|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No overweight/ obesity*  *n (%)* | *Overweight/obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 14,253 (66.3) | 7238 (33.7) | Reference | Reference |
|  | Only aerobic | 1603 (73.1) | 591 (26.9) | **0.73 (0.66-0.80, p<0.001)** | **0.72 (0.64-0.80, p<0.001)** |
|  | Only MSA | 10,266 (69.2) | 4568 (30.8) | **0.88 (0.84-0.92, p<0.001)** | **0.81 (0.77-0.86, p<0.001)** |
|  | Both recommendations | 8178 (73.7) | 2919 (26.3) | **0.70 (0.67-0.74, p<0.001)** | **0.64 (0.60-0.68, p<0.001)** |
| Age group | < 16 years old | 16,261 (69.2) | 7252 (30.8) | Reference | Reference |
|  | ≥ 16 years old or older | 29,822 (69.4) | 13,174 (30.6) | 0.99 (0.96-1.03, p=0.588) | **0.94 (0.90-0.98, p=0.004)** |
| Sex | Males | 23,874 (71.4) | 9543 (28.6) | Reference | Reference |
|  | Females | 22,209 (67.1) | 10,883 (32.9) | **1.23 (1.19-1.27, p<0.001)** | **1.37 (1.31-1.44, p<0.001)** |
| Race/Ethnicity | White | 21,572 (73.0) | 7972 (27.0) | Reference | Reference |
|  | Black or African American | 7061 (64.8) | 3830 (35.2) | **1.47 (1.40-1.54, p<0.001)** | **1.44 (1.35-1.53, p<0.001)** |
|  | Hispanic/Latino | 11,556 (64.7) | 6308 (35.3) | **1.48 (1.42-1.54, p<0.001)** | **1.49 (1.41-1.56, p<0.001)** |
|  | All other races | 5161 (72.4) | 1966 (27.6) | 1.03 (0.97-1.09, p=0.305) | 1.01 (0.94-1.09, p=0.765) |
| Alcohol consumption | No alcohol consumption | 27,928 (69.6) | 12,170 (30.4) | Reference | Reference |
|  | Alcohol consumption | 14,132 (69.7) | 6132 (30.3) | 1.00 (0.96-1.03, p=0.820) | 1.00 (0.95-1.05, p=0.920) |
| Tobacco consumption | No tobacco consumption | 40,228 (69.5) | 17,627 (30.5) | Reference | Reference |
|  | Tobacco consumption | 4120 (66.0) | 2122 (34.0) | **1.18 (1.11-1.24, p<0.001)** | **1.12 (1.03-1.20, p=0.004)** |
| Computer use | No playing video/computer game | 7571 (69.3) | 3350 (30.7) | Reference | Reference |
|  | Playing video/computer game | 37,097 (69.4) | 16,362 (30.6) | 1.00 (0.95-1.04, p=0.888) | 0.97 (0.92-1.03, p=0.361) |
| TV use | No TV on average school day | 8625 (70.6) | 3588 (29.4) | Reference | Reference |
|  | TV on average school day | 35,754 (69.0) | 16,036 (31.0) | **1.08 (1.03-1.13, p=0.001)** | **1.14 (1.07-1.20, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 33,229 (69.4) | 14,647 (30.6) | Reference | Reference |
|  | < 8 hours | 7256 (68.5) | 3340 (31.5) | 1.04 (1.00-1.09, p=0.061) | 1.02 (0.97-1.08, p=0.437) |
| Fruit consumption | Eat fruit daily | 39,759 (69.5) | 17,417 (30.5) | Reference | Reference |
|  | No eat fruit daily | 4975 (67.6) | 2384 (32.4) | **1.09 (1.04-1.15, p=0.001)** | 1.02 (0.95-1.09, p=0.584) |
| Vegetables consumption | Eat vegetables daily | 25,715 (69.1) | 11,499 (30.9) | Reference | Reference |
|  | No eat vegetables daily | 17,674 (69.6) | 7715 (30.4) | 0.98 (0.94-1.01, p=0.172) | **0.89 (0.85-0.93, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 32,412 (68.7) | 14748 (31.3) | Reference | Reference |
|  | No drink diet soda or pop | 10,976 (70.8) | 4524 (29.2) | **0.91 (0.87-0.94, p<0.001)** | 0.97 (0.92-1.02, p=0.231) |
| Breakfast status | Daily breakfast | 14,640 (72.9) | 5440 (27.1) | Reference | Reference |
|  | No daily breakfast | 24,900 (67.1) | 12,219 (32.9) | **1.32 (1.27-1.37, p<0.001)** | **1.28 (1.22-1.34, p<0.001)** |

