**Supplemental table 1. Distribution of physical activity categories at ARIC visit 3 by physical activity categories at ARIC visit 1.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AHA-PA categories at ARIC visit 1 | Overall | Recommended | Intermediate | Poor | p-valuef |
| N | 10,342 | 4,095 | 2,671 | 3,576 |  |
| AHA-PA categories at visit 3 |  |  |  |  | <0.001 |
|  Recommended | 4,364 (42.2) | 2,656 (64.9) | 957 (35.8) | 751 (21.0) |  |
|  Intermediate | 2,366 (22.9) | 735 (17.9) | 847 (31.7) | 784 (21.9) |  |
|  Poor | 3,612 (34.9) | 704 (17.2) | 867 (32.5) | 2,041 (57.1) |  |
| Continuous change in METS\*min/wk from visit 1 to visit 3 | 16.5 ± 767.2 | -346.5 ± 887.9 | 172.4 ± 601.0 | 315.6 ± 521.2 | <0.001 |

**Abbreviations:** Atherosclerosis Risk in Communities, ARIC; American Heart Association, AHA; Physical Activity, PA; Metabolic Equivalent of Tasks, METS; 25-hydroxyvitamin D, 25(OH)D

**Supplemental table 2. Adjusted associations of physical activity levels (averaged between ARIC visit 1 and visit 3) with serum 25(OH)D levels**

|  |
| --- |
| Relative risk ratio (95% CI)a for Deficient 25(OH)D <20 ng/mlc |
|  | Model 1d | Model 2e | Model 3f |
| Continuous average PA level between visit 1 and visit 3 (per 100 METS\*mins/wk increase) | **0.96 (0.95, 0.97)**  | **0.96 (0.95, 0.97)**  | **0.96 (0.96, 0.97)**  |
| Difference [β (95% CI)]b in continuous 25(OH)D levelsc |
|  | Model 1d | Model 2e | Model 3f |
| Continuous average PA levels between visit 1 and visit 3 (per 100 METS\*mins/wk increase) | **0.23 (0.21, 0.26)**  | **0.21 (0.19, 0.24)**  | **0.20 (0.18, 0.22)**  |

1. Relative risk ratios were derived from poisson regression models. Bolded results are statistically significant.
2. Beta-coefficients were derived from linear regression models. Bolded values are statistically significant.
3. To convert 25(OH)D levels to nmol/L from ng/ml, multiply by 2.496.
4. Model 1: Age, sex, race/center, education, smoking status, and alcohol intake.
5. Model 2: Model 1+ additional potential mediating variables (of the association between PA or vitamin D and ASCVD risk) – systolic blood pressure, anti-hypertensive medication use, diabetes, total and HDL-cholesterol, use of lipid lowering medications, and estimated GFR.
6. Model 3: Model 2 + BMI

**Abbreviations:** Atherosclerosis Risk in Communities, ARIC; Physical Activity, PA; Metabolic Equivalent of Tasks, METS; 25-hydroxyvitamin D, 25(OH)D; High density lipoprotein, HDL; estimated Glomerular Filtration Rate, eGFR; body mass index, BMI