SUPPLEMENTARY METHODS

Additionally, a glucose tolerance test (GTT) was administered during the 7th week of dietary intervention. While the glucose injection did result in increased circulating glucose expression over time ($F_{[6,186]} = 34.09$; $p < 0.001$; Supplementary Figure 1A), there were no differences across age ($F_{[1,31]} = 0.14$; $p = 0.71$) or diet groups ($F_{[2,31]} = 1,15$; $p = 0.33$), and none of these variables significantly interacted ($p \geq 0.10$ for all comparisons). Furthermore, there were no differences across age ($F_{[5,1]} = 0.28$; $p = 0.60$) or diet ($F_{[5,2]} = 2.76$; $p = 0.08$) in the AUC (Supplementary Figure 1B). However, injecting glucose did alter circulating levels of BHB differentially across diet groups ($F_{[2,31]} = 17.30$; $p < 0.001$), and diet group significantly interacted with the amount of time post injection ($F_{[12,186]} = 4.55$; $p < 0.001$; Supplementary Figure 1C). While there was a significant effect of time point for all groups ($F_{[6,186]} = 31.08$; $p < 0.001$), there were no differences in BHB response across age groups ($F_{[1,31]} = 17.30$; $p = 0.06$) nor did age interact with time point ($F_{[6,186]} = 1.54$; $p = 0.17$). However, age did significantly interact with diet group ($F_{[1,31]} = 3.46$; $p = 0.04$) such that there was a strong trend for aged free-fed rats to demonstrate lower levels than their diet-matched young counterparts ($F_{[1,8]} = 4.91$; $p = 0.06$), whereas aged KD-fed ($F_{[1,11]} = 3.25$; $p = 0.10$) and aged SD-fed rats ($F_{[1,12]} = 1.31$; $p = 0.28$) did not differ from their diet-matched young counterparts. Finally, there were no differences across age ($F_{[5,1]} = 0.25$; $p = 0.62$) or diet ($F_{[5,2]} = 0.63$; $p = 0.54$) in the AUC (Supplementary Figure 1D).