

**Table S1. Comparison of baseline characteristics and changes in weight, vo2max and HOMA1R (N = 180) between Ancillary and non-Ancillary participants.**

	<b>Ancillary (n = 88)</b>	<b>NON-Ancillary (n = 92)</b>	<b>p-value</b>
	<b>Mean(SD)</b>	<b>Mean(SD)</b>	
<b>Age (years)</b>	69.0( 3.5)	69.4( 3.6)	0.47
<b>Female, N (%)</b>	68 (77.3)	68 (73.9)	0.60
<b>White, N (%)</b>	56 (63.6)	75 (81.5)	0.0070
<b>Education, N (%)</b>			
<b>&lt; High School</b>	21 (23.9)	16 (17.4)	0.56
<b>High School</b>	46 (52.3)	52 (56.5)	
<b>&gt; High School</b>	21 (23.9)	24 (26.1)	
<b>Weight (kg)</b>	95.3( 13.7)	92.8( 12.9)	0.20
<b>BMI (kg/m<sup>2</sup>)</b>	35.3( 3.9)	33.8( 2.9)	0.0041
<b>Percent Body Fat (%)</b>	44.9( 5.8)	43.3( 6.3)	0.07
<b>Resting Seated Blood Pressure</b>			
<b>SBP (mmHg)</b>	134.0( 16.4)	137.5( 17.9)	0.17
<b>DBP (mmHg)</b>	73.6( 10.2)	75.6( 10.2)	0.19
<b>HDL cholesterol (mg/dl)</b>	59.3( 15.7)	54.6( 16.7)	0.0514
<b>LDL cholesterol (mg/dl)</b>	110.1( 36.0)	113.1( 31.2)	0.13
<b>Triglycerides (mg/dl)</b>	120.2( 58.6)	133.5( 57.5)	0.94
<b>Fasting Glucose (mg/dl)</b>	102.7( 15.3)	102.9( 21.6)	0.39
<b>HOMA2-IR</b>	2.1( 1.1)	2.0( 1.2)	0.51
<b>Self-reported co-morbidities, N (%)</b>			
<b>Hypertension</b>	57 (64.8)	51(55.4)	0.20
<b>Non-insulin treated diabetes</b>	14 (15.9)	16 (17.4)	0.79
<b>Medication Use, N (%)</b>			
<b>Antihypertensive</b>			
<b>Antidiabetic</b>			
<b>Cholesterol-lowering</b>			
<b>Antidepressant/Mood</b>			
<b>Peak VO<sub>2</sub> (ml/kg/min)</b>	17.6( 3.6)	18.4( 3.0)	0.11
<b>Change of Body Weight (kg)</b>	-7.5( 5.8)	-5.8( 4.4)	0.0516
<b>Change of HOMA2_IR</b>	-0.6( 1.1)	-0.5( 1.0)	0.29
<b>Change of Peak VO<sub>2</sub> (ml/kg/min)</b>	2.7( 3.8)	2.0( 2.1)	0.16

**Table S2. Change from baseline at Post-Intervention and Long-Term Follow-up across all 3 groups.** Adjusted for age, sex, race, education, hypertension status, diabetes status, and BMI.

<b>Outcomes</b>	<b>Post-Intervention Adjusted Mean Change Score (95% CI)</b>	<b>p-value</b>	<b>Long-Term Adjusted Mean Change Score (95% CI)</b>	<b>p-value</b>	<b>Visit p-value</b>
<b>EF</b>	0.114 (0.028,0.200)	0.01017	0.074 (-.014,0.162)	0.09874	0.1824
<b>DSST</b>	1.099 (-.447,2.645)	0.16033	3.300 (1.725,4.874)	0.00009	0.0008
<b>Trails A-B</b>	-1.64 (-8.86,5.590)	0.65239	2.585 (-4.92,10.09)	0.49351	0.2945
<b>Stroop Interference</b>	-2.62 (-5.23,-.006)	0.04948	-1.00 (-3.73,1.720)	0.46375	0.2084
<b>Semantic Fluency</b>	0.327 (-.584,1.237)	0.47579	-0.815 (-1.76,0.131)	0.08993	0.0165
<b>Phonemic Fluency</b>	0.662 (-.057,1.381)	0.07057	0.768 (0.034,1.502)	0.04062	0.6521
<b>RAVLT</b>	1.905 (-.319,4.129)	0.09183	4.148 (1.871,6.425)	0.00056	0.0094
<b>MMSE</b>	0.479 (0.083,0.876)	0.01857	0.869 (0.455,1.284)	0.00009	0.8560

