

CURRICULUM VITAE

PERSONAL INFORMATION

Name: Giorgio Scivoletto
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EDUCATION

1988: Degree in Medicine, summa cum laude Catholic University Medical School, Rome

1988-92: Resident in the Institute of Neurology, Catholic University Medical School, Rome

1992: Board Certification in Neurology summa cum laude Catholic University Medical School, Rome

2005: Board Certification in Physical Medicine and Rehabilitation, “Magna Grecia” University, Catanzaro

2011: PhD in Advanced Technology in Rehabilitation Medicine, Tor Vergata University

2015: Master in Chronic Pain Treatment, La Sapienza University of Rome, S. Andrea Hospital

EMPLOYEMENT HISTORY

Present position:

Director, UOC1 and Spinal Cord Unit, IRCCS Fondazione S. Lucia, Rome, Italy
Head of the Spinal Rehabilitation (SpiRe) Laboratory

2013-present: Professor of Spinal Cord Injury Medicine, Tor Vergata University of Rome, Specialization School of Physical Medicine and Rehabilitation

2010-present: Professor of Spinal Cord Injury Medicine, Campus Biomedico University of Rome, Specialization School of Physical Medicine and Rehabilitation

2010-present: Professor of Neuroanatomy, Tor Vergata University of Rome, School for Speech Therapists

2001-present: Professor of Neuroanatomy, Tor Vergata University of Rome, School for Physical Therapists

1997-2000: Professor of Neurology, Tor Vergata University of Rome, School for Nurses

1992-96: Professor of Neurological Rehabilitation, Ospedale S.Giacomo, School for Physical Therapists

HONOURS

2015: Invited reviewer for the Catalan Agency for Information, Assessment and Quality, CAHIAQ: the 19th TV3 Marató Call on Acquired Spinal cord and Brain Injuries.

2018: Invited reviewer for Wings for Life grant proposals, 2018 call.

2020: Member of the Scientific Advisory Board of Stoke Mandeville Spinal Research (SMSR)

2019-present: Vice President of the Italian Society of Spinal Cord (SIMS – Società Italiana del Midollo Spinale)

2016-present: Chair of the Scientific Committee of the International Spinal Cord Society

RESEARCH PROJECTS

Direction or participation in the activities of a research group characterized by collaborations at national or international level

Multicenter project: Italian Group of Epidemiological Study of Spinal Cord Lesions (GISEM) (<http://salute.regione.emilia-romagna.it> / documentation / conferences-and-seminars / epidemiology-of-myelolesions-in-emilia-romagna-bologna-26-january-2012 / 02_franceschini.pdf) (see first article page) from 01-01-1997 to 01-01-1999

International multicentre project: Development and validation of a scale for the assessment of walking for patients with spinal cord injuries, of which he is the referent for the I.R.C.C.S. S. Lucia (WISCI: Walking Index for Spinal Cord Injury) in collaboration with prof. J. Ditunno, Thomas Jefferson University, Philadelphia, from 01-09-1997 to today

International multicentre project: Evaluation and validation of a new independence scale for patients with spinal cord injury: Spinal Cord Independence Measure (SCIM), in collaboration with prof. Amiram Catz (Loewenstein Hospital Rehabilitation Center, Israel). from 01-01-2002 to 31-12-2005

Class III international multicenter study on Vardenafil for the treatment of erectile dysfunction of patients with spinal cord injury (Glaxo-Smith-Kline). from 01-01-2002 to 31-12-2003

International multicentre study for the evaluation and validation of a new independence scale for patients with spinal cord injury: International Age- and Gender- Controlled Model for the Spinal Cord Injury Ability Realization Measurement Index (SCI- ARMI), in collaboration with prof. Amiram Catz (Loewenstein Hospital Rehabilitation Center, Israel). from 01-01-2012 to 31-12-2014

National multicentre project CCM 2012 - "Taking care of people with spinal cord injury in the Italian regions: implementation of integrated care pathways in the hospital and territory and management tools". from 01-01-2013 to 31-12-2014

International multicentre project, "European Multicenter Study about Spinal Cord Injury (EMSCI)", clinical and neurophysiological evaluation protocol of patients with spinal cord lesions. (<http://emsci.org/index.php/members>) from 01-01-2013 to today

