

McArdle sign

Multiple Sclerosis (MS) is often accompanied by **myelopathy**, which may be associated with progressive worsening. A specific finding of MS-associated myelopathy is **McArdle sign**, wherein **neck flexion** is associated with prominent increased **limb weakness** relative to that detected with **neck extension**. In a study, Schilaty et al. characterized neuromotor control properties of finger extensors in association with the McArdle sign.

A custom-built device was utilized to monitor torque production of the wrist extensors with simultaneous recording of surface electromyography of the extensor digitorum. The electromyography was decomposed and analyzed via both linear and nominal regressions.

Linear regressions demonstrated a strong difference between groups for MS from healthy controls and other myelopathies for motor unit action potential amplitude and average firing rate ($p < 0.001$). Further, linear regression demonstrated good correlations of neuromotor variables to mechanical torque output ($0.24 \leq R^2 \leq 0.76$). Nominal regression distinguished MS from healthy controls with an AUC of 0.87, specificity of 0.97, and sensitivity of 0.64. Nominal regression of MS from other myelopathies demonstrated an AUC of 0.88, specificity of 0.85, and sensitivity of 0.79.

These data demonstrate the neuromotor control factors that largely determine muscle force production change with the observation of McArdle sign; these neuromotor control factors can differentiate MS from both healthy controls and other **myelopathy** conditions ¹⁾.

¹⁾

Schilaty ND, Savoldi F, Nasr Z, Weinshenker BG. Neuromotor control associates with muscle weakness observed with McArdle sign of multiple sclerosis. Ann Clin Transl Neurol. 2022 Mar 15. doi: 10.1002/acn3.51526. Epub ahead of print. PMID: 35289110.

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