## Changes in physical activity and adiposity with mortality and incidence of cardiovascular disease: longitudinal findings from the UK Biobank

## **Supplemental Document**

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Supplemental Figure 1: Flow diagram of participants in the study



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Supplemental Figure 2: Independent association of changes in physical activity and indicators of adiposity with all-cause mortality (physical activity, body mass index and waist to hip ratio [n=29,610]; body fat percentage [n=28,768]).

Adjusted for age, sex, physical activity baseline and change group (or body mass index baseline and change group for physical activity as an exposure); smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis



Supplemental Figure 3: Independent association of changes in physical activity and indicators of adiposity with cardiovascular disease (physical activity, body mass index and waist to hip ratio [n=29,610]; body fat percentage [n=28,768]).

Adjusted for age, sex, physical activity baseline and change group (or body mass index baseline and change group for physical activity as an exposure); smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis



Supplemental Figure 4: Joint association of changes in baseline waist to hip ratio (n=29,610).

WHR (waist to hip ratio): High  $\geq 1.0$  for men and  $\geq 0.86$  for women; Moderate  $\geq 0.96$  for men and  $\geq 0.81$  for women; adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, physical activity baseline group, deprivation index, and cancer diagnosis



Supplemental Figure 5: Joint association of changes in baseline waist circumference (n=29,610).

High: > 102cm for men and >88cm for women; Moderate:  $\leq$ 102cm to > 94cm for men and  $\leq$ 88cm to > 80cm for women; adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, physical activity baseline group, deprivation index, and cancer diagnosis

| All Cause Mortality |              |            |                        |                                   | Cardiovascular Disease Incidence |                   |              |              |   |                       |
|---------------------|--------------|------------|------------------------|-----------------------------------|----------------------------------|-------------------|--------------|--------------|---|-----------------------|
|                     |              | N (Events) |                        | H                                 | azard Ratio (95% CI)             |                   |              | N (Events)   |   | Hazard Ratio (95% CI) |
|                     |              |            |                        |                                   |                                  |                   |              |              |   |                       |
| Physical Activity   | Waist to Hip |            |                        |                                   |                                  | Physical Activity | Waist to Hip |              |   |                       |
| Decreased           |              |            |                        |                                   |                                  | Decreased         |              |              |   |                       |
|                     | Decreased    | 484 (71)   |                        | $\longmapsto$                     | 1.66 (1.02,2.72)                 |                   | Decreased    | 484 (66)     | <b> </b> ●  | 1.35 (0.97,1.74)      |
|                     | Stable       | 2514 (63)  | ł                      | •                                 | 1.29 (0.96,1.74)                 |                   | Stable       | 2514 (290)   | -•-1  | 1.18 (1.00,1.38)      |
|                     | Increased    | 1159 (97)  | $\vdash$               | • I                               | 1.25 (0.83,1.88)                 |                   | Increased    | 1159 (134)   | ╟╼╌┤  | 1.19 (0.95,1.48)      |
| Stable              |              |            |                        |                                   |                                  | Stable            |              |              |   |                       |
|                     | Decreased    | 2393 (59)  |                        | $\vdash \bullet \rightarrow$      | 1.62 (1.24,2.12)                 |                   | Decreased    | 2393 (277)   | ┝━┤   | 1.16 (0.98,1.37)      |
|                     | Stable       | 11980 (40) |                        | •                                 | Reference                        |                   | Stable       | 11980 (1162) | ) 🛉   | Reference             |
|                     | Increased    | 4576 (58)  | F                      | <b>●</b>                          | 1.05 (0.81,1.36)                 |                   | Increased    | 4576 (450)   | ⊦∙⊣   | 0.99 (0.87,1.14)      |
| Increased           |              |            |                        |                                   |                                  | Increased         |              |              |   |                       |
|                     | Decreased    | 851 (66)   | ⊢●                     |                                   | 0.94 (0.56,1.57)                 |                   | Decreased    | 851 (92)     | ⊢∙⊣   | 0.78 (0.62,0.97)      |
|                     | Stable       | 4036 (38)  | -●                     | 4                                 | 0.75 (0.54,1.02)                 |                   | Stable       | 4036 (373)   | <b>●</b>  | 0.90 (0.78,1.04)      |
|                     | Increased    | 1617 (53)  |                        | ●                                 | 1.04 (0.71,1.53)                 |                   | Increased    | 1617 (126)   |   | 1.16 (0.90,1.49)      |
|                     |              | 0          | 0.2 0.4 0.6 0.8<br>Haz | 1 1.2 1.4 1.6 1.8 2<br>rard Ratio |                                  |                   |              |              | 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2<br>Hazard Ratio |                       |

Supplemental Figure 6: Joint association of changes in physical activity and waist to hip ratio (n=29,610).

Adjusted for age, sex, baseline physical activity group, baseline waist to hip ratio group; smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis.