European research project, European Union Seventh Framework Program, FP7-ICT-2013-10, ID 661626SYMBITRON: Symbiotic man-machine interactions in wearable exoskeletons to enhance mobility for paraplegics (<https://www.symbitron.eu/consortium/>) from 01-10-2013 to today

European research project, European Union's Horizon 2020 research and innovation program under the grant agreement No 681094, NISCI: Nogo-A Inhibition in acute Spinal Cord Injury (<https://nisci-2020.eu/index.php?id=1510>) from 01-01-2016 to today

International multicentre project, sponsored by the Rick Hansen Institute: Access To Care And Timing (ACT) Project: Level 1 Process Mapping Survey - Rehabilitation Care. Care Journey For Patients With Traumatic Spinal Cord Injury (SCI) from 01-09-2016 to today

International and national research projects, admitted for funding on the basis of competitive calls that provide for peer review

NEURON JTC 2016 'External Insults to the Nervous that is co-funded by the European Commission. SILENCE Spinal Cord Injury-induced Systemic Maladaptive Immune Response and Autoimmunity to Central Nervous System Antigens - European Network Approach. **Principal Investigator for S. Lucia Foundation. Funds assigned 240,000 euros.** <https://www.era-learn.eu/network-information/networks/neuron-cofund/call-for-proposals-for-european-research-projects-on-external-insults-to-the-nervous-system/spinal-cord-injury-induced-systemic-maladaptive-immune-response-and-autoimmunity-to-central-nervous-system-antigens-european-network-approach> from 01-01-2016 to today.

Italian Ministry of Health Research Project RF-2019-12369396: "DiSCloser: Unlocking recovery potential of arm sensorimotor functions after spinal cord injury by promoting activity-dependent brain plasticity and modeling the causal relationship between brain plasticity and recovery of function" **Head of Unit 2. Total Grant 450,000 euros. Funds assigned to the unit 240.000 euros.**

MAIN FIELD OF INTEREST

Bladder management in spinal cord injury and other neurological disease.

Development of spinal cord injury patients outcome scales.

Gait analysis of spinal cord injury.

Epidemiology and outcome evaluation of traumatic and non-traumatic Spinal Cord Injury

Development of exoskeletons

SCIENTIFIC RATINGS

H Index: 41

Citation number: 3878

Articles on peer-reviewed journals: 112 (PubMed) – 124 (Scopus)

Book chapters: 13

MAIN PUBLICATIONS

1. Sequential treatment of chronic constipation in paraplegic subjects. Badiali D., Bracci F., Castellano V., Corazziari E., Fuoco U., Habib FI., Scivoletto G. *Spinal Cord*, 1997, 35 (2): 116-120 I.F. 0.986
2. Interhemispheric differences of hand muscle representation in human motor cortex Cicinelli P., Traversa R., Bassi A., Scivoletto G., Rossini P.M. *Muscle and Nerve*, 1997, 20: 535-542 I.F. 1.898
3. Psychological investigation of spinal cord injury patients. Scivoletto G., Petrelli A., Di Lucente L., Castellano V. *Spinal Cord*, 1997, 35: 516-520 I.F. 0.986
4. Clean intermittent catheterization and prevention of renal disease in spinal cord injury patients. Giannantoni A., Scivoletto G., Di Stasi S.M., Silecchia A., Finazzi-Agrò E., Micali I., Castellano V., *Spinal Cord*, 1998, 36: 29-32 I.F. 0.986
5. Autonomic Dysreflexia during urodynamics. Giannantoni A., Di Stasi S.M., Scivoletto G., Mollo A., Silecchia A., Fuoco U., Vespasiani G. *Spinal Cord*, 1998, 36: 756-760 I.F. 0.986
6. Walking Index for Spinal Cord Injury (WISCI): A Multicenter Validity and Reliability Study Ditunno J.F., Ditunno P.L., Graziani V., Scivoletto G., Bernardi M., Castellano V., Marchetti M., Barbeau H., Frankel H., Greve J., Ko H.Y., Marshall R., Nance P. *Spinal Cord*, 2000, 38 (2): 234-243 I.F. 0.986
7. Intermittent catheterization with a prelubricated catheter in spinal cord injured patients: a prospective, randomized, cross over study. Giannantoni A., Di Stasi S.M., Scivoletto G., Virgili G., Dolci S., Porena M. *Journal of Urology*, 2001, 166: 130-133 I.F. 2.486
8. Effects of age on spinal cord injury patients rehabilitation. Scivoletto G., Morganti B., Ditunno P., Ditunno J.F. and Molinari M. *Spinal Cord*, 2003, 41: 457-464 I.F. 0.986
9. Distributed plasticity of locomotor pattern generators in spinal cord injured patients. R. Grasso, Y. P. Ivanenko, M. Zago, M. Molinari, G. Scivoletto, V. Castellano, V. Macellari, and F. Lacquaniti, *Brain*, 2004 May;127: 1019-34 I.F. 7.81

