

Exercise to combat neurocognitive decline in older adults

Background: Older adults with type 2 diabetes (T2D) experience cognitive decline and neural atrophy, and therefore are at high risk for developing dementia. Consequently, older adults at-risk for developing T2D (i.e., overweight or pre-diabetic individuals) are at higher risk for cognitive decline, and intervening at this point may prevent or delay the onset of such decline. One promising lifestyle intervention that may improve neurocognitive function is exercise. For example, 6 months of aerobic training improves cognitive function in overweight or pre-diabetic older adults, but research has not examined whether resistance training (RT) can produce comparable results in this population.

Hypothesis: To address whether similar findings would occur in older adults at-risk for T2D, a 6-month progressive RT intervention is needed. We predict that 6 months of thrice-weekly RT will improve cognitive and brain function in older adults at-risk for T2D.

Methods: We are conducting a pilot RCT resistance exercise intervention. Participants (n=20) are: 1) community-dwelling men and women aged 60-80 years, 2) sedentary, and 3) have BMI>25 or blood glucose levels of 6.1-7.0 mmol/L. Participants are randomized into one of two groups: 1) RT or 2) balance and tone (BAT; control).

Preliminary Results: Our preliminary results suggest that RT improves memory and executive function (assessed via neuropsychological tests) and brain health (increased total brain volume) in older adults at-risk for T2D, compared to BAT.

Discussion: Thus far, our findings offer a feasible, cost-efficient lifestyle intervention strategy to improve cognitive and brain health in a population of older adults at-risk for early decline.