**Table S3. Adjusted mean change scores (95% CI) show effects of randomization on cognitive outcomes at post-intervention and long-term follow-up based on mixed-effect models.**

Outcomes	Post-intervention			Long-term Follow-up			p-value	p-value
	ExOnly	Ex+Mod-CR	Ex+High-CR	ExOnly	Ex+Mod-CR	Ex+High-CR	visit	group
Model I								
EF Composite	0.130(0.003,0.257)	0.108(-.004,0.220)	0.121(0.003,0.239)	0.089(-.038,0.216)	0.068(-.048,0.183)	0.081(-.039,0.200)	0.1808	0.9557
DSC	1.620(-.682,3.923)	1.075(-.882,3.033)	1.171(-.920,3.262)	3.817(1.531,6.104)	3.272(1.258,5.286)	3.368(1.240,5.495)	0.0008	0.9060
Trials B-A	-.835(-11.4,9.758)	1.521(-7.72,10.76)	-5.45(-15.2,4.301)	3.491(-6.99,13.98)	5.846(-3.84,15.53)	-1.12(-11.2,8.963)	0.2822	0.4540
Stroop Interference	-3.95(-7.71,-.188)	-.618(-3.90,2.660)	-2.77(-6.20,0.667)	-2.36(-6.10,1.392)	0.973(-2.47,4.416)	-1.18(-4.73,2.377)	0.2151	0.2740
Semantic Fluency	0.025(-1.29,1.344)	0.609(-.555,1.773)	0.493(-.722,1.708)	-1.12(-2.43,0.191)	-.535(-1.75,0.679)	-.651(-1.91,0.604)	0.0160	0.7120
Phonemic Fluency	1.175(0.103,2.247)	0.690(-.241,1.622)	0.181(-.797,1.159)	1.278(0.210,2.346)	0.794(-.159,1.746)	0.284(-.712,1.279)	0.6626	0.2826
RAVLT	3.382(0.145,6.620)	0.607(-2.24,3.459)	2.033(-1.03,5.092)	5.610(2.386,8.834)	2.835(-.091,5.761)	4.261(1.143,7.380)	0.0101	0.3340
MMSE	0.126(-.438,0.691)	0.408(-.102,0.918)	0.865(0.334,1.397)	0.506(-.055,1.066)	0.788(0.252,1.323)	1.245(0.692,1.798)	0.0966	0.0603
Model II								
EF Composite	0.126(-.003,0.255)	0.100(-.015,0.216)	0.114(-.005,0.234)	0.086(-.043,0.214)	0.060(-.058,0.179)	0.074(-.047,0.195)	0.1825	0.9430
DSC	1.435(-.866,3.735)	0.877(-1.12,2.875)	0.985(-1.11,3.075)	3.635(1.352,5.919)	3.078(1.032,5.123)	3.186(1.058,5.313)	0.0008	0.9028
Trials B-A	-1.38(-11.8,9.074)	2.135(-7.11,11.38)	-5.66(-15.3,3.964)	2.842(-7.50,13.19)	6.357(-3.30,16.01)	-1.44(-11.4,8.529)	0.2945	0.3834
Stroop Interference	-4.10(-7.93,-.266)	-.885(-4.28,2.513)	-2.82(-6.33,0.684)	-2.49(-6.31,1.335)	0.728(-2.82,4.276)	-1.21(-4.83,2.419)	0.2085	0.3278
Semantic Fluency	-.033(-1.36,1.297)	0.525(-.665,1.716)	0.487(-.739,1.714)	-1.17(-2.50,0.147)	-.616(-1.85,0.622)	-.654(-1.92,0.614)	0.0166	0.7124
Phonemic Fluency	1.180(0.086,2.274)	0.632(-.332,1.597)	0.173(-.828,1.175)	1.286(0.196,2.376)	0.739(-.245,1.722)	0.279(-.740,1.299)	0.6521	0.2915
RAVLT	3.349(0.089,6.610)	0.164(-2.76,3.084)	2.202(-.902,5.305)	5.592(2.344,8.841)	2.407(-.584,5.397)	4.445(1.280,7.609)	0.0095	0.2345
MMSE	0.165(-.389,0.718)	0.354(-.152,0.859)	0.920(0.396,1.443)	0.555(0.005,1.104)	0.744(0.214,1.273)	1.310(0.764,1.855)	0.0881	0.0384