

Effect of Aerobic Exercise on Alzheimers Pathophysiology in Preclinical AD

<https://neurodegenerationresearch.eu/survey/effect-of-aerobic-exercise-on-alzheimers-pathophysiology-in-preclinical-ad/>

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USA

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Effect of Aerobic Exercise on Alzheimers Pathophysiology in Preclinical AD

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NIH (NIA)

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3

The project/programme is most relevant to:

Alzheimer's disease & other dementias

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Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Neurodegenerative... Neurosciences... Physical Activity... Prevention

Research Abstract

DESCRIPTION (provided by applicant): Strategies for promoting healthy brain aging and preventing Alzheimer's disease (AD) are increasingly important with the unprecedented growth of the elderly population. The advent of amyloid imaging has created an opportunity to identify individuals in the putative earliest stages of the disease. Approximately 30% of cognitively normal older adults have cerebral amyloidosis and meet research criteria for "preclinical AD." This proposal examines the effects of aerobic exercise on AD pathophysiology (amyloid burden) and associated "downstream" neurodegeneration (regional atrophy) and cognitive decline in preclinical AD. Our long-term research goal is to develop and test strategies to prevent AD. We will examine the effects of a 52-week aerobic exercise program in 100 individuals with preclinical AD. The University of Kansas Alzheimer's Disease Center (KU ADC; P30AG035982) will screen 400 sedentary, cognitively normal (CDR 0) individuals age 65 and older with Florbetapir PET imaging to enroll 100 preclinical AD participants into the exercise trial. Participants will be randomized in a 2:1 ratio to either aerobic exercise (n=67) vs. stretching / toning control (n=33). Exercise training will occur in a community setting through the network of Greater Kansas City YMCAs, building on our history of NIH-funded collaborations with the YMCA. We hypothesize that 52 weeks of aerobic exercise will be associated with lower amyloid burden as measured by Florbetapir PET imaging (aim 1), attenuate hippocampal atrophy (aim 2), and provide cognitive benefits (aim 3). Animal data suggests exercise may modify AD neuropathological burden while human studies suggest exercise protects against age-related functional and structural brain changes. Nevertheless, the current data is insufficient to conclude that physical exercise delays or prevents AD and there remains a critical need for rigorous intervention trials to investigate AD prevention strategies. This proposal will provide important preliminary data assessing disease-modifying benefits of exercise on AD pathophysiology in high-risk individuals and inform the design of more definitive studies of exercise as an AD prevention strategy.

Lay Summary

PUBLIC HEALTH RELEVANCE: Over 5 million Americans currently have AD and the prevalence is rising sharply as the population ages. There is a need for rigorous trials assessing the role of AD prevention strategies. Demonstrating that aerobic exercise alters AD pathophysiology would have enormous public health implications, encourage the public to adopt more active lifestyles, and stimulate the development effective exercise delivery programs.

Further information available at:

Types:

Investments > €500k

Member States:

United States of America

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Alzheimer's disease & other dementias

Years:

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