

# Effects of Stretching, Aerobic, and Yoga Exercise on Neurocognition among Middle Aged and Older Adults: Protocol for the SAY Exercise Trial



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## Introduction

- Prevalence of cognitive decline in older adults is predicted to be 11.1% (1 in 9) among adults. >65 show greater prevalence at 11.7% compared to those 45-65 years-old being at 10.8%.
- Volume of the brain and/or its weight declines with age at a rate of approximately 5% per decade after 40.
- Physical activity is one of the biggest factors for mitigating cognitive decline in older age.



Changes in brain volume by the decade

## Aims

- Examine the effects a 6-month exercise intervention on the cognitive health of older adults (55-79).
- Look at structural and functional changes in the brain that may arise among older adults (55-79) as a result of physical activity intervention.
- Analyze potential physiological changes such as inflammatory and molecular markers due to change in cardiorespiratory fitness.

## Methods

### Participants

- There will be 168 participants for the duration of the entire study (3 waves)
- Male and female older adults who are not physically active

### Inclusion Requirements

- Must be between the ages of 55-79 years old
- Right-handed
- Be MRI compatible
- TICS-M (Modified Telephone Interview for Cognitive Status) score of 32 or higher
- Have no health conditions that could be made worse by exercise as well as no diagnosis of dementia or other cognitive impairments
- Not physically active for more than 30 minutes twice a week
- Good hearing and vision
- Ambulatory
- Must intend to remain in Champaign-Urbana area over duration of study



Participant during a GXT with EPL staff



EPL Exercise Leader leading participants through stretches

### Intervention

- Randomly assigned to a stretching and toning, aerobics, or yoga exercise group.
- 3 times a week for 1 hour over the course of 6 months.
- Exercise sessions will be a hybrid format; participants will choose one day a week to attend in person. sessions and will attend on zoom the other two days of the week.
- Participants will be provided with a Fitbit over the duration of the study, which will be worn during exercise sessions.
- Participants will complete exercise and home logs where they will record information from their exercise session.

### Assessments

- Graded Exercise Test
- Functional Fitness Test
- Fasting Blood draw
- Cognitive Tests
- Psychosocial Questionnaires
- MRI and fMRI

## Expected Outcomes

### Cognitive Function

- Improvement in areas of cognition such as memory, attention and executive function will be observed in all three groups.

### Brain Structure & Function

- Hippocampus will demonstrate a smaller reduction in size over time.

### Physiological Biomarkers

- Observation of positive effects on physiological biomarkers with greater fitness potentially correlating with greater effect.

### Cardiovascular Fitness

- A sizeable change in fitness for aerobic group followed by yoga with little to no change for stretching and toning group.



EPL staff preparing for an MRI session.

## References

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