| All Cause Mortality |                     |            |   | Cardiovascular Disease Incidence |                   |                    |              |  |                       |
|---------------------|---------------------|------------|---|----------------------------------|-------------------|--------------------|--------------|--|-----------------------|
|                     |                     | N (Events) | н   | azard Ratio (95% CI)             |                   |                    | N (Events)   |  | Hazard Ratio (95% CI) |
|                     |                     |            |   |                                  |                   |                    |              |  |                       |
| Physical Activity   | Waist Circumference |            |   |                                  | Physical Activity | Waist Circumferenc | e            |  |                       |
| Decreased           |                     |            |   |                                  | Decreased         |                    |              |  |                       |
|                     | Decreased           | 484 (71)   | ⊢┥  | 0.97 (0.73,1.21)                 |                   | Decreased          | 484 (43)     | ⊦ <b>∙</b> ⊣                                   | 1.03 (0.87, 1.19)     |
|                     | Stable              | 2514 (63)  | <b> </b> − − 1                                    | 1.29 (0.96,1.74)                 |                   | Stable             | 2514 (345)   | <b>⊢</b> ●-                                    | 1.19 (0.97, 1.44)     |
|                     | Increased           | 1159 (97)  | $\longmapsto$                                     | 1.66 (1.02,2.72)                 |                   | Increased          | 1159 (102)   | <b> </b> ●-                                    | 1.22 (1.09, 1.38)     |
| Stable              |                     |            |   |                                  | Stable            |                    |              |  |                       |
|                     | Decreased           | 2393 (59)  | <b>⊢</b> ∙-                                       | 0.82 (0.61,1.04)                 |                   | Decreased          | 2393 (228)   | <b>⊦</b> •-                                    | 0.94 (0.80, 1.08)     |
|                     | Stable              | 11980 (40) | •   | Reference                        |                   | Stable             | 11980 (1290) | •  | Reference             |
|                     | Increased           | 4576 (58)  | ┝━┥   | 1.21 (1.05,2.39)                 |                   | Increased          | 4576 (371)   | ⊦ <b>●</b> ⊦                                   | 1.02 (0.91, 1.14)     |
| Increased           |                     |            |   |                                  | Increased         |                    |              |  |                       |
|                     | Decreased           | 851 (66)   | ⊢∙─┤  | 0.68 (0.47,0.94)                 |                   | Decreased          | 851 (80)     | ⊢∙⊣  | 0.66 (0.48, 0.89)     |
|                     | Stable              | 4036 (38)  | <b>●</b>  | 0.85 (0.69,1.02)                 |                   | Stable             | 4036 (412)   | ŀ  | 0.94 (0.84, 1.05)     |
|                     | Increased           | 1617 (53)  | ⊢ –   | 1.04 (0.71,1.53)                 |                   | Increased          | 1617 (99)    | <b>⊢</b> ●-                                    | 0.86 (0.7, 1.05)      |
|                     |                     | Г<br>0.2   | 2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2<br>Hazard Ratio |                                  |                   |                    | Г<br>О.:     | 2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.<br>Hazard Ratio | 8 2                   |

Supplemental Figure 7: Joint association of changes in physical activity and waist circumference (n=29,610).

Adjusted for age, sex, baseline physical activity group, baseline waist circumference group; smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis.

**Body Mass Index Body Fat** N (Events) Hazard Ratio (95% CI) N (Events) Hazard Ratio (95% CI) Physical Activity Body Mass Index Physical Activity Body Fat Inactive Inactive 464 (20) 1.16 (0.58.2.33) 430 (17) 0.77 (0.35.1.66) Obese High Overweight 752 (21) 0.50 (0.23,1.10) Moderate 796 (30) 0.76 (0.43,1.35) Healthy 643 (29) 1.64 (0.99,2.74) Low 602 (21) 1.03 (0.54, 1.96) Insufficient Insufficient Obese 3101 (78) 1.82 (1.37,2.42) High 3235 (71) 1.31 (0.98, 1.74) 6071 (87) 6324 (105) Reference Overweight Reference Moderate Healthy 6052 (79) 1.11 (0.83, 1.49) 4873 (62) 0.86 (0.64, 1.17) Low Sufficient Sufficient Obese 2239 (52) 1.43 (1.01.2.02) High 1926 (52) 1.32 (0.96.1.83) Overweight 5172 (105) 1.00 (0.76,1.32) Moderate 6104 (98) 0.92 (0.71,1.19) Healthy 5116 (74) 1.06 (0.80,1.41) Low 4478 (71) 0.86 (0.65, 1.14) 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 Waist to Hip Ratio Waist Circumference N (Events) Hazard Ratio (95% CI) N (Events) Hazard Ratio (95% CI) Physical Activity Waist to Hip Physical Activity Waist Circumference Inactive Inactive High 337 (21) 1.16 (0.56,2.37) High 727 (73) 0.88 (0.48, 1.59) Moderate 505 (22) 0.74 (0.37, 1.47) Moderate 812 (47) 0.65 (0.32, 1.34) 988 (20) Low 0.62 (0.35, 1.02) Low 949 (49) 1.02 (0.62, 1.66) Insufficient Insufficient 2725 (76) 1.39 (1.03, 1.90) 3153 (43) 1.34 (1.03, 1.75) High High 3106 (81) Reference 3881 (48) Reference Moderate Moderate 8524 (99) 0.63 (0.47,0.84) 7290 (48) 0.83 (0.64, 1.08) Low --Low Sufficient Sufficient 1.05 (0.72,1.52) High 1901 (43) High 2051 (69) 1.03 (0.76, 1.4) Moderate 3206 (67) 0.93 (0.67, 1.28) Moderate 3093 (79) 0.9 (0.67, 1.22) Low 8318 (116) 0.70 (0.54,0.92) Low 7654 (89) 0.85 (0.66, 1.09) --0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 Hazard Ratio

Supplemental Figure 8: Joint association of baseline physical activity and indicators of adiposity with all-cause mortality (body mass index, waist circumference, and waist to hip ratio [n=29,610]; body fat percentage [n=28,768]).

Physical activity: inactive (0 minutes of MVPA), Insufficient (>0 to < 150 minutes of MVPA), Sufficient ( $\geq$  150 minutes of MVPA); Body mass index: obese ( $\geq$  30 kg/m<sup>2</sup>), overweight (<30 to  $\geq$  25 kg/m<sup>2</sup>), or healthy weight ( $\geq$  18.5 kg/m<sup>2</sup>; %body fat:: high ( $\geq$ 29% for men and  $\geq$ 42% for women), moderate(<29% to  $\geq$ 22% for men and <42% to  $\geq$ 35.2% for women), and low(<22% for men and <35.2% for women).; WHR (waist to hip ratio): High  $\geq$  1.0 for men and  $\geq$  0.86 for women; Moderate  $\geq$  0.96 for men and  $\geq$  0.81 for women; Adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis

