(S138) MANUAL WHEELCHAIR PROPULSION PATTERN USE BY PEOPLE WITH MULTIPLE SCLEROSIS

R. Verza,1 M. Battaglia,2 M. Messmer Uccelli3

1Occupational Therapy, Italian Multiple Sclerosis Society Rehabilitation Center, Padua, Italy; 2Department of Physiopathology, Experimental Medicine and Public Health, University of Siena, Siena, Italy; 3Department of Research, Italian MS Society, Genoa, Italy

**Background:** The symptoms of multiple sclerosis (MS) vary considerably and may include sensory deficits, cognitive problems, weakness, tremor, and spasticity. These symptoms and, in particular, fatigue, poor trunk control, and deficits in upper-limb functioning, may influence efficiency in wheelchair self-propulsion. As a result, a manual wheelchair may be considered an inappropriate mobility aid for people with MS. In the literature four propulsion patterns have been identified; contrary to findings for wheelchair users with spinal cord injury, it has been reported that people with MS commonly use the least effective pattern.

**Objectives:** To determine the most commonly used manual wheelchair propulsion pattern by people with MS and assess which factors influence the preference.

**Methods:** Sixty manual wheelchair users with MS were clinically assessed for upper-limb active range of motion and trunk stability in order to determine whether these factors or demographic factors, disease factors, or wheelchair use history influence the choice of wheelchair propulsion pattern. Video documentation of each subject during propulsion was analyzed in order to identify propulsion pattern.

**Results:** Fifty-four (90%) subjects used the “arcing” propulsion pattern, the least efficient pattern as reported in the literature. Sixteen (26.7%) subjects had impaired trunk stability, and 38 (63.3%) subjects demonstrated some deficit in either extremity for active range flexion-extension. Twenty (33.3%) subjects had no deficits on active range flexion-extension and had normal trunk control. Upper-limb range of motion and trunk stability were not significant in determining preference for propulsion pattern (P = 1.05 and P = .38, respectively). Demographic and disease factors and wheelchair use history were also not significant in determining propulsion pattern.

**Conclusions:** The person with MS uses the least efficient pattern overall, requiring frequent repetitions, although with a smaller range of movement. This may be an energy-conservation technique due to neurologic fatigue, a problem that other groups of wheelchair users do not generally face.

**Supported by:** Foundation of the Italian Multiple Sclerosis Society (FISM)

**Disclosure:** Nothing to disclose

**Keywords:** rehabilitation strategies and therapy and MS