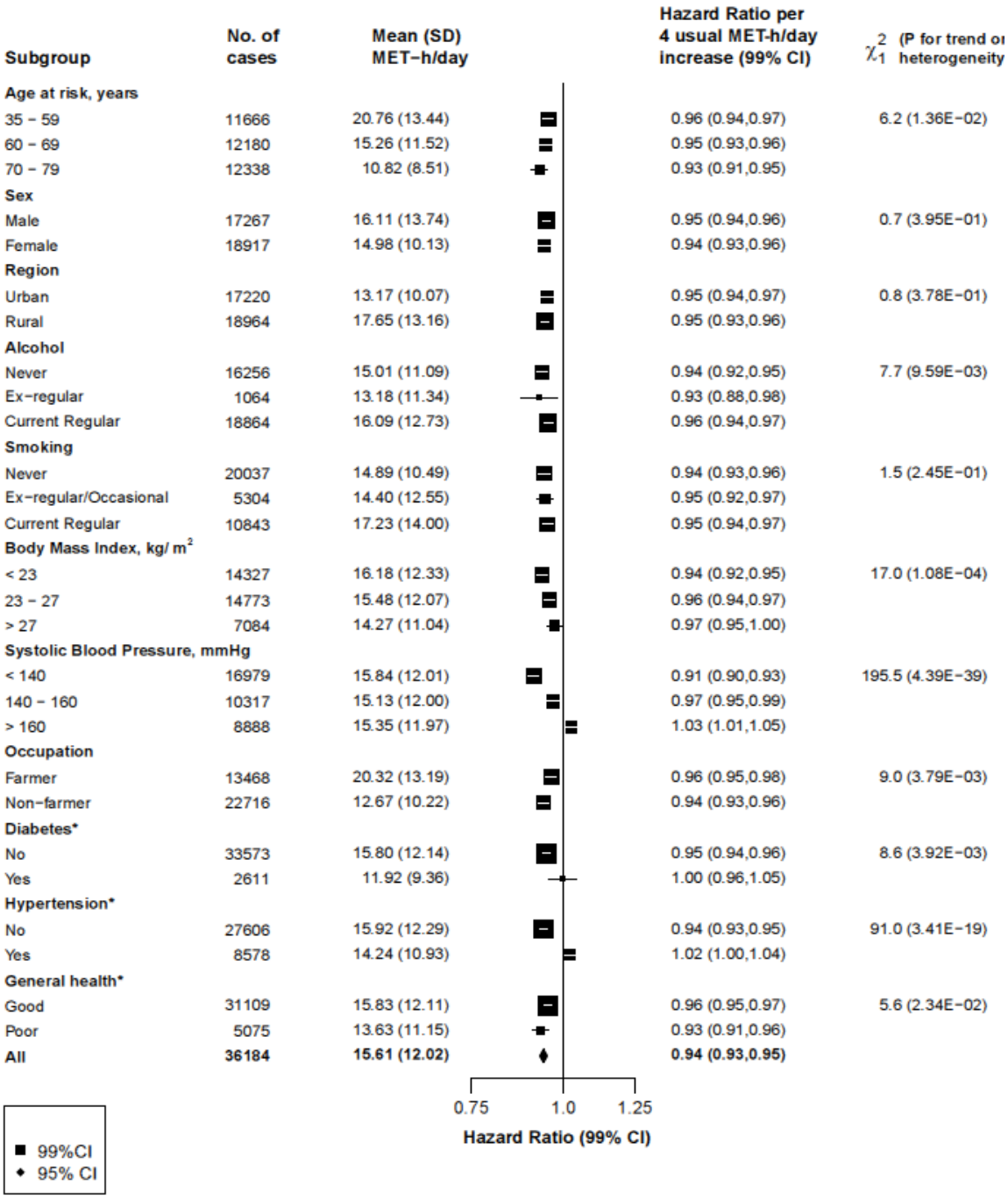
eFigure 10: Adjusted HRs for intracerebral haemorrhage by a) occupational and b) non-occupational physical activity, in men and women



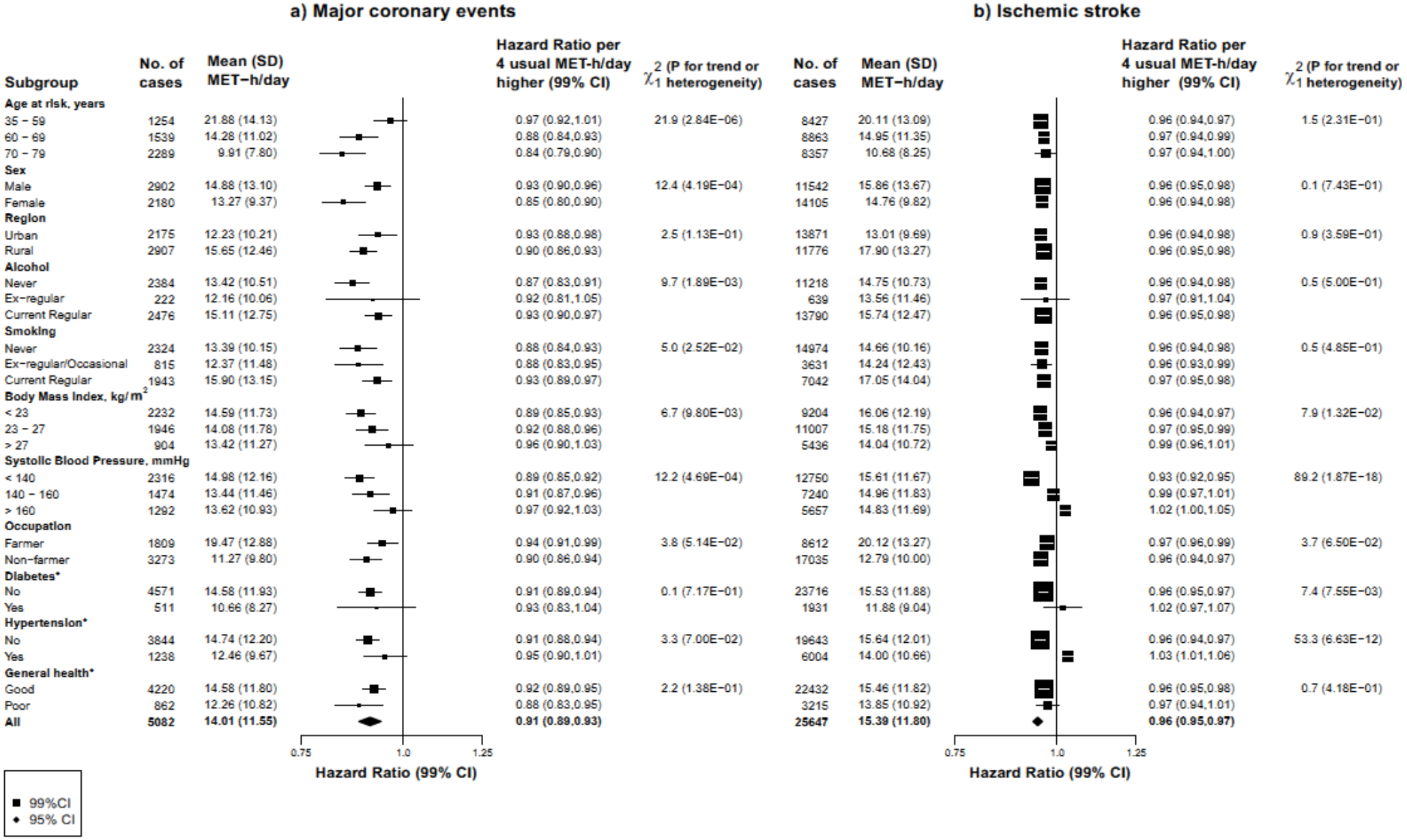
eFigure 11: Adjusted HRs for fatal cardiovascular disease by a) occupational and