Authors: Ardolino EM, Flores M, Ferreira G, Jeantete S, Manella KM.

Abstract (2583/3125 characters)

Title: Interrater Reliability of the Pediatric Neuromuscular Recovery Scale in Children with Spina Bifida.

Purpose: There is a paucity of outcome measures to assess the quality of functional mobility in children with spina bifida[1]. The Pediatric Neuromuscular Recovery Scale (Peds NRS) is a valid and reliable outcome measure that was developed to assess the motor capacity of children with spinal cord injury[2-6]. The purpose of this study was to examine the interrater reliability of the Pediatric Neuromuscular Recovery Scale (Peds NRS) to classify motor capacity in children with myelomeningocele (MMC) form of spina bifida.

Subjects: Twenty-one children with MMC (1.4- 10 years of age; mean age of 5.3 years) were recruited from clinics and support groups within a 250-mile radius of Austin, TX. Four clinicians, two physical therapists (PTs) and two occupational therapists (OTs) served as the raters for the study. Raters had an average of 14 years of clinical practice and 11 years of pediatric practice.

Methods: Each child with MMC was scored on the Peds NRS three times: two live testing sessions and one video recorded session. Every child was scored by two PTs and one OT. Interrater reliability was analyzed using intraclass correlation coefficients (ICC) for individual items and the summary score.

Results: The Peds NRS summary score demonstrated good reliability (ICC = 0.89; 95% CI, .80-.95). For the sixteen individual items, reliability was excellent for items forward reach and grasp (right and left), static stand, and walking (ICC= .919-.969), good for supine to sit, sit inside base of support, sit outside base of support, in-hand manipulation (right), overhead reach (right and

left), sit to stand, dynamic stand, and step retraining (ICC= .765-.890) and moderate for in-hand manipulation (left), stand adaptability, step adaptability (.511-.745). None of the items had poor reliability. The summary score had consistent reliability across age categories and groups defined by modified Hoffer level. There was no difference in the summary scores among all raters at F(2,60)= .220, p=.804.

Conclusions: Pediatric clinicians were able to reliably administer and score the Peds NRS on children with MMC, representing a wide range of ages and functional levels.

Clinical Relevance: This is the first investigation of the use of the Peds NRS in children with MMC. This study adds to the literature regarding the psychometric properties of the Peds NRS and supports the use of this outcome measure as an instrument to assess motor capacity in children with MMC.

References:

1. Bisaro DL, Bidonde J, Kane KJ, Bergsma S, Musselman KE. Past and Current Use of Walking Measures for Children With Spina Bifida: A Systematic Review. *Arch Phys Med Rehabil*. 2015;96:1533-1543.e31. doi:10.1016/j.apmr.2015.04.014.
2. Ardolino EM, Mulcahey MJ, Trimble S, et al. Development and initial validation of the pediatric neuromuscular recovery scale. *Pediatr Phys Ther*. 2016:1. doi:10.1097/PEP.0000000000000285.
3. Trimble S, Ardolino E, Mulcahey M, Bienkowski M, Mullen C, Behrman A. The Pediatric Neuromuscular Recovery Scale: Development, validity, and reliability of a new assessment of neuromuscular capacity. | IV STEP 2016. *Poster Present IV STEP Conf Am Phys Ther Assoc*. 2016. http://u.osu.edu/ivstep/poster/075_trimble-et-al/. Accessed June 14, 2018.
4. Tester NJ, Lorenz DJ, Suter SP, et al. Responsiveness of the Neuromuscular Recovery Scale During Outpatient Activity-Dependent Rehabilitation for Spinal Cord Injury. *Neurorehabil Neural Repair*. 2016;30(6):528-538. doi:10.1177/1545968315605181.
5. Velozo C, Moorhouse M, Ardolino E, et al. Validity of the Neuromuscular Recovery Scale: A Measurement Model Approach. *Arch Phys Med Rehabil*. 2015;96(8). doi:10.1016/j.apmr.2015.04.004.

6. Behrman AL, Velozo C, Suter S, Lorenz D, Basso DM. Test-Retest reliability of the neuromuscular recovery scale. *Arch Phys Med Rehabil*. 2015;96(8):1375-1384. doi:10.1016/j.apmr.2015.03.022.