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## Assistive technology utilized for cardiovascular conditioning for patients with spinal cord injury: A case study

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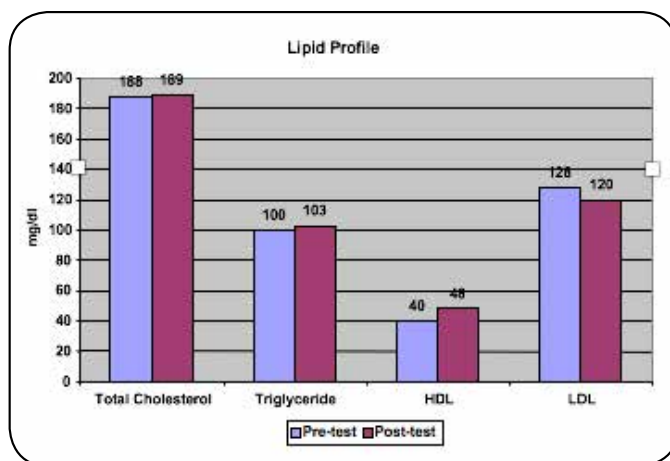
**Statement of the Problem:** There are between 183,000 and 230,000 people with spinal cord injury (SCI) living in United States, with approximately 11,000 new cases each year. In spite of the advancements in medical and educational interventions, individuals with SCI still face health disparities and a number of challenges in maintaining cardiovascular health compared to the able bodied population. As a result, heart disease (HD) is one of the leading causes of death for patients with chronic SCI. Providing effective interventions to reduce the effects of HD for individuals with SCI is vital.

**Aim:** Aim of this study is to demonstrate the cardiovascular benefits of ambulation with a hybrid orthotic-functional electrical stimulation system (ARGO-FES) in a patient with paraplegia when performed in a clinical setting. Sample: Single-subject case study involving a patient with paraplegia enrolled in an outpatient rehab program for ambulation.

**Method:** Participant engaged in an ARGO-FES ambulation program 20 minutes, two times a week for six weeks. The following variables were measured at each session: pre- and post-exercise heart rate (HR) and blood pressures (BP) and distance ambulated. In addition, cholesterol (total, HDL/LDL ratio), and serum triglycerides were measured at baseline and at the end of the six-week intervention.

**Findings:** Patient demonstrated cardiovascular conditioning with reductions in post-ambulation HR and pulse pressure with an increase in distance ambulated. Triglycerides remained unchanged, LDL cholesterol decreased, and HDL cholesterol increased after six weeks of intervention.

**Conclusion:** Cardiovascular conditioning with an ARGO-FES system conducted in a clinical setting can reduce cardiovascular risk factors and facilitate health in individuals with chronic SCI.



**Figure:** Pre- and post-exercise training total cholesterol, triglycerides, HDLs, and LDLs blood lipid profile.

### Biography

Suzanne L Tinsley completed her PT degree at Texas Woman’s University and PhD in Neuropharmacology at Louisiana State University Health Sciences Center. She received her Board Certification in Neurologic Physical Therapy at American Board of Physical Therapy Specialties (ABPTS). She has been a Faculty member at LSU-Health since 1988 and currently holds the position of Associate Professor. She has published a Pharmacology text book for physical therapy education. She has an active clinical research program in the area of Neurological Rehabilitation.

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