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1. Muscle Nerve. 2005 May;31(5):535-51.

## Pathophysiology of spastic paresis. I: Paresis and soft tissue changes.

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### Abstract

Spastic paresis follows chronic disruption of the central execution of volitional command. Motor function in patients with spastic paresis is subjected over time to three fundamental insults, of which the last two are avoidable: (1) the neural insult itself, which causes paresis, i.e., reduced voluntary motor unit recruitment; (2) the relative immobilization of the paretic body part, commonly imposed by the current care environment, which causes adaptive shortening of the muscles left in a shortened position and joint contracture; and (3) the chronic disuse of the paretic body part, which is typically self-imposed in most patients. Chronic disuse causes plastic rearrangements in the higher centers that further reduce the ability to voluntarily recruit motor units, i.e., that aggravate baseline paresis. Part I of this review focuses on the pathophysiology of the first two factors causing motor impairment in spastic paresis: the vicious cycle of paresis-disuse-paresis and the contracture in soft tissues.

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