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Use of a functional electrical stimulation bike to improve cardiovascular risk factors in an individual with spinal cord injury in a clinical setting

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Introduction: Individuals with spinal cord injury (SCI) face health disparities and a number of challenges in maintaining cardiovascular health compared to the able bodied population. The causes are multifactorial including susceptibility to numerous medical conditions that impart a health hazard; illness behaviors leading to a disproportionate percentage of deaths as a result of preventable causes and changes in the ability to exercise to maintain heart health. Therefore, establishing and providing effective interventions for individuals with SCI is vital, however, the majority of rehabilitation research has been performed in research laboratories.

Aim: Aim of this study is to identify the possible physiological adaptations gained from utilizing a functional electrical stimulation (FES) bike for aerobic conditioning to address the increased prevalence of cardiovascular risk factors exhibited by the chronic SCI population, ASIA A-D in an outpatient clinic setting.

Methods: Single-subject case study involved an individual with tetraplegia, enrolled in an outpatient wellness program. Participant engaged in a cardiovascular endurance exercise program using an FES bike 30 minutes, three times a week for six months in a clinical setting, supervised by a physical therapist. The following variables were measured at baseline and at the end of the six months intervention: Hemoglobin A1c, cholesterol (total, HDL/LDL ratio), and serum triglycerides.

Results: Participant's A1c, LDL cholesterol and triglycerides decreased and HDL cholesterol increased after six months of intervention.

Conclusion: Cardiovascular conditioning with an FES bike conducted in an outpatient setting can reduce cardiovascular risk factors and facilitate health in individuals with chronic SCI.

Biography

Marie Vazquez Morgan completed her BS in Physical Therapy and Doctorate degree in Health Studies in 2006. She has 22 years of Rehabilitation experience and has been a Faculty member at LSU Health in Shreveport since 1997. She has presented her research work nationally and internationally on "Cultural competence, health disparities, wellness, and neurorehabilitation". She was honored by Maybelline as outstanding Female Educator. She was the recipient of the Allen A Copping Teaching Award in 2014, a finalist for the 2011 International Award for Research and recipient of the APTA Minority Faculty National Scholarship in 2003.

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