EFFECTS OF REGULAR AEROBIC EXERCISE ON NEURAL FUNCTION IN PERSONS WITH ALZHEIMER'S DISEASE

D. Milham\textsuperscript{1}, R. Newton\textsuperscript{2}, Z. Kendrick\textsuperscript{3}

\textsuperscript{1}School of Science and Primary Industries, Waikato Institute of Technology, Hamilton, New Zealand, \textsuperscript{2}Physical Therapy, \textsuperscript{3}Kinesiology, Temple University, Philadelphia, PA, USA

Introduction: Affecting millions and costing $billions, Alzheimer's disease (AD) causes deficits in neural function, effecting both cognitive and executive function. The primary pathogen, \(\beta\)-amyloid-derived neuritic plaque, causes metabolic degradation that eventually leads to cell death. While pharmacological interventions have minimal effect on AD symptoms, research results indicate exercise enhances neuronal function through exercised-induced expression of Brain-derived neurotrophic factor (BDNF); a peptide that mediates neurotransmitter modulation, protein synthesis, and energy metabolism. Recognized as a primary mediator of \(\beta\)-amyloid, BDNF prevents \(\beta\)-amyloid-derived neuritic plaque buildup and is shown to attenuate AD symptoms/delay AD onset.

Aim: This study examined the AD/exercise hypothesis through the implementation of a physical exercise treatment, walking, over time.

Methods: Participants (N = 19; mean 85.5 yrs, SD = + 5.20) diagnosed with probable AD completed a single treatment, regular walking over time (30-min, 3 days per week for 12 weeks); pre/post-tests measured cognitive function and motor capabilities. Statistics - T-test with repeated measures ANOVA with various categorical variables as between-group factors.

Results: Along with significant reduction in falls (\(z = 2.392, p < .017\)), change in Cognitive function \(t(18) = 5.74, p < .001\), Balance \(t(18) = 7.43, p < .001\), and Mobility \(t(18) = 3.82, p < .001\) were significant. No main effect was associated with AD stage, Activities of daily living, Gender, or Education level.

Conclusion: The results of this study support the exercise hypothesis positing regular aerobic exercise enhances neural function in persons with probable AD, thus possibly attenuating AD symptoms and delaying AD onset.