10. Motor-related cortical dynamics to intact movements in tetraplegics as revealed by high resolution EEG. Mattia D., Cincotti F., Mattiocco M., Scivoletto G., Marciani MG., and Babiloni F., *Human Brain Mapping*, 2006 27: 510-519 I.F. 6,151
11. Utility of delayed Spinal Cord Injury Rehabilitation: An Italian Study. Scivoletto G., Morganti B., Cosentino E., Molinari M. *Neurological Sciences*, 2006, 27: 86-90 I.F. 1.056
12. A multi-center international study on the Spinal Cord Independence Measure, version III: Rasch psychometric validation. A Catz, M Itzkovich, Luigi Tesio, F Biering-Soerensen, C Weeks, MT Laramee, C Craven, S Hitzig, E Glaser, G Zeilig, S Aito, G Scivoletto, M Mecci, RJ Chadwick, WS El Masry, A Osman, CA Glass, P Silva, BM Soni, B Gardner, G Savic, E Bergström, V Bluvshstein, J Ronen, *Spinal Cord*. 2007 Apr;45(4):275-91. I.F. 1.579
13. Plasticity of spinal centers in spinal cord injury patients: new concepts for gait evaluation and training. Scivoletto G., Ivanenko Y., Morganti B., Grasso R., Zago M., Lacquaniti F., Ditunno J., Molinari M. *Neurorehabilitation and Neural Repair*, 2007, 21: 358-65 I.F. 3,803
14. The Spinal Cord Independence Measure (SCIM), version III: reliability and validity in a multicenter international study. M Itzkovich, Gelernter I., F Biering-Soerensen, C Weeks, MT Laramee, BC Craven, M. Tonack, S Hitzig, E Glaser, G Zeilig, S Aito, G Scivoletto, M Mecci, RJ Chadwick, WS El Masry, A Osman, CA Glass, P Silva, BM Soni, B Gardner, G Savic, E Bergström, V Bluvshstein, J Ronen, A. Catz *Disability and Rehabilitation*, 2007, Dec 30;29(24):1926-3305 I.F. 1.579
15. Validation of the walking index for spinal cord injury in a US and European clinical population. Ditunno JF, Scivoletto G, Patrick M, Biering-Sorensen F, Abel R, Marino R. *Spinal Cord*. 2008 Mar;46(3):181-8. I.F. 2.071
16. Clinical factors that affect walking level and performance in chronic spinal cord lesion patients. Scivoletto G., Romanelli A., Mariotti A., Marinucci D., Tamburella F., Mammone A., Cosentino E., Sterzi S., Molinari M. *Spine* 2008; 33(3): 259-64. I.F. 2.351
17. Functional Recovery Measures for Spinal Cord Injury: comparison by a multinational work group. Anderson K., Aito S., Atkins M., Biering-Sørensen F., Charlifue S., Curt A., Ditunno J., Glass C., Marino R., Marshall R., Mulcahey MJ., Post M., Savic G., Scivoletto G., Catz A. *Journal of Spinal Cord Medicine* 2008, 31(2): 133-44 I.F. 1,328
18. Prediction of walking recovery after spinal cord injury. Scivoletto G, Di Donna V. *Brain Res Bull*. 2009 Jan 15;78(1):43-51. I.F. 2,184
19. Motor cortical responsiveness during attempted motor actions in tetraplegia: evidence from neuroelectrical imaging. Mattia D., Cincotti F., Astolfi L, de Vico

