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# EMG ACTIVATION DIFFERS BETWEEN ADULTS WITH AND WITHOUT MULTIPLE SCLEROSIS AT THE ANKLE

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## Abstract

Multiple sclerosis (MS) is an autoimmune disease that majorly affects the brain and the spinal cord. The disease affects the central nervous system (CNS) and thus causes limitations of individuals to carry out various activities. In MS, the myelin sheath that covers nerve cell axon is destroyed causing inflammation. Destruction of the membrane leads to slowed conveyance of signals from the spinal cord to the brain, which as a result leads to reduced response to different stimuli. Inflammation of the nerve occurs mostly when the immune cells from the body attack the nervous system. The inflammation is not only limited to the spinal cord, but sometimes extends to optic nerve or the brain.

The purpose of this study was to quantify the steady-state isometric muscular control of the ankle plantar flexors in individuals with MS. We hypothesized that individuals with MS will have a higher coefficient of variation (CV) during a low level isometric contraction compared with healthy controls. Secondly, we hypothesized that the surface EMG (sEMG) of the gastrocnemius in individuals with MS would exhibit altered harmonics when attempting to sustain the isometric contraction.

**Key words:** EMG Activation, Multiple sclerosis, Torque variability, ankle plantar flexors