**Table S1.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and overweight/obesity by listwise deletion method (N=42,829).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No obesity*  *n (%)* | *Obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 17,841 | 3650 | Reference | Reference |
|  | Only aerobic | 1909 | 285 | **0.73 (0.64-0.83, p<0.001)** | **0.67 (0.58-0.77, p<0.001)** |
|  | Only MSA | 12,713 | 2121 | **0.82 (0.77-0.86, p<0.001)** | **0.72 (0.68-0.77, p<0.001)** |
|  | Both recommendations | 9820 | 1277 | **0.64 (0.59-0.68, p<0.001)** | **0.52 (0.48-0.56, p<0.001)** |
| Age group | < 16 years old | 20,256 | 3257 | Reference | Reference |
|  | ≥ 16 years old or older | 36,596 | 6400 | **1.09 (1.04-1.14, p<0.001)** | 1.03 (0.97-1.09, p=0.360) |
| Sex | Males | 29,527 | 3890 | Reference | Reference |
|  | Females | 27,325 | 5767 | **1.60 (1.53-1.67, p<0.001)** | **1.84 (1.74-1.95, p<0.001)** |
| Race/Ethnicity | White | 25,857 | 3687 | Reference | Reference |
|  | Black or African American | 8971 | 1920 | **1.50 (1.41-1.59, p<0.001)** | **1.45 (1.33-1.57, p<0.001)** |
|  | Hispanic/Latino | 14,867 | 2997 | **1.41 (1.34-1.49, p<0.001)** | **1.45 (1.36-1.55, p<0.001)** |
|  | All other races | 6245 | 882 | 0.99 (0.92-1.07, p=0.811) | 0.98 (0.89-1.08, p=0.688) |
| Alcohol consumption | No alcohol consumption | 34,355 | 5743 | Reference | Reference |
|  | Alcohol consumption | 17,415 | 2849 | 0.98 (0.93-1.03, p=0.383) | 1.01 (0.95-1.07, p=0.828) |
| Tobacco consumption | No tobacco consumption | 49,552 | 8303 | Reference | Reference |
|  | Tobacco consumption | 5172 | 1070 | **1.23 (1.15-1.32, p<0.001)** | 1.07 (0.97-1.18, p=0.170) |
| Computer use | No playing video/computer game | 9474 | 1447 | Reference | Reference |
|  | Playing video/computer game | 45,611 | 7848 | **1.13 (1.06-1.20, p<0.001)** | 1.04 (0.96-1.12, p=0.340) |
| TV use | No TV on average school day | 10,571 | 1642 | Reference | Reference |
|  | TV on average school day | 44,167 | 7623 | **1.11 (1.05-1.18, p<0.001)** | **1.15 (1.07-1.24, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 40,945 | 6931 | Reference | Reference |
|  | < 8 hours | 8987 | 1609 | 1.06 (1.00-1.12, p=0.062) | 1.03 (0.96-1.11, p=0.353) |
| Fruit consumption | Eat fruit daily | 49,042 | 8134 | Reference | Reference |
|  | No eat fruit daily | 6131 | 1228 | **1.21 (1.13-1.29, p<0.001)** | **1.11 (1.01-1.21, p=0.022)** |
| Vegetables consumption | Eat vegetables daily | 31,741 | 5473 | Reference | Reference |
|  | No eat vegetables daily | 21,772 | 3617 | 0.96 (0.92-1.01, p=0.108) | **0.86 (0.81-0.91, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 40,063 | 7097 | Reference | Reference |
|  | No drink diet soda or pop | 13,468 | 2032 | **0.85 (0.81-0.90, p<0.001)** | 0.94 (0.88-1.01, p=0.074) |
| Breakfast status | Daily breakfast | 17,559 | 2521 | Reference | Reference |
|  | No daily breakfast | 31,249 | 5870 | **1.31 (1.24-1.38, p<0.001)** | **1.27 (1.19-1.34, p<0.001)** |

**Table S2.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and obesity by listwise deletion method (N=42,829).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No overweight/ obesity*  *n (%)* | *Overweight/obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 25,852 (83.5) | 5096 (16.5) | Reference | Reference |
|  | Only aerobic | 3842 (87.6) | 542 (12.4) | **0.72 (0.65-0.79, p<0.001)** | **0.65 (0.59-0.72, p<0.001)** |
|  | Only MSA | 20,242 (85.5) | 3425 (14.5) | **0.86 (0.82-0.90, p<0.001)** | **0.80 (0.76-0.83, p<0.001)** |