**Body Mass Index Body Fat** N (Events) Hazard Ratio (95% CI) N (Events) Hazard Ratio (95% CI) Physical Activity Body Mass Index Physical Activity Body Fat Inactive Inactive 464 (26) 1.17 (0.78.1.75) 430 (24) 1.05 (0.71.1.56) Obese High Overweight 752 (56) 1.11 (0.83,1.49) Moderate 796 (61) 1.02 (0.77, 1.34) Healthy 643 (41) 0.98 (0.71,1.39) Low 602 (33) 0.78 (0.54,1.11) Insufficient Insufficient Obese 3101 (189) 1.23 (1.03,1.45) High 3235 (202) 1.35 (1.15, 1.59) 6071 (412) Reference Moderate 6324 (405) Overweight Reference Healthy 6052 (278) 0.87 (0.75,1.01) 4873 (249) 0.86 (0.73,1.00) Low Sufficient Sufficient Obese 2239 (158) 1.20 (0.98.1.45) High 1926 (154) 1.49 (1.24.1.79) Overweight 5172 (386) 0.86 (0.74,1.00) Moderate 6104 (372) 0.98 (0.86,1.13) Healthy 5116 (311) 0.79 (0.68,0.92) Low 4478 (305) 0.90 (0.77,1.04) 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 Waist to Hip Ratio Waist Circumference N (Events) Hazard Ratio (95% CI) N (Events) Hazard Ratio (95% CI) Physical Activity Waist to Hip Physical Activity Waist Circumference Inactive Inactive 727 (366) High 337 (22) 1.24 (0.80.1.91) High 1.38 (1. 1.92) Moderate 505 (46) 1.35 (0.96, 1.90) Moderate 812 (353) 1.15 (0.87, 1.58) Low 988 (55) 0.76 (0.56, 1.03) Low 949 (373) 0.92 (0.68, 1.26) Insufficient Insufficient 2725 (288) 1.26 (1.04, 1.52) 3153 (244) 1.26 (1.06, 1.49) High High 3106 (470) 3881 (228) Reference Moderate Reference Moderate 8524 (681) 0.81 (0.68,0.95) 7290 (251) 0.8 (0.68, 0.93) Low Low Sufficient Sufficient High 1901 (230) 1.02 (0.82, 1.27) High 2051 (294) 1.13 (0.93, 1.38) 3093 (332) Moderate 3206 (447) 0.90 (0.75, 1.09) Moderate 0.9 (0.74, 1.08) Low 8318 (731) H 0.74 (0.63,0.86) Low 7654 (529) 0.74 (0.63, 0.87) 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2

Supplemental Figure 9: Joint association of baseline physical activity and indicators of adiposity with cardiovascular disease incidence (body mass index, waist circumference, and waist to hip ratio [n=29,610]; body fat percentage [n=28,768]).

Physical activity: inactive (0 minutes of MVPA), Insufficient (>0 to < 150 minutes of MVPA), Sufficient ( $\geq$  150 minutes of MVPA); Body mass index: obese ( $\geq$  30 kg/m<sup>2</sup>), overweight (<30 to  $\geq$  25 kg/m<sup>2</sup>), or healthy weight ( $\geq$  18.5 kg/m<sup>2</sup>; %body fat:: high ( $\geq$ 29% for men and  $\geq$ 42% for women), moderate(<29% to  $\geq$ 22% for men and <42% to  $\geq$ 35.2% for women), and low(<22% for men and <35.2% for women).; WHR (waist to hip ratio): High  $\geq$  1.0 for men and  $\geq$  0.86 for women; Moderate  $\geq$  0.96 for men and  $\geq$  0.81 for women; Adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis



Supplemental Figure 10: Distributions and combinations of unobserved lifestyle covariate data in the eligible sample of 33,633 participants.

Barplots (left side of figure) depict the proportion of covariates with missing data and the combination matrix (right side of figure) depicts the combinations of missing data across covariates; horizontal barplot next to the combination matrix depicts the proportion of data for a particular combination.





Box plots depict the distribution of observed (blue) and unobserved (red) data for covariates across age distribution (white) in the eligible sample. The median and IQR of the unobserved (missing) data boxplots being within the IQR of observed data boxplots is an indication that the assumption of missing completely at random (MCAR) is met.

| Physical activity                 |          | Increase | •        |          | Stable |          |          | Decrease | · · · ·  |
|-----------------------------------|----------|----------|----------|----------|--------|----------|----------|----------|----------|
| group                             |          |          |          |          |        |          |          |          |          |
| BMI group                         | Increase | Stable   | Decrease | Increase | Stable | Decrease | Increase | Stable   | Decrease |
| Education =                       | 365      | 2736     | 235      | 1184     | 8178   | 569      | 342      | 1913     | 101      |
| college/university, N             | (57.5)   | (51.3)   | (46.0)   | (57.7)   | (51.9) | (53.2)   | (61.5)   | (56.1)   | (57.1)   |
| (%)                               |          |          |          |          |        |          |          |          |          |
| Smoking, N (%)                    |          |          |          |          |        |          |          |          |          |
|                                   | 358      | 3427     | 319      | 1284     | 10082  | 661      | 326      | 2116     | 112      |
| never                             | (56.6)   | (64.4)   | (62.7)   | (62.7)   | (64.1) | (61.9)   | (58.7)   | (62.2)   | (63.3)   |
|                                   | 249      | 1712     | 164      | 679      | 5012   | 384      | 203      | 1119     | 56       |
| previous                          | (39.3)   | (32.2)   | (32.2)   | (33.2)   | (31.9) | (36.0)   | (36.6)   | (32.9)   | (31.6)   |
|                                   | 26       | 184      | 26       | 84       | 628    | 22       | 26       | 167      | 9        |
| current                           | (4.1)    | (3.5)    | (5.1)    | (4.1)    | (4.0)  | (2.1)    | (4.7)    | (4.9)    | (5.1)    |
| Alcohol                           |          |          |          |          |        |          |          |          |          |
| consumption,                      | 4.12     | 4.12     | 4.16     | 4.12     | 4.13   | 4.16     | 4.01     | 4.08     | 4.04     |
| units/week <sup>1</sup>           | (1.18)   | (1.13)   | (1.15)   | (1.19)   | (1.13) | (1.10)   | (1.23)   | (1.18)   | (1.08)   |
| Fruits and                        | 5.14     | 5.85     | 5.86     | 5.96     | 6.27   | 6.87     | 5.99     | 5.79     | 5.75     |
| vegetables, servings              | (7.69)   | (7.21)   | (6.14)   | (7.99)   | (7.63) | (7.43)   | (7.05)   | (7.49)   | (7.10)   |
| per day                           |          |          |          |          |        |          |          |          |          |
| Sleep pattern, N (%) <sup>2</sup> |          |          |          |          |        |          |          |          |          |
|                                   | 13       | 37       | 3        | 26       | 109    | 3        | 5        | 17       | 1        |
| Poor                              | (3.9)    | (1.4)    | (1.3)    | (1.9)    | (1.2)  | (0.5)    | (1.5)    | (1.0)    | (1.3)    |
|                                   | 114      | 923      | 85       | 521      | 3070   | 190      | 125      | 558      | 26       |
| Intermediate                      | (34.1)   | (34.6)   | (36.0)   | (37.1)   | (32.5) | (32.9)   | (36.5)   | (33.9)   | (33.8)   |
|                                   | 207      | 1707     | 148      | 857      | 6277   | 385      | 212      | 1073     | 50       |
| Healthy                           | (62.0)   | (64.0)   | (62.7)   | (61.0)   | (66.4) | (66.6)   | (62.0)   | (65.1)   | (64.9)   |
|                                   | 29       | 239      | 13       | 100      | 728    | 39       | 33       | 182      | 11       |
| Cancer, N (%) <sup>3</sup>        | (10.1)   | (10.4)   | (8.6)    | (11.0)   | (10.0) | (10.6)   | (12.6)   | (11.3)   | (15.1)   |

