**Supplementary table 1. Longitudinal association between total Youth Self Report (YSR) score at age 14 and physical activity engagement at Age 21 (both predictor and predictor variables are continuous)1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **N** | **Beta coefficient**  **(Standard error)** | **P value** |
| **YSR Total Score at age 14 – Vigorous exercise at age 21** | 2636 | -0.007  (0.004) | 0.084 |
| **YSR Total Score at age 14 – Moderate exercise at age 21** | 2636 | -0.007  (0.004) | 0.070 |
| **YSR Total Score at age 14 – Walking at age 21** | 2636 | -0.002  (0.004) | 0.720 |
|  |  |  |  |
| **YSR Internalizing Score at age 14 – Vigorous exercise at age 21** | 2636 | -0.011  (0.009) | 0.220 |
| **YSR Internalizing Score at age 14 – Moderate exercise at age 21** | 2636 | -0.009  (0.009) | 0.312 |
| **YSR Internalizing Score at age 14 – Walking at age 21** | 2636 | 0.008  (0.010) | 0.454 |
|  |  |  |  |
| **YSR Externalizing Score at age 14 – Vigorous exercise at age 21** | 2636 | -0.015  (0.010) | 0.133 |
| **YSR Externalizing Score at age 14 – Moderate exercise at age 21** | 2636 | **-0.024**  **(0.010)** | **0.014** |
| **YSR Externalizing Score at age 14 – Walking at age 21** | 2636 | -0.014  (0.011) | 0.228 |

1Adjusted for age, sex, and body mass index as well as exercise and sports engagement at age 14 and psychopathology at age 21.

**Supplementary table 2. Longitudinal association between total Youth Self Report (YSR) score at age 14 and physical activity engagement at Age 21 using multiple imputation**

|  |  |  |
| --- | --- | --- |
|  | **Physical activity session at age 21**  **Odds ratio (95% CI)a** | **Physical activity session at age 21**  **Odds ratio (95% CI)** |
|  | ***No engagement in vigorous exercise*** | ***Any vigorous exercise*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | 0.95 (0.84 – 1.08) |
|  | ***No engagement in moderate exercise*** | ***Any moderate exercise*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | 0.99 (0.83 – 1.12) |
|  | ***No engagement in walking*** | ***Any walking*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | 0.91 (0.80 – 1.03) |

aAdjusted for age, sex, body mass index at age 14 as well as exercise and sports engagement at age 14 and YASR total score at age 21 in addition to auxiliary variables known to be associated with attrition in this cohort (birth weight and various maternal variables at first clinic visit related to age, education, marital status, mental health, and smoking)

**Supplementary table 3. Association between total Youth Self Report (YSR) score at age 14 and being lost to follow up at Age 21**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Lost to follow up**  **N = 1718** | **Included in the current study**  **N = 3448** |  |
| **YSR Total Score** | **N (%)** | **N (%)** |  |
| **Low-Normal** | 1539 (89.6) | 3129 (90.8) |  |
| **High** | 179 (10.4) | 319 (9.3) | Chi-squared test  *P = 0.181* |

**Supplementary table 4: Longitudinal association between total Youth Self Report (YSR) score at age 14 and physical activity engagement at Age 21 under modelled scenario1**

|  |  |  |
| --- | --- | --- |
|  | **Physical activity session at age 21**  **Odds ratio (95% CI)a** | **Physical activity session at age 21**  **Odds ratio (95% CI)** |
|  | ***No engagement in vigorous exercise*** | ***Any vigorous exercise*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | 0.96 (0.73 – 1.25) |
|  | ***No engagement in moderate exercise*** | ***Any moderate exercise*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | 0.88 (0.67 – 1.14) |
|  | ***No engagement in walking*** | ***Any walking*** |
| **YSR Total Score at Age 14**  **Low-Normal** | *Reference* | *Reference* |
| **YSR Total Score at Age 14**  **High** | *Reference* | **0.75 (0.58 – 0.99)** |

1Under assumptions that those who were lost to follow-up would have had the same level of psychopathology as age 14 but no physical activity engagement at age 21  
aAdjusted for age, sex, body mass index at age 14 as well as exercise and sports engagement at age 14 and modelled YASR total score at age 21