SUPPLEMENTARY DATA

Appendix 1. Mixed effects regression models used to explore the relationship of HbA1c and muscle outcomes

The full model used for analyses of HbA1c and muscle outcomes (knee extensor strength, knee extensor strength/leg lean mass, leg lean mass, total body lean mass, thigh cross-sectional area) with all variables included is as follows. Let y_{ij} denote the individual muscle outcome for subject i at observation (visit) $j=1,2,3,... n$. $\beta0$ indicates the intercept or mean adjusted muscle measure for all individuals at baseline (time 0). Further, b_i represents the random-effect intercept for subject i at baseline (time 0) with normal distribution and a zero mean and variance V1. $\beta1$- $\beta11$ represent the fixed-effect coefficients for the regressors HbA1c and other covariates, each identical for all individuals. In particular, $x1_{ij}$ – $x3_{ij}$ represents HbA1c as quartile membership for subject i at observation (visit) $j=1,2,3,...n,$ with $x1_{ij}$ being true (equal to 1) if HbA1c is in the second quartile, $x2_{ij}$ being true (equal to 1) if HbA1c is in the third quartile, and $x3_{ij}$ being true (equal to 1) if HbA1c is in the fourth quartile; otherwise these variables=0 if HbA1c in the first quartile. Race was a categorical variable with $x4_i$ =0 if Caucasian, $x4_i$ =1 if African American and $x4_i$ =2 if other ethnicity. The remaining covariates include $x5_i$ representing the covariate age at baseline, $x6_{ij}$ representing the covariate time since baseline, $x7_i$ representing the covariate sex (0=female, 1=male), $x8_{ij}$ representing the covariate height, $x9_{ij}$ representing the covariate weight, $x10_{ij}$ representing the covariate physical activity, and $x11_{ij}$ representing the covariate nerve conduction velocities for subject i at observation (visit) $j=1,2,3,... n$. The variables $x4_i$ (race), $x5_i$ (age at baseline), and $x7_i$ (sex) were fixed (not time-varying) covariates. The term ε_{ij} indicates the residual error with normal distribution with a mean of zero and variance V. The model equation is also indicated below:

$$y_{ij}= \beta0 + b_i + \beta1*x1_{ij} + \beta2*x2_{ij} + \beta3*x3_{ij} + \beta4*x4_i + \beta5*x5_i + \beta6*x6_{ij} + \beta7*x7_i + \beta8*x8_{ij} + \beta9*x9_{ij} + \beta10*x10_{ij} + \beta11*x11_{ij} + \varepsilon_{ij}$$

where $\varepsilon_{ij}= N(0,V)$ and $b_i=N(0,V1)$

Note that a random term for the time coefficient was not included in the final model since its variance was not significantly different from zero. Also, an interaction between HbA1c quartiles and time was not found to be significant and thus not included in the final model (i.e. rates of decline for individual muscle outcomes were similar by HbA1c quartile).