|  | Both recommendations | 12,446 (88.4) | 1629 (11.6) | **0.66 (0.63-0.70, p<0.001)** | **0.57 (0.54-0.61, p<0.001)** |
| Age group | < 16 years old | 22,368 (86.0) | 3650 (14.0) | Reference | Reference |
|  | ≥ 16 years old or older | 40,014 (85.0) | 7042 (15.0) | **1.08 (1.03-1.13, p=0.001)** | 1.03 (0.98-1.07, p=0.214) |
| Sex | Males | 32,430 (88.3) | 4284 (11.7) | Reference | Reference |
|  | Females | 29,952 (82.4) | 6408 (17.6) | **1.62 (1.55-1.69, p<0.001)** | **1.78 (1.70-1.86, p<0.001)** |
| Race/Ethnicity | White | 28,118 (87.3) | 4099 (12.7) | Reference | Reference |
|  | Black or African American | 10,369 (82.6) | 2181 (17.4) | **1.44 (1.36-1.53, p<0.001)** | **1.42 (1.34-1.50, p<0.001)** |
|  | Hispanic/Latino | 16,918 (83.3) | 3391 (16.7) | **1.37 (1.31-1.44, p<0.001)** | **1.37 (1.31-1.44, p<0.001)** |
|  | All other races | 6977 (87.2) | 1021 (12.8) | 1.00 (0.93-1.08, p=0.919) | 1.00 (0.93-1.07, p=0.961) |
| Alcohol consumption | No alcohol consumption | 41,444 (85.3) | 7145 (14.7) | Reference | Reference |
|  | Alcohol consumption | 20,938 (85.5) | 3547 (14.5) | 0.98 (0.94-1.03, p=0.430) | 0.96 (0.92-1.01, p=0.089) |
| Tobacco consumption | No tobacco consumption | 56,274 (85.7) | 9421 (14.3) | Reference | Reference |
|  | Tobacco consumption | 6108 (82.8) | 1271 (17.2) | **1.24 (1.17-1.32, p<0.001)** | **1.15 (1.07-1.23, p<0.001)** |
| Computer use | No playing video/computer game | 10,958 (86.4) | 1727 (13.6) | Reference | Reference |
|  | Playing video/computer game | 51,424 (85.2) | 8965 (14.8) | **1.11 (1.05-1.17, p<0.001)** | 1.02 (0.97-1.08, p=0.450) |
| TV use | No TV on average school day | 12,295 (86.2) | 1970 (13.8) | Reference | Reference |
|  | TV on average school day | 50,087 (85.2) | 8722 (14.8) | **1.09 (1.03-1.15, p=0.002)** | **1.11 (1.05-1.17, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 51,133 (85.5) | 8689 (14.5) | Reference | Reference |
|  | < 8 hours | 11,249 (84.9) | 2003 (15.1) | 1.05 (0.99-1.10, p=0.082) | 1.03 (0.98-1.09, p=0.249) |
| Fruit consumption | Eat fruit daily | 55,059 (85.7) | 9209 (14.3) | Reference | Reference |
|  | No eat fruit daily | 7323 (83.2) | 1483 (16.8) | **1.21 (1.14-1.29, p<0.001)** | **1.12 (1.05-1.19, p=0.001)** |
| Vegetables consumption | Eat vegetables daily | 36,985 (85.3) | 6389 (14.7) | Reference | Reference |
|  | No eat vegetables daily | 25,397 (85.5) | 4303 (14.5) | 0.98 (0.94-1.02, p=0.364) | **0.88 (0.84-0.92, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 46,618 (84.9) | 8297 (15.1) | Reference | Reference |
|  | No drink diet soda or pop | 15,764 (86.8) | 2395 (13.2) | **0.85 (0.81-0.90, p<0.001)** | **0.94 (0.90-0.99, p=0.024)** |
| Breakfast status | Daily breakfast | 22,520 (87.2) | 3301 (12.8) | Reference | Reference |
|  | No daily breakfast | 39,862 (84.4) | 7391 (15.6) | **1.26 (1.21-1.32, p<0.001)** | **1.23 (1.18-1.29, p<0.001)** |

**Table S3.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and overweight/obesity using multiple imputations by chained methods (N=73,074).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05. Multiple imputations by chained equations done using mice package in RStudio.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No obesity*  *n (%)* | *Obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 25,852 (83.5) | 5096 (16.5) | Reference | Reference |
|  | Only aerobic | 3842 (87.6) | 542 (12.4) | **0.72 (0.65-0.79, p<0.001)** | **0.65 (0.59-0.72, p<0.001)** |