b) non-occupational physical activity, in men and women



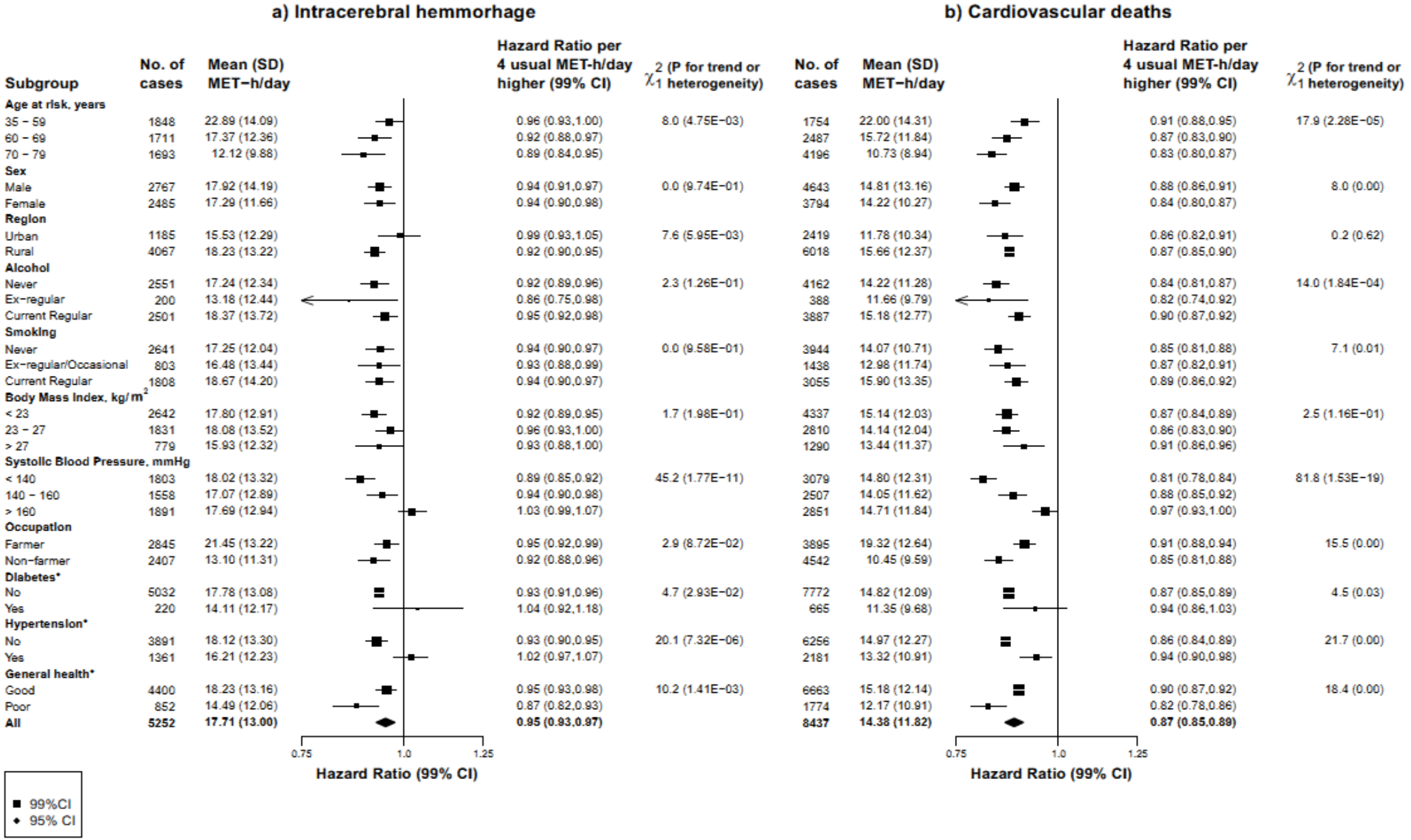
eFigure 12: Adjusted HRs for major vascular events per 4 MET−h/day higher usu total physical activity by baseline characteristics



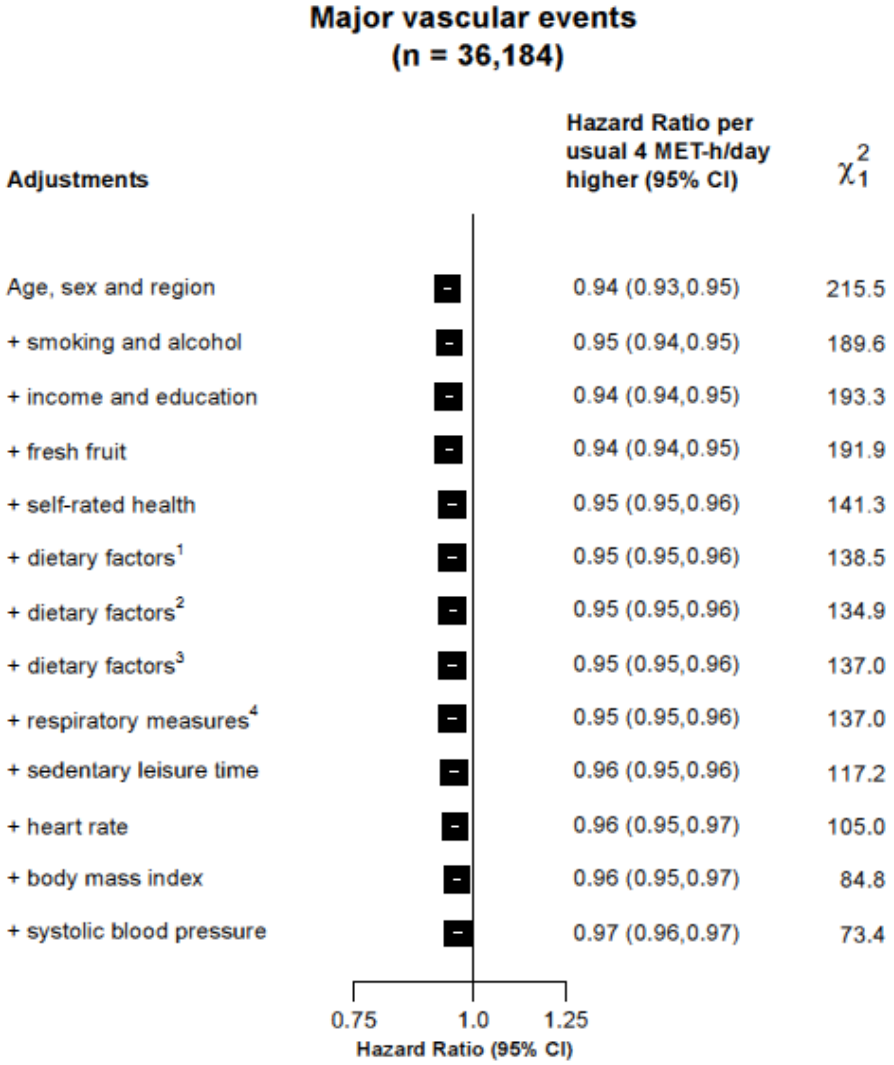
eFigure 13: Adjusted HRs for a) major coronary events and b) ischemic stroke per 4 MET−h/day higher usual total physical activity by baseline characteristics



eFigure 14: Adjusted HRs for a) intracerebral hemmorhage and b) cardiovascular death per 4 MET−h/day higher total physical activity by baseline characteristics



eFigure 15: Effect on HRs for major vascular events per 4 MET−h/day higher total physical activity sequential adjustment for potential confounders



1: Rice, wheat, and staple foods,
2: Meat, poultry, fresh fish, eggs
3: Diary, soyabean, and preserved vegatables
4: Ratio of forced expiratory volume in 1 second to forced vital capacity