Supplemental Table 1: Participant follow-up characteristics categorized by physical activity and body mass index groups (n = 29,610)

All values represent Mean (SD) unless noted otherwise

<sup>1</sup> units represent Math (5D) unless note other wise <sup>1</sup> units of present Math (5D) unless note other wise <sup>1</sup> unit = 8 g of ethanol; 'sleep patterns were determined based on the method proposed by Fan M. et al (ref 29). In brief, participants were categorized by how many healthy sleep characteristics (morning chronotype, adequate sleep duration (7-8 hr./d), never or rare insomnia, never or rare snoring, and infrequent daytime sleepiness) they displayed into three groups (healthy:  $\geq$  4; intermediate: 2-3; poor:  $\leq$  1) <sup>3</sup>Physician diagnosed (self-reported and cancer registry) Supplemental Table 2: Sequential covariate adjustments for baseline physical activity, body mass index, body fat percentage, waist to hip ratio, and waist circumference changes with all-cause mortality

| Baseline       | Change               | Model 1           | Model 2           |
|----------------|----------------------|-------------------|-------------------|
| Inactive       |                      |                   |                   |
|                | Stable               | 1.04(0.43,2.54)   | 1.00(0.41,2.42)   |
|                | Increased            | 0.74(0.49,1.12)   | 0.72(0.47,1.09)   |
| Insufficient   |                      |                   |                   |
|                | Decreased            | 1.46(0.81,2.63)   | 1.39(0.77,2.51)   |
|                | Stable               | Ref.              | Ref.              |
|                | Increased            | 0.64(0.49,0.84)   | 0.64(0.49,0.84)   |
| Sufficient     |                      |                   |                   |
|                | Decreased            | 1.04(0.8,1.33)    | 1.00(0.78,1.29)   |
|                | Stable               | 0.75(0.61,0.93)   | 0.74(0.6,0.91)    |
|                |                      |                   |                   |
| B) Body Mass ] | Index<br>Change      |                   | NA 112            |
|                | Change               | Model I           | Model 2           |
| Obese          | Stalela              |                   | 1 00(1 42 2 2()   |
|                | Stable<br>Decemental | 1.87(1.49,2.35)   | 1.80(1.43,2.26)   |
| 0              | Decreased            | 1.02(0.64,1.62)   | 1(0.63,1.59)      |
| Overweight     | Desmand              |                   |                   |
|                | Decreased            | 0.63(0.4,1.01)    | 0.65(0.41,1.03)   |
|                | Stable               | Ref.              | Ref.              |
| NT 1           | Increased            | 1.35(0.88,2.07)   | 1.3(0.85,1.99)    |
| Normal         | <b>x</b> 1           |                   |                   |
|                | Increased            | 0.97(0.64,1.45)   | 0.97(0.64,1.45)   |
|                | Stable               | 1.09(0.88,1.36)   | 1.14(0.91,1.42)   |
|                |                      |                   |                   |
| C) Body Fat    | 01                   |                   |                   |
| Baseline       | Change               | Model I           | Model 2           |
| High           | 0, 11                |                   |                   |
|                | Stable               | 1.57 (1.24, 1.99) | 1.50 (1.18, 1.89) |
|                | Decreased            | 0.73 (0.42, 1.27) | 0.71 (0.41, 1.23) |
| Moderate       |                      |                   |                   |
|                | Decreased            | 1.14 (0.77, 1.68) | 1.15 (0.78, 1.70) |
|                | Stable               | Ref.              | Ref.              |
|                | Increased            | 1.00 (0.71, 1.40) | 0.97 (0.69, 1.35) |
| Low            | <b>T</b> 1           |                   |                   |
|                | Increased            | 0.91 (0.66, 1.26) | 0.92 (0.66, 1.27) |