|  | Only MSA | 20,242 (85.5) | 3425 (14.5) | **0.86 (0.82-0.90, p<0.001)** | **0.80 (0.76-0.83, p<0.001)** |
|  | Both recommendations | 12,446 (88.4) | 1629 (11.6) | **0.66 (0.63-0.70, p<0.001)** | **0.57 (0.54-0.61, p<0.001)** |
| Age group | < 16 years old | 22,368 (86.0) | 3650 (14.0) | Reference | Reference |
|  | ≥ 16 years old or older | 40,014 (85.0) | 7042 (15.0) | **1.08 (1.03-1.13, p=0.001)** | 1.03 (0.98-1.07, p=0.214) |
| Sex | Males | 32,430 (88.3) | 4284 (11.7) | Reference | Reference |
|  | Females | 29,952 (82.4) | 6408 (17.6) | **1.62 (1.55-1.69, p<0.001)** | **1.78 (1.70-1.86, p<0.001)** |
| Race/Ethnicity | White | 28,118 (87.3) | 4099 (12.7) | Reference | Reference |
|  | Black or African American | 10,369 (82.6) | 2181 (17.4) | **1.44 (1.36-1.53, p<0.001)** | **1.42 (1.34-1.50, p<0.001)** |
|  | Hispanic/Latino | 16,918 (83.3) | 3391 (16.7) | **1.37 (1.31-1.44, p<0.001)** | **1.37 (1.31-1.44, p<0.001)** |
|  | All other races | 6977 (87.2) | 1021 (12.8) | 1.00 (0.93-1.08, p=0.919) | 1.00 (0.93-1.07, p=0.961) |
| Alcohol consumption | No alcohol consumption | 41,444 (85.3) | 7145 (14.7) | Reference | Reference |
|  | Alcohol consumption | 20,938 (85.5) | 3547 (14.5) | 0.98 (0.94-1.03, p=0.430) | 0.96 (0.92-1.01, p=0.089) |
| Tobacco consumption | No tobacco consumption | 56,274 (85.7) | 9421 (14.3) | Reference | Reference |
|  | Tobacco consumption | 6108 (82.8) | 1271 (17.2) | **1.24 (1.17-1.32, p<0.001)** | **1.15 (1.07-1.23, p<0.001)** |
| Computer use | No playing video/computer game | 10,958 (86.4) | 1727 (13.6) | Reference | Reference |
|  | Playing video/computer game | 51,424 (85.2) | 8965 (14.8) | **1.11 (1.05-1.17, p<0.001)** | 1.02 (0.97-1.08, p=0.450) |
| TV use | No TV on average school day | 12,295 (86.2) | 1970 (13.8) | Reference | Reference |
|  | TV on average school day | 50,087 (85.2) | 8722 (14.8) | **1.09 (1.03-1.15, p=0.002)** | **1.11 (1.05-1.17, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 51,133 (85.5) | 8689 (14.5) | Reference | Reference |
|  | < 8 hours | 11,249 (84.9) | 2003 (15.1) | 1.05 (0.99-1.10, p=0.082) | 1.03 (0.98-1.09, p=0.249) |
| Fruit consumption | Eat fruit daily | 55,059 (85.7) | 9209 (14.3) | Reference | Reference |
|  | No eat fruit daily | 7323 (83.2) | 1483 (16.8) | **1.21 (1.14-1.29, p<0.001)** | **1.12 (1.05-1.19, p=0.001)** |
| Vegetables consumption | Eat vegetables daily | 36,985 (85.3) | 6389 (14.7) | Reference | Reference |
|  | No eat vegetables daily | 25,397 (85.5) | 4303 (14.5) | 0.98 (0.94-1.02, p=0.364) | **0.88 (0.84-0.92, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 46,618 (84.9) | 8297 (15.1) | Reference | Reference |
|  | No drink diet soda or pop | 15,764 (86.8) | 2395 (13.2) | **0.85 (0.81-0.90, p<0.001)** | **0.94 (0.90-0.99, p=0.024)** |
| Breakfast status | Daily breakfast | 22,520 (87.2) | 3301 (12.8) | Reference | Reference |
|  | No daily breakfast | 39,862 (84.4) | 7391 (15.6) | **1.26 (1.21-1.32, p<0.001)** | **1.23 (1.18-1.29, p<0.001)** |

**Table S4.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and obesity using multiple imputations by chained methods (N=73,074).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05. Multiple imputations by chained equations done using mice package in RStudio.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No overweight/ obesity*  *n (%)* | *Overweight/obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 8183 (68.6) | 3751 (31.4) | Reference | Reference |
|  | Only aerobic | 618 (72.5) | 235 (27.5) | **0.83 (0.71-0.97, p=0.018)** | 0.86 (0.73-1.00, p=0.055) |