- Fallani F., Scivoletto G., Mattiocco M., Marciani MG. and Babiloni F. *Clinical Neurophysiology* 2009 Jan;120(1):181-9. I.F. 3,122
20. Walking Index for Spinal Cord Injury: Inter and Intra – Rater Reliability. Marino RJ., Scivoletto G., Patrick M., Tamburella F., Schmidt Read M., Burns A., Hauck W., Ditunno J. *Am J Phys Med Rehabil.* 2010 Jan;89(1):7-15. I.F. 1,762
 21. Traumatic and non-traumatic spinal cord lesions: an Italian comparison of neurological and functional outcomes. Scivoletto G, Farchi S, Laurenza L, Molinari M. *Spinal Cord.* 2011 Mar;49(3):391-6 I.F. 1.826
 22. Neoplastic mielopathies and traumatic spinal cord lesions: an italian comparison of functional and neurologic outcome. Scivoletto G., Lapenna L.M., Di Donna V., Laurenza L., Sterzi S., Molinari M. *Spinal Cord.* 2011 Jul;49(7):799-805 I.F. 1.826
 23. The sense of the body in individuals with spinal cord injury. Lenggenger B., Pazzaglia M., Scivoletto G., Molinari M., Aglioti SM. *PlosOne* 2012;7(11):e50757. doi: 10.1371/ I.F. 4.092
 24. International comparison of the organization of rehabilitation services and systems of care patients with non-traumatic spinal cord injury. New PW., Townson A., Scivoletto G., Post MWM., Eriks-Hoogland I., Gupta A., Smith E., Reeves RK., Gill ZA. *Spinal Cord* 2013 Jan;51(1):33-9.I.F. 1.826
 25. The Spinal Cord Independence Measure. How much change is clinically significant for spinal cord injury subjects. Scivoletto G., Tamburella F., Laurenza L., Molinari M. *Disabil Rehabil.* 2013 Oct;35(21):1808-13. doi: 10.3109/09638288.2012.756942. I.F. 1.498
 26. The Walking Index for Spinal Cord Injury (WISCI/WISCI II): nature, metric properties, use and misuse. Ditunno J., Ditunno P., Scivoletto G., Patrick M., Dijkers M., Barbeau H., Burns A., Marino R., Schmidt-Read M. *Spinal Cord* 2013 Mar 5. doi: 10.1038/sc.2013.9. I.F. 1.826
 27. International survey of perceived barriers to patient flow in spinal cord injury rehabilitation units. New PW., Scivoletto G., Smith E., Townson A., Gupta A., Reeves RK. *Spinal Cord.* 2013 Dec;51(12):893-7. doi: 10.1038/sc.2013.69. I.F. 1.805
 28. Impact of polytrauma on functional and neurological outcomes of patients with spinal cord injury. Scivoletto G., Farchi S., Laurenza L., Tamburella F., Molinari M. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* 2013 May 30;21:42. doi: 10.1186/1757-7241-21-42 I.F. 1.85
 29. An international age and gender controlled model for the spinal cord injury ability realization measurement index (SCI-ARMI). G. Scivoletto, C Glass, KD Anderson, T Galili, Y Benjamin, L Front, E Aidinoff, V Bluvshstein, M Itzkovich, S Aito, I

Baroncini, S Castellano, J Benito, P Silva, M. Watkins, A. Catz. *Neurorehabilitation and Neural Repair* 2015 Jan;29(1):25-32 I.F. 4.278

