

**Supplementary Table 1. Stratified Cox regression (by age, sex, education, and smoking) describing associations between vigorous activity and all-cause, cardiovascular (CVD) and cancer mortality in the Health Survey for England and the Scottish Health Survey.**

Variable	Total No. of Participants/Events	Proportion of moderate to vigorous activity classified as vigorous					
		0%	Ref.	>0% to <30%	HR (95% CI)	≥30%	HR (95% CI)
<b>All-cause mortality</b>							
<b>Model 1</b>							
All sample (excluding first 24 months)	59422/4172	40553/3686	1	4643/127	0.84 (0.70-1.02) p=0.08	14226/359	0.86 (0.77-0.97) p=0.01
<b>Model 2</b>							
All sample (excluding first 24 months)	58012/3993	39474/3527	1	4569/123	0.84 (0.69-1.02) p=0.07	13969/343	0.85 (0.75-0.95) p=0.006
<b>CVD mortality</b>							
<b>Model 1</b>							
All sample (excluding first 24 months)	52822/1169	36352/1050	1	4003/31	0.85 (0.59-1.24) p=0.41	12467/88	0.87 (0.69-1.10) p=0.24
<b>Model 2</b>							
All sample (excluding first 24 months)	51511/1124	35344/1009	1	3932/29	0.83 (0.56-1.22) p=0.34	12235/86	0.88 (0.69-1.11) p=0.27
<b>Cancer mortality</b>							
<b>Model 1</b>							
All sample (excluding first 24 months)	58361/1342	39758/1154	1	4586/48	0.83 (0.62-1.12) p=0.22	14017/140	0.91 (0.75-1.09) p=0.30
<b>Model 2</b>							
All sample (excluding first 24 months)	56979/1303	38701/1122	1	4513/47	0.84 (0.62-1.13) p=0.25	13765/134	0.88 (0.73-1.07) p=0.20

*N* total population, *Ref* referent group, *HR* hazard ratio, *CI* confidence interval

For all-cause mortality: Model 1 values were adjusted for alcohol, total weighted volume of moderate to vigorous physical activity (MVPA), longstanding illness and body mass index (BMI). Model 2 values were adjusted for Model 1 plus psychological distress. For CVD mortality: Model 1 values were adjusted for alcohol, total weighted volume of MVPA, longstanding illness, CVD diagnosis at baseline and BMI. Model 2 values were adjusted for Model 1 plus psychological distress. For cancer mortality: Model 1 values were adjusted for alcohol, total weighted volume of MVPA, longstanding illness, cancer diagnosis at baseline and BMI. Model 2 values were adjusted for Model 1 plus psychological distress.