|  | Only MSA | 4551 (74.4) | 1563 (25.6) | **0.75 (0.70-0.80, p<0.001)** | **0.78 (0.73-0.84, p<0.001)** |
|  | Both recommendations | 2317 (78.6) | 632 (21.4) | **0.60 (0.54-0.65, p<0.001)** | **0.63 (0.57-0.70, p<0.001)** |
| Age group | < 16 years old | 5542 (72.3) | 2128 (27.7) | Reference | Reference |
|  | ≥ 16 years old or older | 10,127 (71.4) | 4053 (28.6) | 1.04 (0.98-1.11, p=0.189) | 0.99 (0.92-1.05, p=0.661) |
| Race/Ethnicity | White | 7986 (76.4) | 2471 (23.6) | Reference | Reference |
|  | Black or African American | 1875 (61.2) | 1191 (38.8) | **2.05 (1.88-2.24, p<0.001)** | **1.95 (1.79-2.13, p<0.001)** |
|  | Hispanic/Latino | 3988 (67.1) | 1958 (32.9) | **1.59 (1.48-1.70, p<0.001)** | **1.57 (1.46-1.68, p<0.001)** |
|  | All other races | 1820 (76.4) | 561 (23.6) | 1.00 (0.90-1.11, p=0.943) | 0.98 (0.88-1.09, p=0.746) |
| Alcohol consumption | No alcohol consumption | 10,206 (72.0) | 3971 (28.0) | Reference | Reference |
|  | Alcohol consumption | 5463 (71.2) | 2210 (28.8) | 1.04 (0.98-1.11, p=0.215) | 0.99 (0.92-1.05, p=0.687) |
| Tobacco consumption | No tobacco consumption | 14,770 (72.1) | 5723 (27.9) | Reference | Reference |
|  | Tobacco consumption | 899 (66.2) | 458 (33.8) | **1.31 (1.17-1.48, p<0.001)** | **1.25 (1.11-1.42, p<0.001)** |
| Computer use | No playing video/computer game | 3103 (71.0) | 1266 (29.0) | Reference | Reference |
|  | Playing video/computer game | 12,566 (71.9) | 4915 (28.1) | 0.96 (0.89-1.03, p=0.259) | 0.95 (0.89-1.03, p=0.219) |
| TV use | No TV on average school day | 2930 (73.4) | 1064 (26.6) | Reference | Reference |
|  | TV on average school day | 12,739 (71.3) | 5117 (28.7) | **1.11 (1.02-1.20, p=0.011)** | 1.08 (1.00-1.17, p=0.067) |
| Sleep duration | ≥ 8 hours or more | 12,828 (71.9) | 5004 (28.1) | Reference | Reference |
|  | < 8 hours | 2841 (70.7) | 1177 (29.3) | 1.06 (0.98-1.14, p=0.118) | 1.04 (0.97-1.13, p=0.281) |
| Fruit consumption | Eat fruit daily | 14,296 (71.8) | 5614 (28.2) | Reference | Reference |
|  | No eat fruit daily | 1373 (70.8) | 567 (29.2) | 1.05 (0.95-1.16, p=0.336) | 0.94 (0.85-1.05, p=0.284) |
| Vegetables consumption | Eat vegetables daily | 9496 (72.4) | 3618 (27.6) | Reference | Reference |
|  | No eat vegetables daily | 6173 (70.7) | 2563 (29.3) | **1.09 (1.03-1.16, p=0.005)** | 0.94 (0.88-1.00, p=0.064) |
| Soda consumption | Drink diet soda or pop | 11,055 (70.6) | 4606 (29.4) | Reference | Reference |
|  | No drink diet soda or pop | 4614 (74.6) | 1575 (25.4) | **0.82 (0.77-0.88, p<0.001)** | **0.92 (0.86-0.99, p=0.021)** |
| Breakfast status | Daily breakfast | 5339 (76.1) | 1673 (23.9) | Reference | Reference |
|  | No daily breakfast | 10,330 (69.6) | 4508 (30.4) | **1.39 (1.31-1.49, p<0.001)** | **1.28 (1.20-1.37, p<0.001)** |

**Table S5.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and overweight/obesity by listwise deletion method for boys (N=21,850).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No overweight/ obesity*  *n (%)* | *Overweight/obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 4224 (63.0) | 2485 (37.0) | Reference | Reference |
|  | Only aerobic | 763 (73.3) | 278 (26.7) | **0.62 (0.53-0.72, p<0.001)** | **0.63 (0.55-0.73, p<0.001)** |