|               | Stable     | 0.89 (0.70, 1.14) | 0.92 (0.72, 1.19) |
|---------------|------------|-------------------|-------------------|
| D) Waist to H | lip Ratio  |                   |                   |
| Baseline      | Change     | Model 1           | Model 2           |
| Hig           | ;h         |                   |                   |
|               | Stable     | 1.71(1.19,2.45)   | 1.66(1.15,2.38)   |
|               | Decreased  | 1.64(1.11,2.41)   | 1.61(1.09,2.37)   |
| Moderat       | te         |                   |                   |
|               | Decreased  | 1.32(0.89,1.94)   | 1.33(0.9,1.97)    |
|               | Stable     | Ref.              | Ref.              |
|               | Increased  | 1.54(1.04,2.27)   | 1.51(1.03,2.24)   |
| Lov           | W          |                   |                   |
|               | Increased  | 0.93(0.65,1.31)   | 0.93(0.66,1.33)   |
|               | Stable     | 0.80(0.58,1.1)    | 0.83(0.6,1.14)    |
|               |            |                   |                   |
| E) Waist Circ | cumference |                   |                   |
| Baseline      | Change     | Model 1           | Model 2           |
| Hig           | ,h         |                   |                   |
|               | Stable     | 1.58 (1.24, 2.05) | 1.49 (1.16, 1.94) |
|               | Decreased  | 1.32 (1.10, 1.89) | 1.22 (0.92, 1.80) |
| Moderat       | te         |                   |                   |
|               | Decreased  | 0.68 (0.43, 1.03) | 0.70 (0.45, 1.05) |
|               | Stable     | Ref.              | Ref.              |
|               | Increased  | 1.18 (0.82, 1.72) | 1.13 (0.77, 1.65) |
| Lov           | W          |                   |                   |
|               | Increased  | 0.72 (0.49, 1.06) | 0.75 (0.52, 1.09) |
|               | Stable     | 0.74 (0.54, 1.01) | 0.77 (0.57, 1.04) |
|               |            | . /               | . ,               |

Model 1 (M1) adjusted for age, sex

Model 2 (M2) adjusted for M1 plus smoking status, alcohol consumption, sleep pattern, fruits and vegetables consumption, deprivation index, physical activity baseline and change (or body mass index baseline and change for physical activity as an exposure), and education

Supplemental Table 3: Sequential covariate adjustments for baseline physical activity, body mass index, body fat percentage, waist to hip ratio, and waist circumference changes with cardiovascular disease

| Baseline       | Change    | Model 1           | Model 2           |
|----------------|-----------|-------------------|-------------------|
| Inactive       |           |                   |                   |
|                | Stable    | 1.44(0.92,2.26)   | 1.41(0.90,2.21)   |
|                | Increased | 0.87(0.70,1.07)   | 0.85(0.69,1.05)   |
| Insufficient   |           |                   |                   |
|                | Decreased | 1.47(1.06,2.04)   | 1.42(1.02,1.99)   |
|                | Stable    | Ref.              | Ref.              |
|                | Increased | 0.83(0.72,0.96)   | 0.83(0.72,0.96)   |
| Sufficient     |           |                   |                   |
|                | Decreased | 1.12(0.97,1.29)   | 1.10(0.95,1.27)   |
|                | Stable    | 0.90(0.80,1.01)   | 0.88(0.78,0.99)   |
|                |           |                   |                   |
| B) Body Mass I | ndex      |                   |                   |
| Baseline       | Change    | Model 1           | Model 2           |
| Obese          |           |                   |                   |
|                | Stable    | 1.36(1.2,1.55)    | 1.34(1.18,1.52)   |
|                | Decreased | 0.71(0.48,1.05)   | 0.71(0.48,1.05)   |
| Overweight     |           |                   |                   |
|                | Decreased | 0.69(0.54,0.89)   | 0.70(0.55,0.91)   |
|                | Stable    | Ref.              | Ref.              |
|                | Increased | 1.15(0.92,1.42)   | 1.12(0.90,1.39)   |
| Normal         |           |                   |                   |
|                | Increased | 0.89(0.72,1.1)    | 0.88(0.72,1.09)   |
|                | Stable    | 0.83(0.74,0.93)   | 0.85(0.76,0.96)   |
|                |           |                   |                   |
| C) Body Fat    |           |                   |                   |
| Baseline       | Change    | Model 1           | Model 2           |
| Hıgh           | a 11      |                   |                   |
|                | Stable    | 1.48 (1.30, 1.69) | 1.44 (1.27, 1.65) |
|                | Decreased | 1.12 (0.83, 1.53) | 1.12 (0.82, 1.52) |
| Moderate       |           |                   |                   |
|                | Decreased | 0.80 (0.61, 1.06) | 0.81 (0.61, 1.07) |
|                | Stable    | Ref.              | Ref.              |
|                | Increased | 1.18 (1.00, 1.38) | 1.15 (0.98, 1.36) |
| Low            |           |                   |                   |
|                | Increased | 0.89 (0.76, 1.05) | 0.89 (0.76, 1.05) |
|                | Stable    | 0.86 (0.76, 0.98) | 0.88 (0.77, 1.00) |

| D) Waist to Hip Ratio |           |                 |                 |  |  |  |  |
|-----------------------|-----------|-----------------|-----------------|--|--|--|--|
| Baseline              | Change    | Model 1         | Model 2         |  |  |  |  |
| High                  |           |                 |                 |  |  |  |  |
|                       | Stable    | 1.06(0.88,1.28) | 1.05(0.86,1.27) |  |  |  |  |
|                       | Decreased | 1.20(0.97,1.47) | 1.19(0.97,1.46) |  |  |  |  |
| Moderate              |           |                 |                 |  |  |  |  |
|                       | Decreased | 0.82(0.66,1.01) | 0.83(0.67,1.02) |  |  |  |  |
|                       | Stable    | Ref.            | Ref.            |  |  |  |  |
|                       | Increased | 0.96(0.78,1.17) | 0.95(0.77,1.16) |  |  |  |  |
| Low                   |           |                 |                 |  |  |  |  |
|                       | Increased | 0.74(0.62,0.88) | 0.74(0.62,0.88) |  |  |  |  |
|                       | Stable    | 0.71(0.61,0.83) | 0.72(0.62,0.84) |  |  |  |  |
|                       |           |                 |                 |  |  |  |  |

| E) Waist Circumference |           |                   |                   |  |  |  |  |
|------------------------|-----------|-------------------|-------------------|--|--|--|--|
| Baseline               | Change    | Model 1           | Model 2           |  |  |  |  |
| High                   |           |                   |                   |  |  |  |  |
|                        | Stable    | 1.65 (1.45, 1.90) | 1.54 (1.34, 1.79) |  |  |  |  |
|                        | Decreased | 1.14 (0.92, 1.42) | 1.05 (0.83, 1.33) |  |  |  |  |
| Moderate               |           |                   |                   |  |  |  |  |
|                        | Decreased | 0.60 (0.35, 0.82) | 0.66 (0.41, 0.87) |  |  |  |  |
|                        | Stable    | Ref.              | Ref.              |  |  |  |  |
|                        | Increased | 1.19 (1.00, 1.46) | 1.15 (0.95, 1.41) |  |  |  |  |
| Low                    |           |                   |                   |  |  |  |  |
|                        | Increased | 0.71 (0.56, 0.89) | 0.77 (0.62, 0.95) |  |  |  |  |
|                        | Stable    | 0.68 (0.56, 0.81) | 0.74 (0.62, 0.88) |  |  |  |  |

