**SUPPLEMENTAL DIGITAL CONTENT**

***Path a:*** Females and males unstandardized regression coefficients of physical activity to leg LST.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **coefficient** | **se** | ***p*** | **95% CIs** |
| Females | 0,351 | 0,086 | <0,001 | (0,181; 0.520) |
| Males | 0,267 | 0,124 | 0,033 | (0,021; 0.512) |

All models were controlled to lower limb length and body weight.

**LST,** Lean soft tissue.

***Path b:*** Females and males unstandardized regression coefficients of leg LST to bone outcomes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Females**  |  |  |  |  |
| **Bone Outcome** | **coefficient** |  **se** |  ***P* Value** |  **95% CIs** |
| Proximal femur aBMD | 0,079 | 0,014 | <0,001 | (0,051; 0.108) |
| Trochanter aBMD | 0,076 | 0,014 | <0,001 | (0,048; 0.104) |
| Inter- trochanter aBMD | 0,082 | 0,017 | <0,001 | (0,050; 0.115) |
| Neck aBMD | 0,064 | 0,014 | <0,001 | (0,036; 0.091) |
| Superolateral neck aBMD | 0,072 | 0,018 | <0,001 | (0,037; 0.106) |
| Inferomedial neck aBMD | 0,058 | 0,013 | <0,001 | (0,032; 0.083) |
| N|PF aBMD | -0,008 | 0,007 | 0,223 | (-0,021; 0.005) |
| TR|PF aBMD | 0,014 | 0,005 | 0,007 | (0,004; 0.024) |
| IT|PF aBMD | -0,008 | 0,004 | 0,051 | (-0,017; 0.000) |
| IM|SL aBMD | -0,032 | 0,016 | 0,041 | (-0,062; -0.001) |
| HAL | 0,296 | 0,069 | <0,001 | (0,161; 0.431) |
| NNW | 0,018 | 0,041 | 0,668 | (-0,063; 0.099) |
| NSA | -0,019 | 0,628 | 0,850 | (-1,358; 1.120) |
| **Males** |  |  |  |  |
| **Bone Outcome** | **coefficient** |  **se** |  ***p* Value** |  **95% CIs** |
| Proximal femur aBMD | 0,085 | 0,012 | <0,001 | (0,061; 0.109) |
| Trochanter aBMD | 0,074 | 0,011 | <0,001 | (0,051; 0.097) |
| Inter-trochanter aBMD | 0,094 | 0,014 | <0,001 | (0,066; 0.122) |
| Neck aBMD | 0,075 | 0,013 | <0,001 | (0,050; 0.101) |
| Superolateral neck aBMD | 0,090 | 0,016 | <0,001 | (0,060; 0.121) |
| Inferomedial neck aBMD | 0,066 | 0,013 | <0,001 | (0,041; 0.091) |
| N|PF aBMD | -0,002 | 0,006 | 0,756 | (-0,014; 0.010) |
| TR|PF aBMD | 0,006 | 0,004 | 0,104 | (-0,001; 0.014) |
| IT|PF aBMD | -0,003 | 0,003 | 0,406 | -0,009; 0.004) |
| IM|SL aBMD | -0,047 | 0,013 | <0,001 | (-0,073; -0.021) |
| HAL | 0,292 | 0,058 | <0,001 | (0,176; 0.407) |
| NNW | 0,071 | 0,021 | 0,001 | (0,029; 0.113) |
| NSA | -0,275 | 0,483 | 0,570 | (-1,228; 0.678) |

All models were controlled to lower limb length body weight and MVPA trajectories of physical activity.

LST, Lean soft tissue; N, Neck; PF, Proximal femur; TR, Trochanter; IT, Inter-trochanter; IM, Inferomedial; SL, Superolateral; HAL, Hip axis length; NNW, Narrow neck width; NSA, Neck shaft angle.