|  | Only MSA | 4376 (65.8) | 2279 (34.2) | **0.89 (0.82-0.95, p=0.001)** | **0.87 (0.81-0.93, p<0.001)** |
|  | Both recommendations | 4746 (72.2) | 1828 (27.8) | **0.65 (0.61-0.70, p<0.001)** | **0.66 (0.61-0.71, p<0.001)** |
| Age group | < 16 years old | 4427 (66.0) | 2279 (34.0) | Reference | Reference |
|  | ≥ 16 years old or older | 9682 (67.8) | 4591 (32.2) | **0.92 (0.87-0.98, p=0.009)** | **0.89 (0.83-0.94, p<0.001)** |
| Race/Ethnicity | White | 7056 (69.6) | 3083 (30.4) | Reference | Reference |
|  | Black or African American | 1995 (68.6) | 914 (31.4) | 1.05 (0.96-1.15, p=0.296) | 1.03 (0.94-1.12, p=0.559) |
|  | Hispanic/Latino | 3521 (61.8) | 2175 (38.2) | **1.41 (1.32-1.51, p<0.001)** | **1.40 (1.31-1.50, p<0.001)** |
|  | All other races | 1537 (68.8) | 698 (31.2) | 1.04 (0.94-1.15, p=0.444) | 1.03 (0.93-1.14, p=0.560) |
| Alcohol consumption | No alcohol consumption | 9414 (67.4) | 4563 (32.6) | Reference | Reference |
|  | Alcohol consumption | 4695 (67.1) | 2307 (32.9) | 1.01 (0.95-1.08, p=0.661) | 1.01 (0.94-1.08, p=0.828) |
| Tobacco consumption | No tobacco consumption | 12,277 (67.3) | 5961 (32.7) | Reference | Reference |
|  | Tobacco consumption | 1832 (66.8) | 909 (33.2) | 1.02 (0.94-1.11, p=0.619) | 1.03 (0.94-1.13, p=0.550) |
| Computer use | No playing video/computer game | 1681 (68.4) | 777 (31.6) | Reference | Reference |
|  | Playing video/computer game | 12,428 (67.1) | 6093 (32.9) | 0.96 (0.89-1.03, p=0.202) | 1.01 (0.92-1.11, p=0.855) |
| TV use | No TV on average school day | 2717 (69.5) | 1194 (30.5) | Reference | Reference |
|  | TV on average school day | 11,392 (66.7) | 5676 (33.3) | **1.13 (1.05-1.22, p=0.001)** | **1.20 (1.11-1.30, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 11,663 (67.4) | 5643 (32.6) | Reference | Reference |
|  | < 8 hours | 2446 (66.6) | 1227 (33.4) | 1.04 (0.96-1.12, p=0.349) | 1.01 (0.93-1.09, p=0.818) |
| Fruit consumption | Eat fruit daily | 12,509 (67.5) | 6028 (32.5) | Reference | Reference |
|  | No eat fruit daily | 1600 (65.5) | 842 (34.5) | 1.09 (1.00-1.19, p=0.052) | 1.09 (1.00-1.20, p=0.060) |
| Vegetables consumption | Eat vegetables daily | 8536 (66.6) | 4282 (33.4) | Reference | Reference |
|  | No eat vegetables daily | 5573 (68.3) | 2588 (31.7) | **0.93 (0.87-0.98, p=0.011)** | **0.83 (0.78-0.89, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 11,190 (67.2) | 5450 (32.8) | Reference | Reference |
|  | No drink diet soda or pop | 2919 (67.3) | 1420 (32.7) | 1.00 (0.93-1.07, p=0.974) | 1.06 (0.98-1.14, p=0.121) |
| Breakfast status | Daily breakfast | 5972 (71.0) | 2439 (29.0) | Reference | Reference |
|  | No daily breakfast | 8137 (64.7) | 4431 (35.3) | **1.33 (1.26-1.42, p<0.001)** | **1.29 (1.21-1.37, p<0.001)** |

**Table S6.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and overweight/obesity by listwise deletion method for girls (N=20,979).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No obesity*  *n (%)* | *Obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 10,264 (86.0) | 1670 (14.0) | Reference | Reference |
|  | Only aerobic | 754 (88.4) | 99 (11.6) | 0.81 (0.65-1.00, p=0.051) | 0.84 (0.67-1.04, p=0.116) |
|  | Only MSA | 5540 (90.6) | 574 (9.4) | **0.64 (0.58-0.70, p<0.001)** | **0.67 (0.61-0.75, p<0.001)** |
|  | Both recommendations | 2743 (93.0) | 206 (7.0) | **0.46 (0.40-0.54, p<0.001)** | **0.50 (0.43-0.58, p<0.001)** |