Model 1 (M1) adjusted for age, sex

Model 2 (M2) adjusted for M1 plus smoking status, alcohol consumption, sleep pattern, fruits and vegetables consumption, deprivation index physical activity baseline and change (or body mass index baseline and change for physical activity as an exposure), and education

| Baseline physical   | Change    | Physical activity | BMI               | Body fat          | Waist             | Waist to hip ratio |
|---------------------|-----------|-------------------|-------------------|-------------------|-------------------|--------------------|
| activity/adiposity  |           |                   |                   | percentage        | circumference     |                    |
| Inactive/           |           |                   |                   |                   |                   |                    |
| Obese/High          |           |                   |                   |                   |                   |                    |
|                     | Stable    | 1.55 (1.15, 1.96) | 0.96 (0.60, 1.57) | 0.73 (0.44, 1.02) | 1.20 (0.78, 1.77) | 1.58 (1.07, 2.34)  |
|                     | Increased | 0.74 (0.51, 1.13) | 1.81 (1.44, 2.30) | 1.51 (1.15, 1.92) | 1.49 (1.15, 1.95) | 1.65 (1.15, 2.38)  |
| Insufficient/       |           |                   |                   |                   |                   |                    |
| Overweight/Moderate |           |                   |                   |                   |                   |                    |
|                     | Decreased | 1.41 (1.07, 1.91) | 0.67 (0.44, 1.04) | 0.93 (0.66, 1.38) | 0.72 (0.48, 1.14) | 1.36 (0.88, 2.02)  |
|                     | Stable    | Reference         | Reference         | Reference         | Reference         | Reference          |
|                     | Increased | 0.65 (0.51, 0.88) | 1.32 (0.86, 2.01) | 1.18 (0.78, 1.75) | 1.14 (0.78, 1.67) | 1.53 (1.04, 2.26)  |
| Sufficient/         |           |                   |                   |                   |                   |                    |
| Healthy/Low         |           |                   |                   |                   |                   |                    |
|                     | Decreased | 0.99 (0.78, 1.30) | 1.08 (0.87, 1.37) | 0.92 (0.71, 1.20) | 0.80 (0.61, 1.06) | 0.85 (0.63, 1.17)  |
|                     | Stable    | 0.72 (0.58, 0.89) | 0.95 (0.65, 1.45) | 0.96 (0.68, 1.32) | 0.79 (0.57, 1.13) | 0.92 (0.65, 1.33)  |

Supplemental Table 4: Separate association of physical activity, body mass index, body fat

Percentage, waist circumference, and waist to hip ratio baseline changes with all-cause mortality risk; exclusion of prevalent cancer

Adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, physical activity baseline group, deprivation index. 408 deaths for BMI, waist circumference, and waist to hip ratio (n=26,339) and 392 deaths for body fat percentage (n=25,497)

| Physical activity | Adiposity change | BMI               | Body fat          | Waist              | Waist to hip ratio |
|-------------------|------------------|-------------------|-------------------|--------------------|--------------------|
| change            |                  |                   | percentage        | circumference      |                    |
| Decreased         |                  |                   |                   |                    |                    |
|                   | Decreased        | 0.79 (0.35, 1.93) | 0.85 (0.38, 1.49) | 0.96 (0.71, 1.23)  | 1.71 (1.04, 2.82)  |
|                   | Stable           | 1.18 (0.88, 1.62) | 1.20 (0.90, 1.56) | 1.16 (0.93, 1.78)  | 1.26 (0.92, 1.78)  |
|                   | Increased        | 1.22 (0.68, 1.98) | 1.25 (0.82, 1.93) | 1. 69 (1.06, 2.75) | 1.22 (0.78, 1.83)  |
| Stable            |                  |                   |                   |                    |                    |
|                   | Decreased        | 0.74 (0.52, 1.07) | 0.82 (0.64, 1.11) | 0.84 (0.58, 1.09)  | 1.52 (1.21, 2.04)  |
|                   | Stable           | Reference         | Reference         | Reference          | Reference          |
|                   | Increased        | 0.94 (0.65, 1.35) | 1.01 (0.71, 1.46) | 1.24 (1.02, 2.36)  | 1.06 (0.83, 1.41)  |
| Increased         |                  |                   |                   |                    |                    |
|                   | Decreased        | 0.44 (0.20, 0.89) | 0.59 (0.28, 0.94) | 0.64 (0.43, 0.88)  | 0.91 (0.52, 1.54)  |
|                   | Stable           | 0.78 (0.60, 1.01) | 0.75 (0.58, 0.93) | 0.83 (0.66, 0.99)  | 0.78 (0.57, 1.04)  |
|                   | Increased        | 0.80 (0.48, 1.02) | 0.75 (0.44, 1.29) | 1.05 (0.72, 1.53)  | 1.07 (0.76, 1.59)  |

Supplemental Table 5: Joint association of changes in physical activity and adiposity with all-cause mortality risk; exclusion of prevalent cancer

