

1018 Board #279 May 30 3:30 PM - 5:00 PM
Thermoregulation, Strokes, And Dementia: A Healthy Heart Begets A Healthy Brain.
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(No relevant relationships reported)

More than 5 million Americans live with dementia; it affects 10% of the population over age 65. There is no cure, but recognition of risk factors could be helpful for prevention. Identifying demographic, genetic, and behavioral risk factors can improve the prescription of lifestyle choices, such as exercise training, to minimize risk.

PURPOSE: To evaluate predictors of dementia in a patient population.

METHODS: We obtained the patient registry of a hospital in the Midwestern United States. Demographic data, vital signs, health history, and current diagnoses were recorded. There were 2,244 consecutive patients admitted over a 3-year period who met inclusionary criteria; 105 of these patients had a diagnosis of dementia. Logistic regression tested the effects of age, sex, vital signs, and diagnostic history on incidence of dementia in this sample.

RESULTS: Significant predictors of dementia were age ($p<0.001$), diastolic blood pressure ($p=0.048$), core temperature ($p=0.040$), presence of a bleeding disorder ($p=0.028$), and diagnosis of a previous stroke ($p<0.001$). For each degree F that core temperature increased, the odds of dementia were elevated by 44% (95% CI: 1.02 to 2.05). A history of stroke was the most pronounced predictor of dementia (95% CI: 1.89 to 7.57). When history of stroke was analyzed as the dependent variable, core temperature continued to be a significant predictor ($p=0.025$); holding all other variables constant, each additional degree F associated with a 48% elevation in the odds of a stroke (95% CI: 1.05 to 2.10).

CONCLUSION: Age and cardiovascular function are known risk factors for strokes, and strokes are a known risk factor for dementia. In this sample, core temperature emerged as a significant predictor of both stroke and dementia. While poor thermoregulation may be a consequence, rather than a cause, of dementia, a possible consideration is the relationship between heat in the brain, cerebral oxygen demand, and blood brain barrier permeability. The brain's energy demand is several orders of magnitude greater than other body cells, and thus temperature dissipation for the brain is vitally important. Because exercise training improves thermoregulatory capacity, it is possible that this capacity could benefit the brain in previously unidentified ways.

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Changes in Cardiovascular Health Following Exercise in Older Men and Women at Risk for Dementia
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(No relevant relationships reported)

PURPOSE: To investigate the effects of a 24-week multiple-modality exercise intervention with additional mind-motor training on cardiovascular health and fitness. The secondary objective was to investigate whether the intervention had gender-specific effects on the study outcomes.

METHODS: Community-dwelling older adults ($n = 127$, age = 67.5 [7.3] yr, 71% women) were randomized to a 45-min multiple-modality exercise intervention with additional 15 minutes of either mind-motor training (M4 group) or an active control intervention (15 minutes of balance, range of motion and breathing exercises, [M2 group]). Assessment occurred at: baseline, 24 weeks (intervention endpoint), and 52 weeks (after a 28-week no-contact follow-up). The study outcomes were: predicted maximal oxygen consumption (pVO2max), automated office blood pressure (BP), carotid atrial compliance (cAC), intima-media thickness (cIMT), as well as body weight. Mixed between-within ANOVA was used to examine: i) main effects of time (baseline vs 24 weeks), intervention group (M4 vs M2) and gender (men vs women); ii) interactions of time x intervention group, and time x gender.

RESULTS: Results at 24 weeks: both M4 and M2 demonstrated improvements in pVO2max ($p<.001$), with no interaction effects for group or gender (all $p>.05$). For BP measures, both groups showed reduction in systolic ($p<.001$) and diastolic ($p=.001$) BP, with no interaction effect for intervention group; however, women showed greater reduction in diastolic BP compared to men ($p=.02$). No significant changes were observed in cIMT, cAC, or body weight. Results at 52 weeks: improvements in pVO2max were retained ($p<.001$), however, the M4 group showed higher pVO2max when compared to M2 ($p=.005$), with no interaction effects for gender. Significant reduction in systolic BP ($p<.001$) was observed for both M4 and M2, with no interaction effects for group or gender. For diastolic BP, M4 showed significant reduction compared to M2 ($p=.04$); women also demonstrated greater reduction compared to men ($p=.02$). There was no significant change in cIMT, cAC or body weight.

CONCLUSION: Our results suggest that women may be more likely to benefit from group-based, multiple-modality exercise programs in measures of cardiovascular health.

B-74 Exercise is Medicine®/Poster - EIM: Exercise Programs

Wednesday, May 30, 2018, 1:00 PM - 6:00 PM
Room: CC-Hall B

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The Effect of Two Training Protocols on Post Exercise Lactate Clearance in Heart Failure Patients
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(No relevant relationships reported)

INTRODUCTION: Heart failure (HF) patients suffer from functional aerobic impairment due to reduced cardiac output and O₂ delivery. This condition leads to metabolic and physiological changes, such as longer recovery time from physical activity. It was shown that aerobic exercise confers a beneficial effect on quality of life (QOL) and physiological parameters in HF. High intensity interval training (HIT) has been argued by some studies to have a superior rehabilitative effect compared to moderate aerobic training (MAT). We hypothesized that HIT has a superior effect on lactate clearance and, by extension, on recovery from exercise.

METHODS: Twenty-nine HF patients were randomized into two exercise groups: MAT or HIT, and trained twice a week for 12 weeks. Before and after completion of the exercise program patients were assessed for QOL, six-minute walk test (6MWT) and a cardiopulmonary exercise test (CPET). Blood lactate concentration was measured after the CPET and lactate clearance kinetics were fit to each patient by a bi-exponential time function.

RESULTS: HIT group showed a significant improvement compared to baseline in QOL and aerobic capacity (VO₂ max 21.4±7 vs. 17.5±3 ml/min/kg, 6MWT 461±71 vs. 355±58 m). Both exercise groups improved lactate clearance, as represented by the γ_2 constant. While the MAT group showed a trend towards significance (0.061±0.020_units) ($p=0.07$), the HIT group improved lactate clearance significantly (0.074±0.020 units) ($p<0.01$).

CONCLUSIONS: HIT improves lactate clearance kinetics; thereby can partly explain the improved QOL attributed to exercise training

1021 Board #282 May 30 3:30 PM - 5:00 PM
Effects Of 12 Weeks Of Yoga Program in Middle Aged Women With Frozen Shoulder Iisu Kwon,
Jae-keun Oh, Taeyeon Kim. *Korea National Sport University, Seoul, Korea, Republic of.* (No relevant relationships reported)