| Age group | < 16 years old | 6846 (89.3) | 824 (10.7) | Reference | Reference |
|  | ≥ 16 years old or older | 12,455 (87.8) | 1725 (12.2) | **1.15 (1.05-1.26, p=0.002)** | 1.08 (0.98-1.18, p=0.109) |
| Race/Ethnicity | White | 9500 (90.8) | 957 (9.2) | Reference | Reference |
|  | Black or African American | 2503 (81.6) | 563 (18.4) | **2.23 (1.99-2.50, p<0.001)** | **2.08 (1.86-2.34, p<0.001)** |
|  | Hispanic/Latino | 5151 (86.6) | 795 (13.4) | **1.53 (1.39-1.69, p<0.001)** | **1.51 (1.37-1.67, p<0.001)** |
|  | All other races | 2147 (90.2) | 234 (9.8) | 1.08 (0.93-1.26, p=0.305) | 1.07 (0.91-1.24, p=0.410) |
| Alcohol consumption | No alcohol consumption | 12,551 (88.5) | 1626 (11.5) | Reference | Reference |
|  | Alcohol consumption | 6750 (88.0) | 923 (12.0) | 1.06 (0.97-1.15, p=0.218) | 1.00 (0.91-1.10, p=0.978) |
| Tobacco consumption | No tobacco consumption | 18,145 (88.5) | 2348 (11.5) | Reference | Reference |
|  | Tobacco consumption | 1156 (85.2) | 201 (14.8) | **1.34 (1.15-1.57, p<0.001)** | **1.25 (1.06-1.47, p=0.009)** |
| Computer use | No playing video/computer game | 3866 (88.5) | 503 (11.5) | Reference | Reference |
|  | Playing video/computer game | 15,435 (88.3) | 2046 (11.7) | 1.02 (0.92-1.13, p=0.725) | 1.02 (0.91-1.13, p=0.769) |
| TV use | No TV on average school day | 3569 (89.4) | 425 (10.6) | Reference | Reference |
|  | TV on average school day | 15,732 (88.1) | 2124 (11.9) | **1.13 (1.02-1.27, p=0.026)** | 1.09 (0.98-1.23, p=0.116) |
| Sleep duration | ≥ 8 hours or more | 15,773 (88.5) | 2059 (11.5) | Reference | Reference |
|  | < 8 hours | 3528 (87.8) | 490 (12.2) | 1.06 (0.96-1.18, p=0.247) | 1.04 (0.93-1.16, p=0.471) |
| Fruit consumption | Eat fruit daily | 17,625 (88.5) | 2285 (11.5) | Reference | Reference |
|  | No eat fruit daily | 1676 (86.4) | 264 (13.6) | **1.21 (1.06-1.39, p=0.005)** | 1.07 (0.93-1.23, p=0.354) |
| Vegetables consumption | Eat vegetables daily | 11,632 (88.7) | 1482 (11.3) | Reference | Reference |
|  | No eat vegetables daily | 7669 (87.8) | 1067 (12.2) | **1.09 (1.00-1.19, p=0.040)** | **0.91 (0.83-0.99, p=0.032)** |
| Soda consumption | Drink diet soda or pop | 13,728 (87.7) | 1933 (12.3) | Reference | Reference |
|  | No drink diet soda or pop | 5573 (90.0) | 616 (10.0) | **0.78 (0.71-0.86, p<0.001)** | **0.90 (0.81-0.99, p=0.036)** |
| Breakfast status | Daily breakfast | 6353 (90.6) | 659 (9.4) | Reference | Reference |
|  | No daily breakfast | 12,948 (87.3) | 1890 (12.7) | **1.41 (1.28-1.55, p<0.001)** | **1.25 (1.14-1.38, p<0.001)** |

**Table S7.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and obesity by listwise deletion method for boys (N=21,850).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Predictors* |  | *No obesity*  *n (%)* | *Obesity*  *n (%)* | *OR (95% CI)*  *(Univariate)* | *OR (95% CI)*  *(Multivariate)* |
| PA recommendation met | None | 6130 (78.2) | 1707 (21.8) | Reference | Reference |
|  | Only aerobic | 1044 (86.3) | 166 (13.7) | **0.57 (0.48-0.68, p<0.001)** | **0.59 (0.49-0.71, p<0.001)** |
|  | Only MSA | 6387 (81.7) | 1435 (18.3) | **0.81 (0.75-0.87, p<0.001)** | **0.78 (0.71-0.85, p<0.001)** |
|  | Both recommendations | 6685 (86.5) | 1041 (13.5) | **0.56 (0.51-0.61, p<0.001)** | **0.53 (0.49-0.59, p<0.001)** |
| Age group | < 16 years old | 9336 (83.0) | 1916 (17.0) | Reference | Reference |