Adjusted for age, sex, baseline physical activity group, baseline waist to hip ratio group; smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index. 408 deaths for BMI, waist circumference, and waist to hip ratio (n=26,339) and 392 deaths for body fat percentage (n=25,497)

| A) Physical<br>activity | Change    | E-value   |
|-------------------------|-----------|-----------|
| Inactive                |           |           |
|                         | Stable    | 2.4 (1.5) |
|                         | Increased | 2.2 (1.0) |
| Insufficient            |           |           |
|                         | Decreased | 2.1 (1.3) |
|                         | Stable    | -         |
|                         | Increased | 2.5 (1.6) |
| Sufficient              |           |           |
|                         | Decreased | 1.0 (1.0) |
|                         | Stable    | 2.0 (1.4) |

Supplemental Table 6: E-values for separate association of physical activity, body mass index, and body fat percentage baseline changes with all-cause mortality risk

| B) Body<br>mass<br>index | Change    | E-value   |
|--------------------------|-----------|-----------|
| Obese                    |           |           |
|                          | Stable    | 1.2 (1.0) |
|                          | Increased | 2.9 (2.1) |
| Overweight               |           |           |
|                          | Decreased | 2.5 (1.0) |
|                          | Stable    | -         |
|                          | Increased | 1.9 (1.0) |
| Healthy                  |           |           |
|                          | Decreased | 1.5 (1.0) |
|                          | Stable    | 1.3 (1.0) |

| C) Body Fat | Change    | <b>E-value</b> |
|-------------|-----------|----------------|
| High        |           |                |
|             | Stable    | 2.3 (1.2)      |
|             | Increased | 2.3 (1.6)      |
| Moderate    |           |                |
|             | Decreased | 1.3 (1.0)      |
|             | Stable    | -              |
|             | Increased | 1.6 (1.0)      |
| Low         |           |                |
|             | Decreased | 1.4 (1.0)      |
|             | Stable    | 1.4 (1.0)      |
|             |           |                |

Values represent: E-value (interval bound)

adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, physical activity baseline and change group (or body mass index baseline and change group for physical activity as an exposure), and cancer diagnosis.

| A) Physical<br>activity | Change    | E-value   |
|-------------------------|-----------|-----------|
| Inactive                |           |           |
|                         | Stable    | 2.2 (1.0) |
|                         | Increased | 1.6 (1.0) |
| Insufficient            |           |           |
|                         | Decreased | 2.2 (1.2) |
|                         | Stable    | -         |
|                         | Increased | 1.7 (1.3) |
| Sufficient              |           |           |
|                         | Decreased | 1.4 (1.0) |
|                         | Stable    | 1.5 (1.1) |

Supplemental Table 7: E-values for separate association of physical activity, body mass index, and body fat percentage baseline changes with cardiovascular disease incidence risk

| B) Body     |           |                |
|-------------|-----------|----------------|
| mass        | Change    | <b>E-value</b> |
| index       |           |                |
| Obese       |           |                |
|             | Stable    | 2.2 (1.0)      |
|             | Increased | 2.0 (1.6)      |
| Overweight  |           |                |
|             | Decreased | 2.2 (1.4)      |
|             | Stable    | -              |
|             | Increased | 1.5 (1.0)      |
| Healthy     |           |                |
|             | Decreased | 1.6 (1.3)      |
|             | Stable    | 1.5 (1.0)      |
|             |           |                |
| C) Body Fat | Change    | E-value        |
| High        |           |                |
|             | Stable    | 1.5 (1.0)      |
|             | Increased | 2.3 (1.9)      |
| Moderate    |           |                |
|             | Decreased | 1.8 (1.0)      |
|             | Stable    | -              |
|             | Increased | 1.6 (1.0)      |

| Low       |           |
|-----------|-----------|
| Decreased | 1.5 (1.0) |
| Stable    | 1.5 (1.0) |

Values represent: E-value (interval bound)

adjusted for age, sex, smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, physical activity baseline and change group (or body mass index baseline and change group for physical activity as an exposure), and cancer diagnosis.

| Supplemental Table 8: E-values for Joint association of change | es in physical activity an | d |
|--|----------------------------|---|
| adiposity with all-cause mortality risk                        |                            |   |

| A) Physical<br>activity | Body mass index | E-value   |
|-------------------------|-----------------|-----------|
| Decreased               |                 |           |
|                         | Decreased       | 1.9 (1.0) |
|                         | Stable          | 1.7 (1.0) |
|                         | Increased       | 1.6 (1.0) |
| Stable                  |                 |           |
|                         | Decreased       | 2.2 (1.0) |
|                         | Stable          | -         |
|                         | Increased       | 1.4 (1.0) |
| Increased               |                 |           |
|                         | Decreased       | 3.7 (1.3) |
|                         | Stable          | 1.8 (1.0) |
|                         | Increased       | 1.8 (1.0) |

| B) Physical |           | F voluo   |
|-------------|-----------|-----------|
| activity    | Body fat  | E-value   |
| Decreased   |           |           |
|             | Decreased | 1.7 (1.0) |
|             | Stable    | 1.8 (1.0) |
|             | Increased | 1.7 (1.0) |
| Stable      |           |           |
|             | Decreased | 1.8 (1.0) |
|             | Stable    | -         |
|             | Increased | 1.2 (1.0) |
| Increased   |           |           |
|             | Decreased | 2.6 (1.4) |
|             | Stable    | 1.9 (1.3) |
|             | Increased | 2.0 (1.0) |

Values represent: E-value (interval bound)

Adjusted for age, sex, baseline physical activity, baseline body mass index (or body fat percentage); smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis.

| A) Physical<br>activity | Body mass index | <b>E-value</b> |
|-------------------------|-----------------|----------------|
| Decreased               |                 |                |
|                         | Decreased       | 1.8 (1.0)      |
|                         | Stable          | 1.7 (1.2)      |
|                         | Increased       | 1.6 (1.0)      |
| Stable                  |                 |                |
|                         | Decreased       | 2.1 (1.3)      |
|                         | Stable          | -              |
|                         | Increased       | 1.3 (1.0)      |
| Increased               |                 |                |
|                         | Decreased       | 2.5 (1.3)      |
|                         | Stable          | 1.5 (1.0)      |
|                         | Increased       | 1.3 (1.0       |

Supplemental Table 9: E-values for Joint association of changes in physical activity and adiposity with cardiovascular disease incidence risk

| B) Physical |           | E voluo   |
|-------------|-----------|-----------|
| activity    | Body fat  | E-value   |
| Decreased   |           |           |
|             | Decreased | 1.1 (1.0) |
|             | Stable    | 1.7 (1.2) |
|             | Increased | 1.8 (1.0) |
| Stable      |           |           |
|             | Decreased | 1.4 (1.0) |
|             | Stable    | -         |
|             | Increased | 1.3 (1.0) |
| Increased   |           |           |
|             | Decreased | 2.0 (1.2) |
|             | Stable    | 1.5 (1.2) |
|             | Increased | 1.6 (1.0) |

Values represent: E-value (interval bound)

Adjusted for age, sex, baseline physical activity, baseline body mass index (or body fat percentage); smoking status, alcohol consumption, ethnicity, sleep pattern, education, fruits and vegetables consumption, deprivation index, and cancer diagnosis.

