**Supplementary Data**

Table 1: EPIC-Norfolk participants who attended the 3HC and did or did not have at least 4 days of objectively measured physical activity.

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| **Covariable****mean (SD)** | **Activity Monitor** | **No Activity Monitor** | **P value** |
| **MEN** | **n=1,796** | **n=2,065** |  |
| Age, years | 70.0 (7.6) | 68.9 (8.5) | <0.001 |
| BMI, kg/m2 | 27.1 (3.6) | 27.1 (3.7) | 0.94 |
| \*Self-reported physical activity, % (n) Active Moderately active Moderately inactive Inactive | 36.4 (653)26.4 (474)17.7 (318)18.1 (325) | 37.2 (769)23.2 (480)19.1 (395)18.8 (389) | 0.15 |
| Current wealth, % (n) > enough money Enough money Not enough money | 29.1 (522)60.7 (1,090)6.1 (108) | 25.5 (528)63.5 (1,312)5.9 (123) | 0.06 |
| **WOMEN** | **n=2,255** | **n=2,507** |  |
| Age, years | 68.2 (7.5) | 68.1 (8.5) | 0.69 |
| BMI, kg/m2 | 26.5 (4.7) | 26.7 (4.8) | 0.22 |
| \*Self-reported physical activity, % (n) Active Moderately active Moderately inactive Inactive | 35.6 (802)32.2 (727)16.8 (379)13.7 (309) | 37.7 (946)31.3 (786)16.6 (417)13.2 (332) | 0.58 |
| Current wealth, % (n) > enough money Enough money Not enough money | 25.1 (565)63.5 (1,432)5.1 (115) | 24.1 (605)62.4 (1,566)6.6 (166) | 0.07 |

\*Follow-up 4 questionnaire derived variables. BMI: body mass index. Percentages may not add up to 100% due to missing data. Groups were compared using t-tests (age, BMI) and chi squared tests (physical activity, wealth).

Table 2: Characteristics of men and women by average activity monitor wear-time

|  |  |  |
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|  | **Average Weartime, hrs/day** |  |
| **Co-variable****Mean (SD)** | **Q1****<13.8** | **Q2****13.8-14.5** | **Q3****14.5-15.1** | **Q4****>15.1** | **P value** |
| Sex, % (n) women | 62.0 (572) | 57.5 (536) | 57.6 (533) | 43.5 (411) | <0.001 |
| **Men** |  |  |  |  |  |
| Age, years | 71.7 (8.0) | 71.1 (7.2) | 69.8 (6.9) | 67.7 (7.6) | <0.001 |
| Weight, kg | 82.7 (13.0) | 81.5 (12.4) | 80.7 (10.2) | 81.5 (12.1) | 0.14 |
| UWS, cm/s | 107.8 (24.1) | 109.8 (22.4) | 115.1 (23.4) | 116.1 (23.7) | <0.001 |
| Maxgrip, kg | 37.5 (7.7) | 38.5 (7.8) | 38.4 (7.6) | 40.4 (8.2) | <0.001 |
| Sed Time, hrs/day  | 10.7 (1.0) | 11.3 (1.0) | 11.8 (0.9) | 12.5 (1.4) | <0.001 |
| Sed Time, % | 80.8 (6.8) | 79.9 (6.5) | 79.4 (5.8) | 78.5 (6.3) | <0.001 |
| MVPA, mins/day\* | 26.1 (12.8, 43.4) | 31.0 (17.7, 50.5) | 38.0 (22.9, 56.1) | 43.3 (27.0, 59.6) | <0.001 |
| MVPA, % | 3.9 (3.0) | 4.2 (3.0) | 4.7 (2.7) | 4.7 (2.5) | <0.001 |
| **Women** |  |  |  |  |  |
| Age, years | 69.3 (7.8) | 68.0 (7.3) | 67.7 (6.9) | 66.6 (7.8) | <0.001 |
| Weight, kg | 68.9 (13.0) | 69.1 (13.6) | 67.9 (11.4) | 68.1 (12.9) | 0.33 |
| UWS, cm/s | 105.1 (26.4) | 110.9 (25.1) | 111.2 (22.5) | 114.2 (24.2) | <0.001 |
| Maxgrip, kg | 23.6 (5.3) | 24.4 (5.0) | 24.6 (5.2) | 25.2 (5.7) | <0.001 |
| Sed time, hrs/day | 10.3 (1.0) | 11.0 (0.9) | 11.4 (0.9) | 12.1 (1.3) | <0.001 |
| Sed Time, % | 78.0 (6.5) | 77.5 (6.2) | 76.9 (6.0) | 76.4 (6.4) | <0.001 |
| MVPA, mins/day\* | 25.9 (15.4, 41.8) | 31.1 (18.9, 45.8) | 34.2 (21.9, 50.4) | 37.4 (22.5, 52.3) | <0.001 |
| MVPA, % | 3.8 (2.5) | 3.9 (2.3) | 4.2 (2.4) | 4.3 (2.6) | 0.002 |