|  | ≥ 16 years old or older | 17,989 (82.4) | 3851 (17.6) | 1.04 (0.98-1.11, p=0.170) | 0.99 (0.91-1.07, p=0.724) |
| Race/Ethnicity | White | 12,372 (84.1) | 2339 (15.9) | Reference | Reference |
|  | Black or African American | 4428 (82.7) | 926 (17.3) | **1.11 (1.02-1.20, p=0.018)** | 1.02 (0.91-1.14, p=0.703) |
|  | Hispanic/Latino | 7024 (79.1) | 1856 (20.9) | **1.40 (1.31-1.50, p<0.001)** | **1.41 (1.29-1.53, p<0.001)** |
|  | All other races | 2988 (84.8) | 536 (15.2) | 0.95 (0.86-1.05, p=0.313) | 0.92 (0.81-1.04, p=0.196) |
| Alcohol consumption | No alcohol consumption | 16,705 (82.7) | 3488 (17.3) | Reference | Reference |
|  | Alcohol consumption | 7986 (83.1) | 1624 (16.9) | 0.97 (0.91-1.04, p=0.423) | 1.01 (0.93-1.10, p=0.787) |
| Tobacco consumption | No tobacco consumption | 22,868 (82.6) | 4829 (17.4) | Reference | Reference |
|  | Tobacco consumption | 3429 (81.9) | 757 (18.1) | 1.05 (0.96-1.14, p=0.303) | 0.98 (0.87-1.10, p=0.719) |
| Computer use | No playing video/computer game | 3417 (83.9) | 657 (16.1) | Reference | Reference |
|  | Playing video/computer game | 22,866 (82.4) | 4869 (17.6) | **1.11 (1.01-1.21, p=0.025)** | 1.07 (0.95-1.20, p=0.277) |
| TV use | No TV on average school day | 5112 (83.6) | 1005 (16.4) | Reference | Reference |
|  | TV on average school day | 21,001 (82.3) | 4505 (17.7) | **1.09 (1.01-1.18, p=0.022)** | **1.20 (1.09-1.32, p<0.001)** |
| Sleep duration | ≥ 8 hours or more | 19,701 (82.6) | 4149 (17.4) | Reference | Reference |
|  | < 8 hours | 4165 (81.8) | 926 (18.2) | 1.06 (0.98-1.14, p=0.177) | 1.04 (0.94-1.14, p=0.440) |
| Fruit consumption | Eat fruit daily | 23,041 (82.8) | 4788 (17.2) | Reference | Reference |
|  | No eat fruit daily | 3349 (80.9) | 789 (19.1) | **1.13 (1.04-1.23, p=0.003)** | **1.14 (1.02-1.28, p=0.019)** |
| Vegetables consumption | Eat vegetables daily | 15,277 (82.1) | 3340 (17.9) | Reference | Reference |
|  | No eat vegetables daily | 10,249 (83.2) | 2076 (16.8) | **0.93 (0.87-0.98, p=0.013)** | **0.81 (0.75-0.88, p<0.001)** |
| Soda consumption | Drink diet soda or pop | 20,127 (82.4) | 4310 (17.6) | Reference | Reference |
|  | No drink diet soda or pop | 5466 (82.9) | 1130 (17.1) | 0.97 (0.90-1.04, p=0.338) | 1.01 (0.92-1.10, p=0.894) |
| Breakfast status | Daily breakfast | 9421 (85.0) | 1668 (15.0) | Reference | Reference |
|  | No daily breakfast | 13,921 (80.8) | 3315 (19.2) | **1.34 (1.26-1.43, p<0.001)** | **1.28 (1.19-1.39, p<0.001)** |

**Table S8.** Binary logistic regression analyses of the association between meeting with the physical activity recommendations and obesity by listwise deletion method for girls (N=20,979).

CI, confidence intervals; MSA, muscle-strengthening activities; OR, odds ratio, PA, physical activity. Bold indicates a *p* value < 0.05.

Figure S1. Adjusted odds ratios describing the association between the prevalence of physical activity guidelines and the odds of having overweight/obesity and obesity by year of assessment. Reference (1.0): meeting no guidelines.



Figure S2. Adjusted odds ratios describing the association between days of aerobic physical activity or days of muscle strengthening activities and the odds of having overweight/obesity or obesity. Analysis adjusted for age, sex, race, sleep duration, TV use, computer use, alcohol consumption, tobacco consumption, fruit consumption, vegetables consumption, soda or pop consumption, and breakfast status.