STROBE Statement—checklist of items that should be included in reports of observational studies

|                              | Item<br>No | Recommendation  | Page<br>No |
|------------------------------|------------|---|------------|
| Title and abstract           | 1          | (a) Indicate the study's design with a commonly used term in the title or the abstract  | 2          |
|                              |            | (b) Provide in the abstract an informative and balanced summary   | 23         |
|                              |            | of what was done and what was found   | 2,5        |
| Introduction                 |            |   |            |
| Background/rationale         | 2          | Explain the scientific background and rationale for the   | 5.6        |
| Duringi cunta function       | -          | investigation being reported  | 0,0        |
| Objectives                   | 3          | State specific objectives, including any prespecified hypotheses  | 6          |
| Methods                      |            |   |            |
| Study design                 | 4          | Present key elements of study design early in the paper   | 7-9        |
| Setting                      | 5          | Describe the setting, locations, and relevant dates, including  | 7          |
| 8                            |            | periods of recruitment, exposure, follow-up, and data collection  |            |
| Participants                 | 6          | (a) Cohort study—Give the eligibility criteria, and the sources and<br>methods of selection of participants. Describe methods of follow-<br>up  | 7          |
|                              |            | and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls<br><i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants |            |
|                              |            | (b) Cohort study—For matched studies, give matching criteria and<br>number of exposed and unexposed<br>Case-control study—For matched studies, give matching criteria<br>and the number of controls per case                              | NA         |
| Variables                    | 7          | Clearly define all outcomes, exposures, predictors, potential<br>confounders, and effect modifiers. Give diagnostic criteria, if<br>applicable  | 7-9        |
| Data sources/<br>measurement | 8*         | For each variable of interest, give sources of data and details of<br>methods of assessment (measurement). Describe comparability of<br>assessment methods if there is more than one group  | 7-9        |
| Bias                         | 9          | Describe any efforts to address potential sources of bias   | 10-<br>11  |
| Study size                   | 10         | Explain how the study size was arrived at   | 7          |
| Quantitative variables       | 11         | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why  | 9-11       |
| Statistical methods          | 12         | ( <i>a</i> ) Describe all statistical methods, including those used to control for confounding  | 10-<br>11  |
|                              |            | (b) Describe any methods used to examine subgroups and interactions   | 10-<br>11  |
|                              |            | (c) Explain how missing data were addressed   | NA         |
|                              |            | (d) Cohort study—If applicable, explain how loss to follow-up<br>was addressed  | NA         |
|                              |            | and controls was addressed<br><i>Cross-sectional study</i> —If applicable, describe analytical methods<br>taking account of sampling strategy   |            |
|                              |            | (e) Describe any sensitivity analyses   | NA         |

Results

| Participants      | 13* | (a) Report numbers of individuals at each stage of study—eg<br>numbers potentially eligible, examined for eligibility, confirmed<br>eligible, included in the study, completing follow-up, and analysed | Supplemental<br>Figure 1              |
|-------------------|-----|---|---------------------------------------|
|                   |     | (b) Give reasons for non-participation at each stage  | Supplemental<br>Figure 1              |
|                   |     | (c) Consider use of a flow diagram  | Supplemental<br>Figure 1              |
| Descriptive       | 14* | (a) Give characteristics of study participants (eg demographic,   | Table 1 and                           |
| data              |     | clinical, social) and information on exposures and potential confounders  | Supplemental<br>Table 1               |
|                   |     | (b) Indicate number of participants with missing data for each variable of interest   | NA                                    |
|                   |     | (c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)  | 11                                    |
| Outcome data      | 15* | <i>Cohort study</i> —Report numbers of outcome events or summary measures over time   | 11, Figures                           |
|                   |     | <i>Case-control study</i> —Report numbers in each exposure category, or   | NA                                    |
|                   |     | Summary measures of exposure  | NA                                    |
|                   |     | summary measures  | 11/24                                 |
| Main results      | 16  | (a) Give unadjusted estimates and, if applicable, confounder-   | Figures 1-4,                          |
|                   |     | adjusted estimates and their precision (eg, 95% confidence interval).   | Supplemental                          |
|                   |     | Make clear which confounders were adjusted for and why they were included   | Tables 1-2                            |
|                   |     | (b) Report category boundaries when continuous variables were categorized   | NA                                    |
|                   |     | (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period  | NA                                    |
| Other analyses    | 17  | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses  | 12-15<br>Supplemental<br>Figures 6-7, |
| Discussion        |     |   |                                       |
| Key results       | 18  | Summarise key results with reference to study objectives  | 15                                    |
| Limitations       | 19  | Discuss limitations of the study, taking into account sources of<br>potential bias or imprecision. Discuss both direction and magnitude<br>of any potential bias  | 18,19                                 |
| Interpretation    | 20  | Give a cautious overall interpretation of results considering   | 15-19                                 |
|                   |     | objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence  |                                       |
| Generalisability  | 21  | Discuss the generalisability (external validity) of the study results   | 15-19                                 |
| Other information |     |   |                                       |
| Funding           | 22  | Give the source of funding and the role of the funders for the<br>present study and, if applicable, for the original study on which the<br>present article is based                                     | 20                                    |