30. Somatosensory inputs by application of KinesioTaping: Effects on spasticity, balance, and gait in chronic spinal cord injury. F. Tamburella, G. Scivoletto, M. Molinari. *Inviato a Frontiers in Human Neuroscience* 2014 May 30;8:367. doi: 10.3389/fnhum.2014.00367.I.F. 2.9
31. Challenges for Defining Minimal Clinically Important Difference (MCID) after Spinal Cord Injury. Wu X., Liu J., Tanadini L., Lammertse D., Blight A., Kramer J., Scivoletto G., Jones L., Kirshblum S., Anderson K., Abel R., Fawcett J., Field-Fote E., Guest J., Levinson B., Maier D., Tansey K., Weidner W., Tetzlaff W., Hothorn T., Curt A. *Spinal Cord* 2015 Feb;53(2):84-91 I.F. 1.804
32. Validation of the Italian Version of the Spinal Cord Independence Measure (SCIM III) Self-Report. J. Bonavita, M. Torre, S. China, F. Bressi, E. Bonatti, R. Capirossi, S. Tiberti, S. Olivi, G. Musumeci, E. Maietti, C. Fekete, I. Baroncini, M. Brinkhof, M. Molinari, G. Scivoletto. *Spinal Cord* 2015 Oct 20. doi: 10.1038/sc.2015.187 I.F. 1.804
33. Observational study of the effectiveness of spinal cord injury rehabilitation using the Spinal Cord Injury Ability Realization Measurement Index (SCI-ARMI). G Scivoletto, J Bonavita, M Torre, I Baroncini, S Tiberti, E. Maietti, L Laurenza, Sandra China , V. Corallo, F. Guerra, L. Buscaroli, C. Candeloro, E. Brunelli, A Catz, M Molinari. *Spinal Cord* 2015 Sep 15. doi: 10.1038/sc.2015.153 I.F. 1.804
34. International retrospective comparison of inpatient rehabilitation for patients with spinal cord dysfunction: differences according to etiology. P.W. New, R.K Reeves, É. Smith, A. Townson, I. Eriks-Hoogland, A. Gupta, M. Belci, G. Scivoletto, M.W.M. Post. *Archives of Physical Medicine and Rehabilitation* (in press) I.F. 2.565
35. Rehabilitation of people with spinal cord damage due to tumor: literature review, international survey and practical recommendations for optimizing their rehabilitation. P.W. New, R. Marshall, M.D. Stubblefield, G. Scivoletto. *Journal of Spinal Cord Medicine* (in press) doi:10.1080/10790268.2016.1173321 I.F. 1.333
36. Prediction of bladder outcomes after traumatic spinal cord injury: a longitudinal cohort study. C. Pavese, M.P. Schneider, M. Schubert, A. Curt, G. Scivoletto, E. Finazzi-Agrò, U. Mehnert, D. Maier, R. Abel, F. Röhrich, N. Weidner, R. Rupp, A.G. Kessels, L.M. Bachmann, T.M. Kessler. *PLoS Med* 13(6): e1002041. doi:10.1371/journal.pmed.1002041 I.F. 14.429
37. Assessing and treating pain associated with stroke, multiple sclerosis, cerebral palsy, spinal cord injury and spasticity. Evidence and recommendations from the Italian Consensus conference on Pain in Neurorehabilitation. S. Paolucci, A. Martinuzzi, G. Scivoletto, N. Smania, C. Solaro, I. Aprile, M. Armando, R. Bergamaschi, E. Berra, G. Berto, E. Carraro, M. Cella, M. Gandolfi, M. Masciullo, M. Molinari, E. Pagliano,

C. Pecchioli, L. Roncari, M. Torre, E. Trabucco, G. Vallies, P. Zerbinati, S. Tamburin; Italian Consensus Conference on Pain in Neurorehabilitation (ICCPN). *Eur J Phys Rehabil Med*. 2016 Aug 31. [Epub ahead of print] I.F. 2.06