UWS: usual walking speed; Maxgrip: maximum grip strength; MVPA: moderate-vigorous physical activity

\*results presented as median (inter-quartile range). Groups were compared using one-way analysis of variance (continuous variables), Kruskal Wallis (non-normally distributed variables) and chi squared tests (categorical data) as appropriate.

**Figure 1a: The association of physical capability and MVPA in men with accelerometer data averaged over 60 second epochs\*.**

**Figure 1b: The association of physical capability and sedentary time in men with accelerometer data averaged over 60 second epochs\*.**

\*All models were adjusted for age, height, weight, current wealth, smoking, alcohol intake, co-morbidity, monitor wear-time, calendar date on which the activity monitor was worn for the first time and mutually for sedentary time and MVPA quartiles. Quartiles of MVPA time (least 🡪 most active): Men- Q1 <8.5 mins/day, Q2 8.5 – 20.3 mins/day, Q3 20.3 – 36.3 mins/day, Q4 >36.3 mins/day; Women- Q1< 6.8 mins/day, Q2 6.8 – 15.8 mins/day, Q3 15.8 – 29.0 mins/day, Q4 >29 mins/day. Quartiles of sedentary time (most 🡪 least sedentary): Men- Q1 > 10.3 hrs/day, Q2 9.5 – 10.3 hrs/day, Q3 8.6 – 9.5 hrs/day, Q4 < 8.6 hrs/day; Women Q1 > 9.7 hrs/day; Q2 8.8 – 9.7 hrs/day, Q3 7.9 – 8.8 hrs/day, Q4 < 7.9 hrs/day.

**Figure 2a: The association of physical capability and MVPA in women with accelerometer data averaged over 60 second epochs\***.

**Figure 2b: The association of physical capability and sedentary time in women with accelerometer data averaged over 60 second epochs\*.**

\*All models were adjusted for age, height, weight, current wealth, smoking, alcohol intake, co-morbidity, monitor wear-time, calendar date on which the activity monitor was worn for the first time and mutually for sedentary time and MVPA quartiles. Quartiles of MVPA time (least 🡪 most active): Men- Q1 <8.5 mins/day, Q2 8.5 – 20.3 mins/day, Q3 20.3 – 36.3 mins/day, Q4 >36.3 mins/day; Women- Q1< 6.8 mins/day, Q2 6.8 – 15.8 mins/day, Q3 15.8 – 29.0 mins/day, Q4 >29 mins/day. Quartiles of sedentary time (most 🡪 least sedentary): Men- Q1 > 10.3 hrs/day, Q2 9.5 – 10.3 hrs/day, Q3 8.6 – 9.5 hrs/day, Q4 < 8.6 hrs/day; Women Q1 > 9.7 hrs/day; Q2 8.8 – 9.7 hrs/day, Q3 7.9 – 8.8 hrs/day, Q4 < 7.9 hrs/day.