

Exercise Intervention for Slowing HD Progression

<https://www.neurodegenerationresearch.eu/survey/exercise-intervention-for-slowng-hd-progression/>

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Country

USA

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Exercise Intervention for Slowing HD Progression

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Exercise intervention, Huntington Disease, vigorous intensity, Disease Progression, Physical Exercise

Research Abstract

? DESCRIPTION (provided by applicant): Recent work suggests that exercise that moderate-to-vigorous intensity physical exercise is associated with slowing of symptom progression (motor, cognitive, and psychiatric) in prodromal Huntington's Disease (HD). In addition, the literature shows that the intervention is well tolerated in prodromal HD. In subjects without HD, moderate intensity physical exercise has been shown to improve white matter integrity, increase caudate

neuronal activity, and increase striatum activation in spatial learning. Exercise has been shown to increase metabolic enzymes, promote growth of blood vessels to provide increased nutrient and energy supply, increase central BDNF expression, and to promote local glucose metabolism in the basal ganglia. We hypothesize that initiating a moderate intensity physical exercise program will substantially slow progressive striatal volume loss and improve connectivity in prodromal HD. To test this hypothesis, we will undertake a six-month randomized controlled study of home-based moderate intensity aerobic walking exercise program or balance and toning control. In the proposed study, MR will be used to assess the impact of fitness and an exercise intervention on well established markers for HD progression in the brain including: volume of the caudate and putamen and white matter integrity using diffusion weighted imaging. In addition, we will employ a quantitative relaxation parameter, T1 relaxation in the rotating frame (T1 ρ), which we have shown to be sensitive to prodromal HD progression. To evaluate the influence of fitness and therapeutic effect of moderate intensity exercise in prodromal HD, we propose two specific aims: 1) Does baseline fitness account for variance in motor function and brain imaging measures in prodromal HD? and 2) Does a moderate-to-vigorous exercise intervention influence the progression of motor impairment and brain degeneration in prodromal HD? This study will provide insight into the cascade of events that lead to anatomical changes in prodromal HD and will help reveal how exercise improves motor, cognitive, and psychiatric health in subjects with the Htt gene expansion.

Further information available at:

Types:

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United States of America

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