38. What do spinal cord injury patients think of their improvement? A distribution and anchor based study of the minimal clinically important difference of the Spinal Cord Independence Measure III (SCIM III). Corallo V, Torre M, Ferrara G, Guerra F, Nicosia G, Romanelli E, Lopopolo A, Onesta MP, Fiore P, Bonavita J, Molinari M, Scivoletto G. *European Journal of Physical and Rehabilitation Medicine* (in press) I.F. 2.06
39. Important clinical rehabilitation principles unique to people with non-traumatic spinal cord dysfunction. New PW, Reeves RK, Smith E, Townson A, Eriks-Hoogland I, Gupta, Marshall R, Scivoletto G, Post MWM. *Topics Spinal cord Injury Rehabilitation*, 2017, 23 (4): 299-312 I.F. 1.31
40. Prediction model for the presence of complications at admission to rehabilitation after traumatic spinal cord injury. Scivoletto G, Torre M, Iosa M, Porto MR, Molinari M. *Topics Spinal cord Injury Rehabilitation* 2018 Spring;24(2):151-156. doi: 10.1310/sci17-00013. I.F. 1.31
41. Lower Extremities Outcome Measures: Considerations for Clinical Trials in Spinal Cord Injury. Bolliger M, Blight A, Field-Fote E, Musselman K, Rossignol S, Barthélemy D, Bouyer L, Popovic MR, Schwab JM, Boninger ML, Tansey KE, Scivoletto G, Kleitman N, Jones LAT, Gagnon DH, Nadeau N, Haupt D, Awai L, Easthope CS, Zörner B, Rupp R, Lammertse D, Curt A and Steeves J. *Spinal Cord* 2018 Jul;56(7):628-642. doi: 10.1038/s41393-018-0097-8. I.F. 1.87
42. Prediction of bladder outcomes after ischemic spinal cord injury: A longitudinal cohort study from the European multicenter study about spinal cord injury. Scivoletto G, Pavese C, Bachmann LM, Schubert M, Curt A, Finazzi Agro E, Kessels AG, Kessler TM. *NeuroUrol Urodyn*. 2018 Jun;37(5):1779-1784. doi: 10.1002/nau.23521. I.F. 3.56
43. Considerations and recommendations for selection and utilization of upper extremity clinical outcome assessment in human spinal cord injury trials. Jones L., Bryden A., Wheeler T., Tansey K., Anderson K., Beattie M., Blight A., Curt A., Field-fote E., Guest J., Hsieh J., Jakeman L., Kalsi-Ryan S., Krisa L., Lammertse D., Lieby B., Marino R., Reed R., Schwab J., Scivoletto G., Tulskey D., Wirth E., Zariffa J., Kleitman N., Mulcahey MJ., Steeves J. *Spinal Cord*. 2018 May;56(5):414-425. doi: 10.1038/s41393-017-0015-5 I.F. 1.87
44. Pavese C, Bachmann LM, Schubert M, Curt A, Mehnert U, Schneider MP, Scivoletto G, Finazzi Agrò E, Maier D, Abel R, Weidner N, Rupp R, Kessels AG, Kessler TM. Bowel Outcome Prediction After Traumatic Spinal Cord Injury: Longitudinal Cohort Study. *Neurorehabil Neural Repair*. 2019 Nov;33(11):902-910. doi: 10.1177/1545968319868722.

45. Lucci G, Pisotta I, Berchicci M, Di Russo F, Bonavita J, Scivoletto G, Spinelli D, Molinari M. Proactive Cortical Control in Spinal Cord Injury Subjects with Paraplegia. *J Neurotrauma*. 2019 Dec 15;36(24):3347-3355. doi: 10.1089/neu.2018.6307
46. Scivoletto G, Torre M, Mammone A, Maier DD, Weidner N, Schubert M, Rupp R, Abel R, Yorck-Bernhard K, Jiri K, Curt A, Molinari M. Acute Traumatic and Ischemic Spinal Cord Injuries Have a Comparable Course of Recovery. *Neurorehabil Neural Repair*. 2020 Aug;34(8):723-732. doi: 10.1177/1545968320939569.
47. Scivoletto G, Marcella M, Floriana P, Federica T, Marco M. Impact of complications at admission to rehabilitation on the functional status of patients with spinal cord lesion. *Spinal Cord*. 2020 Jun 12. doi: 10.1038/s41393-020-0501-z. Epub ahead of print.
48. Blasetti G, Pavese C, Maier DD, Weidner N, Rupp R, Abel R, Yorck BK, Jiri K, Curt A, Molinari M, Schubert M, Scivoletto G. Comparison of outcomes between people with and without central cord syndrome. *Spinal Cord*. 2020 Jun 2. doi: 10.1038/s41393-020-0491-x. Epub ahead of print.
49. Brouwers EMJR, Meent HV, Curt A, Maier DD, Abel RF, Weidner N, Rupp R, Kriz J, de Haan AFJ, Kramer JK, Hosman AJF, Bartels RHMA; EMSCI participants and investigators. Recovery after traumatic thoracic- and lumbar spinal cord injury: the neurological level of injury matters. *Spinal Cord*. 2020 May 5. doi: 10.1038/s41393-020-0463-1. Epub ahead of print.
50. Roels EH, Reneman MF, New PW, Kiekens C, Van Roey L, Townson A, Scivoletto G, Smith E, Eriks-Hoogland I, Staubli S, Post MWM. International Comparison of Vocational Rehabilitation for Persons With Spinal Cord Injury: Systems, Practices, and Barriers. *Top Spinal Cord Inj Rehabil*. 2020 Winter;26(1):21-35. doi: 10.1310/sci2601-21. PMID: 32095065.