**Table S1. The association of SBP z-score with total fat-free mass z-score and total fat mass z-score in boys and girls**

|  |  |  |
| --- | --- | --- |
| **Models** | **Boys** | **Girls** |
| **β** | **P** | R2 | **β** | **P** | R2 |
| **Model 1** |  |  |  |  |  |  |
| Total fat-free mass z-score | 0.28 | <0.001 | 0.143 | 0.27 | <0.001 | 0.111 |
| Total fat mass z-score | 0.12 | <0.001 | 0.08 | <0.001 |
| **Model 2** |  |  |  |  |  |  |
| Total fat-free mass z-score | 0.38 | <0.001 | 0.154 | 0.33 | <0.001 | 0.116 |
| Total fat mass z-score | 0.11 | <0.001 | 0.07 | <0.001 |

Linear regression models were used. Model 1 included total fat-free mass z score, total fat mass z-score. Model 2 further adjusted for potential covariates including age, race/ethnicity and height z-score. SBP, systolic blood pressure.

**Table S2. The association of SBP z-score with total fat-free mass z-score and total fat mass z-score stratified by sex and obesity**

|  |  |  |
| --- | --- | --- |
| **Independent variables** | **Boys** | **Girls** |
| **Without obesity (n=5826)** | **obesity (n=1685)** | **Without obesity (n=4919)** | **With obesity (n=1188)** |
| **β** | **P** | R2 | **β** | **P** | R2 | **β** | **P** | R2 | **β** | **P** | R2 |
| Total fat-free mass z-score | 0.30 | <0.001 | 0.074 | 0.30 | <0.001 | 0.068 | 0.25 | <0.001 | 0.068 | 0.35 | <0.001 | 0.078 |
| Total fat mass z-score | 0.06 | <0.001 | 0.03 | 0.301 | 0.06 | <0.001 | -0.04 | 0.336 |

Linear regression models were used. Model included total fat-free mass z-score, total fat mass z-score, age, race/ethnicity and height z-score. SBP, systolic blood pressure.

**Table S3. The association of SBP z-score with fat distribution in boys and girls**

|  |  |  |
| --- | --- | --- |
| **Models** | **Boys** | **Girls** |
| **β** | **P** | R2 | **β** | **P** | R2 |
| **Model 1** |  |  |  |  |  |  |
| Total fat-free mass z-score | 0.28 | <0.001 | 0.152 | 0.28 | <0.001 | 0.114 |
| Trunk fat mass z-score | 0.33 | <0.001 | 0.15 | <0.001 |
| Leg fat mass z-score | -0.20 | <0.001 | -0.08 | 0.006 |
| **Model 2** |  |  |  |  |  |  |
| Total fat free mass z-score | 0.34 | <0.001 | 0.162 | 0.37 | <0.001 | 0.120 |
| Trunk fat mass z-score | 0.34 | <0.001 | 0.17 | <0.001 |
| Leg fat mass z-score | -0.21 | <0.001 | -0.09 | 0.002 |

Linear regression models were used. Model 1 included total fat-free mass z-score, trunk fat mass z-score and leg fat mass z-score. Model 2 further adjusted for potential covariates including age, race/ethnicity and height z-score. SBP, systolic blood pressure.

**Table S4. The association of SBP z-score with fat distribution stratified by sex and obesity**

|  |  |  |
| --- | --- | --- |
| **Independent variables** | **Boys** | **Girls** |
| **Without obesity (n=5826)** | **With obesity (n=1685)** | **Without obesity (n=4919)** | **With obesity (n=1188)** |
| **β** | **P** | R2 | **Β** | **P** | R2 | **β** | **P** | R2 | **β** | **P** | R2 |
| Fat-free mass z-score | 0.26 | <0.001 | 0.082 | 0.30 | <0.001 | 0.079 | 0.24 | <0.001 | 0.070 | 0.31 | <0.001 | 0.089 |
| Trunk fat mass z-score | 0.24 | <0.001 | 0.18 | <0.001 | 0.11 | <0.001 | 0.12 | 0.006 |
| Leg fat mass z-score | -0.17 | <0.001 | -0.16 | <0.001 | -0.04 | 0.126 | -0.15 | <0.001 |

Linear regression models were used. Model included fat-free mass z-score, trunk fat mass z-score, leg fat mass z-score, age, race/ethnicity and height z-score. SBP, systolic blood pressure.

**Table S5. The association of SBP with total muscle mass and total fat mass in boys and girls**

|  |  |  |
| --- | --- | --- |
| **Models** | **Boys** | **Girls** |
| **β** | **P** | R2 | **β** | **P** | R2 |
| **Model 1** |  |  |  |  |  |  |
| Total muscle mass, kg | 0.38 | <0.001 | 0.322 | 0.39 | <0.001 | 0.187 |
| Total fat mass, kg | 0.11 | <0.001 |  | 0.05 | 0.006 |  |
| **Model 2** |  |  |  |  |  |  |
| Total muscle mass, kg | 0.36 | <0.001 | 0.327 | 0.036 | <0.001 |  |
| Total fat mass, kg | 0.12 | <0.001 |  | 0.02 | 0.291 | 0.191 |

Linear regression models were used. Model 1 included total muscle mass, total fat mass. Model 2 further adjusted for potential covariates including age, race/ethnicity and height. SBP, systolic blood pressure.

**Table S6. The association of SBP with fat distribution in boys and girls**

|  |  |  |
| --- | --- | --- |
| **Models** | **Boys** | **Girls** |
| **β** | **P** | R2 | **β** | **P** | R2 |
| **Model 1** |  |  |  |  |  |  |
| Total muscle mass, kg | 0.37 | <0.001 | 0.328 | 0.33 | <0.001 | 0.332 |
| Trunk fat mass, kg | 0.58 | <0.001 | 0.62 | <0.001 |
| Leg fat mass, kg | -0.44 | <0.001 | -0.40 | <0.001 |
| **Model 2** |  |  |  |  |  |  |
| Total muscle mass, kg | 0.41 | <0.001 | 0.189 | 0.44 | <0.001 | 0.193 |
| Trunk fat mass, kg | 0.28 | <0.001 | 0.28 | <0.001 |
| Leg fat mass, kg | -0.25 | <0.001 | -0.29 | <0.001 |

Linear regression models were used. Model 1 included total muscle mass, trunk fat mass and leg fat mass. Model 2 further adjusted for potential covariates including age, race/ethnicity and height. SBP, systolic blood pressure.